



HAZARD COMMUNICATION

AND

SDS

MANUAL

January 2018

PART 1

HAZARD
COMMUNICATION
PROGRAM

John Plott Co., Inc.

HAZARD COMMUNICATION PROGRAM

The Hazard Communication Program has been developed by the company in accordance with OSHA Regulations 1926.21 and 1926.59 and 1910.1200. Employees will be trained under the guidelines of the program.

Any questions or comments regarding the Hazard Communication Program should be directed to the supervisor and/or Management.

Chemical Inventory

Hazardous chemicals are inventoried by the office on a regular basis. Any new chemicals brought to the work site by the Company will be included on the hazardous chemical inventory list.

Container Labeling

All chemicals on-site are used from an original container or a temporary container, only in small quantities for immediate use. Any chemical left after work is completed must be returned to the original container, if it is not returned to the original container it must be labeled. No unmarked containers of any size are to be left in the work area unattended.

The Company will rely on the manufacturer's applied labels whenever possible, and will ensure that these labels are not removed or if damaged are replaced. Each container will be labeled with the identity of the hazardous chemical and any appropriate hazard warnings.

Safety Data Sheets (SDS)

The Company will have an up-to-date copy of the safety data sheets (SDS). Each SDS will be in English and shall contain:

- a) The name of the chemical.
- b) The physical hazards.
- c) The health hazards.
- d) The primary route of entry.
- e) The OSHA permissible exposure limit.
- f) Any general precautions for safe handling.
- g) The date of preparation or the date of the last change to the SDS.
- h) The name, address and telephone number of the chemical manufacturer.

SDS are kept at the office and are accessible to all employees. Job specific SDS will be readily available to the employees working on specific job sites. If an employee cannot locate an SDS sheet contact the office.

Supervisors are responsible for having the appropriate up-to-date SDS available to employees.

Employee Training in Haz Com

General

Employees are trained to work safely with hazardous chemicals. Employee training will include:

- a) Methods that may be used to detect a release of hazardous chemicals in the workplace.
- b) Physical and health hazards associated with chemicals.
- c) Protective measure to be taken.
- d) Safe work practices, emergency response and use of personnel protective equipment.
- e) Information on the Hazardous Communication Standard.
- f) Labeling and warning systems.
- g) The employees Right to Know.
- h) And an understanding of the Safety Data Sheet (SDS).
- i) Global Harmonization
- j) Pictograms

On - Site Training

Supervisors are responsible for site specific hazardous chemical training. Training includes:

- a) Types of chemicals on the job site.
- b) Hazards created by chemicals on the job site.
- c) First aid and emergency procedures, when exposed to specific chemicals.
- d) Using appropriate personnel protective equipment for hazardous chemical handling.

Hazards of Non - Routine Tasks

Supervisors inform employees of any special tasks that may arise which would involve possible exposure to hazardous chemicals.

Review of safe work procedures and use of required PPE is conducted prior to the start of such tasks. Where necessary, areas are posted to indicate the nature of the hazard involved.

Multi - Employer Workplaces

Other on - site employers are required to adhere to the provisions of the Hazard Communication Standard.

The Company will provide to other employers on multi - employer job sites, copies of SDS on hazardous chemicals that are used by the Company. Those employers will be responsible for providing their employees with the information necessary to prevent exposure to the Company's hazardous chemicals.

Employers working on the job site with the Company will provide the Company with SDS on each hazardous chemical that they use on the job site. The Company is responsible for providing its employees with the information necessary to prevent exposure to the other employer's hazardous chemicals.

PART 2

SDS

SAFETY DATA SHEET (SDS)

A Safety Data Sheet (SDS) is a fact sheet for a chemical which poses a physical or health hazard at your work site. SDS must be in English and contain the following information:

- Identity of the chemical (as used on the label)
- Physical hazards
- Health hazards
- Primary routes of entry
- Whether it is a carcinogen
- Precautions for safe handling and use
- Emergency and first aid procedures
- Date of preparation of last revision
- Name, address, and telephone number of manufacturer, importer, or other responsible party

If relevant information in one of the categories was unavailable at the time of preparation, the SDS must indicate that no information was found. Blank spaces are not permitted. If you find a blank space on a SDS, contact your supervisor.

Your company must have a SDS for each hazardous chemical it uses. Copies must be made readily available at your work sites. When you travel between work sites during the day, the SDS may be kept at a central location.

If there are workers from other companies at your work site, they must be made aware of the chemicals you use and the location of your SDS. They must do the same for you. All SDS can be at a central location and managed by the general contractor.

Labels and Labeling Requirements

Containers of hazardous chemicals must be labeled in English. Information may also be presented in other languages for non-English speaking employees, but English is required. It is required that labels contain the following information:

- Identity of the hazardous chemical
- Appropriate hazard warnings
- Name and address of the chemical manufacturer, importer, or other responsible party
- Pictograms

On individual stationary containers you may use signs, placards, batch tickets, or printed operating procedures in place of labels.

Where the chemical is intended only for the use of the employee marking the transfer during his or her work shift, the company is not required to label portable transfer vessels. If, however, that vessel or container is transferred for use on another work shift, it has to carry a label.

How to Read an SDS

An SDS must precede or accompany the initial shipment but does not have to be physically attached to it. If you receive subsequent shipments of the same item, a new SDS is not required to be sent to you unless the chemical make-up of the product changes.

To ensure proper record keeping and maintenance of SDS, you should:

- Make sure any employee who purchases supplies for your company is on the lookout for SDS.
- Include a request for a SDS and a label that meets the requirements of the Hazard Communications Standard on all purchase orders.
- Ask for a SDS for any material bearing a label indicating it is a hazard unless a SDS is already on file.
- To deal with the multi-employer situation, you may request information from other contractors on the site about hazardous substances and chemicals known to be at the site.

While SDS will appear in many different formats, they will contain essentially the same information. The information on a SDS is extremely technical in nature and should be used as a reference or as a backup to information on a label. A SDS tracking OSHA Form 174 would offer the following information:

SECTION 1 – IDENTIFICATION

1. Chemical name, as it appears on the label.
2. Manufacturer's name and address.
3. Emergency telephone number in the event of an emergency involving the substance.
4. Date prepared and the signature of the preparer.

SECTION II – HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

1. Hazardous Components: Contains the specific chemical identity, its formula, and any common names it is known by.
2. OSHA Permissible Exposure Limits (PEL): PEL is the permissible maximum amount of the chemical a person may be safely exposed to without harm.
3. American Conference of Governmental Industrial Hygienists Threshold Limit Value (TLV): TLV is the concentration of a chemical in the air that can be breathed for five consecutive eight-hour workdays by most persons without harmful effects. It is generally expressed in parts per million.
4. Other limits recommended: Any other recommended limitation on the use of the chemical by any agency, scientific group, or organization should be included.

SECTION III – PHYSICAL / CHEMICAL CHARACTERISTICS

1. Boiling Point: The temperature at which a liquid boils.
2. Vapor Pressure (mm Hg): Vapor pressure measures a liquid's tendency to evaporate. The higher the pressure, the faster it will evaporate.
3. Vapor Density: Indicates the weight of an equal volume of air. If a vapor is heavier than air (vapor density greater than 1), it will sink to the ground. If it is lighter than air (vapor density less than 1), it will rise.
4. Solubility in Water: Indicates whether the chemical can mix with water in any ratio without separating.
5. Appearance and Odor: A brief description of the chemical's color and smell.
6. Specific Gravity: Ratio of the weight of the material to the weight of an equal volume of water. The specific gravity determines whether the material floats or sinks in water. Specific gravity values less than or equal to 1 indicate that water should not be used to extinguish a fire involving the substance unless the water comes from automatic sprinklers.
7. Melting Point: Indicates the temperature at which a solid changes to a liquid.
8. Evaporation Point (Butyl Acetate 1): Indicates the temperature at which a substance evaporates.

SECTION IV – FIRE AND EXPLOSION HAZARD DATA

1. Flash Point: Indicates the lowest temperature at which a liquid gives off enough vapor to ignite in air when exposed to a flame.
2. Flammable Limits: Indicates the range of vapor concentrations which will explode when an ignition source is present.
3. Extinguishing Media: Materials suitable for putting out a fire involving the identified chemical. These fire fighting agents are: water fog, foam, alcohol foam, carbon dioxide, and dry chemical. The four classes of fire are:
 - Class A – paper, wood, straw, cloth
 - Class B – flammable and combustible liquids
 - Class C – fire involving energized electrical equipment
 - Class D – combustible metals
4. Special Fire Fighting Procedures: Indicates the chemical's special characteristics when it comes in contact with fire.
5. Unusual Fire and Explosion Hazards: Indicates any special types of hazards requiring attention. The description will indicate whether the chemical is difficult to extinguish, will re-ignite spontaneously, and how it reacts with water and other extinguishing agents.

SECTION V – REACTIVITY DATA

1. **Stability:** Indicates conditions that contribute to the stability or instability of a chemical when it is exposed to heat, pressure, or excessive shock during storage, use, misuse, or transport. Look to this section to identify specific conditions to be avoided.
2. **Incompatibility (materials to avoid):** Indicates various materials or conditions you must keep the chemical away from to avoid adverse reactions.
3. **Hazardous Decomposition or By-products:** Indicates gases or vapors which are released when the chemical is burned or decomposes.
4. **Hazardous Polymerization:** Polymerization is a chemical reaction when molecules of the chemical combine with molecules of another chemical to form a larger, different material. This reaction is accompanied by the release of large amounts of energy which can produce fire or other hazards. Polymerization can occur when the chemical comes in contact with certain plastics, rubber, or coatings.

SECTION VI – HEALTH HAZARD DATA

1. **Route(s) of Entry:** A chemical may enter the body either through inhalation, by contact with the skin or eyes, or by being swallowed.
2. **Health Hazards:** Indicates any long-term (chronic) or short-term (acute) effects on the human body.
3. **Carcinogenic:** Indicates whether the chemical causes cancer.
4. **Signs and Symptoms of Exposure:** Indicates and describes the effects of exposure to the chemical and the most common resulting sensations.
5. **Medical Conditions Severely Aggravated by Exposure:** Indicates how the chemical will affect any pre-existing medical conditions.
6. **Emergency and First Aid Procedures:** Indicates first aid procedures to use in order to reduce the hazardous effects of the chemical. The techniques covered will deal only with inhalation of the chemical, and skin or eye contact with it.

SECTION VII – PRECAUTIONS FOR SAFE HANDLING

1. **Steps to be taken in case Material is Released or Spilled:** Indicates precautions such as avoid breathing gases and vapors; avoid contact with liquids. This section also gives recommended techniques to use in controlling land or water spills.
2. **Waste Disposal Methods:** Indicates proper disposal of the chemical and contaminated materials.
3. **Precautions to Take in Handling and Storage:** Indicates safe handling and storage procedures to be taken to avoid hazardous reactions.
4. **Other Precautions:** Indicates special precautions to use in handling or disposing of the chemical.

SECTION VIII – CONTROL MEASURES

1. The measures indicates in this section should be taken whenever the chemical is handled or disposed of during normal use. They are not measures to be used solely during emergencies or accidental spills.
2. **Respiratory Protection:** If needed, specifies type of respirators required by OSHA when the chemical is used, even as a precautionary measure in non-emergency situations.
3. **Ventilation:** Indicates ventilating systems needed to prevent over-exposure to the chemical. "Local exhaust" ventilation is a system with high speed and low volume. "Mechanical (general) ventilation" is the regular ventilation system used to heat / cool an enclosed area in a permanent facility.
4. **Protective Gloves:** Indicates whether or not gloves must be worn when the chemical is handled. If gloves are required for skin protection, the type of material they should be made of will be indicated.
5. **Eye Protection:** Indicates appropriate eye protection, such as face shields, safety goggles or glasses.
6. **Other Protective Clothing:** Indicates protective equipment and the materials they should be made of to effectively prevent skin contact.

SECTION IX – PHYSICAL AND CHEMICAL PROPERTIES

SECTION X – REACTIVITY AND STABILITY

SECTION XI – TOXICOLOGICAL INFORMATION

SECTION XII – ECOLOGICAL INFORMATION

SECTION XIII – DISPOSAL CONSIDERATIONS

SECTION XIV – TRANSPORT INFORMATION

SECTION XV – REGULATORY INFORMATION










SECTION XVI – OTHER INFORMATION

OSHA[®] QUICK CARD[™]

Hazard Communication Standard Pictogram

As of June 1, 2015, the Hazard Communication Standard (HCS) will require pictograms on labels to alert users of the chemical hazards to which they may be exposed. Each pictogram consists of a symbol on a white background framed within a red border and represents a distinct hazard(s). The pictogram on the label is determined by the chemical hazard classification.

HCS Pictograms and Hazards

<p>Health Hazard</p>  <ul style="list-style-type: none"> • Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity 	<p>Flame</p>  <ul style="list-style-type: none"> • Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides 	<p>Exclamation Mark</p>  <ul style="list-style-type: none"> • Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (Non-Mandatory)
<p>Gas Cylinder</p>  <ul style="list-style-type: none"> • Gases Under Pressure 	<p>Corrosion</p>  <ul style="list-style-type: none"> • Skin Corrosion/ Burns • Eye Damage • Corrosive to Metals 	<p>Exploding Bomb</p>  <ul style="list-style-type: none"> • Explosives • Self-Reactives • Organic Peroxides
<p>Flame Over Circle</p>  <ul style="list-style-type: none"> • Oxidizers 	<p>Environment (Non-Mandatory)</p>  <ul style="list-style-type: none"> • Aquatic Toxicity 	<p>Skull and Crossbones</p>  <ul style="list-style-type: none"> • Acute Toxicity (fatal or toxic)

For more information:



U.S. Department of Labor

www.osha.gov (800) 321-OSHA (6742)

OSHA 3491-02 2012

PART 3

**CHEMICAL
LIST**

John Plott Co., Inc.

Chemical List

A. Concrete Materials, Asphalts and Aggregates

1. Asphalt
2. Caliche
3. CMU Block
4. Concrete Mix
5. Concrete Ready Mix
6. Concrete Structural Units
7. Hydraulic Cement
8. Limestone (Martin Marietta Quarry)
9. Limestone (Vulcan Quarry)
10. Mortar Mix
11. Non Shrink Grout
12. Sandstone (Martin Marietta Quarry)
13. Sandstone (Vulcan Quarry)

B. Fuels, Oils and Greases

1. 2-Stroke Mixing Oil
2. Diesel Fuel (On & Off Road)
3. Gasoline
4. Gear Oil
5. Grease
6. Hydraulic Oil
7. Motor Oil
8. Propane

C. General Jobsite Supplies

1. Battery Acid
2. Brake Fluid
3. Calibration Kit for Air Monitor
4. Chlorine (Granular)
5. Coal Tar Epoxy
6. Epoxy (Anchoring)
7. Fertilizer
8. Galvanize Coating
9. Glue (PVC)
10. Injectaflex Resin (For Active Water Leaks)
11. Marking Paint
12. Pipe Lube
13. Polyethylene Vapor Barrier
14. Purple Primer
15. Rock Splitting Grout
16. Thread Paste
17. WD-40

D. Office Supplies

1. Air Duster
2. Clorox Cleaner
3. Dial Liquid Soap
4. Glass Plus
5. Lysol Disinfectant Spray
6. Lysol Wipes
7. Pledge
8. Toner (Kyocera)

E. Pipe Materials

1. Aluminized Steel Drain Pipe
2. Asphalt Coated Steel Drain Pipe
3. Concrete Pipe
4. HDPE Pipe
5. PVC Pipe

F. Shop & Mechanic Supplies

1. Anitfreeze
2. 4-N-1
3. Battery Saver
4. Big Blast
5. Brake Away
6. Cherry Blast Soap
7. Clear Seal
8. Ice Eraser
9. Knock Out
10. Mechanics Helper
11. Panel Brite
12. Peak Performance
13. Safety Kleen
14. Slither
15. Solar Shield
16. White Lube

G. Welding & Cutting Materials

1. Abrasive Blades & Wheels
2. Compressed Acetylene
3. Compressed Oxygen
4. Welding Rod (6010)
5. Welding Rod (308L-16)
6. Welding Rod (7018)

Part 4

Indexed SDS

SDS
Manual

INDEX of SDS Sheets

A. Concrete Materials, Asphalts and Aggregates

1. Asphalt
2. Caliche
3. CMU Block
4. Concrete Mix
5. Concrete Ready Mix
6. Concrete Structural Units
7. Hydraulic Cement
8. Limestone (Martin Marietta Quarry)
9. Limestone (Vulcan Quarry)
10. Mortar Mix
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7. Motor Oil
8. Propane

C. General Jobsite Supplies

1. Battery Acid
2. Brake Fluid
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14. Purple Primer
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16. Thread Paste
17. WD-40

D. Office Supplies

1. Air Duster
2. Clorox Cleaner
3. Dial Liquid Soap
4. Glass Plus
5. Lysol Disinfectant Spray
6. Lysol Wipes
7. Pledge
8. Toner (Kyocera)

E. Pipe Materials

1. Aluminized Steel Drain Pipe
2. Asphalt Coated Steel Drain Pipe
3. Concrete Pipe
4. HDPE Pipe
5. PVC Pipe

F. Shop & Mechanic Supplies

1. Antifreeze
2. 4-N-1
3. Battery Saver
4. Big Blast
5. Brake Away
6. Cherry Blast Soap
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G. Welding & Cutting Materials

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6. Welding Rod (7018)

***A. Concrete Materials, Asphalts
and Aggregates***

1.) Asphalt



Identification

Product Identifier Asphalt Other means of identification

SDS number 208-GH5

Synonyms PBA/PG Grade Paving Asphalt; AR/AC Paving Grade Asphalt; AC Grade Petroleum Asphalt; Asphalt Cement; PEN Grade Asphalt; AS20; Emulsion Base Stock (E.B.S.) Asphalt; Asphalt, Flux; Asphalt, Saturant; Solvent Deasphalted Bottoms Petroleum Asphalt; Propane Deasphalted Bottoms Petroleum Asphalt; Vacuum Tower Bottoms Petroleum Asphalt; Steam Refined Asphalt; Mildly Oxidized Petroleum Asphalt

Recommended use Asphalt products are to be used as road and highway paving applications; waterproofing and sealing applications; coatings; or other engineering applications. Use in other applications may result in higher exposures and require additional engineering controls and personal protective equipment.

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer/Supplier Valero Marketing & Supply Company and Affiliates One Valero Way San Antonio, TX 78269-6000

General Assistance 210-345-4593

E-Mail CorpHSE@valero.com

Contact Person Industrial Hygienist

Emergency Telephone 24 Hour Emergency 866-565-5220

1-800-424-9300 (CHEMTREC USA)

Hazard(s) Identification

Physical hazards Health hazards

OSHA defined hazards Label elements Not classified.
Carcinogenicity
Not classified.

Category 2



Signal word Danger

Hazard statement Suspected of causing cancer.

Precautionary statement

Prevention Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection.

Response If exposed or concerned: Get medical advice/attention.

Storage Store locked up.

Disposal Dispose of contents/container in accordance with local/regional/national/International regulations.

Hazard(s) not otherwise classified (HNOC) None known.

Composition/information on Ingredients

Mixtures

Chemical name

Asphalt	CAS number	%
Vacuum tower bottoms	8052-42-40 - 100	
	64741-56-6	0 - 100

Distillates, petroleum residues, vacuum
Hydrogen sulfide

68955-27-1 0 - 15

7783-06-4<0.1

Polycyclic Aromatic Hydrocarbons

130498-29-2 <0.1

Composition comments Dangerous amounts of hydrogen sulfide, a highly toxic gas, may be present, especially in the headspace of containers.

First-aid measures

Inhalation Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

Skin contact In case of contact with hot or molten product, cool rapidly with water and seek immediate medical attention. Do not attempt to remove molten product from skin because skin will tear easily.

Remove contaminated clothing and shoes. Get medical attention if irritation develops or persists. Wash clothing separately before reuse. Destroy or thoroughly clean contaminated shoes. If high pressure injection under the skin occurs, always seek medical attention.

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention.

Ingestion Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center. Do not give mouth-to-mouth resuscitation. If vomiting occurs, keep head low so that stomach content does not get into the lungs. Never give anything by mouth to a victim who is unconscious or is having convulsions. Get medical attention immediately.

Most important symptoms/effects, acute and delayed Irritation of nose and throat. Irritation of eyes and mucous membranes. Skin irritation. Unconsciousness. Corneal damage. Narcosis. Decrease in motor functions. Behavioral changes. Edema. Conjunctivitis. Proteinuria. Defatting of the skin. Rash.

Indication of immediate medical attention and special treatment needed In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General information If exposed or concerned: get medical attention/advice. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before re-use.

Fire-fighting measures

Suitable extinguishing media Water spray. Water fog. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media Do not use water jet.

Specific hazards arising from the chemical

Thermal decomposition or combustion may liberate toxic gases or fumes.

Special protective equipment and precautions for firefighters

Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

Fire-fighting equipment/instructions

Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Withdraw immediately in case of rising sound from venting safety devices or any discoloration of tanks due to fire. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Move containers from fire area if you can do it without risk. In the event of fire, cool tanks with water spray. Cool containers exposed to flames with water until well after the fire is out. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Water runoff can cause environmental damage. Use compatible foam to minimize vapor generation as needed.

Accidental release measures

Personal precautions, protective equipment and emergency procedures

Keep unnecessary personnel away. Local authorities should be advised if significant spills cannot be contained. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. See Section 8 of the SDS for Personal Protective Equipment.

Methods and materials for containment and cleaning up

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Extinguish all flames in the vicinity. Keep combustibles (wood, paper, oil, etc.) away from spilled material.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible.

Small Spills: Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Cover with plastic sheet to prevent spreading. Collect spillage. Following product recovery, flush area with water. Prevent product from entering drains. Do not allow material to contaminate ground water system. Clean surface thoroughly to remove residual contamination. Wipe up with absorbent material (e.g. cloth, fleece).

Environmental precautions If facility or operation has an "oil or hazardous substance contingency plan", activate its procedures. Stay upwind and away from spill. Wear appropriate protective equipment including respiratory protection as conditions warrant. Do not enter or stay in area unless monitoring indicates that it is safe to do so. Isolate hazard area and restrict entry to emergency crew. Review Firefighting Measures, Section 5, before proceeding with clean up. Keep all sources of ignition (flames, smoking, flares, etc.) and hot surfaces away from release. Contain spill in smallest possible area. Recover as much product as possible (e.g. by vacuuming). Stop leak if it can be done without risk. Use water spray to disperse vapors. Use compatible foam to minimize vapor generation as needed. Spilled material may be absorbed by an appropriate absorbent, and then handled in accordance with environmental regulations. Prevent spilled material from entering sewers, storm drains, other unauthorized treatment or drainage systems and natural waterways. Contact fire authorities and appropriate federal, state and local agencies. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, contact the National Response Center at 1-800-424-8802. For highway or railways spills, contact Chemtrec at 1-800-424-9300.

Handling and storage

Precautions for safe handling Wear personal protective equipment. Avoid breathing mist or vapor from heated material. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Use only with adequate ventilation. Wash thoroughly after handling. Do not handle, store or open near an open flame or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use only non-sparking tools. When using, do not eat, drink or smoke. Avoid release to the environment.

Conditions for safe storage, including any incompatibilities

Material is normally stored in closed tanks at 250 to 375F. Do not handle, store or open near an open flame or sources of ignition. Protect material from direct sunlight. This material can accumulate static charge which may cause spark and become an ignition source. The pressure in sealed containers can increase under the influence of heat. Keep container tightly closed in a cool, well-ventilated place. Keep away from food, drink and animal feedingstuffs. Keep out of the reach of children.

Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-2 (29 CFR 1910.1000)

Components	Type	Value
Hydrogen sulfide (CAS 7783-06-4)	Ceiling	20 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Asphalt (CAS 8052-42-4)	TWA	0.5 mg/m3	Inhalable fraction.
Hydrogen sulfide (CAS 7783-06-4)	STEL	5 ppm	
	TWA	1 ppm	
Vacuum tower bottoms (CAS 64741-56-6)	TWA	0.5 mg/m3	Inhalable fraction.

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Asphalt (CAS 8052-42-4)	Ceiling	5 mg/m3 Fume.	
Hydrogen sulfide (CAS 7783-06-4)	Ceiling	15 mg/m3	
		10 ppm	

Components	Type	Value	Form
Vacuum tower bottoms (CAS 64741-56-6)	Ceiling	5 mg/m ³	Fume.
Biological limit values	No biological exposure limits noted for the ingredient(s).		
Appropriate engineering controls	Provide adequate general and local exhaust ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.		
Individual protection measures, such as personal protective equipment			
Eye/face protection	Wear safety glasses. If splash potential exists, wear full face shield or chemical goggles.		
Skin protection			
Hand protection	Avoid exposure - obtain special instructions before use. Wear protective gloves. Protective gloves.		
Other	Wear chemical-resistant, impervious gloves. Flame retardant protective clothing is recommended.		
Respiratory protection	Wear a NIOSH-approved (or equivalent) respirator as needed.		
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.		
General hygiene considerations	Consult supervisor for special handling instructions. Avoid contact with eyes. Avoid contact with skin. Keep away from food and drink. Wash hands before breaks and immediately after handling the product. Provide eyewash station and safety shower. Handle in accordance with good industrial hygiene and safety practice.		
Physical and chemical properties			
Appearance	Dark brown to black liquid at normal use temperatures above 300F. Semi-solid at 70F.		
Physical state	Liquid.		
Form	Semi-Solid at 70F		
Color	Brown/black.		
Odor	Strong petroleum.		
Odor threshold	Not available.		
pH	Not available.		
Melting point/freezing point	100 - 150 °F (37.78 - 65.56 °C) (Softening point)		
Initial boiling point and boiling range	700 - 1100.1 °F (371.11 - 593.39 °C)		
Flash point	> 350.1 °F (> 176.7 °C) Closed Cup		
Evaporation rate	Not available. Flammability (solid, gas) Not available. Upper/lower flammability or explosive limits		
Flammability limit - lower (%)	> 0.9		
Flammability limit - upper (%)	< 7		
Explosive limit - lower (%)	Not available.		
Explosive limit - upper (%)	Not available.		
Vapor pressure	< 0.01 kPa @ 20 °C		
Vapor density	> 1.6 (Air = 1)		
Relative density	1 - 1.2 (Water=1)		
Solubility(ies)			
Solubility (water)	Not available.		
Partition coefficient (n-octanol/water)	Not available.		
Auto-ignition temperature	> 600.1 °F (> 315.61 °C)		
Decomposition temperature	Not available.		
Viscosity	Not available.		

Stability and reactivity

Reactivity Not available.

Chemical stability Stable under normal temperature conditions and recommended use.

Possibility of hazardous reactions Hazardous polymerization does not occur.

Conditions to avoid Flames and sparks. Ignition sources. Contact with incompatible materials. Do not pressurize, cut, weld, braze, solder, drill, grind or expose empty containers to heat, flame, sparks, static electricity, or other sources of ignition; they may explode and cause injury or death.

Incompatible materials Strong oxidizing agents.

Hazardous decomposition products No hazardous decomposition products are known.

Toxicological information

Information on likely routes of exposure

Ingestion May be harmful if swallowed.

Inhalation May be harmful if inhaled. In high concentrations, vapors and spray mists are narcotic and may cause headache, fatigue, dizziness and nausea.

Skin contact May cause skin irritation.

Eye contact May cause eye irritation.

Symptoms related to the physical, chemical and toxicological characteristics Irritation of nose and throat. Irritation of eyes and mucous membranes. Skin irritation. Unconsciousness. Corneal damage. Narcosis. Decrease in motor functions. Behavioral changes. Edema. Conjunctivitis. Proteinuria. Defatting of the skin. Rash.

Information on toxicological effects

Acute toxicity Based on available data, the classification criteria are not met.

Components Species

Test Results

Hydrogen sulfide (CAS 7783-06-4)

Acute

Inhalation

LC50 Rat

> 0.38 mg/l, 960 Minutes

Skin corrosion/irritation Based on available data, the classification criteria are not met.

Serious eye damage/eye irritation Based on available data, the classification criteria are not met.

Respiratory or skin sensitization

Respiratory sensitization Based on available data, the classification criteria are not met. **Skin sensitization** Based on available data, the classification criteria are not met. **Germ cell mutagenicity** Based on available data, the classification criteria are not met.

Carcinogenicity Suspected of causing cancer. Contains polycyclic aromatic compounds (PACs). Prolonged and/or repeated skin contact with certain PACs has been shown to cause skin cancer. Prolonged and/or repeated exposures by inhalation of certain PACs may also cause cancer of the lung and of other sites of the body.

Occupational exposure to straight-run asphalts and their emissions during road paving: 2B Possibly carcinogenic to humans.

IARC Monographs. Overall Evaluation of Carcinogenicity

Asphalt (CAS 8052-42-4) 2B Possibly carcinogenic to humans. Vacuum tower bottoms (CAS 64741-56-6) 2B Possibly carcinogenic to humans.

Reproductive toxicity Based on available data, the classification criteria are not met.

Specific target organ toxicity - single exposure Based on available data, the classification criteria are not met. Based on available data, the classification criteria are not met.

Specific target organ toxicity - repeated exposure

Aspiration hazard Based on available data, the classification criteria are not met.

Further information Symptoms may be delayed.

Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Components	Species	Test Results
Hydrogen sulfide (CAS 7783-06-4)		
Aquatic		
Fish	LC50	Lake whitefish (<i>Coregonus clupeaformis</i>) 0.002 mg/l, 96 hours

Persistence and degradability Not available. **Bioaccumulative potential** Not available. **Mobility in soil** Not available.
Other adverse effects Not available.

Disposal considerations

Disposal instructions Dispose in accordance with all applicable regulations. This material and its container must be disposed of as hazardous waste. Dispose of this material and its container to hazardous or special waste collection point. Incinerate the material under controlled conditions in an approved incinerator. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

US RCRA Hazardous Waste U List: Reference

Hydrogen sulfide (CAS 7783-06-4) U135

Waste from residues / unused products Dispose of in accordance with local regulations.

Contaminated packaging Offer rinsed packaging material to local recycling facilities.

Transport information**DOT**

UN number UN3257
UN proper shipping name Transport Elevated temperature liquid, n.o.s.
hazard class(es)
Class Subsidiary risk 9
Packing group - III

Special precautions for user Not available.

Special provisions Packaging I81, T3, TP3, TP29

exceptions Packaging non bulk None None 247

Packaging bulk

IATA UN3257
UN number Elevated temperature liquid, n.o.s.
UN proper shipping name Transport
haza. d class(es) 9
Class Subsidiary risk Label(s) - 9
Packing group Environmental hazards Not applicable.
ERG Code No.
 9L

Special precautions for user Not available.

IMDG

UN number UN3257
UN proper shipping name Transport ELEVATED TEMPERATURE LIQUID, N.O.S.
hazard class(es)
Class Subsidiary risk Label(s) 9
Packing group - 9
 III

Environmental hazards Marine
pollutant No.
Ems F-A, S-P

Special precautions for user Not available.
Transport in bulk according to Annex II of Not applicable.
MARPOL 73/78 and the IBC Code
Regulatory information
US federal regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.
US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Asphalt (CAS 8052-42-4) LISTED

Hydrogen sulfide (CAS 7783-06-4) LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA) Hazard categories Immediate Hazard - Yes

Delayed Hazard - Yes

Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Chemical name	CAS number	Reportable quantity	Threshold planning quantity	Threshold planning quantity, lower value	Threshold planning quantity, upper value
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Hydrogen sulfide	7783-06-4100	500 lbs			
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SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Polycyclic Aromatic Hydrocarbons (CAS 130498-29-2)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Hydrogen sulfide (CAS 7783-06-4)

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations WARNING: This product contains chemicals known to the State of California to cause cancer.

US. Massachusetts RTK - Substance List

Asphalt (CAS 8052-42-4)

Hydrogen sulfide (CAS 7783-06-4) Vacuum tower bottoms (CAS 64741-56-6)

US. New Jersey Worker and Community Right-to-Know Act

Asphalt (CAS 8052-42-4)

Hydrogen sulfide (CAS 7783-06-4)

Polycyclic Aromatic Hydrocarbons (CAS 130498-29-2) Vacuum tower bottoms (CAS 64741-56-6)

US. Pennsylvania Worker and Community Right-to-Know Law

Asphalt (CAS 8052-42-4)

Hydrogen sulfide (CAS 7783-06-4)

Polycyclic Aromatic Hydrocarbons (CAS 130498-29-2) Vacuum tower bottoms (CAS 64741-56-6)

US. Rhode Island RTK

Hydrogen sulfide (CAS 7783-06-4)

US. California Proposition 65

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Asphalt (CAS 8052-42-4)

Vacuum tower bottoms (CAS 64741-56-6)

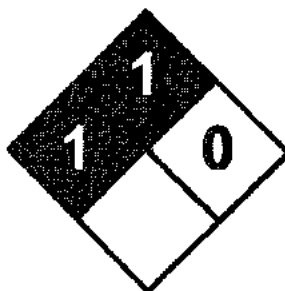
International inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
	Non-Domestic Substances List (NDSL)	No
	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances	No (PICCS)

United States & Puerto Rico
Toxic Substances Control Act (TSCA) Inventory
Yes
"A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s). A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

Hazardous Substances Data Bank
IARC Monographs. Overall Evaluation of Carcinogenicity National Toxicology Program (NTP) Report on Carcinogens
ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices
Disclaimer This material Safety Data Sheet (SDS) was prepared in accordance with 29 CFR 1910.1200 by Valero Marketing & Supply Co., ("VALERO"). VALERO does not assume any liability arising out of product use by others. The information, recommendations, and suggestions presented in this SDS are based upon test results and data believed to be reliable. The end user of the product has the responsibility for evaluating the adequacy of the data under the conditions of use, determining the safety, toxicity and suitability of the product under these conditions, and obtaining additional or clarifying information where uncertainty exists. No guarantee expressed or implied is made as to the effects of such use, the results to be obtained, or the safety and toxicity of the product in any specific application. Furthermore, the information herein is not represented as absolutely complete, since it is not practicable to provide all the scientific and study information in the format of this document, plus additional information may be necessary under exceptional conditions of use, or because of applicable laws or government regulations.

Other information, including date of preparation or last revision
Issue date 27-June-2013
Revision date 05-May-2014
Version # 02
NFPA Ratings



References
ACGIH
EPA: AQUIRE database
NLM: Hazardous Substances Data Base
US. IARC Monographs on Occupational Exposures to Chemical Agents HSDB® -

Asphalt

814038 Version #: 02 Revision date: 05-May-2014 Print date: 05-May-2014

Prepared by 3E Company

2.) Caliche



SAFETY DATA SHEET (SDS): CRUSHED CALICHE

SECTION I – IDENTIFICATION

PRODUCT IDENTIFIER	TRADE NAME	OTHER SYNONYMS
Crushed Caliche	Caliche	Base Material, Caliche Base

RECOMMENDED USE AND RESTRICTION ON USE

Used for construction purposes
This product is not intended or designed for and should not be used as an abrasive blasting medium or for foundry applications.

MANUFACTURER/SUPPLIER INFORMATION

Martin Marietta Materials
2710 Wycliff Road
Raleigh, North Carolina 27607
Phone: 919-781-4550

For additional health, safety or regulatory information and other emergency situations, call 919-781-4550

SECTION II – HAZARD(S) IDENTIFICATION

HAZARD CLASSIFICATION:

Category 1A Carcinogen
Category 1 Specific Target Organ Toxicity (STOT) following repeated exposures
Category 2A Eye Irritant
Category 2 Skin Irritant



SIGNAL WORD: DANGER

HAZARD STATEMENTS:

May cause cancer by inhalation.
Causes damage to lungs, kidneys and autoimmune system through prolonged or repeated exposure by inhalation.
Causes skin irritation and serious eye irritation.

PRECAUTIONARY STATEMENTS

Do not handle until the safety information presented in this SDS has been read and understood.
Do not breathe dusts or mists. Do not eat, drink or smoke while manually handling this product. Wash skin thoroughly after manually handling.
If swallowed: If gastrointestinal discomfort occurs and if person is conscious, give a large quantity of water and induce vomiting; however, never attempt to make an unconscious person drink or vomit.
If on skin (or hair): Rinse skin after manually handling and wash contaminated clothing if there is potential for direct skin contact before reuse.
If inhaled excessively: Remove person to fresh air and keep comfortable for breathing.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do, and continue rinsing.
If exposed, concerned, unwell or irritation of the eyes, skin, mouth or throat/nasal passage persist: Get medical attention.
Wear eye protection and respiratory protection following this SDS, NIOSH guidelines and other applicable regulations. Use protective gloves if manually handling the product.

Avoid creating dust when handling, using or storing. Use with adequate ventilation to keep exposure below recommended exposure limits.

Dispose of product in accordance with local, regional, national or international regulations.

Please refer to Section XI for details of specific health effects of the components.

SECTION III – COMPOSITION/INFORMATION ON INGREDIENTS		
COMPONENT(S) CHEMICAL NAME	CAS REGISTRY NO	% by weight (approx)
Silicon Dioxide, SiO ₂ ⁽¹⁾	7631-86-9	28.5
Calcium Carbonate, CaCO ₃	471-34-1	70.5
Trace Elements	-	<1

(1): The composition of SiO₂ may be up to 100% crystalline silica, content of this material varies naturally

SECTION IV – FIRST-AID MEASURES
<p>INHALATION: If excessive inhalation occurs, remove to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or develops later.</p> <p>EYES: Immediately flush eye(s) with plenty of clean water for at least 15 minutes, while holding the eyelid(s) open. Occasionally lift the eyelid(s) to ensure thorough rinsing. Remove contact lenses, if present and easy to do, and continue rinsing. Beyond flushing, do not attempt to remove material from the eye(s). Contact a physician if irritation persists or develops later.</p> <p>SKIN: Rinse skin with soap and water after manually handling and wash contaminated clothing if there is potential for direct skin contact. Contact a physician if irritation persists or develops later.</p> <p>INGESTION: If gastrointestinal discomfort occurs and if person is conscious, give a large quantity of water and induce vomiting; however, never attempt to make an unconscious person drink or vomit. Get medical attention.</p> <p>SIGNS AND SYMPTOMS OF EXPOSURE: There are generally no signs or symptoms of exposure to respirable crystalline silica. Often, chronic silicosis has no symptoms. The symptoms of chronic silicosis, if present, are shortness of breath, wheezing, cough and sputum production. The symptoms of acute silicosis which can occur with exposures to very high concentrations of respirable crystalline silica over a very short time period, sometimes as short as 6 months, are the same as those associated with chronic silicosis; additionally, weight loss and fever may also occur. The symptoms of scleroderma, an autoimmune disease, include thickening and stiffness of the skin, particularly in the fingers, shortness of breath, difficulty swallowing and joint problems.</p> <p>Direct skin and eye contact with dust may cause irritation by mechanical abrasion. Some components of the product are also known to cause irritant effects to skin, eyes and mucous membranes. Ingestion of large amounts may cause gastrointestinal irritation and blockage. Inhalation of dust may irritate nose, throat, mucous membranes and respiratory tract by mechanical abrasion. Coughing, sneezing, chest pain, shortness of breath, inflammation of mucous membrane, and flu-like fever may occur following exposures in excess of appropriate exposure limits. Repeated excessive exposure may cause pneumoconiosis, such as</p>

SECTION V – FIRE-FIGHTING MEASURES	
EXTINGUISHING AGENT Not flammable; use extinguishing media compatible with surrounding fire.	
UNUSUAL FIRE AND EXPLOSION HAZARD Contact with powerful oxidizing agents may cause fire and/or explosions (see Section X of this SDS).	
SPECIAL FIRE FIGHTING PROCEDURES None known	HAZARDOUS COMBUSTION PRODUCTS None known

SECTION VI – ACCIDENTAL RELEASE MEASURES**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED**

Persons involved in cleaning should first follow the precautions defined in Section VII of the SDS. Spilled materials, where dust can be generated, may overexpose cleanup personnel to respirable crystalline silica-containing dust and other components that may pose inhalation hazards. Do not dry sweep spilled material. Collect the material using a method that does not produce dust such as a High-Efficiency Particulate Air (HEPA) vacuum or thoroughly wetting down the dust before cleaning up. Wear appropriate personal protective equipment as specified in Section VIII including appropriate respirators during and following clean up or whenever airborne dust is present to ensure worker exposures remain below occupational exposure limits (OELs - Refer to Section VIII).

Place the dust in a covered container appropriate for disposal. Dispose of the dust according to federal, state and local regulations.

This product is not subject to the reporting requirements of SARA Title III Section 313, and 40 CFR 372.

SECTION VII – HANDLING AND STORAGE

This product is not intended or designed for and should not be used as an abrasive blasting medium or for foundry applications. Follow protective controls set forth in Section VIII of this SDS when handling this product. Dust containing respirable crystalline silica and other components that may be irritant may be generated during processing, handling and storage. Use good housekeeping procedures to prevent the accumulation of dust in the workplace.

Do not breathe dust. Avoid contact with skin and eyes. Do not store near food or beverages or smoking materials.

Do not stand on piles of materials; it may be unstable.

Use adequate ventilation and dust collection equipment and ensure that the dust collection system is adequate to reduce airborne dust levels to below the appropriate OELs. If the airborne dust levels are above the appropriate OELs, use respiratory protection during the establishment of engineering controls. Refer to Section VIII - Exposure Controls/Personal Protection for further information.

In accordance with OSHA's Hazard Communication Standard (29 CFR 1910.1200, 1915.99, 1917.28, 1918.90, 1926.59, 1928.21), state, and/or local right-to-know laws and regulations, familiarize your employees with this SDS and the information contained herein. Warn your employees, your customers and other third parties (in case of resale or distribution to others) of the potential health risks associated with the use of this product and train them in the appropriate use of personal protective equipment and engineering controls, which will reduce their risks of exposure.

See also ASTM International standard practice E 1132-06, "Standard Practice for Health Requirements Relating to Occupational Exposure to Respirable Crystalline Silica."

For safe handling and use of this product for Hydraulic Fracturing, please see the OSHA/NIOSH Hazard Alert Worker Exposure to Silica during Hydraulic Fracturing DHHS (NIOSH) Publication No. 2012-166 (2012).

SECTION VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne OELs for Components of Crushed Caliche:

COMPONENT(S) CHEMICAL NAME	MSHA/OSHA PEL	ACGIH TLV-TWA	NIOSH REL
Silicon Dioxide, SiO ₂ Calcium Carbonate, CaCO ₃	(R) 10 mg/m ³ / (% SiO ₂ +2) ⁶ (T) 15 mg/m ³ , (R) 5 mg/m ³	(R) 0.025 mg/m ³ * -	(R) 0.05 mg/m ³ * (T) 10 mg/m ³ , (R) 5 mg/m ³

⁶ Crystalline silica is normally measured as respirable dust. The OSHA/MSHA standard also presents a formula for calculation of the PEL based on total dust: 30 mg/m³ / (% SiO₂ +2). The OSHA/MSHA PEL listed is for dust containing crystalline silica (quartz) and is based on the silica content of the respirable dust sample. The OSHA/MSHA PEL for crystalline silica as tridymite and cristobalite is one-half the PEL for crystalline silica (quartz).

* The ACGIH and NIOSH limits are for crystalline silica (quartz), independent of the dust concentration. The ACGIH TLV for crystalline silica as cristobalite is equal to the TLV for crystalline silica as quartz. In 2005, ACGIH withdrew the TLV for crystalline silica as tridymite. Refer to Section X for thermal stability information for crystalline silica (quartz).

(R): Respirable Fraction.

(T): Total Dust.

Airborne OELs for Inert/Nuisance Dust:

Standard	Respirable Dust	Total Dust
MSHA/OSHA PEL (as Inert or Nuisance Dust)	5 mg/m ³	15
mg/m ³ ACGIH TLV (as Particles Not Otherwise Specified)	5 mg/m ³	*10 mg/m ³
NIOSH REL (Particulates Not Otherwise Regulated)	-	-

Note: The limits for Inert Dust are provided as guidelines. Nuisance dust is limited to particulates not known to cause systemic injury or illness.

* The TLV provided is for inhalable particles not otherwise specified.

ENGINEERING CONTROLS

Ventilation: Use local exhaust, general ventilation or natural ventilation adequate to maintain exposures below appropriate exposure limits.

Other control measures: Respirable dust and crystalline silica levels should be monitored regularly. Dust and crystalline silica levels in excess of appropriate exposure limits should be reduced by implementing feasible engineering controls, including (but not limited to) dust suppression (wetting), ventilation, process enclosure and enclosed employee work stations.

EYE/FACE PROTECTION

Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated. If irritation persists, get medical attention immediately. There is potential for severe eye irritation if exposed to excessive concentrations of dust for those using contact lenses.

SKIN PROTECTION

Use appropriate protective gloves if manually handling the product.

RESPIRATORY PROTECTION

Respirator Recommendations:

For respirable crystalline silica levels that exceed or are likely to exceed appropriate exposure limits, a NIOSH-approved particulate filter respirator must be worn. Respirator use must comply with applicable MSHA or OSHA standards, which include provisions for a user training program, respirator repair and cleaning, respirator fit testing, and other requirements. For additional information contact NIOSH at 1-800-356-4674 or visit website: <http://www.cdc.gov/niosh/npg> (search for crystalline silica). See also ANSI standard Z88.2 (latest revision) "American National Standard for Respiratory Protection," 29 CFR 1910.134 and 1926.103, and 42 CFR 84.

SECTION VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION, CONTD.

NIOSH recommendations for respiratory protection include:

Up to 0.5 mg/m³:

(APF = 10) Any particulate respirator equipped with an N95, R95, or P95 filter (including N95, R95, and P95 filtering facepieces) except quarter-mask respirators. The following filters may also be used: N99, R99, P99, N100, R100, P100.

Up to 1.25 mg/m³:

(APF = 25) Any powered, air-purifying respirator with a high-efficiency particulate (100-series) filter.

(APF = 25) Any supplied-air respirator operated in a continuous-flow mode

Up to 2.5 mg/m³:

(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter.

(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter

Up to 25 mg/m³:

(APF = 1000) Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode

Emergency or planned entry into unknown concentrations or IDLH conditions (50 mg/m³ for crystalline silica-quartz): A self-contained breathing apparatus (SCBA) that has a full-face piece and is operated in a pressure-demand or other positive-pressure mode or any supplied-air respirator that has a full-face piece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus.

Escape from unknown or IDLH conditions: An air-purifying, full-face piece respirator with a high-efficiency particulate (100-series) filter or any appropriate escape-type, self-contained breathing apparatus.

If the workplace airborne crystalline silica concentration is unknown for a given task, conduct air monitoring to determine the appropriate level of respiratory protection to be worn. Consult with a certified industrial hygienist, your insurance risk manager or the OSHA Consultative Services group for detailed information. Ensure appropriate respirators are worn, as needed, during and following the task, including clean up or whenever airborne dust is present, to ensure worker exposures remain below OELs.

GENERAL HYGIENE CONSIDERATIONS

There are no known hazards associated with this material when used as recommended. Following the guidelines in this SDS are recognized as good industrial hygiene practices. Avoid breathing dust. Avoid skin and eye contact. Wash dust-exposed skin with soap and water before eating, drinking, smoking and using toilet facilities. Wash work clothes after each use.

SECTION IX— PHYSICAL AND CHEMICAL PROPERTIES	
APPEARANCE Crushed Caliche is a mixture of grey cubical rock fragment ranging in size from 1 inch to dust.	ODOR AND ODOR THRESHOLD Odorless and not applicable
pH AND VISCOSITY Not applicable	MELTING POINT/FREEZING POINT Not applicable
BOILING POINT AND RANGE Not applicable	FLASH POINT AND FLAMMABILITY Not applicable
FLAMMABILITY/EXPLOSIVE LIMITS AND AUTOIGNITION TEMPERATURE Not applicable	EVAPORATION RATE AND DECOMPOSITION TEMPERATURE Not applicable
VAPOR PRESSURE AND VAPOR DENSITY IN AIR Not applicable	SPECIFIC GRAVITY. 2.59
SOLUBILITY IN WATER Insoluble	PARTITION COEFFICIENT: N-OCTANOL/WATER Not applicable

SECTION X – STABILITY AND REACTIVITY	
STABILITY Stable	CONDITIONS TO AVOID Contact with incompatible materials (see below).
THERMAL STABILITY If crystalline silica (quartz) is heated to more than 870°C (1598°F), it can change to a form of crystalline silica known as tridymite, and if crystalline silica (quartz) is heated to more than 1470°C (2678°F), it can change to a form of crystalline silica known as cristobalite.	
INCOMPATIBILITY (Materials to avoid) Contact with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride may cause fire and/or explosions.	
HAZARDOUS DECOMPOSITION PRODUCTS Silica dissolves in hydrofluoric acid producing a corrosive gas - silicon tetrafluoride.	
HAZARDOUS POLYMERIZATION Not known to polymerize	

SECTION XI – TOXICOLOGICAL INFORMATION
<p>Health Effects: The information below represents an overview of health effects caused by overexposure to one or more components in crushed caliche.</p> <p>Primary routes(s) of exposure: ■ Inhalation ☐ Skin ■ Ingestion</p> <p>EYE CONTACT: Direct contact with dust may cause irritation by mechanical abrasion. Conjunctivitis may occur.</p> <p>SKIN CONTACT: Direct contact may cause irritation by mechanical abrasion. Some components of material are also known to cause irritant effects to skin and mucous membranes.</p> <p>SKIN ABSORPTION: Not expected to be a significant route of exposure.</p> <p>INGESTION: Small amounts (a tablespoonful) swallowed during normal handling operations are not likely to cause injury. Ingestion of large amounts may cause gastrointestinal irritation and blockage.</p> <p>INHALATION: Dust may irritate nose, throat, mucous membranes and respiratory tract by mechanical abrasion. Coughing, sneezing, chest pain, shortness of breath, inflammation of mucous membrane, and flu-like fever may occur following exposures in normal handling operations.</p> <p>MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE Inhaling respirable dust and/or crystalline silica may aggravate existing respiratory system disease(s) (e.g., bronchitis, emphysema, chronic obstructive pulmonary disease) and/or dysfunctions. Exposure to dust may aggravate existing skin and/or eye conditions. Smoking and obstructive/restrictive lung diseases may also exacerbate the effects of excessive exposure to this product.</p> <p>This product is a mixture of components. The composition percentages are listed in Section III. Toxicological information for each component is listed below:</p> <p>Silicon Dioxide: It is comprised of amorphous and crystalline forms of silica. In some batches, crystalline silica may represent up to 100% of silicon dioxide.</p> <p>Exposure route: Eyes, respiratory system. Target</p> <p>organs: Eyes, skin, respiratory system.</p> <p>ACGIH, MSHA, and OSHA have determined that adverse effects are not likely to occur in the workplace provided exposure levels do not exceed the appropriate exposure limits. Lower exposure limits may be appropriate for some individuals including persons with pre-existing medical conditions as described under medical conditions aggravated by exposure.</p>

SECTION XI – TOXICOLOGICAL INFORMATION, CONTD.**A. SILICOSIS**

The major concern is silicosis (lung disease), caused by the inhalation and retention of respirable crystalline silica dust. Silicosis leads to conditions such as lung fibrosis and reduced pulmonary function. The form and severity in which silicosis manifests itself, depends in part on the type and extent of exposure to silica dusts: chronic, accelerated and acute forms are recognized. In later stages the critical condition may become disabling and potentially fatal. Restrictive and/or obstructive changes in lung function may occur due to exposure. A risk associated with silicosis is development of pulmonary tuberculosis (silico-tuberculosis). Respiratory insufficiencies due to massive fibrosis and reduced pulmonary function, possibly with accompanying heart failure, are other potential causes of death due to silicosis.

Chronic or Ordinary Silicosis is the most common form of silicosis and can occur after many years of exposure to levels above the OELs for airborne respirable crystalline silica dust. Not all individuals with silicosis will exhibit symptoms (signs) of the disease. Symptoms of silicosis may include (but are not limited to): Shortness of breath; difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; heart enlargement and/or failure. It is further defined as either simple or complicated silicosis.

Simple Silicosis is characterized by lung lesions (shown as radiographic opacities) less than 1 centimeter in diameter, primarily in the upper lung zones. Often, simple silicosis is not associated with symptoms, detectable changes in lung function or disability. Simple silicosis may be progressive and may develop into complicated silicosis or progressive massive fibrosis (PMF).

Complicated Silicosis or PMF is characterized by lung lesions (shown as radiographic opacities) greater than 1 centimeter in diameter. Although there may be no symptoms associated with complicated silicosis or PMF, the symptoms, if present, are shortness of breath, wheezing, cough and sputum production. Complicated silicosis or PMF may be associated with decreased lung function and may be disabling. Advanced complicated silicosis or PMF may lead to death. Advanced complicated silicosis or PMF can result in heart disease (cor pulmonale) secondary to the lung disease.

Accelerated Silicosis can occur with exposure to high concentrations of respirable crystalline silica over a relatively short period; the lung lesions can appear within five (5) years of the initial exposure. The progression can be rapid. Accelerated silicosis is similar to chronic or ordinary silicosis, except that the lung lesions appear earlier and the progression is more rapid.

Acute Silicosis can occur with exposures to very high concentrations of respirable crystalline silica over a very short time period, sometimes as short as a few months. The symptoms of acute silicosis include progressive shortness of breath, fever, cough and

B. CANCER

IARC - The International Agency for Research on Cancer ("IARC") concluded that there is "*sufficient evidence* in humans for the carcinogenicity of crystalline silica in the form of quartz or cristobalite", there is "*sufficient evidence* in experimental animals for the carcinogenicity of quartz dust" and that there is "*limited evidence* in experimental animals for the carcinogenicity of tridymite dust and cristobalite dust." The overall IARC evaluation was that "crystalline silica inhaled in the form of quartz or cristobalite dust is *carcinogenic to humans (Group 1)*." The IARC evaluation noted that not all industrial circumstances studied evidenced carcinogenicity. The monograph also stated that "Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs." For further information on the IARC evaluation, see IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 100C, "Silica Dust, Crystalline, in the Form of Quartz or Cristobalite" (2012).

NTP - In its Eleventh Annual Report on Carcinogens, concluded that respirable crystalline silica is known to be a human carcinogen, based on sufficient evidence of carcinogenicity from studies in humans indicating a causal relationship between exposure to respirable crystalline silica and increased lung cancer rates in workers exposed to crystalline silica dust.

OSHA - Crystalline silica is not on the OSHA carcinogen list.

CALIFORNIA PROPOSITION 65 - Crystalline silica in October 1996 was listed on the Safe Drinking Water and Toxic Enforcement ACT of 1986 as a chemical known to the state to cause cancer or reproductive toxicity.

SECTION XI – TOXICOLOGICAL INFORMATION, CONTD.

There have been many articles published on the carcinogenicity of crystalline silica, which the reader should consult for additional information; the following are examples of recently published articles: (1) "Dose-Response Meta-Analysis of Silica and Lung Cancer", *Cancer Causes Control*, (20):925-33 (2009); (2) "Occupational Silica Exposure and Lung Cancer Risk: A Review of Epidemiological Studies 1996-2005", *Ann Oncol*, (17) 1039-50 (2006); (3) "Lung Cancer Among Industrial Sand Workers Exposed to Crystalline Silica", *Am J Epidemiol*, (153) 695-703 (2001); (4) "Crystalline Silica and The Risk of Lung Cancer in The Potteries", *Occup Environ Med*, (55) 779-785 (1998); (5) "Is Silicosis Required for Silica-Associated Lung Cancer?", *American Journal of Industrial Medicine*, (37) 252- 259 (2000); (6) "Silica, Silicosis, and Lung Cancer: A Risk Assessment", *American Journal of Industrial Medicine*, (38) 8-18 (2000); (7) "Silica, Silicosis, and Lung Cancer: A Response to a Recent Working Group Report", *Journal of Occupational and Environmental Medicine*, (42) 704-720 (2000).

AUTOIMMUNE DISEASES

There is evidence that exposure to respirable crystalline silica (without silicosis) or that the disease silicosis may be associated with the increased incidence of several autoimmune disorders, -- scleroderma, systemic lupus erythematosus, rheumatoid arthritis and diseases affecting the kidneys. For a review of the subject, the following may be consulted: (1) "Antinuclear Antibody and Rheumatoid Factor in Silica-Exposed Workers", *Arh Hig Rada Toksikol*, (60) 185-90 (2009); (2) "Occupational Exposure to Crystalline Silica and Autoimmune Disease", *Environmental Health Perspectives*, (107) Supplement 5, 793-802 (1999); (3) "Occupational Scleroderma", *Current Opinion in Rheumatology*, (11) 490-494 (1999); (4) "Connective Tissue Disease and Silicosis", *Am J Ind Med*, (35), 375-381 (1999).

TUBERCULOSIS

Individuals with silicosis are at increased risk to develop pulmonary tuberculosis, if exposed to persons with tuberculosis. The following may be consulted for further information: (1) "Tuberculosis and Silicosis: Epidemiology, Diagnosis and Chemoprophylaxis", *J Bras Pneumol*, (34) 959-66 (2008); (2) *Occupational Lung Disorders*, Third Edition, Chapter 12, entitled "Silicosis and Related Diseases", Parkes, W. Raymond (1994); (3) "Risk of Pulmonary Tuberculosis Relative to Silicosis and Exposure to Silica Dust in South African Gold Miners," *Occup Environ Med*, (55) 496-502 (1998); (4) "Occupational Risk Factors for Developing Tuberculosis", *Am J Ind Med*, (30) 148-154 (1996).

KIDNEY DISEASE

There is evidence that exposure to respirable crystalline silica (without silicosis) or that the disease silicosis is associated with the increased incidence of kidney diseases, including end stage renal disease. For additional information on the subject, the following may be consulted: (1) "Mortality from Lung and Kidney Disease in a Cohort of North American Industrial Sand Workers: An Update", *Ann Occup Hyg*, (49) 367-73 (2005); (2) "Kidney Disease and Silicosis", *Nephron*, (85) 14-19 (2000); (3) "End Stage Renal Disease Among Coal Mine Workers Exposed to Silica", *Occup Environ Med*, (56) 550-561 (1999); (4) "Kidney Disease and Arthritis in

F. NON-MALIGNANT RESPIRATORY DISEASES

NIOSH has cited the results of studies that report an association between dusts found in various mining operations and non-malignant respiratory disease, particularly among smokers, including bronchitis, emphysema, and small airways disease. *NIOSH Hazard Review – Health Effects of Occupational Exposure to Respirable Crystalline Silica*, published in April 2002, available from NIOSH, 4676 Columbia Parkway, Cincinnati, OH 45226, or at <http://www.cdc.gov/niosh/02-129A.html>.

Respirable dust containing newly broken particles has been shown to be more hazardous to animals in laboratory tests than respirable dust containing older silica particles of similar size. Respirable silica particles which had aged for sixty days or more showed less lung injury in animals than equal exposures of respirable dust containing newly broken pieces of silica.

Calcium Carbonate:

Exposure route: Inhalation, skin/eye contact.

Target organs: Eyes, skin, respiratory system.

Acute effect: Irritation of the eyes, skin and respiratory system and cough. It has been reported that there may be a silicosis risk when using impure limestone containing in excess of 3% quartz. However, it is claimed that pure calcium carbonate does not cause pneumoconiosis. Adverse health effects have generally not been reported in literature among workers using CaCO₃.

Chronic effect/Carcinogenicity: Not classifiable as human carcinogen.

Acute Toxicity Estimates for Crushed Caliche – Not Available

SECTION XII – ECOLOGICAL INFORMATION

No data available for this product.

SECTION XIII – DISPOSAL CONSIDERATIONS**WASTE DISPOSAL METHOD**

Collect and reuse clean materials. Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations.

The above information applies to Martin Marietta Materials product only as sold. The product may be contaminated during use and it is the responsibility of the user to assess the appropriate disposal method in that situation.

SECTION XIV – TRANSPORT INFORMATION**DOT HAZARD CLASSIFICATION**

None

PLACARD REQUIRED

None

LABEL REQUIRED

Label as required by the OSHA Hazard Communication standard (29 CFR 1910.1200(f)), and applicable state and local regulations.

SECTION XV – REGULATORY INFORMATION

OSHA: Crystalline Silica is not listed as a carcinogen.

SARA Title III: Section 311 and 312: Immediate health hazard and delayed health hazard. **TSCA:**

All components of the product appear on the EPA TSCA chemical substance inventory.

RCRA: Crystalline silica (quartz) is not classified as a hazardous waste under the Resource Conservation and Recovery Act, or its regulations, 40 CFR §261 et seq.

CERCLA: Crystalline silica (quartz) is not classified as a hazardous substance under regulations of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 40 CFR §302.4

EPCRA (Emergency Planning and Community Right to Know Act): Crystalline silica (quartz) is not an extremely hazardous substance under regulations of the Emergency Planning and Community Right to Know Act, 40 CFR Part 355, Appendices A and B and is not a toxic chemical subject to the requirements of Section 313.

Clean Air Act: Crystalline silica (quartz) mined and processed by Martin Marietta Materials was not processed with or does not contain any Class I or Class II ozone depleting substances.

FDA: Silica is included in the list of substances that may be included in coatings used in food contact surfaces, 21 CFR §175.300(b)(3). (The FDA standard primarily applies to products containing silica used in the coatings of food contact surfaces).

California Proposition 65: Respirable crystalline silica is classified as a substance known to the state of California to be a carcinogen.

Massachusetts Toxic Use Reduction Act: Respirable crystalline silica is considered toxic per the Massachusetts Toxic Use Reduction Act when used in abrasive blasting and molding.

Pennsylvania Worker and Community Right to Know Act: Quartz is considered hazardous for purposes of the Act, but it is not a

SECTION XVI – OTHER INFORMATION

3.) *CMU Block*

Safety Data Sheet **Masonry Cement**

Section 1. Identification

GHS product identifier:	Masonry Cement
Chemical name:	Calcium compounds, calcium silicate compounds, and other calcium compounds containing iron and aluminum make up the majority of this product.
Other means of identification:	Mortar or Masonry Cement, Type N, S, M, CSA Type N, S, MCN, MCS, Hydraulic Cement
Relevant identified uses of the substance or mixture and uses advised against:	Building materials, construction, a basic ingredient in masonry mortars and concrete.
Supplier's details:	300 E. John Carpenter Freeway, Suite 1645 Irving, TX 75062 (972) 653-5500
Emergency telephone number (24 hours):	CHEMTREC: (800) 424-9300

Section 2. Hazards Identification

Overexposure to cement can cause serious, potentially irreversible skin or eye damage in the form of chemical (caustic) burns, including third degree burns. The same serious injury can occur if wet or moist skin has prolonged contact exposure to dry cement.

GHA/HCS status:	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture:	SKIN CORROSION/IRRITATION – Category 1 SERIOUS EYE DAMAGE/EYE IRRITATION – Category 1 SKIN SENSITIZATION – Category 1 CARCINOGENICITY/INHALATION – Category 1A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) – Category 3

GHS label elements

Hazard pictograms:



Signal word:
Hazard statements:

Danger
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
May cause respiratory irritation.
May cause cancer.

Precautionary statements: Prevention:

Response:

Storage:

Disposal:

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid breathing dust. Use outdoors in a well ventilated area. Wash any exposed body parts thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Contaminated clothing must not be allowed out of the workplace.

If exposed or concerned: Immediately get medical advice/attention if you feel unwell or irritation or rash occurs. If on skin: Wash with plenty of water. Take off contaminated clothing and wash it before reuse. If in eyes: Rinse continuously with water for several minutes. Remove contact lenses, if present and easy to do. If inhaled: Remove person to fresh air and keep comfortable for breathing. If swallowed: Rinse mouth. Do not induce vomiting.

Restrict or control access to stockpile areas (store locked up). Engulfment hazard: To prevent burial or suffocation, do not enter a confined space, such as a silo, bulk truck or other storage container or vessel that stores or contains masonry cement without an effective procedure for assuring safety. Store in a well ventilated area. Keep container tightly closed.

Dispose of contents/container in accordance with local/regional/national/international

Hazards not otherwise classified (HNOC): regulations. None known

Supplemental Information: Respirable Crystalline Silica (RCS) may cause cancer. Repeated inhalation of respirable crystalline silica (quartz) may cause lung cancer according to IARC and NTP; ACGIH states that it is a suspected cause of cancer. Other forms of RCS (e.g., tridymite and cristobalite) may also be present or formed under certain industrial processes.

Section 3. Composition/information on ingredients

Substance/mixture: Mixture
Chemical Name: Calcium compounds, calcium silicate compounds, and other calcium compounds containing iron and aluminum make up the majority of this product.

CAS number/other identifiers

Ingredient name	%	CAS number
Masonry Cement	~95%	65997-15-1
The structure of Masonry cement may contain the following in some concentration ranges:		
Calcium oxide	A-B	1305-78-8
Quartz	C-D	14808-60-7
Hexavalent chromium*	E-F	18450-29-9
Masonry cement also contains gypsum, limestone and magnesium oxide in various concentrations. However, because these components are not classifiable as a hazard under Title 29 Code of Federal Regulations 1910.1200, they are not required to be listed in this section.		
Gypsum	G-H	13397-24-5
Limestone	I-J	1317-65-3
Magnesium oxide	K-L	1309-48-4

Any concentration shown as a range is to protect confidentiality or is due to process variation.
*Hexavalent chromium is included due to dermal sensitivity associated with the component.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye Contact: Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 20 minutes. Chemical burns must be treated promptly by a physician.

Inhalation: Seek medical help if coughing or other symptoms persist. Inhalation of large amounts of masonry cement requires immediate medical attention. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If the individual is not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in a recovery position and get medical attention immediately. Maintain an open airway.

Skin Contact: Get medical attention immediately. Heavy exposure to masonry cement dust, wet mortar or associated water requires prompt attention. Quickly remove contaminated clothing, shoes, and leather goods such as watchbands and belts. Quickly and gently blot or brush away excess masonry cement. Immediately wash thoroughly with lukewarm, gently flowing water and non-abrasive pH natural soap. Seek medical attention for rashes, burns, irritation, dermatitis and prolonged unprotected exposures to wet cement, cement mixtures or liquids from wet cement. Burns should be treated as caustic burns. Masonry cement causes skin burns with little warning. Discomfort or pain cannot be relied upon to alert a person to a serious injury. You may not feel pain or the severity of the burn until hours after the exposure. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure.

Ingestion: Get medical attention immediately. Call a poison center or physician. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING unless directed to do so by medical personnel. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Have victim drink 60 to 240 mL (2 to 8 oz.) of water. Stop giving water if the exposed person feels sick as vomiting may be dangerous. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

Most important symptoms/effects, acute and delayed potential acute health effects

Eye contact: Causes serious eye damage.
Inhalation: May cause respiratory irritation.
Skin contact: Causes severe burns. May cause an allergic skin reaction.
Ingestion: May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact: Adverse symptoms may include the following: pain, watering and redness
Inhalation: Adverse symptoms may include the following: respiratory tract irritation and coughing
Skin contact: Adverse symptoms may include the following: pain or irritation, redness and blistering may occur, skin burns, ulceration and necrosis may occur
Ingestion: Adverse symptoms may include the following: stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician: Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments: Not applicable.
Protection of first-aiders: No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media: Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media: Do not use water jet or water-based fire extinguishers.
Specific hazards arising from the chemical: No specific fire or explosion hazard.
Hazardous thermal decomposition products: Decomposition products may include the following materials: carbon dioxide, carbon monoxide, sulfur oxides and metal oxide/oxides
Special protective actions for fire-fighters: Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
Special protective equipment for fire-fighters: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: No action shall be taken involving any personal risk or without suitable training. Avoid touching or walking through spilled material. Do not breathe dust. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

**For emergency responders:
Environmental precautions:**

For personal protective clothing requirements, please see Section 8.
Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has entered the environment, including waterways, soil or air. Materials can enter waterways through drainage systems.

Methods and materials for containment and cleaning up

- Small spill:** Move containers from spill area. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Place spilled material in a designated, labeled waste container. Dispose of waste material by using a licensed waste disposal contractor.
- Large spill:** Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place dust in a closed, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Large spills to waterways may be hazardous due to alkalinity of the product. Dispose of waste material using a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7 Handling and storage

Precautions for safe handling

- Protective measures:** Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Avoid exposure by obtaining and following special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe dust. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material and keep the container tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene:** Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
- Conditions for safe storage, including any incompatibilities:** A key to using the product safely requires the user to recognize that masonry cement reacts chemically with water to produce calcium hydroxide which can cause severe chemical burns. Every attempt should be made to avoid skin and eye contact with masonry cement. Do not get masonry cement inside boots, shoes or gloves. Do not allow wet, saturated clothing to remain against the skin. Promptly remove clothing and shoes that are dusty or wet with cement mixtures. Launder/clean clothing and shoes before reuse. Do not enter a confined space that stores or contains masonry cement unless appropriate procedures and protection are available. Portland cement can build up or adhere to the walls of a confined space and then release or fall suddenly (engulfment).

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
-----------------	-----------------

Cement, masonry, chemicals	<p>ACGIH TLV (United States, 3/2012) TWA: 1 mg/m³ 8 hours. Form: Respirable fraction</p> <p>NIOSH REL (United States, 6/2009) TWA: 5 mg/m³ 10 hours. Form: Respirable fraction TWA: 10 mg/m³ 10 hours. Form: Total</p> <p>OSHA PEL (United States, 6/2010) TWA: 5mg/m³. 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust</p>
Calcium oxide	<p>ACGIH TLV (United States, 3/2012) TWA: 2 mg/m³ 8 hours</p> <p>NIOSH REL (United States, 6/2009) TWA: 2mg/m³ 10 hours.</p> <p>OSHA PEL (United States, 6/2010) TWA: 5 mg/m³ 8 hours.</p>
Limestone	<p>NIOSH REL (United States, 6/2009) TWA: 5 mg/m³ 10 hours. Form: Respirable fraction TWA: 10 mg/m³ 10 hours. Form: Total</p> <p>OSHA PEL (United States, 6/2010) TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust</p>
Magnesium oxide	<p>ACGIH TLV (United States, 3/2012) TWA: 10 mg/m³ 8 hours. Form: Inhalable fraction</p> <p>OSHA PEL (United States, 6/2010) TWA: 15 mg/m³ 8 hours. Form: Total particulates</p>
Quartz	<p>ACGIH TLV (United States, 3/2012) TWA: 0.025 mg/m³ 8 hours. Form: Respirable fraction</p> <p>NIOSH REL (United States, 6/2009) TWA: 0.05 mg/m³ 10 hours. Form: Respirable dust</p> <p>OSHA PEL Z-3 (United States, 9/2005) TWA: 10 mg/m³ divided by % SiO₂ + 2: Respirable TWA: 30 mg/m³ divided by % SiO₂ + 2: Total</p>
Calcium sulfate (gypsum)	<p>ACGIH TLV (United States, 3/2012) TWA: 10 mg/m³ 8 hours. Form: Respirable fraction</p> <p>NIOSH REL (United States, 6/2009) TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 10 mg/m³ 8 hours. Form: Total dust</p> <p>OSHA PEL Z-1 (United States, 2/2006) TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust</p>

Appropriate engineering controls:

Use only with adequate ventilation. If user operations generate dust, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls:

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

Individual protection measures

- Hygiene measures:** Clean water should always be readily available for skin and (emergency) eye washing. Periodically wash areas contacted by masonry cement with a pH neutral soap and clean, uncontaminated water. If clothing becomes saturated with masonry cement, garments should be removed and replaced with clean, dry clothing.
- Eye/face protection:** To prevent eye contact, wear safety glasses with side shields, safety goggles or face shields when handling dust or wet cement. Wearing contact lenses when working with cement is not recommended.

Skin protection

- Hand protection:** Use impervious, waterproof, abrasion and alkali-resistant gloves. Do not rely on barrier creams in place of impervious gloves. Do not get masonry cement inside gloves.
- Body protection:** Use impervious, waterproof, abrasion and alkali-resistant boots and protective long-sleeved and long-legged clothing to protect the skin from contact with wet cement. To reduce foot and ankle exposure, wear impervious boots that are high enough to prevent cement from getting inside them. Do not get cement inside boots, shoes, or gloves. Remove clothing and protective equipment that becomes saturated with cement and immediately wash exposed areas of the body.
- Other skin protection:** Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved.
- Respiratory protection:** Use properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product, and assigned protection factor of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical State:	Solid. [Powder]	Lower and Upper explosive flammable limits	Not applicable
Color:	Gray or white	Vapor pressure:	Not applicable
Odor:	Odorless	Vapor density:	Not applicable
Odor threshold:	Not available	Relative density:	2.3 to 3.1
pH:	>11.5 [Conc. (% w/w): 1%]	Solubility:	Slightly soluble in water
Melting point:	Not available	Solubility in water:	0.1 to 1%
Boiling point:	>1000°C (>1832°F)	Partition coefficient: n-octanol/water:	Not applicable
Flash point:	Not flammable. Not combustible.	Auto-ignition temperature:	Not applicable
Burning time:	Not available	Decomposition temperature:	Not available
Burning rate:	Not available	SADT:	Not available
Evaporation Rate:	Not applicable	Viscosity:	Not applicable
Flammability (solid, gas):	Not applicable		

Section 10. Stability and reactivity

- Reactivity:** Reacts slowly with water forming hydrated compounds, releasing heat and producing a strong alkaline solution until reaction is substantially complete.
- Chemical Stability:** The product is stable.
- Possibility of hazardous reactions:** Under normal circumstances of storage and use, hazardous reactions will not occur.
- Conditions to avoid:** No specific data.
- Incompatible materials:** Reactive or incompatible with the following materials: oxidizing materials, acids, aluminum and ammonium salt. Masonry cement is highly alkaline and will react with acids to produce a violent, heat-generating reaction. Toxic gases or vapors may be given off depending on the acid involved. Reacts with acids, aluminum metals and ammonium salts. Aluminum powder and other alkali and alkaline earth elements will react in wet mortar or concrete, liberating hydrogen gas. Limestone ignites on contact with fluorine and is incompatible with acids, alum, ammonium salts, and magnesium. Silica reacts violently with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride yielding possible fire and/or explosions. Silicates dissolve readily in hydrofluoric acid producing a corrosive gas-silicon tetrafluoride.
- Hazardous decomposition products:** Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity: Masonry Cement LD50/LC50 = Not available
Irritation/Corrosion: **Skin:** May cause skin irritation. May cause serious burns in the presence of moisture.
Eyes: Causes serious eye damage. May cause burns in the presence of moisture.
Respiratory: May cause respiratory tract irritation.
Sensitization: May cause sensitization due to the potential presence of trace amounts of hexavalent chromium.
Mutagenicity: There are no data available.

Carcinogenicity:
Classification below:

Product/Ingredient name	OSHA	IARC	ACGIH	NTP
Cement, masonry, chemicals		1	A4	
Quartz			A2	Known to be a human carcinogen.

Reproductive toxicity: There are no data available.
Teratogenicity: There are no data available.

Specific target organ toxicity (single exposure)

Name	Category	Route of Exposure	Target Organs
Calcium oxide	Category 3	Inhalation and skin contact	Respiratory tract irritation, skin irritation
Cement, masonry, chemicals	Category 3	Inhalation and skin contact	Respiratory tract irritation, skin irritation

Specific target organ toxicity (repeated exposure)

Name	Category	Route of Exposure	Target Organs
Quartz	Category 1	Inhalation	Respiratory tract and kidneys

Aspiration hazard: There are no data available.

Information on the likely routes of exposure

Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects: **Eye contact:** Causes serious eye damage.
Inhalation: May cause respiratory irritation.
Skin contact: Causes severe burns. May cause an allergic skin reaction.
Ingestion: May cause burns to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics: **Eye contact:** Adverse symptoms may include the following: pain, watering, redness.
Inhalation: Adverse symptoms may include the following: respiratory tract irritation, coughing
Skin contact: Adverse symptoms may include the following: pain or irritation, redness, blistering may occur, skin burns, ulcerations and necrosis may occur
Ingestion: Adverse symptoms may include the following: stomach pains

Delayed and immediate effects and also chronic effects from short and long term exposure: **Short term exposure**
Potential immediate effects: No known significant effects or critical hazards. **Potential delayed effects:** No known significant effects or critical hazards.

Potential chronic health effects:

Long term exposure

Potential immediate effects: No known significant effects or critical hazards. Potential delayed effects: No known significant effects or critical hazards.

General: Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation. If sensitized to hexavalent chromium, a severe allergic dermal reaction may occur when subsequently exposed to very low levels.

Carcinogenicity: Masonry cement is not classifiable as a human carcinogen. Crystalline silica is considered a hazard by inhalation. IARC has classified crystalline silica as a Group 1 substance, carcinogenic to humans. This classification is based on the findings of laboratory animal studies (inhalation and implantation) and epidemiology studies that were considered sufficient for carcinogenicity. Excessive exposure to crystalline silica can cause silicosis, a non-cancerous lung disease.

Mutagenicity: No known significant effects or critical hazards. **Teratogenicity:** No

known significant effects or critical hazards. **Developmental effects:** No known

significant effects or critical hazards.

Numerical measures of toxicity:

Fertility effects: No known significant effects or critical hazards. **Acute toxicity estimates:** There are no data available.

Section 12. Ecological Information

Toxicity

Product/ingredient name	Result	Species	Exposure
Calcium oxide	Chronic NOEC 100 mg/L Fresh water	Fish-Oreochromis niloticus-Juvenile (Fledgling, Hatchling, Weanling)	45 days

Persistence and degradability:

There are no data available.

Bioaccumulative potential:

There are no data available.

Mobility in soil:

Soil/water partition coefficient (Koc): Not available.

Other adverse effects:

No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods:

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Untreated waste should not be released to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe manner. Care should be taken when handling empty containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff, and contact with soil, waterways, drains and sewers.

Section 14. Transportation information

	DOT Classification	IMDG	IATA
UN number	Not regulated	Not regulated	Not regulated
UN proper shipping name			
Transport hazard class(es)			
Packing group Environmental hazards	None	None	None
Additional information			

Special precautions for user: Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not available.

Section 15. Regulatory Information

TSCA 6 final risk management: Chromium, ion (Cr6+)
United States Inventory (TSCA 8b): Cements are considered to be statutory mixtures under TSCA. CAS 65997-15-1 is included on the TSCA inventory.
CERCLA: This product is not listed as a CERCLA substance

Clean Air Act Section 112 (b): Hazardous Air Pollutants (HAPs) – Not listed
Clean Air Act Section 602: Class I Substances - Not listed Clean Air Act Section 602: Class II Substances - Not listed DEA List I Chemicals: (Precursor Chemicals) – Not listed DEA List II Chemicals: (Essential Chemicals) – Not listed

SARA 311/312

Classification: Immediate (acute) health hazard
 Delayed (chronic) health hazard

Composition/information on ingredients

Name	%	Fire Hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Calcium oxide	A-B	No	No	No	Yes	No
Quartz	>0.1	No	No	No	No	Yes
Chromium, ion (Cr6+)	<0.1	No	No	No	Yes	Yes

SARA 313

Form R-Report requirements	Product name	CAS number	%
	Chromium, ion (Cr6+)	8540-29-9	<0.1

State regulations

Massachusetts: The following components are listed: cement, masonry, chemicals, limestone
New York: None of the components are listed.
New Jersey: The following components are listed: cement, masonry, chemicals, gypsum, limestone
Pennsylvania: The following components are listed: cement, masonry, chemicals, gypsum, limestone

California Prop. 65

WARNING: This product contains crystalline silica and chemicals (trace metals) known to the State of California to cause cancer, birth defects or other reproductive harm. California law requires the above warning in the absence of definitive testing to prove the defined risks do not exist.

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
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4.) *Concrete Mix*

QUIKRETE**CEMENT & CONCRETE PRODUCTS™**

D1: Packaged Raw Materials

SAFETY DATA SHEET

(Complies with OSHA 29 CFR 1910.1200)

SECTION I: PRODUCT IDENTIFICATION

The QUIKRETE® Companies One
Securities Centre
3490 Piedmont Road, Suite 1300
Atlanta, GA 30305

Emergency Telephone Number
(770) 216-9580
Information Telephone Number
(770) 216-9580

SDS D1

Revision: May-16

QUIKRETE® Product Name**Code #**

QUIKRETE® PORTLAND CEMENT (GRAY OR WHITE)	1124/1231
PORTLAND/POZZOLAN CEMENT	1118-35
QUIKRETE® PORTLAND T-I AND T-III CEMENT	2126-53
QUIKRETE® PORTLAND T-10 AND T-30 CEMENT	2126-54
QUIKRETE® PORTLAND T-III W FLY ASH	1125-22
ALL-STAR PORTLAND CEMENT TYPE-I	1121-94
ZIA PORTLAND CEMENT	2124-97
CONCRETE ACCELERATOR	9800

PRODUCT USE: HYDRAULIC CEMENTS FOR GENERAL CONSTRUCTION AND REPAIR

SECTION II - HAZARD IDENTIFICATION

Hazard-determining components of labeling: Silica, Portland cement**1.1 Classification of the substance or mixture**

Carcinogen – Category 1A Skin

Corrosion – Category 1B

Skin Sensitization – Category 1B

Specific Target Organ Toxicity Repeat Exposure – Category 1

Specific Target Organ Toxicity: Single Exposure – Category 3

1.2a Signal word DANGER!**2.2b Hazard Statements**

May cause cancer through chronic inhalation Causes
severe skin burns and serious eye damage May cause



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an allergic skin reaction

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Causes damage to lungs through prolonged or repeated inhalation May cause respiratory irritation

2.2c Pictograms



2.2d Precautionary statements

Do not handle until all safety precautions have been read and understood.

Wear impervious gloves, such as nitrile. Wear eye protection, and protective clothing. Do not eat, drink or smoke when using this product.

Wash thoroughly after handling. Use only in a well-ventilated area. Do not breathe dust.

If swallowed: Rinse mouth. Do NOT induce vomiting.

If inhaled: Remove person to fresh air and keep comfortable for breathing.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If on skin (or hair): Remove immediately all contaminated clothing and wash before re-use. Rinse skin or hair with water.

If significant skin irritation or rash occurs: get medical advice or attention.

Immediately seek medical advice or attention if symptoms are significant or persist.

Store in a well-ventilated place. Keep container tightly closed. Dispose of contents/containers in accordance with all regulations.

2.3 Additional Information

The Portland cement in this product can cause serious, potentially irreversible damage to skin, eye, respiratory and digestive tracts due to chemical (caustic) burns, including third degree burns.

Burns from Portland cement may not cause immediate pain or discomfort. You cannot rely on pain to alert you to cement burns. Portland cement can cause dermatitis or sensitization. Therefore precautions must be taken to prevent all contact with Portland cement. Cement burns can become worse even after contact has ended. If there is contact with this product, immediately remove all product from body and thoroughly rinse with water. If you experience or suspect a cement burn or inflammation you should immediately see a health care professional.

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Skin burns and irritation may be caused by brief exposure, though often are caused by extended exposure of 15 minutes, an hour, or longer. Interaction of Portland cement with water or sweat

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releases a caustic solution which produces the burns or irritation. Any extended exposure should be treated as though a burn has occurred until determined otherwise.

Skin contact with Portland cement can also cause inflammation of the skin, referred to as dermatitis. Signs and symptoms of dermatitis can include itching, redness, swelling, blisters, scaling, and other changes in the normal condition of the skin. Signs and symptoms of burns include the above and whitening, yellowing, blackening, peeling or cracking of skin.

The Portland cement in this product may cause allergic contact dermatitis in sensitized individuals. This overreaction of the immune system can lead to severe inflammation. Sensitization may result from a single exposure to the low levels of Cr (VI) in Portland cement or repeated exposures over months or years. Sensitization is long lasting and, after sensitization, even very small quantities can trigger the dermatitis. Sensitization is uncommon. Individuals who experience skin problems, including seemingly minor ones, are advised to seek medical attention.

2.3a HNOC – Hazards not otherwise classified: Not applicable

2.3b Unknown Acute Toxicity: None

2.3C WHMIS Classification

Class D2B – Skin/Eye Irritant

Class D2A – Chronic Toxic Effects – Carcinogen Class

E – Corrosive Material

2.3d Label Elements According To WHMIS

Hazard Symbols



Signal Word

DANGER!

SECTION III - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components	CAS No.	% by Weight
Portland Cement	65997 15 1	99-100
Sand, Silica, Quartz	14808-60-7	<1

*The concentrations ranges are provided due to batch-to-batch variability.



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None of the constituents of this material are of unknown toxicity.

QUIKRETE**CEMENT & CONCRETE PRODUCTS™****SECTION IV – FIRST AID MEASURES****4.1 Description of the first-aid measures****General information:**

After inhalation: Remove person to fresh air. If breathing is difficult, administer oxygen. If not breathing, give artificial respiration. In case of unconsciousness, place patient stably in side position for transportation.

After skin contact: Wash skin with cool water and pH-neutral soap or a mild detergent. If significant skin irritation or rash occurs: get medical advice or attention.

After eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

After swallowing: Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms/effects, acute and delayed

Inhalation: May cause respiratory tract irritation. Causes damage to organs through prolonged or repeated inhalation. This product contains crystalline silica. Prolonged or repeated inhalation of respirable silica from this product can cause silicosis.

Skin contact: The Portland cement in this product can cause serious, potentially irreversible damage to skin, eye, respiratory and digestive tracts due to chemical (caustic) burns, including third degree burns.

Burns from Portland cement may not cause immediate pain or discomfort. You cannot rely on pain to alert you to cement burns. Portland cement can cause dermatitis or sensitization. Therefore precautions must be taken to prevent all contact with Portland cement. Cement burns can become worse even after contact has ended. If there is contact with this product, immediately remove all product from body and thoroughly rinse with water. If you experience or suspect a cement burn or inflammation you should immediately see a health care professional.

Skin burns and irritation may be caused by brief exposure, though often are caused by extended exposure of 15 minutes, an hour, or longer. Interaction of Portland cement with water or sweat releases a caustic solution which produces the burns or irritation. Any extended exposure should be treated as though a burn has occurred until determined otherwise.

Skin contact with Portland cement can also cause inflammation of the skin, referred to as dermatitis. Signs and symptoms of dermatitis can include itching, redness, swelling, blisters, scaling, and other changes in the normal condition of the skin. Signs and symptoms of burns include the above and whitening, yellowing, blackening, peeling or cracking of skin.

The Portland cement in this product may cause allergic contact dermatitis in sensitized individuals. This overreaction of the immune system can lead to severe inflammation. Sensitization may result from a single exposure to the low levels of Cr (VI) in Portland cement or repeated exposures over months or years. Sensitization is long lasting and, after sensitization, even very small quantities can



trigger the dermatitis. Sensitization is uncommon. Individuals who experience skin problems, including seemingly minor ones, are advised to seek medical attention.

Eye Contact: Causes serious eye damage. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva.

Ingestion: May be harmful if swallowed. Ingestion may cause discomfort and/or distress, nausea or vomiting.

4.3 Indication of immediate medical attention and special treatment needed:

Immediately seek medical advice or attention if symptoms are significant or persist.

SECTION V - FIRE FIGHTING MEASURES

5.1 Flammability of the Product: Non-flammable and non-combustible

5.2 Suitable extinguishing agents: Treat for surrounding material

5.3 Special hazards arising from the substance or mixture: None

5.3a Products of Combustion: None

5.3b Explosion Hazards in Presence of Various Substances: Non-explosive in presence of shocks

SECTION VI – ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures: Wear personal protective equipment (See section VIII). Keep unprotected persons away.

6.2 Methods and material for containment and cleaning up:

Do not allow to enter sewers/ surface or ground water. Dispose of unwanted materials and containers properly in accordance with all regulations.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND STORAGE

7.1 Handling

Precautions for safe handling: Ensure good ventilation/exhaustion at the workplace. **DO NOT BREATHE DUST.** In dusty environments, the use of an OSHA, MSHA or NIOSH approved respirator and tight fitting goggles is recommended. Wear appropriate PPE (See section 8). Do not mix with other chemical products, except as indicated by the manufacturer. Do not get in eyes, on skin or clothing. Good housekeeping is important to prevent accumulation of dust.

QUIKRETE**CEMENT & CONCRETE PRODUCTS™****7.2 Storage**

Requirements to be met by storerooms and receptacles: No special requirements.

Information about storage in one common storage facility: Not required.

Further information about storage conditions: Keep out of the reach of children. Keep container tightly closed and prevent exposure to humidity. Do not allow water to contact the product until time of use to preserve product utility.

SECTION VIII – EXPOSURE CONTROL MEASURES / PERSONAL PROTECTION**8.1 Components with limit values that require monitoring at the workplace:**

Hazardous Components	CAS No.	PEL (OSHA) mg/M ³	TLV (ACGIH) mg/M ³
Silica Sand, crystalline	14808-60-7	0.1	0.025 (resp)
Portland Cement	65997-15-1	5 (resp) 15 (total)	10 (resp)

8.2 Exposure Controls

Use ventilation adequate to keep exposures below recommended exposure limits.

8.3 General protective and hygienic measures

Keep away from foodstuffs, beverages and feed. Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin.

8.3a Personal protective equipment**Protection of hands:**

Wear gloves of adequate length to offer appropriate skin protection from splashes. Nitrile, Butyl and PVC gloves have been found to offer adequate protection for incidental contact. You cannot rely on pain to alert you to cement burns. Portland cement can cause dermatitis or sensitization.

Eye protection:

Wear approved eye protection (properly fitted dust- or splash-proof chemical safety glasses).

Respiratory protection:

A NIOSH-approved dust mask or filtering face piece is recommended in poorly ventilated areas or when permissible exposure limits may be exceeded. Respirators should be selected by and used under the direction of a trained health and safety professional, following requirements found in OSHA's respirator standard (29 CFR 1910.134) and ANSI's standard for respiratory protection (Z88.2).

SECTION IX - PHYSICAL/CHEMICAL CHARACTERISTICS**General Information****Appearance**

Form: Granular Solid

Color: Gray to gray-brown colored

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	Odor: None
pH-value at 20°C (68 °F):	13 (10%)
Boiling point/Boiling range:	Not applicable
Flash point:	Not applicable
Auto igniting:	Product is not self-igniting
Vapor pressure at 21°C (70°F)	Not available
Density at 25°C (77 °F):	3.15

Solubility in / Miscibility with

Water:	Insoluble
VOC content:	0 g/L VOC

SECTION X – STABILITY AND REACTIVITY**10.1 Reactivity**

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

Stable under normal storage conditions. Keep in dry storage.

10.3 Possibility of hazardous reaction

No dangerous reaction known under conditions of normal use.

10.4 Thermal decomposition / conditions to be avoided

No decomposition if used according to specifications.

10.5 Incompatible materials

Contact of silica with powerful oxidizing agents such as fluorine, chlorine trifluoride, manganese trioxide, or oxygen difluoride may cause fires

10.6 Hazardous Decomposition or By-products

Silica will dissolve in Hydrofluoric Acid and produce a corrosive gas – silicon tetrafluoride.

SECTION XI – TOXICOLOGICAL INFORMATION

11.1 Exposure Routes: Skin contact, skin adsorption, eye contact, inhalation, or ingestion.

11.2 Symptoms related to physical/chemical/toxicological characteristics:

Inhalation: May cause respiratory tract irritation. Causes damage to organs through prolonged or repeated exposure. This product contains crystalline silica. Prolonged or repeated inhalation of respirable silica from this product can cause silicosis.

Skin contact: Causes skin irritation. Handling can cause dry skin, discomfort, irritation, and dermatitis. May cause sensitization by skin contact. Product becomes extremely alkaline when exposed to moisture, and can cause alkali burns and affect the mucous membranes.

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Eye Contact: Causes serious eye damage. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva.

Ingestion: Harmful if swallowed. Ingestion may cause discomfort and/or distress, nausea or vomiting.

11.3 Delayed, immediate and chronic effects of short-term and long-term exposure Short Term

Skin Corrosion/Irritation: Causes severe skin burns.

Serious Eye Damage/Irritation: Causes severe eye damage. Respiratory

Sensitization: Not available

Skin Sensitization: May cause an allergic skin reaction.

Specific Target Organ Toxicity-Single Exposure: (Category 3) May cause respiratory irritation.

Aspiration Hazard: Not available

Long Term

Carcinogenicity: May cause cancer through chronic inhalation. Germ Cell

Mutagenicity: Not available

Reproductive Toxicity: Not available

Specific Target Organ Toxicity- Repeated Exposure: (Category 1) Causes damage to lungs through prolonged/repeated exposure

Synergistic/Antagonistic Effects: Not available.

SECTION XII – ECOLOGICAL INFORMATION

12.1 Ecotoxicity

May cause long-term adverse effects to the aquatic environment. Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system. Must not reach bodies of water or drainage ditch undiluted or un-neutralized

12.2 Persistence and degradability

No further relevant information available.

12.3 Bioaccumulative potential:

No further relevant information available.

12.4 Mobility in soil

No further relevant information available.

12.5 Other Adverse Effects

No further relevant information available.

QUIKRETE**CEMENT & CONCRETE PRODUCTS™****SECTION XIII – DISPOSAL CONSIDERATIONS****13.1 Waste Disposal Method**

The packaging and material may be land filled; however, material should be covered to minimize generation of airborne dust. This product is not classified as a hazardous waste under the authority of the RCRA (40CFR 261) or CERCLA (40CFR 117&302). Disposal must be made in accordance with local, state and federal regulations.

13.2 Other disposal considerations**Uncleaned packaging**

Recommendation: Disposal must be made in accordance with local, state and federal regulations.

Recommended cleansing agent: Water, if necessary with cleansing agents.

SECTION XIV – TRANSPORT INFORMATION

	DOT (U.S.)	TDG (Canada)
UN-Number	Not Regulated	Not Regulated
UN proper shipping name	Not Regulated	Not Regulated
Transport Hazard Class(es)	Not Regulated	Not Regulated
Packing Group (if applicable)	Not Regulated	Not Regulated

14.1 Environmental hazards:

Not Available

14.2 Transport in bulk according to Annex II of Marpol 73/78 and the IBC Code

Not available

14.3 Special precautions for user

Do not handle until all safety precautions have been read and understood.

SECTION XV – OTHER REGULATORY INFORMATION**15.1 Safety, Health and Environmental Regulations/Legislations specific for the chemical****Canada**

WHMIS Classification: Considered to be a hazardous material under the Hazardous Products Act as defined by the Controlled Products Regulations and subject to the requirements of Health Canada's Workplace Hazardous Material Information (WHMIS). This document complies with the WHMIS requirements of the Hazardous Products Act (HPA) and the CPR.

QUIKRETE**CEMENT & CONCRETE PRODUCTS™****15.2 US Federal Information****SARA 302/311/312/313 Components**

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302, 311, 312 or 313.

RCRA: Crystalline silica (quartz) is not classified as a hazardous waste under the Resource Conservation and Recovery Act, or its regulations, 40 CFR §261 et seq.

CERCLA: Crystalline silica (quartz) is not classified as a hazardous substance under regulations of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), 40 CFR §302.

Emergency Planning and Community Right to Know Act (SARA Title III): Crystalline silica (quartz) is not an extremely hazardous substance under Section 302 and is not a toxic chemical subject to the requirements of Section 313.

FDA: Silica is included in the list of substances that may be included in coatings used in food contact surfaces, 21 CFR §175.300(b)(3)(xxvi).

NTP: Respirable crystalline silica, primarily quartz dusts occurring in industrial and occupational settings, is classified as Known to be a Human Carcinogen.

OSHA Carcinogen: Crystalline silica (quartz) is not listed.

15.3 State Right to Know Laws California**Prop. 65 Components**

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

California Inhalation Reference Exposure Level (REL): California established a chronic REL of 3 µg for silica (crystalline, respirable). A chronic REL is an airborne level of a substance at or below which no adverse health effects are anticipated in individuals indefinitely exposed to the substance at that level.

Massachusetts Toxic Use Reduction Act: Silica, crystalline (respirable size, <10 microns) is "toxic" for purposes of the Massachusetts Toxic Use Reduction Act.

15.4 Global Inventories

DSL All components of this product are on the Canadian DSL list.

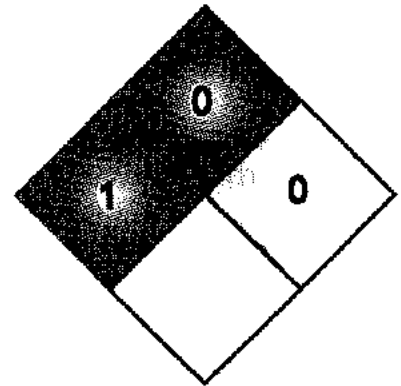
TSCA No.: Crystalline silica (quartz) appears on the EPA TSCA inventory under the CAS No. 14808-60-7. All constituents are listed in the TSCA inventory.

15.5 NFPA Ratings

NFPA Rating Explanation Guide

HEALTH HAZARD	FLAMMABILITY HAZARD
<p>4 = Can be lethal 3 = Can cause serious or permanent injury 2 = Can cause temporary incapacitation or residual injury 1 = Can cause significant irritation 0 = No hazard</p>	<p>4 = Will vaporize and readily burn at normal temperatures 3 = Can be ignited under almost all ambient temperatures 2 = Must be heated or high ambient temperature to burn 1 = Must be preheated before ignition can occur 0 = Will not burn</p>
<p>ALX = Alkaline AOD = Acidic COR = Corrosive OX = Oxidizing RA = Radioactive W = Reacts violently or explosively with water WA = Reacts violently or explosively with water and acidizing WOX =</p>	<p>4 = May explode at normal temperatures and pressures 3 = May explode at high temperatures or check 2 = Violent chemical change at high temperatures or pressures 1 = Normally stable. High temperatures make unstable 0 = Stable</p>
SPECIAL HAZARD	INSTABILITY HAZARD

This chart for reference only - For complete specifications consult the NFPA 704 Standard
www.osha-slc.com/technical/gsa.com



SECTION XVI – OTHER INFORMATION

Last Updated: May 4, 2016

NOTE: The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, express or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to silica contained in our products.

Prepared by The QUIKRETE® Companies
 Phone (800) 282-5828
www.QUIKRETE.com

5.) Ready Mix Concrete

MATERIAL SAFETY DATA SHEET

READY MIXED CONCRETE COMPANY

6200 Cornhusker Highway
Lincoln, NE 68529

Emergency Phone: 402-434-1844

PRODUCT NAME: ▪ Freshly mixed unhardened concrete

CHEMICAL NAME: ▪ Same as above

CHEMICAL FAMILY: ▪ Calcium Salts

- Mixtures of Portland or blended cements, concrete aggregates and chemical admixtures.

FORMULA:

- Portland and Blended Cements:
 - 3CaO.SiO₂ (CAS # 12168-85-3)
 - 2CaO.SiO₂ (CAS # 10034-77-2)
 - 3CaO.A1₂O₃ (CAS # 23042-78-3)
 - 4CaO.A1₂O₃.Fe₂O₃ (CAS # 12068-34-8)
 - CaSO₄.2H₂O (CAS # 7778-18-9)
 - Plus traces of CaO, MgO, K₂S0₄, and Na₂S0₄

- Concrete Aggregates: Inert gravel, sand and rocks.

- Admixtures: May include fly ash, granulated slag and very small amounts of organic and inorganic materials which have no effect on the hazards associated with the use of the product.

PHYSICAL/CHEMICAL CHARACTERISTICS:

- Gray, plastic, flowable, granular mud, and odorless
-

PHYSICAL HAZARDS:

- Acute wet plastic, unhardened concrete, can dry the skin and cause alkali burns (cementdermatitis).
 - (Cement may contain traces of hexavalent chromium.)
 - Flammability – none
 - Solubility in water – slight (0.1 – 1%)
 - Specific Gravity (H₂O = 1)
-

HEALTH HAZARDS:

- Signs and symptoms of exposure – dried skin – alkali burns (dermatitis)
- Medical conditions aggravated by exposure
- Infection – remove from exposure those individuals who develop sensitivity to chromate

ROUTE OF ENTRY: ▪ Skin contact or absorption

**AIR EXPOSURE
LIMIT(S):** ▪ Maximum 50 m ppcf per yard
 ▪ Stability unstable, product sets and hardens in 2 to 8 hours and is
 no longer hazardous
 ▪ Hazardous polymerization will not occur

CARCINOGENICITY: ▪ None

SPILLAGE: ▪ Does not increase hazard, material can be retained until it hardens
 when it can be disposed of as common waste.
 ▪ Avoid direct or indirect contact with freshly mixed ready mixed
 concrete.

**CONTROL
MEASURES:** ▪ Personal protective equipment – use barrier creams, wear tight
 fitting goggles.
 ▪ When concrete may splash, wear rubber boots high enough to
 prevent concrete from flowing into them, waterproof gloves, long
 sleeved shirt, water resistant clothing.
 ▪ Remove saturated clothing or shoes and rinse with running water
 until soapy feeling disappears.
 ▪ QUICK METHOD – rinse with water, then rinse with diluted
 vinegar, rinse again with water.
 ▪ If irritation persists, seek prompt medical attention.

**EMERGENCY AND
FIRST AID
PROCEDURE:** SKIN: ▪ Avoid contact with skin, either directly or indirectly or
 through saturated clothing or shoes.
 ▪ Wash affected areas promptly with soap and water.
 Failure to do so may cause skin irritation or first second
 or third degree burns.
 ▪ If redness or irritation persists, seek prompt medical
 attention.
 EYES: ▪ If any wet concrete comes into contact with the eye,
 rinse immediately with water for 15 minutes and seek
 prompt medical attention.

Ready Mixed Concrete Company believes the data contained herein as factual and the opinions expressed are those of qualified individuals. The data is offered for your consideration, investigation and verification.

6.) *Concrete Structural Units*



Material Safety Data Sheet

SECTION 1 COMPANY AND PRODUCT IDENTIFICATION		
PRODUCT NAME Concrete Structural Units		Revised: 28 June 06
SYNONYMS Manholes, boxculverts, curb inlets, inverts, etc.		
MANUFACTURER Hanson Pipe and Products	EMERGENCY PHONE NUMBER 800-424-9300 CHEMTREC®	
SECTION 2 COMPOSITION & INFORMATION ON INGREDIENTS		
OSHA/MSHA REGULATORY STATUS Concrete structural units are not considered hazardous as shipped. Dust generated from crushing, cutting, grinding or drilling hardened concrete may contain amounts of crystalline silica considered hazardous under the OSHA and MSHA Hazard Communication Standards.		
HAZARDOUS COMPONENTS	CASNUMBER	%BY WEIGHT
Portland cement	65997-15-1	5-10
Crystalline silica (quartz)	14808-60-7	> 0.1
SECTION 3 HAZARDS IDENTIFICATION		
EMERGENCY OVERVIEW Odorless, gray, solid or hollow concrete objects of various shapes. Non flammable. Concrete structural units themselves pose no health hazards; however, dust from crushed or broken concrete may cause skin, eye or respiratory tract irritation.		
PHYSICAL HAZARDS None		
PRIMARY ROUTES OF EXPOSURE Primary routes of exposure to concrete dust are inhalation and eye/skin contact.		
POTENTIAL EFFECTS AND SYMPTOMS OF ACUTE EXPOSURE Contact with concrete dust may cause irritation of the eyes and skin; inhalation may cause upper respiratory tract irritation. Symptoms may include irritation and tearing of the eyes, irritation and redness of exposed skin and temporary upper respiratory discomfort with coughing and sneezing. A rare "acute" form of silicosis may develop from inhalation of extremely high concentrations of crystalline silica over a period of several months to five years. Acute silicosis progresses rapidly and is often fatal.		
POTENTIAL EFFECTS AND SYMPTOMS OF CHRONIC EXPOSURE Repeated or prolonged inhalation of high concentrations of very small dust particles (respirable) may cause changes to the fibrous tissue of the lungs.		

Repeated or prolonged inhalation of high concentrations of respirable particles which contain crystalline silica may cause silicosis, an incurable lung disease. Silicosis is a scarring of the lungs which generally develops gradually over a period of years and may progress even after exposure has stopped. Early symptoms may be so mild that they are not noticed. In advanced cases, lung capacity is severely reduced and the risk of infectious diseases such as tuberculosis increases. Early symptoms of silicosis include coughing and shortness of breath on exercising; symptoms may progress to pain in the chest, loss of appetite, fatigue, weakness, inability to work. Complications may lead to respiratory or heart failure. Chronic silicosis generally occurs after 10 or more years of overexposure.

Studies indicate that people with silicosis have an increased risk of lung cancer; however, many of the studies do not take into account additive factors such as smoking.

CARCINOGENICITY

Concrete structural units are not listed as a carcinogen by the International Agency on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA). Classifications of crystalline silica are based on experimental studies with animals and epidemiologic studies of workers exposed to respirable crystalline silica.

- IARC: classified as Group 1, a substance known to cause cancer to humans
- NTP: classified as a known human carcinogen
- OSHA: not classified as a carcinogen
- ACGIH: classified as suspect human carcinogen
- NIOSH: classified as a potential occupational carcinogen

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Individuals with respiratory, skin or eye disorders may find these conditions aggravated by exposure to concrete dust.

SECTION 4 FIRST AID MEASURES

INHALATION

Move exposed individual to fresh air. Dust in throat and nasal passages should clear naturally by coughing, sneezing and nasal discharge. Obtain medical attention if symptoms persist or develop later.

EYE CONTACT

Do not allow individual to rub eyes. Flush gently under running water for 15 minutes or longer, making sure that the eyelids are held open. Other than washing with water, do not attempt to remove material from eyes. If pain or irritation persist or develop later, obtain medical attention.

SKIN CONTACT

If irritation occurs, flush gently with water until dust is removed. If irritation persists or develops later, obtain medical attention.

INGESTION

Ingestion is not a common route of occupational exposure for this product.

SECTION 5 FIRE FIGHTING MEASURES

FLASHPOINT

Not combustible.

FLAMMABLE LIMITS

Not applicable.

EXTINGUISHING AGENTS
Not combustible. Use extinguishing agent appropriate for surrounding flammable materials.
UNUSUAL FIRE AND EXPLOSION HAZARDS
Spalling of hardened concrete may occur under conditions of intense heat.
SECTION 6 ACCIDENTAL RELEASE MEASURES
PERSONAL PRECAUTIONS
If large amounts of dust have been generated, eye protection and appropriate respiratory protection should be used to protect cleanup personnel against dust.
SPILL AND LEAK PROCEDURES
Do not dry sweep broken, dusty material. Use water spray to minimize dust or vacuum with HEPA filters.

SECTION 7 HANDLING AND STORAGE
HANDLING PRECAUTIONS
Dust containing crystalline silica may be generated during cutting, grinding or crushing. Activities which generate dust should take place in well ventilated areas. Use good housekeeping methods to prevent the accumulation of dust in the workplace.
RECOMMENDED STORAGE CONDITIONS
No special storage conditions required.

SECTION 8 EXPOSURE CONTROLS, PERSONAL PROTECTION		
REGULATORY PERMISSIBLE EXPOSURE LIMITS		
COMPONENT & CAS #	OSHA PEL	MSHA PEL
Portland Cement CAS # 65997-15-1 (<1% crystalline silica) *Respirable Dust; **Total Dust	5 mg/m ³ * 15 mg/m ³ **	— 10 mg/m ³ **
COMPONENT	OSHA PEL	MSHA PEL
Respirable Dust containing 1% or more crystalline silica (quartz)	(10 mg/m ³) (%SiO ₂ + 2)	(10 mg/m ³) (%SiO ₂ + 2)
Total Dust containing 1% or more crystalline silica (quartz)	(30 mg/m ³) (%SiO ₂ + 2)	(30 mg/m ³) (%SiO ₂ + 3)
OTHER GUIDELINES		
COMPONENT	ACGIH TLV	NIOSH REL
Portland Cement (<1% crystalline silica) Crystalline silica (quartz) CAS#14808-60-7	10 mg/m ³ 0.025 mg/m ³	5 mg/m ³ 0.05 mg/m ³
ENGINEERING CONTROLS		
When crushing, cutting, grinding or drilling concrete, use general ventilation, local exhaust and/or wet suppression methods to maintain exposures below allowable exposure limits.		

RESPIRATORY PROTECTION
The need for respiratory protection should be evaluated by a qualified professional. The use of respirators for controlling exposures in excess of PEL must comply with OSHA and MSHA requirements for medical surveillance, respirator fit testing, repair and cleaning and user training.
EYE PROTECTION
Safety glasses with side shields should be worn as minimum protection. Dust goggles or full face protection should be worn when conditions with high dust concentrations exist or are anticipated.
SKIN PROTECTION
Use gloves to provide hand protection from abrasion. In very dusty conditions, clothing with long sleeves will provide skin protection. Contaminated work clothing should be washed after use.
ADDITIONAL PROTECTIVE MEASURES
Air monitoring for respirable dust containing quartz should be conducted regularly. Airborne dust levels in excess of appropriate exposure limits should be reduced by all feasible engineering controls, including (but not limited to) wet suppression, ventilation, process enclosure, and enclosed employee work stations.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES	
APPEARANCE	SPECIFIC GRAVITY
Solid or hollow concrete objects of various shapes.	Unknown
COLOR	EVAPORATION RATE
Gray.	Not applicable.
ODOR	VAPOR DENSITY (AIR= 1)
None.	Not applicable.
BOILING POINT	pH
Not applicable.	Not applicable.
VAPOR PRESSURE	SOLUBILITY IN WATER
Not applicable.	Negligible.

SECTION 10 STABILITY AND REACTIVITY	
STABILITY	Stable.
INCOMPATIBILITY	Strong acids may etch concrete.
HAZARDOUS DECOMPOSITION PRODUCTS	None.
HAZARDOUS POLYMERIZATION	Does not polymerize.
CONDITIONS TO AVOID	Avoid contact with strong acids.

SECTION 11 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY DATA

Standard animal toxicity data (e.g. LD₅₀, LC₅₀) are not available for quartz. Epidemiologic studies of workers indicate an increased risk of lung cancer from chronic exposure to respirable crystalline silica; this effect was more pronounced in those with silicosis. However, many of the studies did not account for effects of smoking or other confounding exposures.

Epidemiologic studies have linked crystalline silica exposure with autoimmune diseases and kidney disorders. Individuals with silicosis show a higher incidence of scleroderma, a thickening of the skin. Current data have not shown a definite causal effect between these effects and exposure to respirable crystalline silica.

In laboratory animal tests, dust containing newly broken particles of respirable silica particles caused greater lung injury than equal exposures to particles aged for sixty days or more.

SECTION 12 ECOLOGICAL INFORMATION

ECOLOGICAL DATA

Generally considered chemically inert in the environment.

SECTION 13 DISPOSAL CONSIDERATIONS

WASTE DISPOSAL

Dispose of waste product and unused product in compliance with federal, state and local requirements. Used material which has become contaminated, may have significantly different characteristics based on the contaminant and should be evaluated accordingly.

SECTION 14 TRANSPORT INFORMATION

DOT HAZARD CLASS

None.

DOT PLACARD

None.

SECTION 15 REGULATORY INFORMATION

US FEDERAL REGULATIONS

SARA 313

Not applicable.

CERCLA 103

Not applicable.

RCRA HAZARDOUS WASTE

Waste is not hazardous according to 40 CFR 261.

STATE REGULATIONS

COMPONENT

Crystalline Silica, quartz 14808-60-7

STATE REGULATORY LISTS

CA, FL, MA, MN, NJ, PA

7.) Hydraulic Cement



CEMENT & CONCRETE PRODUCTS™

RAPID SETTING REPAIR MATERIALS

MATERIAL SAFETY DATA SHEET
(Complies with OSHA 29 CFR 1910.1200)

SECTION I: PRODUCT IDENTIFICATION

The QUIKRETE® Companies
One Securities Centre
3490 Piedmont Road, Suite 1300
Atlanta, GA 30329

Emergency Telephone Number
(770) 216-9580

Information Telephone Number
(770) 216-9580

MSDS 04
Revision : May-12

QUIKRETE® Product Name

RAPID ROAD REPAIR

Product#

FIBERED **1242-50**,
UN-FIBERED **1242-52**
EXTENDED **1242-80**
1243-50
1126-00
1240-00
1245-80, -81
1126-00

RAPID HARDENING SAND MIX HYDRAULIC
WATER STOP
QUICK SETTING CEMENT
EXTERIOR USE ANCHORING CEMENT
FASTSET™ WATER-STOP CEMENT

HEALTH	1
FLAMMABILITY	0
PHYSICAL HAZARD	0
PERSONAL PROTECTION Safety Glasses, Gloves and Dust Respirator	

PRODUCT USE: HYDRAULIC CEMENT-BASED RAPID-SETTING REPAIR MATERIALS

SECTION 11 - HAZARD IDENTIFICATION

Route(s) of Entry: Inhalation, Skin, Ingestion

Acute Exposure: Product becomes alkaline when exposed to moisture. Exposure can dry the skin, cause alkali burns and affect the mucous membranes. Dust can irritate the eyes and upper respiratory system. Toxic effects noted in animals include, for acute exposures, alveolar damage with pulmonary edema.

Chronic Exposure: Dust can cause inflammation of the lining tissue of the interior of the nose and inflammation of the cornea. Hypersensitive individuals may develop an allergic dermatitis.

Carcinogenicity: Since Portland cement and blended cements are manufactured from raw materials mined from the earth (limestone, marl, sand, shale, etc.) and process heat is provided by burning fossil fuels, trace, but detectable, amounts of naturally occurring, and possibly harmful, elements may be found during chemical analysis. Under ASTM standards, Portland cement may contain 0.75 % insoluble residue. A fraction of these residues may be free crystalline silica. Respirable crystalline silica (quartz) can cause silicosis, a fibrosis (scarring) of the lungs and

MATERIAL SAFETY DATA SHEET

[REDACTED]

[REDACTED]

[REDACTED]



CEMENT & CONCRETE PRODUCTS

possibly cancer. There is evidence that exposure to respirable silica or the disease silicosis is associated with an increased incidence of Scleroderma, tuberculosis and kidney disorders.

Carcinogenicity Listings:	NTP:	Known carcinogen
	OSHA:	Not listed as a carcinogen
	IARC Monographs:	Group 1 Carcinogen
	California Proposition 65:	Known carcinogen

NTP: The National Toxicology Program, in its "Ninth Report on Carcinogens" (released May 15, 2000) concluded that "Respirable crystalline silica (RCS), primarily quartz dusts occurring in industrial and occupational settings, is *known to be a human carcinogen*, based on sufficient evidence of carcinogenicity from studies in humans indicating a causal relationship between exposure to RCS and increased lung cancer rates in workers exposed to crystalline silica dust (reviewed in IAC, 1997; Brown *et al.*, 1997; Hind *et al.*, 1997)

IARC: The International Agency for Research on Cancer ("IARC") concluded that there was "*sufficient evidence* in humans for the carcinogenicity of crystalline silica in the forms of quartz or cristobalite from occupational sources", and that there is "*sufficient evidence* in experimental animals for the carcinogenicity of quartz or cristobalite." The overall IARC evaluation was that "crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is *carcinogenic to humans* (Group 1)." The IARC evaluation noted that "carcinogenicity was not detected in all industrial circumstances or studies. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs." For further information on the IARC evaluation, see IARC Monographs on the Evaluation of carcinogenic Risks to Humans, Volume 68, "Silica, Some Silicates." (1997)

Signs and Symptoms of Exposure: Symptoms of excessive exposure to the dust include shortness of breath and reduced pulmonary function. Excessive exposure to skin and eyes especially when mixed with water can cause caustic burns as severe as third degree.

Medical Conditions Generally Aggravated by Exposure: Individuals with sensitive skin and with pulmonary and/or respiratory disease, including, but not limited to, asthma and bronchitis, or subject to eye irritation, should be precluded from exposure. Exposure to crystalline silica or the disease silicosis is associated with increased incidence of scleroderma, Tuberculosis and possibly increased incidence of kidney lesions.

Chronic Exposure: Dust can cause inflammation of the lining tissue of the interior of the nose and inflammation of the cornea. Hypersensitive individuals may develop an allergic dermatitis. (May contain trace (<0.05 %) amounts of chromium salts or compounds including hexavalent chromium, or other metals found to be hazardous or toxic in some chemical forms. These metals are mostly present as trace substitutions within the principal minerals)

Medical Conditions Generally Aggravated by Exposure: Individuals with sensitive skin and with pulmonary and/or respiratory disease, including, but not limited to, asthma and bronchitis, or subject to eye irritation, should be precluded from exposure.



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SECTION 111 - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components	CAS No. mg/M ³	PEL (OSHA) mg/M ³	TLV (ACGIH)
Silica Sand, crystalline	14808-60-7	<u>10</u> %SiO ₂ +2	0.05 (respirable)
Portland Cement	65997-15-1	5	5
May Contain one or more of the following ingredients:			
Amorphous Silica	07631-86-9	<u>80 mg/M³</u> % SiO ₂	10
Calcium Sulfate	10101-41-4 or 13397-24-5	5	5
Lime	01305-62-0	5	5
Fly Ash	68131-74-8	5	5
Calcium Aluminate Cement	65997-16-2	5	5
Clay	01332-58-7	5	5
Pulverized Limestone	01317-65-3	5	5

Other Limits: National Institute for Occupational Safety and Health (NIOSH). Recommended standard maximum permissible concentration=0.05 mg/M (respirable free silica) as determined by a full-shift sample up to 10-hour working day, 40-hour work week. See NIOSH Criteria for a Recommended Standard Occupational Exposure to Crystalline Silica

SECTION IV - First Aid Measures

Eyes: Immediately flush eye thoroughly with water. Continue flushing eye for at least 15 minutes, including under lids, to remove all particles. Call physician immediately.

Skin: Wash skin with cool water and pH-neutral soap or a mild detergent. Seek medical treatment if irritation or inflammation develops or persists. Seek immediate medical treatment in the event of burns.

Inhalation: Remove person to fresh air. If breathing is difficult, administer oxygen. If not breathing, give artificial respiration. Seek medical help if coughing and other symptoms do not subside.

Inhalations of large amounts of Portland cement require immediate medical attention. **Ingestion:** Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately.

SECTION V - FIRE AND EXPLOSION HAZARD DATA

Flammability: Noncombustible and not explosive. **Auto-**

ignition Temperature: Not Applicable **Flash Points:**

Not Applicable



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SECTION VI - ACCIDENTAL RELEASE MEASURES

If spilled, use dustless methods (vacuum) and place into covered container for disposal (if not contaminated or wet). Use adequate ventilation to keep exposure to airborne contaminants below the exposure limit.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND STORAGE

Do not allow water to contact the product until time of use. DO NOT BREATHE DUST. In dusty environments, the use of an OSHA, MSHA or NIOSH approved respirator and tight fitting goggles is recommended.

SECTION VIII - EXPOSURE CONTROL MEASURES

Engineering Controls: Local exhaust can be used, if necessary, to control airborne dust levels .

Personal Protection: The use of barrier creams or impervious gloves, boots and clothing to protect the skin from contact is recommended. Following work, workers should shower with soap and water. Precautions must be observed because burns occur with little warning -- little heat is sensed.

WARN EMPLOYEES AND/OR CUSTOMERS OF THE HAZARDS AND REQUIRED OSHA PRECAUTIONS ASSOCIATED WITH THE USE OF THIS PRODUCT.

Exposure Limits: Consult local authorities for acceptable exposure limits

SECTION IX - PHYSICAL/CHEMICAL CHARACTERISTICS

Appearance: Gray to gray-brown colored powder. Some products contain coarse aggregate.			
Specific Gravity:	2.6 to 3.15	Melting Point:	>2700°F
Boiling Point:	>2700°F	Vapor Pressure:	Not Applicable
Vapor Density:	Not Applicable	Evaporation Rate:	Not Applicable
Solubility in Water:	Slight	Odor:	Not Applicable

SECTION X - REACTIVITY DATA

Stability: Stable.

Incompatibility (Materials to Avoid): Material when mixed with water will react with Aluminum and other alkali and alkaline earth elements liberating hydrogen gas.

Hazardous Decomposition or By-products: None

Hazardous Polymerization: Will Not Occur.

Condition to Avoid: Keep dry until used to preserve product utility.



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SECTION XI - TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, Ingestion**Toxicity to Animals:**

LD50: Not Available

LC50: Not Available

Chronic Effects on Humans: Conditions aggravated by exposure include eye disease, skin disorders and Chronic Respiratory conditions.**Special Remarks on Toxicity:** Not Available

SECTION XII - ECOLOGICAL INFORMATION

Ecotoxicity: Not Available**BODS and COD:** Not Available**Products of Biodegradation:** Not available**Toxicity of the Products of Biodegradation:** Not available**Special Remarks on the Products of Biodegradation:** Not available

SECTION XIII - DISPOSAL CONSIDERATIONS

Waste Disposal Method: The packaging and material may be land filled; however, material should be covered to minimize generation of airborne dust. This product is not classified as a hazardous waste under the authority of the RCRA (40CFR 261) or CERCLA (40CFR 117&302).

SECTION XIV - TRANSPORT INFORMATION

DOT/UN Shipping Name: Non-regulated DOT**Hazard Class:** Non-regulated Shipping Name:

Non-regulated

Non-Hazardous under U.S. DOT and TOG Regulations

SECTION XV - OTHER REGULATORY INFORMATION

US OSHA 29CFR 1910.1200: Considered hazardous under this regulation and should be included in the employers hazard communication program**SARA (Title III) Sections 311 & 312:** Qualifies as a hazardous substance with delayed health effects**SARA (Title III) Section 313:** Not subject to reporting requirements**TSCA (May 1997):** All components are on the TSCA inventory list**Federal Hazardous Substances Act:** Is a hazardous substance subject to statutes promulgated under the subject act**California Regulation: WARNING:** This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

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CEMENT & CONCRETE PRODUCTS*

Canadian Environmental Protection Act: Not listed

WHMIS Classification: Considered to be a hazardous material under the Hazardous Products Act as defined by the Controlled Products Regulations (Class 02A, E- Corrosive Material) and subject to the requirements of Health Canada's Workplace Hazardous Material Information (WHMIS). This product has been classified according to the hazard criteria of the Controlled Products Regulation (CPR). This document complies with the WHMIS requirements of the Hazardous Products Act (HPA) and the CPR.

SECTION XVI - OTHER INFORMATION

HMIS-111:	Health -	0 = No significant health risk 1 = Irritation or minor reversible injury possible 2 = Temporary or minor injury possible 3 = Major injury possible unless prompt action is taken 4 = Life threatening, major or permanent damage possible
	Flammability-	0 = Material will not burn 1 = Material must be preheated before ignition will occur 2 = Material must be exposed to high temperatures before ignition 3 = Material capable of ignition under normal temperatures 4 = Flammable gases or very volatile liquids; may ignite spontaneously
	Physical Hazard-	0 = Material is normally stable, even under fire conditions 1 = Material normally stable but may become unstable at high temps 2 = Materials that are unstable and may undergo react at room temp 3 = Materials that may form explosive mixtures with water 4 = Materials that are readily capable of explosive water reaction

Abbreviations:

ACGIH	American Conference of Government Industrial Hygienists
CAS	Chemical Abstract Service
CERCLA	Comprehensive Environmental Response, Compensation & Liability Act Code
CFR CPR	of Federal Regulations
DOT IARC	Controlled Products Regulations(Canada)
MSHA	Department of Transportation International
NIOSH	Agency for Research
NTP	Mine Safety and Health Administration
OSHA PEL	National Institute for Occupational Safety and Health National
RCRA	Toxicity Program
SARA TLV	Occupational Safety and Health Administration
TWA	Permissible Exposure Limit
WHMIS	Resource Conservation and Recovery Act Superfund Amendments and Reauthorization Act Threshold Limit Value Time-weighted Average Workplace Hazardous Material Information System

Revision #07-01, supersedes all previous revisions.

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CEMENT & CONCRETE PRODUCTS™**Created: 10/25/2006****Last Updated: May 8, 2012**

NOTE: The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, express or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to silica contained in our products.

8.) *Limestone (Martin Marietta Quarry)*

Material Safety Data Sheet

(Limestone)

1. IDENTIFICATION

Chemical Name:	Limestone	Chemical Formula:	N/A
Molecular Weight:	N/A	Trade Name:	Crushed Stone
DOT Identification No:	None		

Synonyms: Aggregate, Aglime, Barn Lime, Coverstone, Flexible Base, Fluxing Agent, Manufactured Sand, Mineral Filler, Screenings

2. PRODUCT AND COMPONENT DATA

Component(s) Chemical Name	CAS Registry No.	% (Approx)	Exposure Limits
Limestone*	1317-65-3	100	See section 6

*Composition varies naturally – typically contains quartz (crystalline silica).	14808-60-7	>1	
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3. PHYSICAL DATA

Appearance and odor: Angular gray, white and tan particles ranging in size from powder to boulders. No odor.
 Specific Gravity: 2.6 – 2.75
 Boiling point (At 1 Atm.): N/A Vapor
 Density in Air (Air = 1): N/A
 Vapor Pressure (mmHg @ 20°C): N/A
 % Volatile, By Volume (@ 100°F): 0%
 Evaporation Rate (at 1 Atm. and 25°C; n-butyl acetate = 1): 0
 Solubility in Water: 0

4. REACTIVITY DATA

Stability: Stable
 Conditions to Avoid: Avoid contact with incompatible materials (see below).
 Incompatibility (materials to avoid): Contact with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride may cause fire and/or explosions. Silica dissolves readily in hydrofluoric acid producing a corrosive gas – silicon tetrafluoride.
 Hazardous Decomposition Products: Limestone ignites on contact with fluorine and is incompatible with acids, alum, ammonium salts, and magnesium. Silica reacts violently with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride yielding possible fire and/or explosions. Silica dissolves readily in hydrofluoric acid producing a corrosive gas – silicon tetrafluoride.
 Hazardous Polymerization: Not known to polymerize

5. FIRE AND EXPLOSION HAZARD DATA

Flashpoint (Method used): Not Flammable
 Flammable Limits in Air: Not Flammable
 Extinguishing Agents: None Required
 Unusual Fire and Explosion Hazards: Contact with powerful oxidizing agents may cause fire and/or explosions (see section 4 of this MSDS).

6. TOXICITY AND FIRST AID

EXPOSURE LIMITS (When exposure to this product and other chemicals is concurrent, the exposure limit must be defined in the workplace.) Unless specified otherwise, limits are expressed as eight-hour time-weighted averages (TWA). Limits for cristobalite and tridymite (other forms of crystalline silica) are equal to one-half of the limits for quartz.

ABBREVIATIONS: TLV = threshold limit value of the American Conference of Governmental Industrial Hygienists (ACGIH); MSHA PEL = permissible exposure limit of the Mine Safety and Health Administration

(MSHA); OSHA PEL = permissible exposure limit of the Occupational Safety and Health Administration (OSHA); mg/m³ = milligrams of substance per cubic meter of air.

Limestone (Calcium Carbonate): ACHIH TLV[®] = 10mg/m³; OSHA PEL = 15mg/m³ (total dust); OSHA PEL = 5mg/m³ (respirable fraction), MSHA PEL = 10mg/m³ (total dust).

Other Particulates: 2001 ACGIH TLV[®] = 10mg/m³ (inhalable/total particulate, not otherwise specified), 2001 ACGIH TLV[®] = 3 mg/m³ (respirable particulate, not otherwise specified); OSHA PEL = 15mg/m³ (total particulate, not otherwise regulated), OSHA PEL = 5mg/m³ (respirable particulate, not otherwise regulated).

Respirable Crystalline Silica (SiO₂/quartz): ACGIH TLV[®] = 0.05mg/m³; MSHA and OSHA PEL = 10mg/m³ + (%SiO₂+2), for respirable dust containing crystalline silica.

Total dust, respirable and nonrespirable: 1973 ACGIH TLV[®] = 30mg/m³ ÷ (%quartz + 3).

Total Dust: MSHA PEL = 10 mg/m³ (for nuisance particulates listed in Appendix E of the 1973 ACGIH TLV[®] booklet).

Per ACGIH, adverse effects are not likely to occur in the workplace provided exposure levels do not exceed the appropriate TLVs & PELs. However, because of the wide variation in individual susceptibility, lower exposure limits may be appropriate for some individuals including persons with pre-existing medical conditions such as those described below.

Medical Conditions Aggravated by Exposure: Inhaling respirable dust and/or crystalline silica may aggravate existing respiratory system disease(s) and/or dysfunctions. Exposure to dust may aggravate existing skin and/or eye conditions.

Primary Route(s) of Exposure

Inhalation

Skin

Ingestion

Acute Toxicity

EYE CONTACT: Direct contact with dust may cause irritation by mechanical abrasion.

SKIN CONTACT: Direct contact may cause irritation by mechanical abrasion.

SKIN ABSORPTION: Not expected to be a significant exposure route.

INGESTION: Expected to be practically non-toxic. Ingestion of large amounts may cause gastrointestinal irritation and blockage.

INHALATION: Dusts may irritate the nose, throat, and respiratory tract by mechanical abrasion. Coughing, sneezing, and shortness of breath may occur following exposures in excess of appropriate exposure limits.

First Aid

EYES: Immediately flush eye(s) with plenty of clean water for at least 15 minutes, while holding the eyelids open. Occasionally lift the eyelids to ensure thorough rinsing. Beyond flushing, do not attempt to remove material from the eye(s). Contact a physician if irritation persists or later develops.

SKIN: Wash with soap and water. Contact a physician if irritation persists or later develops.

INGESTION: If person is conscious, give large quantity of water and induce vomiting; however, never attempt to make an unconscious person drink or vomit. Get immediate medical attention.

INHALATION: Move to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or later develops.

For emergencies, contact _____
(company's designated emergency contact)

Chronic Toxicity

Prolonged and repeated inhalation of respirable crystalline silica-containing dust in excess of appropriate exposure limits has caused silicosis, a lung disease. Not all individuals with silicosis will exhibit symptoms (signs) of the disease. However, silicosis can be progressive, and symptoms can appear at any time, even years

after exposure has ceased. Symptoms of silicosis may include, but are not limited to, the following: shortness of breath; difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; right heart enlargement and/or failure. Smoking may increase the risk of developing lung disorders, including emphysema and lung cancer. Persons with silicosis have an increased risk of pulmonary tuberculosis infection.

Respirable dust containing newly broken silica particles has been shown to be more hazardous to animals in laboratory tests than respirable dust containing older silica particles of similar size. Respirable silica particles which had aged for sixty days or more showed less lung injury in animals than equal exposures of respirable dust containing newly broken particles of silica.

There are reports in the literature suggesting that excessive crystalline silica exposure may be associated with adverse health effects involving the kidney, scleroderma (thickening of the skin caused by swelling and thickening of fibrous tissue) and other autoimmune disorders. However, this evidence has been obtained primarily from case reports involving individuals working in high exposure situations or those who have already developed silicosis; and therefore, this evidence does not conclusively prove a causal relationship between silica or silicosis and these adverse health effects. Several studies of persons with silicosis also indicate an increased risk of developing lung cancer, a risk that increases with the duration of exposure. Some of these studies of silicotics do not account for lung cancer confounders, especially smoking.

Limestone is not listed as a carcinogen by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA). In October 1996, an IARC Working Group re-assessing crystalline silica, a component of this product, designated respirable crystalline silica as carcinogenic (Group 1). The NTP's Report on Carcinogens, 9th edition, lists respirable crystalline silica as a "known human carcinogen." In year 2000, the American Conference of Governmental Industrial Hygienists (ACGIH) listed respirable crystalline silica (quartz) as a suspected human carcinogen (A-2). These classifications are based on sufficient evidence of carcinogenicity in certain experimental animals and on selected epidemiological studies of workers exposed to crystalline silica.

California Proposition 65: WARNING: This product contains chemical(s) known to the state of California to cause cancer.

7. PERSONAL PROTECTION AND CONTROLS

Respiratory Protection

For respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of $0.1\text{mg}/\text{m}^3$, a NIOSH approved dust respirator is recommended. For respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of $0.5\text{mg}/\text{m}^3$, a NIOSH approved HEPA filter respirator is recommended. If respirable quartz levels exceed or are likely to exceed an 8-hr TWA of $5\text{mg}/\text{m}^3$, a NIOSH approved positive pressure, full face respirator or equivalent is recommended. Respirator use must comply with applicable MSHA or OSHA standards, which include provisions for a user training program, respirator repair and cleaning, respirator fit testing, and other requirements.

Ventilation: Local exhaust or general ventilation adequate to maintain exposures below appropriate exposure limits.

Skin Protection

See "Hygiene" section below.

Eye Protection

Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated.

Hygiene

Wash dust-exposed skin with soap and water before eating, drinking, smoking, and using toilet facilities. Wash work clothes after each use.

dust and quartz levels should be monitored regularly. Dust and quartz levels in excess of appropriate exposure limits should be reduced by all feasible engineering controls, including (but not limited to) wet suppression, ventilation, process enclosure, and enclosed employee work stations.

OTHERWISE.

8. STORAGE AND HANDLING PRECAUTIONS

Respirable crystalline silica-containing dust may be generated during processing, handling, and storage. The personal protection and controls identified in Section 7 of the MSDS should be used as appropriate.

Do not store near food and beverages or smoking material.

9. SPILL, LEAK AND DISPOSAL PRACTICES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

The personal protection and controls identified in Section 7 of the MSDS should be used as appropriate. Spilled material, where dust can be generated, may overexpose cleanup personnel to respirable crystalline silica-containing dust. Wetting of spilled material and/or use of respiratory protective equipment may be necessary. Do not dry sweep spilled material. Prevent spilled materials from inadvertently entering streams, drains, or sewers.

For emergencies, contact _____
(your company's designated emergency contact)

WASTE DISPOSAL METHOD

Pick up and reuse clean materials. Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations.

10. TRANSPORTATION

DOT Hazard Classification: None

Placard Required: None

Label Required: Label as required by the OSHA Hazard Communication Standard [29 CFR 1910.1200 (f)] and applicable state and local laws and regulations.

For Further Information Contact: Place here the name, address, and telephone number of the operator or responsible party who can provide more info about the hazardous chemical.

Date of Preparation:

Emergency Information: Your company's designated emergency contact.

Notice: _____ believes the information contained herein is accurate; however, _____ makes no guarantees with respect to such accuracy and assumes no liability in connection with the use of the information contained herein by any party. The provision of the information contained herein is not intended to be and should not be construed as legal advice or as ensuring compliance with any federal, state or local laws and regulations. Any party using this product should review all such laws, rules or regulations prior to use.

NO WARRANTY IS MADE, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR

9.) *Limestone (Vulcan Quarry)*

Limestone

1. Identification

Product name:

Limestone

Other means of identification/Synonyms/Common Names:

Aggregate, Aglime, Barn Lime, Coverstone, Flexible Base, Fluxing Agent, Manufactured Sand, Mineral Filler, Screenings

Recommended use:

Limestone is used as a construction material.

Recommended restrictions:

None Known

Manufacturer/Contact info:

Vulcan Materials Company and its subsidiaries and affiliates
1200 Urban Center Drive
Birmingham, AL 35242

General Phone Number:

1.866.401.5424

Emergency Phone Number:

1.866.401.5424 (3E Company, 24hours/day, 7 Days/week)

Website:

www.vulcanmaterials.com

2. Hazard(s) Identification

Physical hazards:

Not Classified

Health hazards:

Carcinogenicity-Category 1A

Specific target organ toxicity, repeated exposure- Category 2


Signal word:

Danger

Hazard statement:

May Cause Cancer (Inhalation).

Causes damage to organs (lungs, respiratory system) through prolonged or repeated exposure (inhalation)

Precautionary statement:
Prevention

- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Use personal protective equipment as required. Wear protective gloves, protective clothing, eye protection, and face protection.
- Wash hands thoroughly after handling.
- Do not eat, drink or smoke when using this product.

Response

- If exposed or concerned get medical advice/attention.

Disposal

- Dispose of contents/container in accordance with all local, regional, national, and international regulations.

Supplemental information:

Respirable Crystalline Silica (RCS) may cause cancer. Limestone is a naturally occurring mineral complex that contains varying quantities of quartz (crystalline silica). Limestone may be subjected to various natural or mechanical forces that produce small particles (dust) which may contain respirable crystalline silica (particles less than 10 micrometers in aerodynamic diameter). Repeated inhalation of respirable crystalline silica (quartz) may cause lung cancer according to

IARC, NTP; ACGIH states that it is a suspected cause of cancer. Other forms of RCS (e.g., tridymite and cristobalite) may also be present or formed under certain industrial processes.

3. Composition/information on ingredients

Chemical name	CAS number	%
Limestone	1317-65-3	100
Quartz (crystalline silica)	14808-60-7	>1

4. First-aid measures

Inhalation:

Remove to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or if breathing is difficult.

Eyes:

Immediately flush eye(s) with plenty of clean water for at least 15 minutes, while holding the eyelid(s) open. Occasionally lift the eyelid(s) to ensure thorough rinsing. Beyond flushing, do not attempt to remove material from eye(s). Contact a physician if irritation persists or later develops.

Skin:

Wash affected areas thoroughly with mild soap and fresh water. Contact a physician if irritation persists.

Ingestion:

If person is conscious do not induce vomiting. Give large quantity of water and get medical attention. Never attempt to make an unconscious person drink.

Most important symptoms/effects, acute and delayed:

Dust may irritate the eyes, skin, and respiratory tract. Breathing respirable crystalline silica-containing dust for prolonged periods in the workplace can cause lung damage and a lung disease called silicosis. Symptoms of silicosis may include (but are not limited to) shortness of breath, difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; right heart enlargement and/or failure.

Indication of immediate medical attention and special treatment needed:

Not all individuals with silicosis will exhibit symptoms of the disease. However, silicosis can be progressive and symptoms can appear even years after exposures have ceased. Persons with silicosis have an increased risk of pulmonary tuberculosis infection.

For emergencies contact 3E Company at 1.866.401.5424 (24 hours/day, 7 days/week).

5. Fire-fighting measures

Suitable extinguishing media:

This product is not flammable. Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable extinguishing media:

None known.

Specific hazards arising from the chemical:

Contact with powerful oxidizing agents may cause fire and/or explosions (see section 10 of SDS).

Special protective equipment and precautions for firefighters:

Use protective equipment appropriate for surrounding materials.

Fire-fighting equipment/instructions:

No unusual fire or explosion hazards noted. Not a combustible dust.

Specific methods:

The presence of this material in a fire does not hinder the use of any standard extinguishing medium. Use extinguishing medium for surrounding fire.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Persons involved in cleanup processes should first observe precautions (as appropriate) identified in Section 8 of this SDS. **For emergencies, contact 3E Company at 1-866-401-5424 (24 hours/day, 7 days/week).**

Environmental precautions:

Prevent from entering into sewers or drainage systems where it can harden and clog flow.

Methods and materials for containment and cleaning up:

Spilled material, where dust is generated, may overexpose cleanup personnel to respirable crystalline silica-containing dust. Do not dry sweep or use compressed air for clean-up. Wetting of spilled material and/or use of respiratory protective equipment may be necessary.

7. Handling and storage

Precautions for safe handling:

Respirable crystalline silica-containing dust may be generated during processing, handling, and storage. Use personal protection and controls identified in Section 8 of this SDS as appropriate.

Conditions for safe storage, including any incompatibilities:

Do not store near food, beverages, or smoking materials.

8. Exposure controls/personal protection

Legend:

NE = Not Established; PEL = Permissible Exposure Limit; TLV = Threshold Limit Value; REL = Recommended Exposure Limit; OSHA = Occupational Safety and Health Administration; MSHA = Mine Safety and Health Administration; NIOSH = National Institute for Occupational Safety and Health; ACGIH = American Conference of Governmental Industrial Hygienists

Component	OSHA/MSHA PEL	ACGIH TLV	NIOSH REL
Limestone (Calcium Carbonate)	15 (total dust) 5 (respirable fraction)	10 (total dust as calcium carbonate)	15 (total dust) 5 (respirable fraction)
Respirable dust containing silica	10 + (% silica + 2)	Use Respirable Silica TLV	Use Respirable Silica REL
Total dust containing silica	MSHA: 30 ÷ (% silica + 3)	NE	NE
Respirable Crystalline Silica (quartz)	OSHA: 0.05 (PEL) OSHA: 0.025 (Action Level) MSHA: Use Respirable Dust containing Silica PEL (above)	0.025	0.05
Respirable Tridymite and Cristobalite (other forms of crystalline silica)	OSHA: Use respirable crystalline silica PEL MSHA: 1/2 of respirable dust containing silica PEL	0.025	0.05

Exposure Guidelines:

Total dust containing silica, respirable silica-containing dust and respirable crystalline silica (quartz) levels should be monitored regularly to determine worker exposure levels. Exposure levels in excess of allowable exposure limits should be reduced by all feasible engineering controls, including (but not limited to) wet suppression, ventilation, process enclosure, and enclosed employee workstations.

Engineering Controls:

Activities that generate dust require the use of general ventilation, local exhaust and/or wet suppression methods to maintain exposures below allowable exposure limits.

Eye Protection:

Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated.

Skin Protection (Protective Gloves/Clothing):

Use gloves to provide hand protection from abrasion. In dusty conditions, use long sleeve shirts. Wash work clothes after each use.

Respiratory Protection:

All respirators must be NIOSH-approved for the exposure levels present. (See NIOSH Respirator Selection Guide). The need for respiratory protection should be evaluated by a qualified safety and health professional. Activities that generate dust require the use of an appropriate dust respirator where dust levels exceed or are likely to exceed

allowable exposure limits For respirable silica-containing dust levels that exceed or are likely to exceed an 8-hour time-weighted average (TWA) of 0.25 , a high efficiency particulate filter respirator must be worn at a minimum; however, if respirable silica-containing dust levels exceed or are likely to exceed an 8-hour TWA of 1.25 an air-purifying, full-face respirator or equivalent is required. Respirator use must comply with applicable MSHA (42 CFR 84) or OSHA (29 CFR 1910.134) standards, which include provisions for a user training program, respirator inspection, repair and cleaning, respirator fit testing, medical surveillance and other requirements.

9. Physical and chemical properties

Appearance:

Angular gray, white and tan particles ranging in size from powder to boulders.

Odor:

No odor.

PH:

Not applicable

Decomposition temperature:

Not applicable

Melting point/freezing point:

Not applicable

Initial boiling point and boiling range:

Not applicable

Flash point:

Non-combustible

Evaporation rate:

Not applicable

Flammability:

Not applicable

Upper/lower flammability or explosive limits:

Not applicable

Vapor pressure:

Not applicable

Relative density:

Not applicable

Solubility:

0

Partition coefficient: n-octanol/water.

Not applicable

Autoignition temperature:

Not applicable

Specific Gravity (H2O = 1):

2.4 - 2.85

10. Stability and reactivity

Reactivity:

Not reactive under normal use.

Chemical stability:

Stable under normal temperatures and pressures.

Possibility of hazardous reactions:

None under normal use.

Conditions to avoid (e.g., static discharge, shock or vibration):

Contact with incompatible materials should be avoided (see below). See Sections 5 and 7 for additional information.

Incompatible materials:

Silica ignites on contact with fluorine and is incompatible with acids, aluminum, ammonium salts and magnesium. Silica reacts violently with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride yielding possible fire and/or explosions. Silica dissolves readily in hydrofluoric acid producing a corrosive gas – silicon tetrafluoride.

Hazardous decomposition products:

Respirable crystalline silica-containing dust may be generated. When heated, quartz is slowly transformed into tridymite (above 860°C/1580°F) and cristobalite (above 1470°C/2678°F). Both tridymite and cristobalite are other forms of crystalline silica.

11. Toxicological information

Primary Routes of Exposure:

Inhalation and contact with the eyes and skin.

Symptoms related to the physical, chemical, toxicological characteristics

Inhalation:

Dusts may irritate the nose, throat and respiratory tract by mechanical abrasion. Coughing sneezing and shortness of breath may occur.

Symptoms of silicosis may include (but are not limited to) shortness of breath, difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; right heart enlargement and/or failure. Persons with silicosis have an increased risk of pulmonary tuberculosis infection.

Eye Contact:

Dust particles can scratch the eye causing tearing, redness, a stinging or burning feeling, or swelling of the eyes with blurred vision.

Skin Contact:

Dust particles can scratch and irritate the skin with redness, an itching or burning feeling, swelling of the skin, and/or rash.

Ingestion:

Expected to be practically non-toxic. Ingestion of large amounts may cause gastrointestinal irritation including nausea, vomiting, diarrhea, and blockage.

Medical Conditions Aggravated by Exposure:

Irritated or broken skin increases chance of contact dermatitis. Pre-existing medical conditions that may be aggravated by exposure include disorders of the eye, skin and lung (including asthma and other breathing disorders). Smoking tobacco will impair the ability of the lungs to clear themselves of dust.

Delayed and immediate effects and also chronic effects from short- and long-term exposure:

Prolonged overexposure to respirable dusts in excess of allowable exposure limits can cause inflammation of the lungs leading to possible fibrotic changes, a medical condition known as pneumoconiosis.

Prolonged and repeated overexposure to high levels of respirable crystalline silica-containing dust may cause a chronic form of silicosis, an incurable lung disease that may result in permanent lung damage or death. Chronic silicosis generally occurs after 10 years or more of overexposure; a more accelerated type of silicosis may occur between 5 and 10 years of higher levels of prolonged and repeated overexposure. In early stages of silicosis, not all individuals will exhibit symptoms (signs) of the disease. However, silicosis can be progressive, and symptoms can appear at any time, even years after exposure has ceased.

Repeated overexposures to very high levels of respirable crystalline silica for periods as short as six months may cause acute silicosis. Acute silicosis is a rapidly progressive, incurable lung disease that is typically fatal. Symptoms include (but are not limited to): shortness of breath, cough, fever, weight loss, and chest pain.

Respirable dust containing newly broken crystalline silica particles has been shown to be more hazardous to animals in laboratory tests than respirable dust containing older crystalline silica particles of similar size. Respirable crystalline silica particles which had aged for sixty days or more showed less lung injury in animals than equal exposures to respirable dust containing newly broken particles of respirable crystalline silica.

There are reports in the literature suggesting that excessive respirable crystalline silica exposure may be associated with autoimmune disorders and other adverse health effects involving the kidney. In particular, the incidence of scleroderma (thickening of the skin caused by swelling and thickening of fibrous tissue) appears to be higher in silicotic individuals.

To date, the evidence does not conclusively determine a causal relationship between silica exposure and these adverse health effects.

Cardiogenicity:

Epidemiology studies on the association between respirable crystalline silica exposure and lung cancer have had both positive and negative results. There is some speculation that the source, type, and level of exposure of respirable crystalline silica may play a role. Studies of persons with silicosis indicate an increased risk of developing lung cancer, a risk that increases with the level and duration of exposure. It is not clear whether lung cancer develops in non-silicotic patients. Several studies of silicotics do not account for lung cancer confounders, especially smoking, which have been shown to increase the risk of developing lung disorders, including emphysema and lung cancer.

In October 1996, an IARC Working Group designated respirable crystalline silica as carcinogenic (Group 1). In 2012, an IARC Working Group re-affirmed that inhalation of crystalline silica was a known human carcinogen. The NTP's Report on Carcinogens, 9th edition, lists respirable crystalline silica as a "known human carcinogen." In the year 2000, the American Conference of Governmental Industrial Hygienists (ACGIH) listed respirable crystalline silica (quartz) as a suspected human carcinogen (A-2). These classifications are based on sufficient evidence of carcinogenicity in certain experimental animals and on selected epidemiological studies of workers exposed to respirable crystalline silica.

Additional information on toxicological-effects:

Acute toxicity: Not classified

No specific data on product. Limestone (calcium carbonate CAS# 471-34-1) has oral LD50 (rats) = 6450 mg/kg.)

Skin corrosion/irritation: Not classified

Serious eye damage/eye irritation: Not classified

Respiratory sensitization: Not classified.

Skin sensitization: Not classified.

Germ cell Mutagenicity: Not classified

Carcinogenicity: May cause cancer (Inhalation).

Reproductive toxicity: Not classified

Specific target organ toxicity - single exposure: Not classified

Specific target organ- toxicity – repeated exposure: Causes damage to organs (lungs, respiratory system) through prolonged or repeated exposure (inhalation)

Aspiration toxicity: Not classified (not applicable- solid material)

12. Ecological information

Ecotoxicity (aquatic and terrestrial, where available):

Not determined

Persistence and degradability:

Not determined

Bioaccumulative potential:

Not determined

Mobility in soil:

Not determined

Other adverse effects:

Not determined

13. Disposal considerations

Safe handling and disposal of waste:

Place contaminated materials in appropriate containers and dispose of in a manner consistent with applicable federal, state, and local regulations. Prevent from entering drainage, sewer systems, and unintended bodies of water. It is the responsibility of the user to determine, at the time of disposal, whether product meets criteria for hazardous waste. Product uses, transformations, mixture and processes, may render the resulting material hazardous.

14. Transport information

UN Number:

Not regulated.

UN Proper shipping name:

Not regulated.

Transport Hazard class:

Not applicable.

Packing group, if applicable:

Not applicable.

Marine pollutant (Yes/No):

Not applicable.

15. Regulatory information

Toxic Substances Control Act (TSCA):

The components in this product are listed on the TSCA Inventory or are exempt.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA):

Releases of this material to air, land, or water are not reportable to the National Response Center under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or to state and local emergency planning committees under the Superfund Amendments and Reauthorization Act.

10.) Mortar Mix



CEMENT & CONCRETE PRODUCTS

MATERIAL SAFETY DATA SHEET

Masonry Mortars

MATERIAL SAFETY DATA SHEET
(Complies with OSHA 29 CFR 1910.1200)

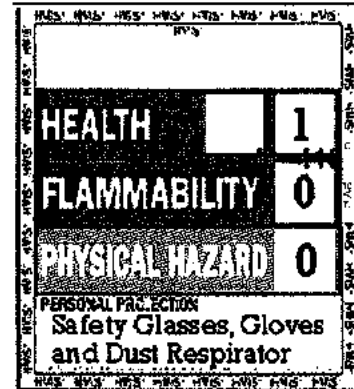
SECTION I: PRODUCT IDENTIFICATION

The QUIKRETE® Companies One
Securities Centre
3490 Piedmont Road, Suite 1300
Atlanta, GA 30329

Emergency Telephone Number
(770) 216-9580

Information Telephone Number
(770) 216-9580

MSDS E1
Revision: May-12



QUIKRETE® Product Name	Code#
MORTAR MIX	1102
MASON MIX	1136
GLASS BLOCK MORTAR ROOF TILE	1610
MORTAR	1140
CS C-4	1191-84
VENEER STONE MORTAR	1137
POLYMER MODIFIED VENEER STONE MORTAR	1137-85
QUIKRETE® PRO-FINISH BLENDED MORTAR MIX ALL-STAR	1136-58
MORTAR MIX	1122
ALL-STAR MASON MIX	1136
ALL-STAR VENEER STONE MORTAR	1137
HANDICRETE MORTAR MIX NATURAL	
STONE MORTAR	
RED-E-CRETE MORTAR	

BULK MASONRY MORTARS: MIX 101M, 102S, 104N, 112M, 112N, 112S, 122M, 122N, 122S, 132S, 142, 201M, 202PLN, 202S, 203 PLS, 203S, 203N, 204N, 205 P/L type 0, 203M, 212M, 212N, 212S, 222M, 222S, 253S, 294N

PRODUCT USE: MASONRY MORTARS FOR CONSTRUCTION WITH BLOCK, BRICK, VENEER STONES, ETC.

SECTION 11 - HAZARD IDENTIFICATION

Route(s) of Entry: Inhalation, Skin, Ingestion

ONE SECURITIES CENTRE, 3490 PIEDMONT ROAD NE, SUITE 1300, ATLANTA, GA 30305

TEL 404-634-9100

WWW.QUIKRETE.COM

Acute Exposure: Product becomes alkaline when exposed to moisture. Exposure can dry the skin, cause alkali burns and affect the mucous membranes. Dust can irritate the eyes and upper respiratory system. Toxic effects noted in animals include, for acute exposures, alveolar damage with pulmonary edema.

Chronic Exposure: Dust can cause inflammation of the lining tissue of the interior of the nose and inflammation of the cornea. Hypersensitive individuals may develop an allergic dermatitis.

Carcinogenicity: Since Portland cement and blended cements are manufactured from raw materials mined from the earth (limestone, marl, sand, shale, etc.) and process heat is provided by burning fossil fuels, trace, but detectable, amounts of naturally occurring, and possibly harmful, elements may be found during chemical

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analysis. Under ASTM standards, Portland cement may contain 0.75 % insoluble residue. A fraction of these residues may be free crystalline silica. Respirable crystalline silica (quartz) can cause silicosis, a fibrosis (scarring) of the lungs and possibly cancer. There is evidence that exposure to respirable silica or the disease silicosis is associated with an increased incidence of Scleroderma, tuberculosis and kidney disorders.

Carcinogenicity Listings:	NTP:	Known carcinogen
	OSHA:	Not listed as a carcinogen
	IARC Monographs:	Group 1 Carcinogen Known
	California Proposition 65:	carcinogen

NTP: The National Toxicology Program, in its "Ninth Report on Carcinogens" (released May 15, 2000) concluded that "Respirable crystalline silica (RCS), primarily quartz dusts occurring in industrial and occupational settings, is *known to be a human carcinogen*, based on sufficient evidence of carcinogenicity from studies in humans indicating a causal relationship between exposure to RCS and increased lung cancer rates in workers exposed to crystalline silica dust (reviewed in IAC, 1997; Brown *et al.*, 1997; Hind *et al.*, 1997)

IARC: The International Agency for Research on Cancer ("IARC") concluded that there was "*sufficient evidence* in humans for the carcinogenicity of crystalline silica in the forms of quartz or cristobalite from occupational sources", and that there is "*sufficient evidence* in experimental animals for the carcinogenicity of quartz or cristobalite." The overall IARC evaluation was that "crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is *carcinogenic to humans* (Group 1)." The IARC evaluation noted that "carcinogenicity was not detected in all industrial circumstances or studies. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs." For further information on the IARC evaluation, see IARC Monographs on the Evaluation of carcinogenic Risks to Humans, Volume 68, "Silica, Some Silicates." (1997)

Signs and Symptoms of Exposure: Symptoms of excessive exposure to the dust include shortness of breath and reduced pulmonary function. Excessive exposure to skin and eyes especially when mixed with water can cause caustic burns as severe as third degree.

Medical Conditions Generally Aggravated by Exposure: Individuals with sensitive skin and with pulmonary and/or respiratory disease, including, but not limited to, asthma and bronchitis, or subject to eye irritation, should be precluded from exposure. Exposure to crystalline silica or the disease silicosis is associated with increased incidence of scleroderma, Tuberculosis and possibly increased incidence of kidney lesions.

Chronic Exposure: Dust can cause inflammation of the lining tissue of the interior of the nose and inflammation of the cornea. Hypersensitive individuals may develop an allergic dermatitis. (May contain trace (<0.05 %) amounts of chromium salts or compounds including hexavalent chromium, or other metals found to be hazardous or toxic in some chemical forms. These metals are mostly present as trace substitutions within the principal minerals)

Medical Conditions Generally Aggravated by Exposure: Individuals with sensitive skin and with pulmonary and/or respiratory disease, including, but not limited to, asthma and bronchitis, or subject to eye irritation, should be precluded from exposure.

SECTION 111 - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components	CAS No.	PEL (OSHA)	TLV (ACGIH)
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ONE SECURITIES CENTRE, 3490 PEBBLEMENT ROAD NE, SUITE 1300, ATLANTA, GA 30305

TEL 404-834-8100

WWW.QUICKRETE.COM



CEMENT & CONCRETE PRODUCTS**

		mg/M ³	mg/M ³
Portland Cement	65997-15-1	5	5
Silica Sand, crystalline	14808-60-7	$\frac{10}{\%SiO_2+2}$	0.05 (respirable)

May contain one or more of the following Ingredients:

Lime	01305-62-0	5	5
Pulverized Limestone	01317-65-3	5	5
Iron Oxide Pigments	01309-37-1	5	5
Clay	01332-58-7	5	5

Other Limits: National Institute for Occupational Safety and Health (NIOSH). Recommended standard maximum permissible concentration=0.05 mg/M³ (respirable free silica) as determined by a full-shift sample up to 10-hour working day, 40-hour work week. See NIOSH Criteria for a Recommended Standard Occupational Exposure to Crystalline Silica.

SECTION IV - First Aid Measures

Eyes: Immediately flush eye thoroughly with water. Continue flushing eye for at least 15 minutes, including under lids, to remove all particles. Call physician immediately.

Skin: Wash skin with cool water and pH-neutral soap or a mild detergent. Seek medical treatment if irritation or inflammation develops or persists. Seek immediate medical treatment in the event of burns.

Inhalation: Remove person to fresh air. If breathing is difficult, administer oxygen. If not breathing, give artificial respiration. Seek medical help if coughing and other symptoms do not subside. Inhalations of large amounts of Portland cement require immediate medical attention.

Ingestion: Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately.

SECTION V - FIRE AND EXPLOSION HAZARD DATA

Flammability: Noncombustible and not explosive.

Auto-ignition Temperature: Not Applicable

Points: Not Applicable

SECTION VI - ACCIDENTAL RELEASE MEASURES

If spilled, use dustless methods (vacuum) and place into covered container for disposal (if not contaminated or wet). Use adequate ventilation to keep exposure to airborne contaminants below the exposure limit.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND STORAGE

Do not allow water to contact the product until time of use. DO NOT BREATHE DUST. In dusty environments, the use of an OSHA, MSHA or NIOSH approved respirator and tight fitting goggles is recommended.

SECTION VIII - EXPOSURE CONTROL MEASURES

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Engineering Controls: Local exhaust can be used, if necessary, to control airborne dust levels.

Personal Protection: The use of barrier creams or impervious gloves, boots and clothing to protect the skin from contact is recommended. Following work, workers should shower with soap and water. Precautions must be observed because burns occur with little warning -- little heat is sensed.

WARN EMPLOYEES AND/OR CUSTOMERS OF THE HAZARDS AND REQUIRED OSHA PRECAUTIONS ASSOCIATED WITH THE USE OF THIS PRODUCT.

Exposure Limits: Consult local authorities for acceptable exposure limits

SECTION IX - PHYSICAL/CHEMICAL CHARACTERISTICS

Appearance: Gray to gray-brown colored powder;			
Specific Gravity: 2.6 to 3.15	Melting Point: Vapor		>2700°F
Boiling Point: >2700°F	Pressure:		Not Available
Vapor Density: Not Available	Evaporation Rate:		Not Available
Solubility in Water: Slight	Odor:		Not Available

SECTION X - REACTIVITY DATA

Stability: Stable.

Incompatibility (Materials to Avoid): Contact of silica with powerful oxidizing agents such as fluorine, chlorine trifluoride, manganese trioxide, or oxygen difluoride may cause fires

Hazardous Decomposition or By-products: Silica will dissolve in Hydrofluoric Acid and produce a corrosive gas - silicon tetrafluoride.

Hazardous Polymerization: Will Not Occur.

Condition to Avoid: Keep dry until used to preserve product utility.

SECTION XI - TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, Ingestion

Toxicity to Animals:

LD50: Not Available LC50:

Not Available

Chronic Effects on Humans: Conditions aggravated by exposure include eye disease, skin disorders and Chronic Respiratory conditions.

Special Remarks on Toxicity: Not Available

SECTION XII - ECOLOGICAL INFORMATION

Ecotoxicity: Not Available

BODS and COD: Not Available

Products of Biodegradation: Not available

Toxicity of the Products of Biodegradation: Not available

Special Remarks on the Products of Biodegradation: Not available

SECTION XIII - DISPOSAL CONSIDERATIONS

{111}/[f:]/4i4.

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MATERIAL SAFETY DATA SHEET

Waste Disposal Method: The packaging and material may be land filled; however, material should be covered to minimize generation of airborne dust. This product is not classified as a hazardous waste under the authority of the RCRA (40CFR 261) or CERCLA (40CFR 117&302).

SECTION XIV - TRANSPORT INFORMATION

Not hazardous under U.S. DOT and TOG regulations.

SECTION XV - OTHER REGULATORY INFORMATION

US OSHA 29CFR 1910.1200: Considered hazardous under this regulation and should be included in the employers' hazard communication program

SARA (Title III) Sections 311 & 312: Qualifies as a hazardous substance with delayed health effects

SARA (Title III) Section 313: Not subject to reporting requirements

TSCA (May 1997): Some substances are on the TSCA inventory list

Federal Hazardous Substances Act: Is a hazardous substance subject to statutes promulgated under the subject act

California Regulation: WARNING: This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

Canadian Environmental Protection Act: Not listed

Canadian WHMIS: Considered to be a hazardous material under the Hazardous Products Act as defined by the Controlled Products Regulations (Class 02A, E- Corrosive Material) and subject to the requirements of Health Canada's Workplace Hazardous Material Information (WHMIS). This product has been classified according to the hazard criteria of the Controlled Products Regulation (CPR). This document complies with the WHMIS requirements of the Hazardous Products Act (HPA) and the CPR.

SECTION XVI - OTHER INFORMATION

HMS-111:

Health -	0 = No significant health risk 1 = Irritation or minor reversible injury possible 2 = Temporary or minor injury possible 3 = Major injury possible unless prompt action is taken 4 = Life threatening, major or permanent damage possible
Flammability-	0 = Material will not burn 1 = Material must be preheated before ignition will occur 2 = Material must be exposed to high temperatures before ignition 3 = Material capable of ignition under normal temperatures 4 = Flammable gases or very volatile liquids; may ignite spontaneously
Physical Hazard-	0 = Material is normally stable, even under fire conditions 1 = Material normally stable but may become unstable at high temps 2 = Materials that are unstable and may undergo react at room temp 3 = Materials that may form explosive mixtures with water

4 = Materials that are readily capable of explosive water reaction

Abbreviations:

ACGIH

American Conference of Government Industrial Hygienists

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CAS	Chemical Abstract Service
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act Code of
CFR CPR	Federal Regulations
DOT	Controlled Products Regulations (Canada)
IARC	Department of Transportation International
MSHA	Agency for Research
NIOSH	Mine Safety and Health Administration
NTP	National Institute for Occupational Safety and Health National
OSHA	Toxicity Program
PEL	Occupational Safety and Health Administration Permissible
RCRA	Exposure Limit
SARA	Resource Conservation and Recovery Act Superfund
TLV	Amendments and Reauthorization Act Threshold Limit
TWA	Value
WHMIS	Time-weighted Average Workplace Hazardous Material Information System

Last Updated: May 8, 2012

NOTE:The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, express or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to silica contained in our products. END OF MSDS.

11.) Non Shrink Grout

NON-SHRINK GROUTS

MATERIAL SAFETY DATA SHEET
 (Complies with OSHA 29 CFR 1910.1200)

SECTION I: PRODUCT IDENTIFICATION

The QUIKRETE® Companies
 One Securities Centre
 3490 Piedmont Road, Suite 1300
 Atlanta, GA 30329

Emergency Telephone Number
 (770) 216-9580

Information Telephone Number
 (770) 216-9580

MSDS 01
 Revision: May-12

HEALTH	1
FLAMMABILITY	0
PHYSICAL HAZARD	0

Use PPE: Safety Glasses, Gloves
 and PPE: Respirator

QUIKRETE® Product Name	Product#
NON-SHRINK PRECISION GROUT	1585-00
NON-SHRINK GENERAL PURPOSE GROUT	1585-01
PORTLAND EXPANDING GROUT	1585-22
ALL-STAR NON-SHRINK PRECISION GROUT	1585

PRODUCT USE: PORTLAND CEMENT-BASED GROUTING MATERIALS FOR COLUMNS, MACHINERY BASES AND ANY APPLICATION WHERE VOLUME STABILITY IS IMPORTANT

SECTION 11 - HAZARD IDENTIFICATION

Route(s) of Entry: Inhalation, Skin, Ingestion

Acute Exposure: Product becomes alkaline when exposed to moisture. Exposure can dry the skin, cause alkali burns and affect the mucous membranes. Dust can irritate the eyes and upper respiratory system. Toxic effects noted in animals include, for acute exposures, alveolar damage with pulmonary edema.

Chronic Exposure: Dust can cause inflammation of the lining tissue of the interior of the nose and inflammation of the cornea. Hypersensitive individuals may develop an allergic dermatitis.

Carcinogenicity: Since Portland cement and blended cements are manufactured from raw materials mined from the earth (limestone, marl, sand, shale, etc.) and process heat is provided by burning fossil fuels, trace, but detectable, amounts of naturally occurring, and possibly harmful, elements may be found during chemical analysis. Under ASTM standards, Portland cement may contain 0.75 % insoluble residue. A fraction of these residues may be free crystalline silica. Respirable crystalline silica (quartz) can cause silicosis, a fibrosis

(scarring) of the lungs and possibly cancer. There is evidence that exposure to respirable silica or the disease silicosis is associated with an increased incidence of Scleroderma, tuberculosis and kidney disorders.

CEMENT & CONCRETE PRODUCTS™

Carcinogenicity Listings:	NTP:	Known carcinogen
	OSHA:	Not listed as a carcinogen
	IARC Monographs:	Group 1 Carcinogen
	California Proposition 65:	Known carcinogen

NTP: The National Toxicology Program, in its "Ninth Report on Carcinogens" (released May 15, 2000) concluded that "Respirable crystalline silica (RCS), primarily quartz dusts occurring in industrial and occupational settings, is *known to be a human carcinogen*, based on sufficient evidence of carcinogenicity from studies in humans indicating a causal relationship between exposure to RCS and increased lung cancer rates in workers exposed to crystalline silica dust (reviewed in IAC, 1997; Brown *et al.*, 1997; Hind *et al.*, 1997)

IARC: The International Agency for Research on Cancer ("IARC") concluded that there was "*sufficient evidence* in humans for the carcinogenicity of crystalline silica in the forms of quartz or cristobalite from occupational sources", and that there is "*sufficient evidence* in experimental animals for the carcinogenicity of quartz or cristobalite." The overall IARC evaluation was that "crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is *carcinogenic to humans* (Group 1)." The IARC evaluation noted that "carcinogenicity was not detected in all industrial circumstances or studies. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs." For further information on the IARC evaluation, see IARC Monographs on the Evaluation of carcinogenic Risks to Humans, Volume 68, "Silica, Some Silicates." (1997)

Signs and Symptoms of Exposure: Symptoms of excessive exposure to the dust include shortness of breath and reduced pulmonary function. Excessive exposure to skin and eyes especially when mixed with water can cause caustic burns as severe as third degree.

Medical Conditions Generally Aggravated by Exposure: Individuals with sensitive skin and with pulmonary and/or respiratory disease, including, but not limited to, asthma and bronchitis, or subject to eye irritation, should be precluded from exposure. Exposure to crystalline silica or the disease silicosis is associated with increased incidence of scleroderma, Tuberculosis and possibly increased incidence of kidney lesions.

Chronic Exposure: Dust can cause inflammation of the lining tissue of the interior of the nose and inflammation of the cornea. Hypersensitive individuals may develop an allergic dermatitis. (May contain trace (<0.05 %) amounts of chromium salts or compounds including hexavalent chromium, or other metals found to be hazardous or toxic in some chemical forms. These metals are mostly present as trace substitutions within the principal minerals)

Medical Conditions Generally Aggravated by Exposure: Individuals with sensitive skin and with pulmonary and/or respiratory disease, including, but not limited to, asthma and bronchitis, or subject to eye irritation, should be precluded from exposure.

SECTION III - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

CEMENT & CONCRETE PRODUCTS™

Hazardous Components	CAS No. mg/M ³	PEL (OSHA) TLV (ACGIH) mg/M ³	
Silica Sand, crystalline	14808-60-7	<u>10</u> %SiO ₂ +2	0.025 (respirable)*
Portland Cement	65997-15-1	5	5
May Contain one or more of the following ingredients:			
Amorphous Silica	07631-86-9	<u>80 mg/M³</u> % SiO ₂	10
Calcium Sulfate	10101-41-4 or 13397-24-5	5	5
Lime	01305-62-0	5	5
Fly Ash	68131-74-8	5	5
Calcium Aluminate Cement	65997-16-2	5	5
Clay	01332-58-7	5	5
Pulverized Limestone	01317-65-3	5	5

*Reported respirable limit reduced due to Canadian legislation, effective March 2010. See 'Other Limits' below.

Other Limits: National Institute for Occupational Safety and Health (NIOSH). Recommended standard maximum permissible concentration=0.05 mg/M (respirable free silica) as determined by a full-shift sample up to 10-hour working day, 40-hour work week. See NIOSH Criteria for a Recommended Standard Occupational Exposure to Crystalline Silica

SECTION IV - First Aid Measures

Eyes: Immediately flush eye thoroughly with water. Continue flushing eye for at least 15 minutes, including under lids, to remove all particles. Call physician immediately.

Skin: Wash skin with cool water and pH-neutral soap or a mild detergent. Seek medical treatment if irritation or inflammation develops or persists. Seek immediate medical treatment in the event of burns.

Inhalation: Remove person to fresh air. If breathing is difficult, administer oxygen. If not breathing, give artificial respiration. Seek medical help if coughing and other symptoms do not subside.

Inhalations of large amounts of Portland cement require immediate medical attention. **Ingestion:** Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately.

SECTION V - FIRE AND EXPLOSION HAZARD DATA

Flammability: Noncombustible and not explosive.

Auto-ignition Temperature: Not Applicable **Flash**

Points: Not Applicable

SECTION VI - ACCIDENTAL RELEASE MEASURES

CEMENT & CONCRETE PRODUCTS"

If spilled, use dustless methods (vacuum) and place into covered container for disposal (if not contaminated or wet). Use adequate ventilation to keep exposure to airborne contaminants below the exposure limit.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND STORAGE

Do not allow water to contact the product until time of use. **DO NOT BREATHE DUST.** In dusty environments, the use of an OSHA, MSHA or NIOSH approved respirator and tight fitting goggles is recommended.

SECTION VIII - EXPOSURE CONTROL MEASURES

Engineering Controls: Local exhaust can be used, if necessary, to control airborne dust levels.

Personal Protection: The use of barrier creams or impervious gloves, boots and clothing to protect the skin from contact is recommended. Following work, workers should shower with soap and water. Precautions must be observed because burns occur with little warning -- little heat is sensed.

WARN EMPLOYEES AND/OR CUSTOMERS OF THE HAZARDS AND REQUIRED OSHA PRECAUTIONS ASSOCIATED WITH THE USE OF THIS PRODUCT.

Exposure Limits: Consult local authorities for acceptable exposure limits

SECTION IX - PHYSICAL/CHEMICAL CHARACTERISTICS

Appearance: Gray to gray-brown colored powder.

Specific Gravity: 2.6 to 3.15

Melting Point:

>2700°F

Boiling Point: >2700°F

Vapor Pressure:

Not Applicable

Vapor Density: Not Applicable

Evaporation Rate:

Not Applicable

Solubility in Water: Slight

Odor:

Not Applicable

SECTION X - REACTIVITY DATA

Stability: Stable.

Incompatibility (Materials to Avoid): Material when mixed with water will react with Aluminum and other alkali and alkaline earth elements liberating hydrogen gas.

Hazardous Decomposition or By-products: None

Hazardous Polymerization: Will Not Occur.

Condition to Avoid: Keep dry until used to preserve product utility.

SECTION XI - TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, Ingestion

Toxicity to Animals:

[11]/[f:14i4.**CEMENT & CONCRETE PRODUCTS"**

LD50: Not Available LC50:
Not Available

Chronic Effects on Humans: Conditions aggravated by exposure include eye disease, skin disorders and Chronic Respiratory conditions.

Special Remarks on Toxicity: Not Available

SECTION XII - ECOLOGICAL INFORMATION

Ecotoxicity: Not Available

BOD5 and COD: Not Available

Products of Biodegradation: Not available

Toxicity of the Products of Biodegradation: Not available

Special Remarks on the Products of Biodegradation: Not available

SECTION XIII - DISPOSAL CONSIDERATIONS

Waste Disposal Method: The packaging and material may be land filled; however, material should be covered to minimize generation of airborne dust. This product is not classified as a hazardous waste under the authority of the RCRA (40CFR 261) or CERCLA (40CFR 117&302).

SECTION XIV - TRANSPORT INFORMATION

DOT/UN Shipping Name: Non-regulated DOT

Hazard Class: Non-regulated Shipping Name:

Non-regulated

Non-Hazardous under U.S. DOT and TOG Regulations

SECTION XV - OTHER REGULATORY INFORMATION

US OSHA 29CFR 1910.1200: Considered hazardous under this regulation and should be included in the employers hazard communication program

SARA (Title III) Sections 311 & 312: Qualifies as a hazardous substance with delayed health effects

SARA (Title III) Section 313: Not subject to reporting requirements

TSCA (May 1997): All components are on the TSCA inventory list

Federal Hazardous Substances Act: Is a hazardous substance subject to statues promulgated under the subject act

California Regulation: WARNING: This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

Canadian Environmental Protection Act: Not listed

WHMIS Classification: Considered to be a hazardous material under the Hazardous Products Act as defined

by the Controlled Products Regulations (Class D2A, E- Corrosive Material) and subject to the requirements of Health Canada's Workplace Hazardous Material Information (WHMIS). This product has been classified according to the hazard criteria of the Controlled Products Regulation (CPR). This document complies with the WHMIS requirements of the Hazardous Products Act (HPA) and the CPR.

SECTION XVI - OTHER INFORMATION

HMIS-111:	Health -	0 = No significant health risk 1 = Irritation or minor reversible injury possible 2 = Temporary or minor injury possible 3 = Major injury possible unless prompt action is taken 4 = Life threatening, major or permanent damage possible
	Flammability-	0 = Material will not burn 1 = Material must be preheated before ignition will occur 2 = Material must be exposed to high temperatures before ignition 3 = Material capable of ignition under normal temperatures 4 = Flammable gases or very volatile liquids; may ignite spontaneously
	Physical Hazard-	0 = Material is normally stable, even under fire conditions 1 = Material normally stable but may become unstable at high temps 2 = Materials that are unstable and may undergo reaction at room temp 3 = Materials that may form explosive mixtures with water 4 = Materials that are readily capable of explosive water reaction

Abbreviations:

ACGIH	American Conference of Government Industrial Hygienists
CAS	Chemical Abstract Service
CERCLA	Comprehensive Environmental Response, Compensation & Liability Act Code
CFR CPR	of Federal Regulations
DOT IARC	Controlled Products Regulations(Canada)
MSHA	Department of Transportation International
NIOSH	Agency for Research
NTP	Mine Safety and Health Administration
OSHA PEL	National Institute for Occupational Safety and Health National
RCRA	Toxicity Program
SARA TLV	Occupational Safety and Health Administration
TWA	Permissible Exposure Limit
WHMIS	Resource Conservation and Recovery Act Superfund Amendments and Reauthorization Act Threshold Limit Value Time-weighted Average Workplace Hazardous Material Information System

Last Updated: May 8, 2012

NOTE: The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, express or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be

12.) Sandstone (Martin Marietta Quarry)



2710 Wycliff Road
 Raleigh, North Carolina 27607
 919-781-4550

MATERIAL SAFETY DATA SHEET

Effective Date: 11-07
 Replaces: 1-04

I - PRODUCT AND COMPANY IDENTIFICATION		
CHEMICAL NAME Sandstone	CHEMICAL FORMULA Mixture	MOLECULAR WEIGHT Not Applicable
TRADE NAME Crushed Stone		
SYNONYMS Aggregate		DOT IDENTIFICATION NO. None

II - COMPOSITION/INFORMATION ON INGREDIENTS				
COMPONENT(S) CHEMICAL NAME	CAS REGISTRY NO	% by weight (approx)	MSHA/OSHA PEL	ACGIH TLV-TWA
Silicon Dioxide*, SiO ₂	14808-60-7	77-79	(R) 10 mg/m ³ / (% SiO ₂ + 2);	0.025 mg/m ³
Aluminum Oxide, Al ₂ O ₃	1344-28-1	4-5	(T) 15 mg/m ³ , (R) 5 mg/m ³	#10 mg/m ³
Ferric Oxide, Fe ₂ O ₃	1309-37-1	1-2	10 mg/m ³	5 mg/m ³
Ferrous Oxide, FeO	1345-25-1	1-2	-	5 mg/m ³
Magnesium Oxide, MgO	1309-48-4	1-2	15 mg/m ³	10 mg/m ³
Calcium Oxide, CaO	1305-78-8	5-6	5 mg/m ³	2 mg/m ³
Sodium Oxide, Na ₂ O	1313-59-3	<1	-	2 mg/m ³ as NaOH
Potassium Oxide, K ₂ O	12136-45-7	1-2	-	-

*: The composition of SiO₂ may be up to 100% crystalline silica. (R): Respirable (T): Total S: Crystalline silica is normally measured as respirable dust. The OSHA standard also presents a formula for calculation of the PEL based on total dust: 30 mg/m³ / (% SiO₂ + 2). #: Particulate matter containing no asbestos and <1% crystalline silica.

III - HAZARDS IDENTIFICATION			
<p>Sandstone is elastic rock of varying color. It is composed of a mixture of angular to sub-angular, multi-colored particles of small grains of quartz and feldspar naturally cemented together. It is odorless and not flammable. Respirable dust particles containing silicon dioxide may be generated by handling sandstone rock. Inhalation of excessive particulate matter may cause respiratory problems. Crystalline silica, a component of this product, has been designated as a Group I carcinogen by IARC.</p>			
<p>Health Effects: The information below represents an overview of health effects caused by overexposure to one or more components in sandstone. The individual effects are described in Section XI.</p>			
Primary routes(s) of exposure:	• Inhalation	D Skin	D Ingestion
EYE CONTACT:	Direct contact with dust may cause irritation by mechanical abrasion. Conjunctivitis may occur.		
SKIN CONTACT:	Direct contact may cause irritation by mechanical abrasion. Some components of material are also known to cause mild corrosive effects to skin and mucous membranes.		

- SKIN ABSORPTION:** Not expected to be a significant route of exposure .
- INGESTION:** Small amounts (a tablespoonful) swallowed during normal handling operations are not likely to cause injury. Ingestion of large amounts may cause gastrointestinal irritation and blockage.
- INHALATION:** Dust may irritate nose, throat, mucous membranes, and respiratory tract by mechanical abrasion. Coughing, sneezing, chest pain, shortness of breath, inflammation of mucous membrane, and flu-like fever may occur following exposures in excess of appropriate exposure limits. Repeated excessive exposure may cause pneumoconiosis, such as silicosis and other respiratory effects.

Notes on Silicosis:

Use of shale rock for construction purposes is not believed to cause acute toxic effects. Repeated overexposures to respirable crystalline silica (quartz, cristobalite, tridymite) for periods as short as 6 months has caused acute silicosis.

Symptoms of acute silicosis include (but are not limited to): shortness of breath, cough, fever, weight loss, and chest pain. Acute silicosis is a rapidly progressive, incurable lung disease and is typically fatal.

Chronic exposure to respirable quartz-containing dust in excess of appropriate exposure limits has caused silicosis, a progressive pneumoconiosis (lung disease). Restrictive and/or obstructive lung function changes may result from chronic exposure. Chronic tobacco smoking may further increase the risk of developing chronic lung problems.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Inhaling respirable dust and/or crystalline silica may aggravate existing respiratory system disease(s) and/or dysfunctions. Exposure to dust may aggravate existing skin and/or eye conditions. Smoking and obstructive/ restrictive lung diseases may also exacerbate the effects of excessive exposure to this product.

IV - FIRST AID MEASURES	
EYES:	Immediately flush eye(s) with plenty of clean water for at least 15 minutes, while holding the eyelid(s) open. Occasionally lift the eyelid(s) to ensure thorough rinsing. Beyond flushing, do not attempt to remove material from the eye(s). Contact a physician if irritation persists or develops later.
SKIN:	Wash with soap and water. Contact a physician if irritation persists or develops later.
INGESTION:	If person is conscious, give a large quantity of water and induce vomiting; however, never attempt to make an unconscious person drink or vomit. Get medical attention.
INHALATION:	Remove to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or develops later.

V - FIRE FIGHTING MEASURES	
FLASHPOINT Not Flammable	FLAMMABLE LIMITS IN AIR Not Flammable
EXTINGUISHING AGENT None required	
UNUSUAL FIRE AND EXPLOSION HAZARD Contact with powerful oxidizing agents may cause fire and/or explosions (see Section X of this MSDS).	

VI - ACCIDENTAL RELEASE MEASURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Persons involved in cleaning should first follow the precautions defined in Section VII of the MSDS. Spilled materials, where dust	

can be generated, may overexpose cleanup personnel to respirable quartz-containing dust. Wetting of spilled material and/or use of respiratory protective equipment may be necessary. Do not dry sweep spilled material.

This product is not subject to the reporting requirements of Title III of SARA, 1986, and 40 CFR 372.

VII - HANDLING AND STORAGE

This product is not intended or designed for, and should not be used as an abrasive blasting medium or for foundry applications. Follow protective controls set forth in Section VIII of this MSDS when handling this product.

Respirable quartz-containing dust may be generated during processing, handling and storage. Do not breathe dust. Avoid contact with skin and eyes.

Do not store near food or beverages or smoking materials.

Do not stand on piles of materials; it may be unstable.

VIII - EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS

Ventilation: Use local exhaust, general ventilation or natural ventilation adequate to maintain exposures below appropriate exposure limits. If a person breathes large amounts of this material, move the exposed person to fresh air at once; other measures are usually unnecessary.

Other control measures: Respirable dust and quartz levels should be monitored regularly. Dust and quartz levels in excess of appropriate exposure limits should be reduced by all feasible engineering controls, including (but not limited to) dust suppression (wetting), ventilation, process enclosure, and enclosed employee work stations.

EYE/FACE PROTECTION

Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated. If product contacts the eyes, immediately wash the eyes with large amounts of water, occasionally lifting the lower and upper lids. Get medical attention immediately. Contact lenses should not be worn when working with this material.

SKIN PROTECTION

No personal protection recommended.

RESPIRATORY PROTECTION

Respirator Recommendations:

For respirable quartz levels that exceed or are likely to exceed appropriate exposure limits, a NIOSH-approved 100 series particulate filter respirator must be worn. If respirable quartz levels exceed or are likely to exceed an 8 hour-TWA of 0.5 mg/m³, a NIOSH-approved air purifying, full-face respirator with a 100 series particulate filter must be worn. Respirator use must comply with applicable MSHA or OSHA standards, which include provisions for a user training program, respirator repair and cleaning, respirator fit testing, and other requirements. For additional information contact NIOSH at 1-800-356-4674.

Emergency or planned entry into unknown concentrations or IDLH conditions: Any self-contained breathing apparatus that has a full-face piece and is operated in a pressure-demand or other positive-pressure mode or any supplied-air respirator that has a full-face piece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus.

Escape from unknown or IDLH conditions: Any air-purifying, full-face piece respirator with a high-efficiency particulate filter or any appropriate escape-type, self-contained breathing apparatus.

GENERAL HYGIENE CONSIDERATIONS

There are no known hazards associated with this material when used as recommended. Following the guidelines in this MSDS are recognized as good industrial hygiene practices. Avoid breathing dust. Avoid skin and eye contact. Wash dust-exposed skin with soap and water before eating, drinking, smoking, and using toilet facilities. Wash work clothes after each use.

IX - PHYSICAL AND CHEMICAL PROPERTIES	
APPEARANCE AND ODOR Mixture of angular to sub-angular, multi-colored particles. No odor.	SPECIFIC GRAVITY. 2.5 ~2.7
BOILING POINT Not applicable	VAPOR DENSITY IN AIR (AIR= 1) Not applicable
VAPOR PRESSURE Not applicable	% VOLATILE, BY VOLUME 0%
EVAPORATION RATE Not applicable	SOLUBILITY IN WATER Negligible

X - STABILITY AND REACTIVITY	
STABILITY Stable	CONDITIONS TO AVOID Contact with incompatible materials (see below).
INCOMPATIBILITY (Materials to avoid) Contact with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride may cause fire and/or explosions. Silica dissolves in hydrofluoric acid producing a corrosive gas – silicon tetrafluoride.	
HAZARDOUS DECOMPOSITION PRODUCTS Silica containing respirable dust particles may be generated by handling.	

XI - TOXICOLOGICAL INFORMATION

This product is a mixture of components. The composition percentages are listed in Section II. Toxicological information for each component is listed below:

Silicon Dioxide: It is comprised of amorphous and crystalline forms of silica. In some batches, crystalline silica may represent up to 100% of silicon dioxide.

Respirable crystalline silica (quartz):

ACGIH TLV= 0.025 mg/m³

MSHA and OSHA PEL:

Crystalline quartz (respirable): PEL-TWA 10 mg/m³ (%SiO₂ + 2).

Crystobalite: Use Y2 the value calculated from the count or mass formulae for quartz.

Tridymite: Use Y2 the value calculated from the formulae for quartz.

Other Particulates: TLV = 10 mg/m³ (inhalable/total particulate, not otherwise classified), TLV = 3 mg/m³ (respirable particulate, not otherwise classified), OSHA PEL= 15 mg/m³ (total particulate, not otherwise regulated), OSHA PEL= 5 mg/m³ (respirable particulate, not otherwise regulated)

ACGIH, MSHA, and OSHA have determined that adverse effects are not likely to occur in the workplace provided exposure levels do not exceed the appropriate exposure limits. Lower exposure limits may be appropriate for some individuals including persons with pre-existing medical conditions such as those described below.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Inhaling respirable dust and/or crystalline silica may aggravate existing respiratory system disease(s) and/or dysfunctions.

Exposure to dust may aggravate existing skin and/or eye conditions.

Occupational exposure to free silica is known to produce silicosis, a chronic, disabling lung disease characterized by the formation of silica-containing nodules of scar tissue in the lungs. Simple silicosis, in which the nodules are less than 1 cm in diameter is generally asymptomatic but can be slowly progressive, even in the absence of continued exposure.

Silicosis leads to conditions such as lung fibrosis and reduced pulmonary function. The form and severity in which silicosis manifests itself depends in part on the type and extent of exposure to silica dusts: chronic, accelerated and acute forms are all recognized. In later stages the critical condition may become disabling and potentially fatal. Restrictive and/or obstructive changes in lung function may occur due to exposure. A risk associated with silicosis is development of pulmonary tuberculosis (silico-tuberculosis). Respiratory insufficiencies due to massive fibrosis and reduced pulmonary function, possibly with accompanying heart failure, are other potential causes of death due to silicosis.

Symptoms of Silicosis: Not all individuals with silicosis will exhibit symptoms (signs) of the disease. However, silicosis can be progressive, and symptoms may potentially appear years after exposures have ceased. Symptoms of silicosis may include (but are not limited to): Shortness of breath; difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; heart enlargement and/or failure.

Respirable dust containing newly broken particles has been shown to be more hazardous to animals in laboratory tests than respirable dust containing older silica particles of similar size. Respirable silica particles which had aged for sixty days or more showed less lung injury in animals than equal exposures of respirable dust containing newly broken pieces of silica.

There are reports in the literature indicating that crystalline silica exposure may be associated with adverse health effects involving the kidney, scleroderma (thickening of the skin caused by swelling and thickening of fibrous tissue) and other autoimmune and immunity-related disorders. Several studies of persons with silicosis or silica exposure also indicate or suggest increased risk of developing lung cancer, a risk that may increase with the duration of exposure. Many of these studies of silicosis do not account for lung cancer confounders, especially smoking. In October 1996, an IARC Working group re-assessing crystalline silica, a component of this product, designated crystalline silica as a human carcinogen (Group 1 carcinogen). The NTP indicates that crystalline silica is reasonably anticipated to be a human carcinogen (Group 2). These classifications are based on sufficient evidence of carcinogenicity in certain experimental animals and epidemiological studies of workers exposed to crystalline silica. Crystalline silica in October 1996 was listed on the Safe Drinking Water and Toxic Enforcement ACT of 1986 (California Proposition 65) as a chemical known to the state to cause cancer or reproductive toxicity.

Aluminum Oxide:

Exposure route: Eyes, skin, inhalation. Target

organs: Eyes, skin, respiratory system.

Acute effect: Animal studies with α -alumina were reported in 1941. This study found that alumina particles well below 40 μ m in diameter produced a "nuisance particulate" reaction in animals. Very fine Al_2O_3 powder was not fibrogenic in rats, guinea pigs, or hamsters when inhaled for 6 to 12 months and sacrificed at periods up to 12 months following the last exposure.

Chronic effect/carcinogenicity: Aluminum oxide is not classifiable as to human carcinogen potential. Epidemiologic surveys have indicated an excess of nonmalignant respiratory disease in workers exposed to aluminum oxide during abrasives production.

Ferric Oxide:

Exposure route: Inhalation.

Target organs: Respiratory system.

Acute effect: Benign pneumoconiosis with X-ray shadows indistinguishable from fibrotic pneumoconiosis. Experimental work in animals exposed by intratracheal injection or by inhalation to iron oxide mixed with less than 5% silica has shown no evidence of fibrosis produced in lung tissue.

Chronic effect/carcinogenicity: It is not generally accepted that inhalation or dermal exposure to iron oxide dust or fume poses a carcinogenic risk to human beings. Not classifiable as to human carcinogen potential.

Ferrous Oxide:

Acute effect: Major findings: stupor, shock, acidosis, hematemesis, bloody diarrhea or coma. Minor findings: vomiting, diarrhea, mild lethargy.

Chronic effect/carcinogenicity: Irritability, nausea or vomiting, and normocytic anemia. When exposed to levels greater than 50 to 100 milligram per day, it can result in pathological deposition of iron in the body tissues causing fibrosis of the pancreas, diabetes mellitus, and liver cirrhosis. Not classifiable as to human carcinogen potential.

Magnesium Oxide:

Exposure route: Inhalation, eye/skin contact.

Target organs: Eyes, respiratory system.

Acute effect: Magnesium oxide dust caused slight irritation of the eyes and nose, conjunctivitis, inflammation of the mucous membrane, and coughing up discolored sputum after industrial exposures amongst workers exposed to an unspecified concentration of MgO. Acute toxicity causes nausea, malaise, general depression and paralysis of respiratory, cardiovascular and central nervous system.

Experiments with cats exposed to freshly formed MgO (magnesium ranging from 21 to 156 mg) fumes plus 10% carbon dioxide showed uniform but slight hypothermia. These animals rapidly returned to normal and showed no subsequent ill effect upon cessation of MgO inhalation.

Chronic effect/carcinogenicity: NIOSH has indicated that there may be a carcinogenic risk from exposure to MgO dust.

Calcium Oxide:

Exposure route: Inhalation, ingestion, skin/eye contact.

Target organs: Eyes, skin, respiratory system.

Acute effect: Direct contact of CaO with tissues, can result in burns and severe irritation because of its high reactivity and alkalinity. Major complaints of workers exposed to lime consist of irritation of the skin and eyes, although inflammation of the respiratory passages, ulceration and perforation of the nasal septum, and even pneumonia has been attributed to inhalation of the dust.

Chronic effect/carcinogenicity: Not classifiable as to human carcinogen potential.

Sodium Oxide:

Exposure route: Inhalation, ingestion, skin/eye contact.

Target organs: Eyes, skin, respiratory system.

Acute effect: Corrosive - causes burns, irritation of skin, eyes, respiratory tract, extremely destructive of mucous membranes.

Chronic effect/carcinogenicity: Not classifiable as to human carcinogen potential.

Potassium Oxide

Exposure route: Inhalation, ingestion, skin/eye contact.

Target organs: Eyes, skin, respiratory system.

Acute effect: If inhaled, causes sore throat, cough, burning sensation and shortness of breath. Contact with skin produces pain and blisters. Severe deep burns, redness and pain occur with eye contact. Ingestion of K₂O results in burning sensations, abdominal pain, shock or collapse.

Chronic effect/carcinogenicity: Not classifiable as to human carcinogen potential.

XII- ECOLOGICAL INFORMATION
No data available

XIII- DISPOSAL CONSIDERATIONS
WASTE DISPOSAL METHOD Collect and reuse clean materials. Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations.

XIV - TRANSPORT INFORMATION
DOT HAZARD CLASSIFICATION None
PLACARD REQUIRED None
LABEL REQUIRED Label as required by the OSHA Hazard Communication standard (29 CFR 1910.1200(f)), and applicable state and local regulations.

XV - REGULATORY INFORMATION
Crystalline silica, a component of this product, is on the NTP and IARC carcinogen lists, but not on the OSHA carcinogen list. In October 1996, an IARC Working group re-assessing crystalline silica, a component of this product, designated crystalline silica as a human carcinogen (Group 1 carcinogen).
Crystalline silica in October 1996 was listed on the Safe Drinking Water and Toxic Enforcement ACT of 1986 (California Proposition 65) as chemical known to the state to cause cancer or reproductive toxicity .

XVI - OTHER INFORMATION
ACGIH: American Conference of Governmental Industrial Hygienists CFR: US Code of Federal Regulations DOT: US Department of Transportation IARC: International Agency for Research on Cancer IDLH: Immediately Dangerous to Life and Health NIOSH: National Institute for Occupational Safety and Health, US Department of Health and Human Services NTP: National Toxicology Program OSHA: Occupational Safety and Health Administration, US Department of Labor PEL: Permissible Exposure Limit SARA Title III: Title III of the Superfund Amendments and Reauthorization Act, 1986 TLV: Threshold Limit Value TWA: Time-weighted Average

FOR FURTHER INFORMATION

CONTACT:

**Martin Marietta Aggregates
Manager-Safety
2710 Wycliff Road
Raleigh, NC 27607
919/781-4550
HOURS; 8 AM - 5 PM (EST)**

DATE OF PREPARATION 11/07

NOTICE: Martin Marietta Materials believes that the information contained on this Material Safety Data Sheet is accurate. The suggested precautions and recommendations are based on recognized good work practices and experience as of the date of publication. They are not necessarily all-inclusive or fully adequate in every circumstance as not all use circumstances can be anticipated. Also, the suggestions should not be confused with nor followed in violation of applicable laws, regulation, rules or insurance requirement. However, product must not be used in a manner which could result in harm.

NO WARRANTY, EXPRESSED OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE IS MADE

MSDS 3600-002

13.) Sandstone (Vulcan Quarry)

Sandstone

SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Sandstone		Formula: Not applicable	
Synonyms/Common Names: None			
Manufacturer/Contact Info: Vulcan Materials Company and its subsidiaries and affiliates 1200 Urban Center Drive Birmingham, AL 35242		General Phone Number: 1.866.401.5424	
		Emergency Phone Number: 1.866.401.5424 (3E Company, 24 hours/day, 7 days/week)	

SECTION 2. COMPOSITION INFORMATION ON INGREDIENTS

Hazardous Components	CAS No.	% by Weight
Sandstone* *Composition varies naturally. Typically contains high levels of quartz (crystalline silica).	None 14808-60-7	100 > 1

SECTION 3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
WARNING Dust may irritate the eyes, skin and respiratory tract. Avoid breathing excessive dust. Breathing silica-containing dust for prolonged periods in the workplace can cause lung damage and a lung disease called silicosis. Several scientific organizations have classified crystalline silica as causing lung cancer in humans. Silicosis or lung cancer can result in permanent injury or death.
POTENTIAL HEALTH EFFECTS
Primary Routes of Exposure: Inhalation and contact with the eyes and skin.
Eye Contact: Dust particles can scratch the eye causing tearing, redness, a stinging or burning feeling, or swelling of the eyes with blurred vision.
Skin Contact: Dust particles can scratch and irritate the skin with redness, an itching or burning feeling, swelling of the skin, and/or rash.
Skin Absorption: Not expected to be a significant exposure route.
Inhalation: Dusts may irritate the nose, throat and respiratory tract by mechanical abrasion. Coughing, sneezing and shortness of breath may occur.
Ingestion: Expected to be practically non-toxic. Ingestion of large amounts may cause gastrointestinal irritation including nausea, vomiting, diarrhea and blockage.
Effects Following Prolonged or Repeated Exposure: Exposure to high levels of respirable crystalline silica is associated with silicosis, lung cancer, and autoimmune disorders. For additional information, see Section 11.
Carcinogenicity: Crystalline silica, a component in this product, has been listed as a carcinogen by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA). For additional information, see Section 11.

POTENTIAL HEALTH EFFECTS
Signs and Symptoms of Exposure: Symptoms of silicosis may include (but are not limited to) shortness of breath, difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; right heart enlargement and/or failure.
Medical Conditions Aggravated by Exposure: Pre-existing medical conditions that may be aggravated by exposure include disorders of the eye, skin and lung (including asthma and other breathing disorders). If addicted to tobacco, smoking will impair the ability of the lungs to clear themselves of dust.

SECTION 4. FIRST AID MEASURES
Eyes: Immediately flush eye(s) with plenty of clean water for at least 15 minutes, while holding the eyelid(s) open. Occasionally lift the eyelid(s) to ensure thorough rinsing. Beyond flushing, do not attempt to remove material from the eye(s). Contact a physician if irritation persists or later develops.
Skin: Wash affected areas thoroughly with mild soap and fresh water. Contact a physician if irritation persists or later develops.
Inhalation: Remove to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or if breathing is difficult.
Ingestion: If person is conscious, do not induce vomiting. Give large quantity of water and get medical attention. Never attempt to make an unconscious person drink.
Notes to Physician: Not all individuals with silicosis will exhibit symptoms of the disease. However, silicosis can be progressive, and symptoms can appear at any time, even years after exposures have ceased. Persons with silicosis have an increased risk of pulmonary tuberculosis infection. For emergencies, contact 3E Company at 1-866-401-5424 (24 hours/day, 7 days/week).

SECTION 5. FIREFIGHTING MEASURES	
Flash Point (Method Used): Not applicable	Flammable Limits: LEL: Not applicable UEL: Not applicable
Autoignition Temperature: Not applicable	
Extinguishing Media: The presence of this material in a fire does not hinder the use of any standard extinguishing medium. Use extinguishing medium for surrounding fire.	
Special Firefighting Procedures: None	
Unusual Fire and Explosion Hazards: Contact with powerful oxidizing agents may cause fire and/or explosions (see Section 10 of MSDS).	

SECTION 6. ACCIDENTAL RELEASE MEASURES
Precautions if Material is Spilled or Released: Persons involved in cleanup processes should first observe precautions (as appropriate) identified in Section 8 of this MSDS. Spilled material, where dust is generated, may overexpose cleanup personnel to respirable crystalline silica-containing dust. Do not dry sweep or use compressed air for clean-up. Wetting of spilled material and/or use of respiratory protective equipment may be necessary. Prevent spilled materials from entering streams, drains, or sewers. For emergencies, contact 3E Company at 1-866-401-5424 (24 hours/day, 7 days/week).
Waste Disposal Methods: Dispose of waste materials in accordance with applicable federal, state and local laws and regulations.
Environmental Precautions: Not applicable

SECTION 7. HANDLING AND STORAGE

Storage:
Do not store near food and beverages or smoking materials.

Handling:
Respirable crystalline silica-containing dust may be generated during processing, handling, and storage. Use personal protection and controls identified in Section 8 of this MSDS as appropriate.

MANUFACTURED SAND MADE FROM THIS PRODUCT MUST NOT BE USED AS AN ABRASIVE BLASTING AGENT.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Legend:
NE = Not Established; PEL = Permissible Exposure Limit; TLV = Threshold Limit Value; REL = Recommended Exposure Limit; OSHA = Occupational Safety and Health Administration; MSHA = Mine Safety and Health Administration; NIOSH = National Institute for Occupational Safety and Health; ACGIH = American Conference of Governmental Industrial Hygienists

Component	OSHA/MSHA PEL	ACGIH TLV	NIOSH REL
Other Particulates	15 mg/m ³ (total dust) 5 mg/m ³ (respirable fraction)	10 mg/m ³ (inhalable fraction) 3 mg/m ³ (respirable fraction)	15 mg/m ³ (total dust) 5 mg/m ³ (respirable fraction)
Respirable dust containing silica	10 mg/m ³ + (% silica + 2)	Use Respirable Silica TLV	Use Respirable Silica REL
Total dust containing silica	OSHA: 30 mg/m ³ + (% silica + 2) MSHA: 30 mg/m ³ + (% silica + 3)	NE	NE
Respirable Crystalline Silica (quartz)	NE - Use respirable dust PEL	0.025 mg/m ³	0.05 mg/m ³
Respirable Tridymite and Cristobalite (other forms of crystalline silica)	1/2 of OSHA and MSHA respirable dust PEL	0.025 mg/m ³	0.05 mg/m ³

Eye Protection:
Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated.

Skin Protection (Protective Gloves/Clothing):
Use gloves to provide hand protection from abrasion. In dusty conditions, use long sleeve shirts. Wash work clothes after each use.

Respiratory Protection:
All respirators must be NIOSH-approved for the exposure levels present. (See NIOSH Respirator Selection Guide). The need for respiratory protection should be evaluated by a qualified safety and health professional. Activities that generate dust require the use of an appropriate dust respirator where dust levels exceed or are likely to exceed allowable exposure limits. For respirable silica levels that exceed or are likely to exceed an 8 hr Time Weighted Average (TWA) of 0.5 mg/m³, a high efficiency particulate filter respirator must be worn at a minimum; however, if respirable silica levels exceed or are likely to exceed an 8 hr TWA of 5.0 mg/m³ a positive pressure, full face respirator or equivalent is required. Respirator use must comply with applicable MSHA (42 CFR 84) or OSHA (29 CFR 1910.134) standards, which include provisions for a user training program, respirator inspection, repair and cleaning, respirator fit testing, medical surveillance and other requirements.

Engineering Controls:
Activities that generate dust require the use of general ventilation, local exhaust and/or wet suppression methods to maintain exposures below allowable exposure limits.

Other:
Respirable dust and quartz levels should be monitored regularly to determine worker exposure levels. Exposure levels in excess of allowable exposure limits should be reduced by all feasible engineering controls, including (but not limited to) wet suppression, ventilation, process enclosure, and enclosed employee workstations.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point: Not applicable	pH: Not applicable	Specific Gravity (H ₂ O = 1): 2.6 - 2.75
Evaporation Rate (Butyl Acetate = 1): 0	Melting Point: Not applicable	Vapor Pressure (mm Hg.): Not applicable
Solubility in Water: 0	Vapor Density (Air = 1): Not applicable	% Volatile: Not applicable

Appearance and Odor:
Angular gray, white and tan particles ranging in size from powder to boulders. No odor.

SECTION 10. STABILITY AND REACTIVITY
Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Contact with incompatible materials should be avoided (see below). See Sections 5 and 7 for additional information.
Incompatibility (Materials to Avoid): Contact with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, an oxygen difluoride may cause fire and/or explosions. Silica dissolves readily in hydrofluoric acid producing a non-toxic gas-silicon tetrafluoride.
Hazardous Decomposition or Byproducts: Silica-containing respirable dust particles may be generated. When heated, quartz is slowly transformed into tridymite (above 860°C/1580 °F) and cristobalite (above 1470°C/2678°F). Both tridymite and cristobalite are other forms of crystalline silica and are considered more fibrogenic to the lungs than quartz.
Hazardous Polymerization: Not known to occur.

SECTION 11. TOXICOLOGICAL INFORMATION
Acute Effects: No specific data on product.
Effects Following Prolonged or Repeated Exposure: Prolonged overexposure to respirable dusts in excess of allowable exposure limits can cause inflammation of the lungs leading to possible fibrotic changes, a medical condition known as pneumoconiosis. Prolonged and repeated inhalation of respirable crystalline silica-containing dust in excess of allowable exposure limits may cause a chronic form of silicosis, an incurable lung disease that may result in permanent lung damage or death. Chronic silicosis generally occurs after 10 years or more of overexposure; a more accelerated type of silicosis may occur between 5 and 10 years of higher levels of exposure. In early stages of silicosis, not all individuals will exhibit symptoms (signs) of the disease. However, silicosis can be progressive, and symptoms can appear at any time, even years after exposure has ceased. Symptoms of silicosis may include, but are not limited to, the following: shortness of breath; difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; right heart enlargement and/or failure. Persons with silicosis have an increased risk of pulmonary tuberculosis infection. Repeated overexposures to very high levels of respirable crystalline silica (quartz, cristobalite, tridymite) for periods as short as six months may cause acute silicosis. Acute silicosis is a rapidly progressive, incurable lung disease that is typically fatal. Symptoms include (but are not limited to): shortness of breath, cough, fever, weight loss, and chest pain. Respirable dust containing newly broken silica particles has been shown to be more hazardous to animals in laboratory tests than respirable dust containing older silica particles of similar size. Respirable silica particles which had aged for sixty days or more showed less lung injury in animals than equal exposures of respirable dust containing newly broken particles of silica. There are reports in the literature suggesting that excessive crystalline silica exposure may be associated with autoimmune disorders and other adverse health effects involving the kidney. In particular, the incidence of scleroderma (thickening of the skin caused by swelling and thickening of fibrous tissue) appears to be higher in silicotic individuals. To date, the evidence does not conclusively determine a causal relationship between silica exposure and these adverse health effects.
Carcinogenicity: Epidemiology studies on the association between crystalline silica exposure and lung cancer have had both positive and negative results. There is some speculation that the source and type of crystalline silica may play a role. Studies of persons with silicosis indicate an increased risk of developing lung cancer, a risk that increases with the level and duration of exposure. It is not clear whether lung cancer develops in non-silicotic patients. Several studies of silicotics do not account for lung cancer confounders, especially smoking, which have been shown to increase the risk of developing lung disorders, including emphysema and lung cancer. In October 1996, an IARC Working Group designated respirable crystalline silica as carcinogenic (Group 1). The NTP's Report on Carcinogens, 9th edition, lists respirable crystalline silica as a "known human carcinogen." In year 2000, the American Conference of Governmental Industrial Hygienists (ACGIH) listed respirable crystalline silica (quartz) as a suspected human carcinogen (A-2). These classifications are based on sufficient evidence of carcinogenicity in certain experimental animals and on selected epidemiological studies of workers exposed to crystalline silica.

SECTION 12. ECOLOGICAL INFORMATION
Aquatic Ecotoxicological Data: No specific data on this product. Not expected to be toxic to aquatic organisms.
Environmental Fate Data: No specific data on this product.
Other: No specific data on this product.

SECTION 13. DISPOSAL CONSIDERATIONS

Place contaminated materials in appropriate containers and dispose of in a manner consistent with applicable federal, state, and local regulations. Prevent from entering drainage, sewer systems, and unintended bodies of water. It is the responsibility of the user to determine, at the time of disposal, whether product meets criteria for hazardous waste. Product uses, transformations, mixture and processes, may render the resulting material hazardous.

SECTION 14. TRANSPORT INFORMATION [Note: Not intended to be all-inclusive.]

DOT Proper Shipping Name:

Not regulated.

DOT Hazard Classification:

Not applicable.

UN/NA Number:

Not regulated.

DOT Packing Group:

Not applicable.

Labeling Requirements:

Not applicable. Label as required by the OSHA Hazard Communication standard [29 CFR 1910.1200(t)], MSHA Hazard Communication standard [30 CFR Part 47] and applicable state and local regulations.

SECTION 15. REGULATORY INFORMATION [Note: Not intended to be all-inclusive.]

Toxic Substances Control Act (TSCA):

The components in this product are listed on the TSCA inventory or are exempt.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA):

Releases of this material to air, land, or water are not reportable to the National Response Center under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or to state and local emergency planning committees under the Superfund Amendments and Reauthorization Act.

Superfund Amendments and Reauthorization Act of 1986 (SARA), Title III:

Section 302 extreme/hazardous substances: None

Section 311/312 hazard categories:
Delayed Health

Section 313 reportable ingredients at or above de minimus concentrations:
None

California Proposition 65:

This product contains a chemical (crystalline silica) known to the State of California to cause cancer.

State Regulatory Lists:

The following materials /components are specifically listed by individual states. For details on regulatory requirements, you should contact the appropriate agency in your state:

Chemical Name	State
Crystalline silica (quartz)	CA; FL; MA; MN; NJ; PA

SECTION 16. OTHER INFORMATION**Disclaimer**

NO WARRANTY IS MADE, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE.

Vulcan Materials Company and its subsidiaries and affiliates ("Vulcan") believe the information contained herein is accurate; however, Vulcan makes no guarantees with respect to such accuracy and assumes no liability whatsoever in connection with the use of any information contained herein by any party. The provision of the information contained herein is not intended to be, and should not be construed as, legal advice or as ensuring compliance with any federal, state, or local laws, rules or regulations. Any party using any information contained herein should review all applicable laws, rules and regulations prior to use.

Vulcan

Dear Customer/Contractor:

Please find attached a material safety data sheet (MSDS) for the product that you purchased from Vulcan Materials Company or one of its subsidiaries or affiliates ("Vulcan"). This is a revised MSDS and replaces any previous versions of the MSDS for this product. This MSDS is provided to you as required by the Occupational Safety and Health Administration's (OSHA) Hazard Communication Standard (29 CFR 1910.1200), the Mine Safety and Health Administration's (MSHA) Hazard Communication Standard (30 CFR Part 47), and/or any applicable state Right-to-Know laws.

It is the responsibility of your company to communicate this information to your employees, customers, and contractors who may use or come in contact with this product. Further, if you distribute this product, Vulcan requests, and applicable laws may require, that you forward this MSDS to your customers.

Please direct this information to the person responsible for safety and health compliance at your company. If you have questions about the MSDS, please contact Vulcan at 1200 Urban Center Drive, Birmingham, AL 35242 or 1-866-401-5424.

If you need additional copies of this or any other Vulcan MSDS or a Spanish language version, you can obtain them at www.vulcanmaterials.com or by calling 1-866-401-5424.

La MSDS puede obtenerse en www.vulcanmaterials.com o llamando al 1-866-401-5424.

3) ttf.c/

Chad E. McDouga, CIH, CSP Manager,

Occupational Health

VI 4

B. Fuels, Oils and Greases

1.) 2-Stroke Mixing Oil

SAFETY DATA SHEET

1. Identification

Product identifier Husqvarna 2-Stroke XP Oil

Other means of identification

610000130, 585247801, 505525901, 585247802, 610000131, 610000132, 585451401, 610000133, 610000166, 610000134, 544106101, 544106102, 544106103, (Not all part numbers are available in all markets.)

Product code

Recommended use 2-stroke engines

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Supplier Husqvarna Group

Address 9335 Harris Corners Parkway

Charlotte, NC 28269

USA

Telephone number 800-487-5951

Emergency telephone

number

+1-760-476-3961 (Access code 333721)

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards Sensitization, skin Category 1

OSHA defined hazards Not classified.

Label elements

Signal word Warning

Hazard statement May cause an allergic skin reaction.

Precautionary statement

Prevention Avoid breathing mist or vapor. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves.

Response If on skin: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention.

Wash contaminated clothing before reuse.

Storage Store away from incompatible materials.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise

classified (HNOC)

None known.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

Solvent-dewaxed heavy 64742-65-0 30 - 50

paraffinic distillates (petroleum)

Chemical name CAS number %

Petroleum distillates, 64742-54-7 15 - 30

hydrotreated heavy paraffinic

Polyisobutylene 9003-29-6 10 - 25

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Distillates (petroleum), 64742-47-8 10 - 20

hydrotreated light

N,N'-di-sec-butyl-p-phenylened 101-96-2 0.1 - 0.5

lamine

All concentrations are in percent by weight (kg) unless ingredient is a gas. Gas concentrations are in percent by volume (l).

4. First-aid measures

Inhalation Move to fresh air. Call a physician if symptoms develop or persist.

Remove contaminated clothing immediately and wash skin with soap and water. In case of

eczema or other skin disorders: Seek medical attention and take along these instructions.

Skin contact

Eye contact Rinse with water. Get medical attention if irritation develops and persists.

Rinse mouth. Do not induce vomiting without advice from poison control center. If vomiting occurs,

keep head low so that stomach content doesn't get into the lungs. Get medical attention if symptoms occur.

Ingestion

Most important May cause an allergic skin reaction. Dermatitis. Rash.

symptoms/effects, acute and delayed

Provide general supportive measures and treat symptomatically. Keep victim under observation.

Symptoms may be delayed.

Indication of immediate medical attention and special treatment needed

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

General information

5. Fire-fighting measures

Suitable extinguishing media Powder. Alcohol resistant foam. Dry chemicals. Carbon dioxide (CO₂).

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions Cool containers exposed to heat with water spray and remove container, if no risk is involved.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards Material will burn in a fire.

6. Accidental release measures

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Avoid breathing mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Personal precautions, protective equipment and emergency procedures

Large Spills: Stop the flow of material, if this is without risk. Use water spray to reduce vapors or divert vapor cloud drift. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Methods and materials for containment and cleaning up

Environmental precautions Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Avoid breathing mist or vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated contact with skin. Use only in well-ventilated areas. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

Precautions for safe handling

Keep away from heat and sources of ignition. Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

Conditions for safe storage, including any incompatibilities

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8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components Type Value Form

Petroleum distillates, PEL 5 mg/m³ Mist.
hydrotreated heavy
paraffinic (CAS 64742-54-7)
Solvent-dewaxed heavy PEL 5 mg/m³ Mist.
paraffinic distillates
(petroleum) (CAS
64742-65-0)
2000 mg/m³
500 ppm

US. ACGIH Threshold Limit Values

Components Type Value Form

Petroleum distillates, TWA 5 mg/m³ Inhalable fraction.
hydrotreated heavy
paraffinic (CAS 64742-54-7)

US. NIOSH: Pocket Guide to Chemical Hazards

Components Type Value Form

Distillates (petroleum), TWA 100 mg/m³
hydrotreated light (CAS
64742-47-8)

Petroleum distillates, STEL 10 mg/m³ Mist.

hydrotreated heavy
paraffinic (CAS 64742-54-7)

TWA 5 mg/m³ Mist.

Solvent-dewaxed heavy Ceiling 1800 mg/m³

paraffinic distillates
(petroleum) (CAS
64742-65-0)

STEL 10 mg/m³ Mist.

Biological limit values No biological exposure limits noted for the ingredient(s).

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Appropriate engineering controls

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles).

Skin protection

Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.

Hand protection

Other Wear appropriate chemical resistant clothing.

Respiratory protection In case of insufficient ventilation, wear suitable respiratory equipment.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

General hygiene considerations

9. Physical and chemical properties

Appearance

Physical state Liquid.

Form Viscous.

Color Dark blue.

Odor Hydrocarbon.

Odor threshold Not available.

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pH Not available.

Melting point/freezing point Not available.

Initial boiling point and boiling range

Not available.

Flash point 209.9 °F (98.8 °C)

Evaporation rate < 1 (Air=1)

Flammability (solid, gas) Not applicable.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)

Not available.

Flammability limit - upper (%)

(%)

Not available.

Explosive limit - lower (%) Not available.

Explosive limit - upper (%) Not available.

Vapor pressure < 1 mm Hg at 20 °C

Vapor density > 1 (Air=1)

Relative density 0.87 (60.08 °F (15.6 °C))

Solubility(ies)

Solubility (water) Negligible.

Partition coefficient

(n-octanol/water)

Not available.

Auto-ignition temperature Not available.

Decomposition temperature Not available.

Viscosity Not available.

Other Information

Density 7.22 lbs/gal

Explosive properties Not explosive.

Kinematic viscosity 7.5 mm²/s (212 °F (100 °C))

45 mm²/s (104 °F (40 °C))

Oxidizing properties Not oxidizing.

VOC (Weight %) 153 g/l

10. Stability and reactivity

Reactivity The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability Material is stable under normal conditions.

Possibility of hazardous reactions No dangerous reaction known under conditions of normal use.

reactions

Conditions to avoid Contact with incompatible materials.

Incompatible materials Strong oxidizing agents.

Hazardous decomposition products No hazardous decomposition products are known.

products**11. Toxicological information****Information on likely routes of exposure**

Inhalation Prolonged inhalation may be harmful.

Skin contact May cause an allergic skin reaction.

Eye contact Direct contact with eyes may cause temporary irritation.

Ingestion May cause irritation of the gastrointestinal tract.

Symptoms related to the**physical, chemical and****toxicological characteristics**

May cause an allergic skin reaction. Dermatitis. Rash.

Information on toxicological effects

Acute toxicity Not expected to be acutely toxic.

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Skin corrosion/irritation Prolonged skin contact may cause temporary irritation.

Serious eye damage/eye irritation Direct contact with eyes may cause temporary irritation.

irritation**Respiratory or skin sensitization**

Respiratory sensitization Not a respiratory sensitizer.

Skin sensitization May cause an allergic skin reaction.

No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Germ cell mutagenicity

Carcinogenicity This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

NTP Report on Carcinogens

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity -

single exposure

Not classified.

Specific target organ toxicity -

repeated exposure

Not classified.

Aspiration hazard Not an aspiration hazard.

Chronic effects Prolonged inhalation may be harmful.

12. Ecological information

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Ecotoxicity

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Disposal instructions

Local disposal regulations Dispose in accordance with all applicable regulations.

The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Hazardous waste code

Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Waste from residues / unused

products

Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

Contaminated packaging

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Not established.

Annex II of MARPOL 73/78 and

the IBC Code

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15. Regulatory information

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication

Standard, 29 CFR 1910.1200.

US federal regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Immediate Hazard - Yes

Delayed Hazard - No

Fire Hazard - No

Pressure Hazard - No

Reactivity Hazard - No

Hazard categories

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous Yes

chemical

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act Not regulated.

(SDWA)

US state regulations

US. Massachusetts RTK - Substance List

Distillates (petroleum), hydrotreated light (CAS 64742-47-8)

N,N'-di-sec-butyl-p-phenylenediamine (CAS 101-96-2)

Petroleum distillates, hydrotreated heavy paraffinic (CAS 64742-54-7)

Solvent-dewaxed heavy paraffinic distillates (petroleum) (CAS 64742-65-0)

US. New Jersey Worker and Community Right-to-Know Act

Distillates (petroleum), hydrotreated light (CAS 64742-47-8)

Petroleum distillates, hydrotreated heavy paraffinic (CAS 64742-54-7)

Solvent-dewaxed heavy paraffinic distillates (petroleum) (CAS 64742-65-0)

US. Pennsylvania Worker and Community Right-to-Know Law

Distillates (petroleum), hydrotreated light (CAS 64742-47-8)

N,N'-di-sec-butyl-p-phenylenediamine (CAS 101-96-2)

Petroleum distillates, hydrotreated heavy paraffinic (CAS 64742-54-7)

US. Rhode Island RTK

Not regulated.

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region Inventory name On inventory (yes/no)*

Australia Australian Inventory of Chemical Substances (AICS) Yes

Canada Domestic Substances List (DSL) Yes

Canada Non-Domestic Substances List (NDSL) No

China Inventory of Existing Chemical Substances in China (IECSC) Yes

European Inventory of Existing Commercial Chemical

Substances (EINECS)

Europe No

Europe European List of Notified Chemical Substances (ELINCS) No

Husqvarna 2-Stroke XP Oil SDS US

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Country(s) or region Inventory name On inventory (yes/no)*

Japan Inventory of Existing and New Chemical Substances (ENCS) No

2.) Diesel Fuel (On & Off Road)

Material Safety Data Sheet

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

Material Name	Shell Diesel Extra
Recommended Uses	Fuel for diesel engines used in both on-road and off-road applications (mining, quarrying and construction)
Product Code	002D1808
Manufacturer/Supplier	The Shell Company of Australia Limited (ABN 46 004 610 459) 8 Redfern Road Hawthorn East Victoria 3123 Australia
Telephone Fax	+61 (0)3 9666 5444 +61 (0)3 8823 4800
Emergency Telephone Number	1800 651 818 (within Australia only) +61 3 9663 2130 (International)

2. HAZARDS IDENTIFICATION

HAZARDOUS SUBSTANCE. NON-DANGEROUSGOODS.

Classified as hazardous according to the criteria of NOHSC, and not classified as Dangerous Goods according to the Australian Dangerous Goods Code.

Symbol(s) R-	Xn Harmful.
phrase(s)	N Dangerous for the environment. R40 Limited evidence of carcinogenic effect. R65 Harmful: may cause lung damage if swallowed. R66 Repeated exposure may cause skin dryness or cracking. R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
S-phrase(s)	S2 Keep out of the reach of children. S36/37 Wear suitable protective clothing and gloves. S61 Avoid release to the environment. Refer to special instructions/Safety data sheets. S62 If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.
Health Hazards	Slightly irritating to respiratory system. Breathing of high vapour concentrations may cause central nervous system (CNS) depression resulting in dizziness, light-headedness, headache and nausea. May cause moderate irritation to skin. Repeated exposure may cause skin dryness or cracking. Harmful: may cause lung damage if swallowed. Limited evidence of carcinogenic effect.
Signs and Symptoms	If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath, and/or fever. The onset of respiratory symptoms may be delayed for several hours after exposure. Defatting dermatitis signs and symptoms may include a

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Safety Hazards	burning sensation and/or a dried/cracked appearance. May ignite on surfaces at temperatures above auto-ignition temperature. Vapour in the headspace of tanks and containers may ignite and explode at temperatures exceeding auto-ignition temperature, where vapour concentrations are within the flammability range. Not classified as flammable but will burn. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire.
Environmental Hazards	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Additional Information	This product is intended for use in closed systems only.
SUSDP Schedule	Not scheduled. When packed in containers having capacity of greater than 20 litres.
SUSDP Schedule	S5. When packed in containers having capacity of less than 20 litres.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Preparation description	Complex mixture of hydrocarbons consisting of paraffins, cycloparaffins, aromatic and olefinic hydrocarbons with carbon numbers predominantly in the C9 to C25 range. May also contain several additives at <0.1% v/v each. May contain cetane improver (Ethyl Hexyl Nitrate) at <0.2% v/v. May contain catalytically cracked oils in which polycyclic aromatic compounds, mainly 3-ring but some 4- to 6-ring species are present.
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Hazardous Components

Chemical Identity	CAS	EINECS	Symbol(s)	R-phrase(s)	Cone.
Fuels, diesel, no.2	68476-34-6	270-676-1	Xn, N	R40; R65; R66; R51/53	< 100.00 %

Additional Information	Dyes and markers can be used to indicate tax status and prevent fraud. Refer to chapter 16 for full text of EC R-phrases .
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4. FIRST AID MEASURES

Inhalation Skin	Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.
Contact	Remove contaminated clothing. Immediately flush skin with large amounts of water for at least 15 minutes, and follow by washing with soap and water if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.
Eye Contact	Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.
Ingestion	If swallowed, do not induce vomiting: transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. If any of the following delayed signs and symptoms appear within the next 6 hours, transport to the nearest medical facility: fever

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Advice to Physician greater than 101° F (37° C), shortness of breath , chest congestion or continued coughing or wheezing.
Treat symptomatically.

5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

Specific Hazards Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Oxides of sulphur. Unidentified organic and inorganic compounds. Carbon monoxide may be evolved if incomplete combustion occurs. Will float and can be reignited on surface water. Flammable vapours may be present even at temperatures below the flash point.

Suitable Extinguishing Media Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only. Do not use water in a jet.

Unsuitable Extinguishing Media

Protective Equipment for Firefighters Wear full protective clothing and self-contained breathing apparatus.

Additional Advice Keep adjacent containers cool by spraying with water.

6. ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. See Chapter 13 for information on disposal. Observe the relevant local and international regulations. Evacuate the area of all non- essential personnel. Ventilate contaminated area thoroughly.

Protective measures Do not breathe fumes, vapour. Do not operate electrical equipment. Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area. Use appropriate containment (of product and fire fighting water) to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. Attempt to disperse the vapour or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge . Ensure electrical continuity by bonding and grounding (earthing) all equipment.

Clean Up Methods For small liquid spills (< 1 drum), transfer by mechanical means to a labelled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.

For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil

and dispose of
safely. Shovel

into a suitable clearly marked container for disposal or recclamation
in

Shell Diesel Extra
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Additional Advice accordance with local regulations.
Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Local authorities should be advised if significant spillages cannot be contained. Maritime spillages should be dealt with using a Shipboard Oil Pollution Emergency Plan (SOPEP), as required by MARPOL Annex 1 Regulation 26.

7. HANDLING AND STORAGE

General Precautions Avoid breathing vapours or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material. Air-dry contaminated clothing in a well-ventilated area before laundering. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires. Prevent spillages. Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. Never siphon by mouth.
Contaminated leather articles including shoes cannot be decontaminated and should be destroyed to prevent reuse. For comprehensive advice on handling, product transfer, storage and tank cleaning refer to the product supplier.
Maintenance and Fuelling Activities - Avoid inhalation of vapours and contact with skin.
Classified as a C1 (COMBUSTIBLE LIQUID) for the purpose of storage and handling, in accordance with the requirements of AS 1940. Refer to State Regulations for storage and transport requirements. AS 1940:2004 The storage and handling of flammable and combustible liquids.

Handling Avoid inhaling vapour and/or mists. Avoid prolonged or repeated contact with skin. When using do not eat or drink. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Earth all equipment. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. The vapour is heavier than air, spreads along the ground and distant ignition is possible.

Storage Drum and small container storage: Drums should be stacked to a maximum of 3 high. Use properly labelled and closeable containers. Tank storage: Tanks must be specifically designed for use with this product. Bulk storage tanks should be diked (bunded). Locate tanks away from heat and other sources of ignition. Must be stored in a diked (bunded) well-ventilated area, away from sunlight, ignition sources and other sources of heat. Vapours from tanks should not be released to atmosphere. Breathing losses during storage should be controlled by a suitable vapour treatment system. The vapour is heavier than air. Beware of accumulation in pits and confined spaces. Keep in a bunded area with a sealed (low permeability) floor, to provide containment against spillage. Prevent ingress of water.

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Product Transfer	Avoid splash filling. Wait 2 minutes after tank filling (for tanks such as those on road tanker vehicles) before opening hatches or manholes. Wait 30 minutes after tank filling (for large storage tanks) before opening hatches or manholes. Keep containers closed when not in use. Do not use compressed air for filling, discharging or handling. Contamination resulting from product transfer may give rise to light hydrocarbon vapour in the headspace of tanks that have previously contained gasoline. This vapour may explode if there is a source of ignition. Partly filled containers present a greater hazard than those that are full, therefore handling, transfer and sampling activities need special care.
Recommended Materials	For containers, or container linings use mild steel, stainless steel. Aluminium may also be used for applications where it does not present an unnecessary fire hazard. Examples of suitable materials are: high density polyethylene (HDPE) and Viton (FKM), which have been specifically tested for compatibility with this product. For container linings, use amine-adduct cured epoxy paint. For seals and gaskets use: graphite, PTFE, Viton A, Viton B.
Unsuitable Materials	Some synthetic materials may be unsuitable for containers or container linings depending on the material specification and intended use. Examples of materials to avoid are: natural rubber (NR), nitrile rubber (NBR), ethylene propylene rubber (EPDM), polymethyl methacrylate (PMMA), polystyrene, polyvinyl chloride (PVC), polyisobutylene .; However, some may be suitable for glove materials.
Container Advice	Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers. Ensure that all local regulations regarding handling and storage facilities are followed .
Additional Information	

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

Naphthalene	AUOEL	TWA	10 ppm	52 mg/m ³	
	AUOEL	STEL	15 ppm	79 mg/m ³	
Oil mist, mineral	AUOEL	TWA [Mist.]		5 mg/m ³	

Additional Information	In the absence of a national exposure limit, the American Conference of Governmental Industrial Hygienists (ACGIH) recommends the following values for Diesel Fuel: TWA- 100 mg/m ³ Critical effects based on Skin and Irritation.
Exposure Controls	The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Use sealed systems as far as possible. Adequate ventilation to control airborne concentrations below the

exposure
guidelines/limits.
Local exhaust
ventilation is
recommended.
Eye washes and
showers

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Personal Protective Equipment	<p>for emergency use.</p> <p>Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers. AS/NZS 1337: Eye protectors for industrial applications. AS/NZS 2161: Occupational protective gloves - Selection, use and maintenance. AS/NZS 1715: Selection, use and maintenance of respiratory protective devices. AS/NZS 1716: Respiratory protective devices.</p>
Respiratory Protection	<p>if engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. All respiratory protection equipment and use must be in accordance with local regulations.</p>
Hand Protection	<p>Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced.</p> <p>Select gloves tested to a relevant standard (e.g. Europe EN374, US F739). When prolonged or frequent repeated contact occurs, Nitrile gloves may be suitable. (Breakthrough time of > 240 minutes.) For incidental contact/splash protection Neoprene, PVC gloves may be suitable.</p>
Eye Protection	<p>Chemical splash goggles (chemical monogoggles). Approved to EU Standard EN166.</p>
Protective Clothing	<p>Chemical resistant gloves/gauntlets, boots, and apron (where risk of splashing) .</p>
Monitoring Methods	<p>Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour.</p>
Environmental Exposure Controls	

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance Odour
pH
Initial Boiling Point and

Boiling Range Freezing/melting point Flash point

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Data not available
170 - 390 °C / 338 - 734 °F

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Data not available
Typical 63 °C / 145 °F
(ASTM D-93 / PMCC)

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Lower/ upper Flammability or Explosion limits	1 - 6 %(V)
Auto-ignition temperature	> 220 °C / 428 °F
Vapour pressure	< 1 hPa at 20 °C / 68 °F
Specific gravity	Data not available
Density	Typical 0.84 g/cm ³ at 15 °C / 59 °F
Solubility in other solvents	Data not available
n-octanol/water partition coefficient (log Pow)	3-6
Kinematic viscosity Vapour density (air=1)	2 - 4.5 mm ² /s at 40 °C / 104 °F
	Data not available

10. STABILITY AND REACTIVITY

Stability	Stable under normal conditions of use.
Conditions to Avoid	Avoid heat, sparks, open flames and other ignition sources. Strong oxidising agents.
Materials to Avoid	
Hazardous Decomposition Products	Hazardous decomposition products are not expected to form during normal storage. Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases, including carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

11. TOXICOLOGICAL INFORMATION

Basis for Assessment Acute	Reproductive and Developmental Toxicity
Oral Toxicity	
Acute Dermal Toxicity Acute	
Inhalation Toxicity	
Skin Irritation	
Eye Irritation	
Respiratory Irritation	
Sensitisation	
Repeated Dose Toxicity	
Mutagenicity	
Carcinogenicity	

Information given is based on product data, a knowledge of the components and the toxicology of similar products.

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Low toxicity: LD50 > 2000 mg/kg.

Rat

Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.

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5 mg/l/ 4 h, Rat

High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; cerebral depression may result in unconsciousness and/or death.

May cause moderate skin irritation (but insufficient to classify).

Prolonged/repeated contact may cause defatting of the skin which can lead to dermatitis.

Slightly irritating.

Slightly irritating.

Not a skin sensitiser.

Kidney: caused kidney effects in male rats which are not considered relevant to humans

In-vitro mutagenicity studies show that mutagenic activity is related to 4-6 ring polycyclic aromatic content.

Limited evidence of carcinogenic effect.

Repeated skin contact has resulted in irritation and skin cancer in animals.

Not expected to be a developmental toxicant.

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12. ECOLOGICAL INFORMATION

Information given is based on a knowledge of the components and the ecotoxicology of similar products. Fuels are typically made from blending several refinery streams. Ecotoxicological studies have been carried out on a variety of hydrocarbon blends and streams but not those containing additives.

Acute Toxicity	Toxic: LUEUIL50 1-10 mg/l (to aquatic organisms) (LUEUIL50 expressed as the nominal amount of product required to prepare aqueous test extract).
Mobility	Floats on water. Partly evaporates from water or soil surfaces, but a significant proportion will remain after one day. Large volumes may penetrate soil and could contaminate groundwater. Contains volatile constituents.
Persistence/degradability	Major constituents are inherently biodegradable. The volatile constituents will oxidize rapidly by photochemical reactions in air.
Bioaccumulation	Contains constituents with the potential to bioaccumulate.
Other Adverse Effects	Films formed on water may affect oxygen transfer and damage organisms.

13. DISPOSAL CONSIDERATIONS

Material Disposal	Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses. Do not dispose of tank water bottoms by allowing them to drain into the ground. This will result in soil and groundwater contamination. Waste arising from a spillage or tank cleaning should be disposed of in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.
Container Disposal	Send to drum recoverer or metal reclaimer. Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Residues may cause an explosion hazard if heated above the flash point. Do not puncture, cut or weld uncleaned drums. Do not pollute the soil, water or environment with the waste container. Comply with any local recovery or waste disposal regulations.
Local Legislation	Disposal should be in accordance with applicable regional, national, and local laws and regulations. Local regulations may be more stringent than regional or national requirements and must be complied with.

14. TRANSPORT INFORMATION

ADG

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This material is not classified as dangerous according to the Australian Dangerous Goods Code.

IMDG

Identification number	UN 3082
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical name	(Gas oil - unspecified) 9
Class / Division	III
Packing group	Yes
Marine pollutant:	

IATA (Country variations may apply)

UN No.	3082
Proper shipping name	Environmentally hazardous substance, liquid, n.o.s. (Gas oil - unspecified)
Technical name Class / Division	9 III
Packing group	

15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

SUSDP Schedule	Not scheduled. When packed in containers having capacity of greater than 20 litres. 55. When packed in containers having capacity of less than 20 litres.
AICS	All components are listed or exempt Contains fuels, diesel.
Classification triggering components	
Other information	National Code of Practice for the Preparation of Material Safety Data Sheets [NOHSC:2011] List of Designated Hazardous Substances [NOHSC:10005]. Approved Criteria for Classifying Hazardous Substances [NOHSC:1008]. Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003]. Australian Dangerous Goods Code. Standard Uniform Scheduling of Drugs and Poisons.

16. OTHER INFORMATION

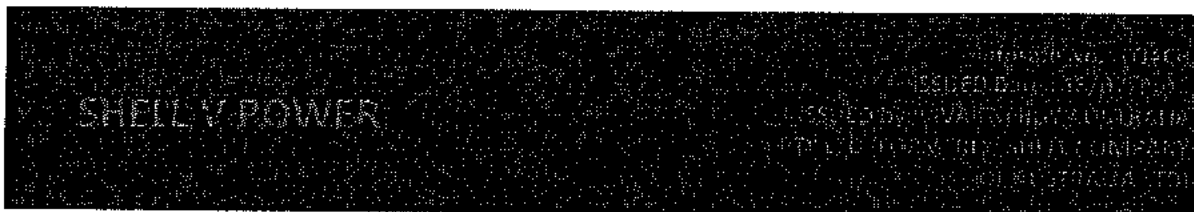
Additional information	This document contains important information to ensure the safe storage, handling and use of this product. The information in this document should be brought to the attention of the person in your organisation responsible for advising on safety
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R-phrases)	matters.
R40	Limited evidence of carcinogenic effect.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R65	Harmful: may cause lung damage if swallowed. Repeated exposure may cause skin dryness or cracking.
R66	
MSDS Version Number	1.2
MSDS Effective Date	07.05.2010
MSDS Revisions	A vertical bar (!) in the left margin indicates an amendment from the previous version.
MSDS Regulation Uses and Restrictions	<p>This product must not be used in applications other than those recommended in Section 1, without first seeking the advice of the supplier.</p> <p>This product is not to be used as a solvent or cleaning agent; for lighting or brightening fires; as a skin cleanser.</p>
MSDS Distribution	The information in this document should be made available to all who may handle the product.
Disclaimer	This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

3.) Gasoline

SAFETY DATA SHEET



1. IDENTIFICATION

GHS Product Identifier

SHELL V POWER

Company Name

VIVA ENERGY AUSTRALIA PTY LTD (FORMERLY: SHELL COMPANY OF AUSTRALIA LTD) (ABN 46 004 610 459)

Address

Level 16, 720 Bourke Street Docklands
Victoria 3008 Australia

Telephone/Fax Number

Tel: +61 (0)3 8823 4444

Fax: +61 (0)3 8823 4800

Emergency phone number

1800 651 818 (Australia) / Poisons Information Centre: 13 11 26 (Australia)

Recommended use of the chemical and restrictions on use

Fuel for spark ignition engines designed to run on unleaded fuel. This product is intended for use in closed systems only.

Other Names

SHELL LOW AROMATIC UNLEADED PETROL	
UNLEADED 98	
SHELL UNLEADED PETROL 98	
SHELL PREMIUM UNLEADED 98	
SHELL UNLEADED PETROL 91	
UNLEADED PETROL 91	
SHELL UNLEADED PETROL 95	

UNLEADED PETROL 95	
PREMIUM UNLEADED PETROL	

2. HAZARD IDENTIFICATION

GHS classification of the substance/mixture

Classified as Hazardous according to the Globally Harmonised System of Classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia

Classified as Dangerous Goods according to the Australian Code for the Transport of Dangerous Goods by Road and Rail. (7th edition)

Aspiration Hazard: Category 1

Carcinogenicity: Category 1

Flammable Liquids: Category 1

Germ Cell Mutagenicity: Category 1

Hazardous to the Aquatic Environment - Long-Term Hazard: Category 2

Skin Corrosion/Irritation: Category 2

Toxic to Reproduction: Category 2

Signal Word (s)

DANGER

Hazard Statement (s)

H224 Extremely flammable liquid and vapour.

H304 May be fatal if swallowed and enters airways.

H315 Causes skin irritation.

H340 May cause genetic defects.

H350 May cause cancer.

H361 Suspected of damaging fertility or the unborn child.

H411 Toxic to aquatic life with long lasting effects.

Pictogram (s)

Flame, Exclamation mark, Health hazard, Environment



Precautionary statement – Prevention

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

P233 Keep container tightly closed.

P240 Ground/bond container and receiving equipment.

P241 Use explosion-proof electrical/ventilating/lighting/equipment.

P242 Use only non-sparking tools.

P243 Take precautionary measures against static discharge.

P264 Wash contaminated skin thoroughly after handling.

P273 Avoid release to the environment.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P281 Use personal protective equipment as required.

Precautionary statement – Response

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P302+P352 IF ON SKIN: Wash with plenty of soap and water.

P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P308+P313 IF exposed or concerned: Get medical advice/attention.

P331 Do NOT induce vomiting.

P332+P313 If skin irritation occurs: Get medical advice/attention.

P362 Take off contaminated clothing and wash before reuse.

P370+P378 In case of fire: Use foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only for extinction.

P391 Collect spillage.

Precautionary statement – Storage

P403+P235 Store in a well-ventilated place. Keep cool.

P405 Store locked up.

Precautionary statement – Disposal

P501 Dispose of contents/container to an approved waste disposal plant.

3. COMPOSITION/INFORMATION ON INGREDIENTS**Ingredients**

Ingredient	CAS	Concentration
Gasoline, low boiling point naphtha	86290- 81- 5	90- 100 %
Benzene	71- 43- 2	<=1 %

Preparation Description

Complex mixture of hydrocarbons consisting of paraffins, cycloparaffins, aromatic and olefinic hydrocarbons (including benzene at 1.0%v/v maximum), with carbon numbers predominantly in the C4 to C12 range. May also contain several additives at <0.1% v/v each.

Other Information

Contains Benzene, CAS # 71-43-2. Contains Toluene, CAS # 108-88-3. Contains Ethylbenzene, CAS # 100-41-4. Contains n-Hexane, CAS # 110-54-3. Contains Xylene (Mixed Isomers), CAS # 1330-20-7. Contains Naphthalene, CAS # 91-20-3. Contains Cyclo-hexane, CAS# 110-82-7. Contains Tri-methyl-benzene (all isomers), CAS# 25551-13-7. Dyes and markers can be used to indicate tax status and prevent fraud.

4. FIRST-AID MEASURES**Inhalation**

If inhaled, remove affected person from contaminated area. Keep at rest until recovered. If symptoms develop and/or persist seek medical attention.

Ingestion

Do NOT induce vomiting. Wash out mouth and lips with water. Where vomiting occurs naturally have affected person place head below hip level in order to reduce risk of aspiration. Seek immediate medical attention.

Skin

Remove all contaminated clothing immediately. Wash affected area thoroughly with soap and water. Wash contaminated clothing before reuse or discard. Seek medical attention.

Eye contact

If in eyes, hold eyelids apart and flush the eyes continuously with running water. Remove contact lenses. Continue flushing for several minutes until all contaminants are washed out completely. If symptoms develop and/or persist seek medical attention.

First Aid Facilities

Eyewash, safety shower and normal washroom facilities.

Advice to Doctor

Treat symptomatically.

Other Information

For advice in an emergency, contact a Poisons Information Centre or a doctor at once. (131 126)

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

Unsuitable Extinguishing Media

Do not use water in a jet.

Hazards from Combustion Products

Under fire conditions this product may emit toxic and/or irritating fumes, smoke and gases including carbon monoxide, carbon dioxide and oxides of nitrogen.

Specific Hazards Arising From The Chemical

Extremely flammable liquid and vapour. Keep containers and fire-exposed surfaces cool with water spray. Shut off any leak if safe to do so and remove sources of re-ignition. Vapour/air mixtures may ignite explosively. Flashback along the vapour trail may occur. Runoff to sewer may create fire or explosion hazard.

Hazchem Code

3YE

Decomposition Temperature

Not available

Precautions in connection with Fire

Fire fighters should wear full protective clothing and self-contained breathing apparatus (SCBA) operated in positive pressure mode. In case of fire the product may be violently or explosively reactive. Use water spray to disperse vapours. This product should be prevented from entering drains and watercourses.

6. ACCIDENTAL RELEASE MEASURES

Emergency Procedures

Wear appropriate personal protective equipment and clothing to prevent exposure. Extinguish or remove all sources of ignition and stop leak if safe to do so. Increase ventilation. Evacuate all unprotected personnel. If possible contain the spill. Place inert absorbent, non combustible material onto spillage. Use clean non-sparking tools to collect the material and place into suitable labelled containers for subsequent recycling or disposal. Dispose of waste according to the applicable local and national regulations. If contamination of sewers or waterways occurs inform the local water and waste management authorities in accordance with local regulations.

7. HANDLING AND STORAGE

Precautions for Safe Handling

Wear appropriate personal protective equipment and clothing to prevent exposure. Handle and use the material in a well-ventilated area, away from sparks, flames and other ignition sources. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Work from suitable, labelled, fire-resistant containers. Open containers carefully as they may be under pressure. Keep containers tightly closed. Flameproof equipment is necessary in

areas where the product is being used. Take precautionary measures against static discharges. Earth or bond all equipment. Do not empty into drains. Ensure a high level of personal hygiene is maintained when using this product, that is, always wash hands before eating, drinking, smoking or using the toilet facilities. Avoid exposure. Do not handle until all safety precautions have been read and understood. It is recommended that pregnant or breastfeeding women should not handle this product unless adequate exposure protection can be assured at all times. Female personnel planning pregnancy should be made aware of the potential risks.

Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well-ventilated area away from sources of ignition, oxidising agents, strong acids, foodstuffs, and clothing. Keep containers closed when not in use, securely sealed and protected against physical damage. Inspect regularly for deficiencies such as damage or leaks. Have appropriate fire extinguishers available in and near the storage area. Take precautions against static electricity discharges. Use proper grounding procedures. Ensure that storage conditions comply with applicable local and national regulations.

For information on the design of the storeroom, reference should be made to Australian Standard AS1940 - The storage and handling of flammable and combustible liquids.

Unsuitable Materials

Some synthetic materials may be unsuitable for containers or container linings depending on the material specification and intended use. Examples of materials to avoid are: natural rubber (NR), nitrile rubber (NBR), ethylene propylene rubber (EPDM), polymethyl methacrylate (PMMA), polystyrene, polyvinyl chloride (PVC), polyisobutylene.; However, some may be suitable for glove materials.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limit values

No exposure standards have been established for this material. However, the available exposure limits for ingredients are listed below:

Benzene

TWA: 1 ppm

TWA: 3.2 mg/m³

TWA (Time Weighted Average): The average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day week.

Biological Limit Values

Name: Benzene

Determinant: S-Phenylmercapturic acid in urine
t,t-Muconic acid in urine

Value: 25 µg/g creatinine

500 µg/g creatinine

Sampling time: End of shift

Notation: B

Source: American Conference of Industrial Hygienists (ACGIH)

Appropriate Engineering Controls

This substance is hazardous and should be used with a local exhaust ventilation system, drawing vapours away from workers' breathing zone. A flame-proof exhaust ventilation system is required. If the engineering controls are not sufficient to maintain concentrations of vapours/mists below the exposure standards, suitable respiratory protection must be worn. Refer to relevant regulations for further information concerning ventilation requirements.

Refer to AS 1940 - The storage and handling of flammable and combustible liquids and AS/NZS 60079.10.1:2009 Explosive atmospheres - Classification of areas - Explosive gas atmospheres, for further information concerning ventilation requirements.

Respiratory Protection

If engineering controls are not effective in controlling airborne exposure then an approved respirator with a replaceable vapor/ mist filter should be used. Refer to relevant regulations for further information concerning respiratory protective requirements.

Reference should be made to Australian Standards AS/NZS 1715, Selection, Use and Maintenance of Respiratory Protective Devices; and AS/NZS 1716, Respiratory Protective Devices, in order to make any necessary changes for individual circumstances.

Eye Protection

Safety glasses with side shields, chemical goggles or full-face shield as appropriate should be used. Final choice of appropriate eye/face protection will vary according to individual circumstances. Eye protection devices should conform to relevant regulations.

Eye protection should conform with Australian/New Zealand Standard AS/NZS 1337 - Eye Protectors for Industrial Applications.

Hand Protection

Wear gloves of impervious material nitrile gloves may be suitable. (Breakthrough time of > 240 minutes.) For incidental contact/splash protection Neoprene, PVC gloves may be suitable.. Final choice of appropriate gloves will vary according to individual circumstances i.e. methods of handling or according to risk assessments undertaken. Occupational protective gloves should conform to relevant regulations.

Reference should be made to AS/NZS 2161.1: Occupational protective gloves - Selection, use and maintenance.

Body Protection

Suitable protective workwear, e.g. cotton overalls buttoned at neck and wrist is recommended. Chemical resistant apron is recommended where large quantities are handled.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form

Liquid

Appearance

Red, Yellow or colourless liquid.

Colour

Red, Yellow or colourless

Odour

Hydrocarbon

Decomposition Temperature

Not available

Melting Point

Not available

Freezing Point

Not available

Boiling Point

35 - 210 °C

Solubility in Water

Not available

Specific Gravity

0.71 - 0.77 gm/cm³ at 15°C

pH

Not available

Vapour Pressure

55 - 80 kPa at 37.8°C

Vapour Density (Air=1)

Not available

Evaporation Rate

Not available

Odour Threshold

Not available

Viscosity

Not available

Partition Coefficient: n-octanol/water

2 - 6

Density

Typical 0.73 g/cm³ at 15 °C

Flash Point

< -40 °C

Flammability

Flammable

Auto-ignition Temperature

Not available

Flammable Limits - Lower

1 %(V)

Flammable Limits - Upper

8 %(V)

Kinematic Viscosity

0.5 - 0.75 mm²/s at 40 °C

10. STABILITY AND REACTIVITY

Chemical Stability

Stable under normal conditions of storage and handling.

Reactivity and Stability

Reacts with incompatible materials.

Conditions to Avoid

Avoid heat, sparks, open flames and other ignition sources.

Incompatible materials

Strong oxidising agents.

Hazardous Decomposition Products

Hazardous decomposition products are not expected to form during normal storage. Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases, including carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

Possibility of hazardous reactions

Not available

Hazardous Polymerization

Not available

11. TOXICOLOGICAL INFORMATION

Toxicology Information

The available toxicity data for material given below.

Acute Toxicity - Oral

LD50:(Rat): >2000 mg/kg

Acute Toxicity - Inhalation

LC50:(Rat): >5 mg/l / 4.00 h

Acute Toxicity - Dermal

LD50:(Rat): >2000 mg/kg

Ingestion

May be fatal if swallowed and enters airways. Small amounts of liquid aspirated into the respiratory system during ingestion or from vomiting may cause severe pulmonary injury that may lead to death. May cause irritation to the mouth, throat, esophagus and stomach with symptoms of nausea, abdominal discomfort, vomiting and diarrhoea.

Inhalation

Inhalation of product vapours may cause irritation of the nose, throat and respiratory system.

Skin

Causes skin irritation. Skin contact will cause redness, itching and swelling. Repeated exposure may cause skin dryness and cracking and may lead to dermatitis.

Eye

May be irritating to eyes. The symptoms may include redness, itching and tearing.

Respiratory sensitisation

Not expected to be a respiratory sensitiser.

Skin Sensitisation

Not expected to be a skin sensitiser.

Germ cell mutagenicity

May cause genetic defects. Classified as Known or presumed to induce heritable mutations.

Carcinogenicity

May cause cancer. Classified as a Known or presumed human carcinogen.

Benzene is listed as a Group 1: Carcinogenic to humans according to International Agency for Research on Cancer (IARC).

Reproductive Toxicity

Suspected of damaging fertility or the unborn child. Classified as a suspected human reproductive or developmental toxicant.

STOT-single exposure

Not expected to cause toxicity to a specific target organ.

STOT-repeated exposure

Not expected to cause toxicity to a specific target organ.

Aspiration Hazard

May be fatal if swallowed and enters airways.

Other Information

Repeated Dose Toxicity:

Kidney: caused kidney effects in male rats which are not considered relevant to humans

Blood-forming organs: repeated exposure affects the bone marrow. (Benzene)

Peripheral nervous system: repeated exposure causes peripheral neuropathy in animals. (n-Hexane)

Exposure to very high concentrations of similar materials has been associated with irregular heart rhythms and cardiac arrest.

Prolonged and repeated exposures to high concentrations have resulted in hearing loss in rats. Solvent abuse and noise interaction in the work environment may cause hearing loss. (Toluene)
Abuse of vapours has been associated with organ damage and death. (Toluene)
Myelodysplastic syndrome (MDS) was observed in individuals exposed to very high levels (50 ppm to 300 ppm range) of benzene over a long period of time in the workplace. The relevance of these results to lower levels of exposure is not known. (Benzene)

12. ECOLOGICAL INFORMATION

Ecotoxicity

Toxic to aquatic life with long lasting effects.

Persistence and degradability

Major constituents are expected to be inherently biodegradable. The volatile constituents will oxidize rapidly by photochemical reactions in air.

Mobility

Floats on water. Evaporates within a day from water or soil surfaces. Large volumes may penetrate soil and could contaminate groundwater. Contains volatile constituents.

Bioaccumulative Potential

Contains constituents with the potential to bioaccumulate.

Other Adverse Effects

Films formed on water may affect oxygen transfer and damage organisms.

Environmental Protection

Do not discharge this material into waterways, drains and sewers.

Acute Toxicity - Other Organisms

LL/EL/IL50:(Aquatic organisms): 1-10 mg/l

13. DISPOSAL CONSIDERATIONS

Disposal considerations

Dispose of waste according to applicable local and national regulations. Labels should not be removed from containers until they have been cleaned. Advise flammable nature. Empty containers may contain flammable residues. Do not cut, puncture or weld on or near containers. Contaminated containers must not be treated as household waste. Containers should be cleaned by appropriate methods and then re-used or disposed of by landfill or incineration as appropriate. Do not incinerate closed containers. Wastes including emptied containers are controlled wastes and should be disposed of in accordance with all applicable local and national regulations. Do not allow into drains or watercourses or dispose of where ground or surface waters may be affected.

14. TRANSPORT INFORMATION

Transport Information

Road and Rail Transport (ADG Code):

This material is a Class 3 - Flammable Liquid according to The Australian Code for the Transport of Dangerous Goods by Road and Rail. (7th edition)

Class 3 - Flammable Liquids are incompatible in a placard load with any of the following:

- Class 1, Explosives
- Division 2.1, Flammable Gases, (Division 2.1 and Class 3 are incompatible in transport if both are in tanks or other receptacles with a capacity individually exceeding 500L.)
- Division 2.3, Toxic Gases
- Division 4.2 Spontaneously Combustible Substances

4.) Gear Oil

Material Safety Data Sheet**1. MATERIAL AND COMPANY IDENTIFICATION**

Material Name Uses	Shell SPIRAX® HD GEAR OIL SAE 85W-140 Transmission oil.
Manufacturer/Supplier	SOPUS Products PO BOX4427 Houston, TX 77210-4427 USA 877-276-7285
MSDS Request	
Emergency Telephone Number	
Spill Information	877-242-7400
Health Information	877-504-9351

2. COMPOSITION/INFORMATION ON INGREDIENTS

Highly refined mineral oil, severely hydrotreated slack wax, synthetic esters, polyolefins and additives.
The highly refined mineral oil contains <3% (w/w) DMSO-extract, according to IP346.

3. HAZARDS IDENTIFICATION

	Emergency Overview
Appearance and Odour	May be dyed. Liquid at room temperature. Slight hydrocarbon.
Health Hazards	Not classified as dangerous for supply or conveyance.
Safety Hazards	Not classified as flammable but will burn.
Environmental Hazards	Not classified as dangerous for the environment.
Health Hazards	Not expected to be a health hazard when used under normal conditions.
Health Hazards Inhalation	
Skin Contact	Under normal conditions of use, this is not expected to be a primary route of exposure. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis.
Eye Contact	May cause slight irritation to eyes. Low toxicity if swallowed.
Ingestion	
Other information	
Signs and Symptoms	Used oil may contain harmful impurities. Oil acne/folliculitis signs and symptoms may include formation of black pustules and spots on the skin of exposed areas.
Aggravated Medical Condition	Ingestion may result in nausea, vomiting and/or diarrhoea. Pre-existing medical conditions of the following organ(s) or organ system(s) may be aggravated by exposure to this material: Skin.
Environmental Hazards	Not classified as dangerous for the environment.

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Additional Information Under normal conditions of use or in a foreseeable emergency, this product does not meet the definition of a hazardous chemical when evaluated according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

4. FIRST AID MEASURES

General Information Not expected to be a health hazard when used under normal conditions.

Inhalation No treatment necessary under normal conditions of use. If symptoms persist, obtain medical advice.

Skin Contact Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available. If persistent irritation occurs, obtain medical attention.

Eye Contact Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.

Ingestion In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.

Advice to Physician Treat symptomatically.

5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

Flash point Typical 350 °C / 662 °F (COC)

Upper/ lower Flammability or Explosion limits Typical 1 - 10 %(V)(based on mineral oil)

Auto ignition temperature > 320 °C / 608 °F

Specific Hazards Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds. Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only. Do not use water in a jet.

Suitable Extinguishing Media

Unsuitable Extinguishing Media

Protective Equipment for Firefighters Proper protective equipment including breathing apparatus must be worn when approaching a fire in a confined space.

6. ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. See Chapter 13 for information on disposal. Observe all relevant local and international regulations.

Protective measures

Clean Up Methods

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Avoid contact
with skin and
eyes. Use

containment to
avoid
environmental
contamination.

Prevent from
spreading or
entering drains,
ditches or rivers
by using sand,
earth, or other
appropriate
barriers.

Slippery when
spilt. Avoid
accidents, clean
up immediately.

Prevent from
spreading by
making a barrier
with sand, earth
or

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Additional Advice other containment material. Reclaim liquid directly or in an absorbent. Soak up residue with an absorbent such as clay, sand or other suitable material and dispose of properly. Local authorities should be advised if significant spillages cannot be contained.

7. HANDLING AND STORAGE

General Precautions Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.

Handling Avoid prolonged or repeated contact with skin. Avoid inhaling vapour and/or mists. When handling product in drums, safety footwear should be worn and proper handling equipment should be used.

Storage Keep container tightly closed and in a cool, well-ventilated place. Use properly labelled and closeable containers. Storage Temperature: 0 - 50 °C / 32 - 122 °F

Recommended Materials For containers or container linings, use mild steel or high density polyethylene.
PVC.

Unsuitable Materials Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion.

Additional Information

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Occupational Exposure Limits**

Material	Source	Type	oom	mg/m3	Notation
Oil mist, mineral	ACGIH	TWA(Mist.)		5 mg/m3	
Oil mist, mineral	ACGIH	STEL(Mist.)		10 mg/m3	

Exposure Controls The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Adequate ventilation to control airborne concentrations. Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

Personal Protective Equipment Respiratory Protection Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers. No respiratory protection is ordinarily required under normal conditions of use. in

accordance with
good
industrial hygiene
practices.
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precautions should
be taken to avoid
breathing of

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	material. If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for combined particulate/organic gases and vapours [boiling point >65 °C (149 °F)].
Hand Protection	Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection: PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.
Eye Protection	Wear safety glasses or full face shield if splashes are likely to occur. Skin protection not ordinarily required beyond standard issue work clothes.
Protective Clothing	Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate.
Monitoring Methods	Minimise release to the environment. An environmental assessment must be made to ensure compliance with local environmental legislation.
Environmental Exposure Controls	

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	n-octanol/water partition coefficient (log Pow)
Odour	
pH	
Initial Boiling Point and Boiling Range	
Pour point	
Flash point	
Upper/ lower Flammability or Explosion limits	
Auto-ignition temperature	
Vapour pressure	
Specific gravity	
Density	
Water solubility	

May
be
dyed

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eligible.
> 6 (based on information on similar products)

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Liqui
d at
roo
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pera
ture.
Sligh
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hydr
ocar
bon.

Not applicable.
> 280 °C / 536 °F estimated
value(s)

Typical -10 °C / 14 °F
Typical 350 °C / 662 °F (COC)
Typical 1 - 10 %(V) (based on
mineral oil)

> 320 °C / 608 °F

<
0.5

Pa
at
20
°C /
68
°F

(esti
mat
ed
valu
e(s))

Typi
cal
0.88

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Kinematic viscosity Vapour density (air=1)
Evaporation rate (nBuAc=1)

Typical 400 mm²/s at 40 °C / 104 °F
> 1 (estimated value(s))
Data not available

10. STABILITY AND REACTIVITY

Stability Stable.
Conditions to Avoid Materials to Avoid Hazardous Extremes of temperature and direct sunlight.
Decomposition Products Strong oxidising agents.
Hazardous decomposition products are not expected to form during normal storage.

11. TOXICOLOGICAL INFORMATION

Basis for Assessment Information given is based on data on the components and the toxicology of similar products.

Acute Oral Toxicity Acute Dermal Toxicity Acute Inhalation Toxicity Skin Irritation Expected to be of low toxicity: LOSO > 5000 mg/kg , Rat Expected to be of low toxicity: LD50 > 5000 mg/kg , Rabbit Low toxicity by inhalation.
Expected to be slightly irritating. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis.

Eye Irritation Expected to be slightly irritating.
Respiratory Irritation Inhalation of vapours or mists may cause irritation.
Sensitisation Not expected to be a skin sensitiser.
Repeated Dose Toxicity Not expected to be a hazard.
Mutagenicity Not considered a mutagenic hazard.
Carcinogenicity Product contains mineral oils of types shown to be non-carcinogenic in animal skin-painting studies. Highly refined mineral oils are not classified as carcinogenic by the International Agency for Research on Cancer (IARC). Other components are not known to be associated with carcinogenic effects.

Not expected to be a hazard.

Reproductive and Developmental Toxicity Additional Information Used oils may contain harmful impurities that have accumulated during use. The concentration of such impurities will depend on use and they may present risks to health and the environment on disposal. ALL used oil should be handled with caution and skin contact avoided as far as possible.

12. ECOLOGICAL INFORMATION

Ecotoxicological data have not been determined specifically for this product. Information given is based on a knowledge of the components and the ecotoxicology of similar products.

Acute Toxicity Poorly soluble mixture. May cause physical fouling of aquatic organisms. Expected to be practically non toxic: LL/EL/IL50 > 100 mg/l (to aquatic organisms) (LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract).

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Mineral oil is not expected to cause any chronic MSDS# 864040L
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effects to aquatic organisms at concentrations less than 1 mg/l.

Mobility	Liquid under most environmental conditions. Floats on water. If it enters soil, it will adsorb to soil particles and will not be mobile.
Persistence/degradability	Expected to be not readily biodegradable. Major constituents are expected to be inherently biodegradable, but the product contains components that may persist in the environment.
Bioaccumulation Other Adverse Effects	Contains components with the potential to bioaccumulate. Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities. Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential.

13. DISPOSAL CONSIDERATIONS

Material Disposal	Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses.
Container Disposal	Dispose in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.
Local Legislation	Disposal should be in accordance with applicable regional, national, and local laws and regulations.

14. TRANSPORT INFORMATION

US Department of Transportation Classification (49CFR)
This material is not subject to DOT regulations under 49 CFR Parts 171-180.

IMDG
This material is not classified as dangerous under IMDG regulations.

IATA (Country variations may apply)
This material is not classified as dangerous under IATA regulations.

15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Federal Regulatory Status

Notification Status

DSL
EINECS

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TSCA All components listed.

SARA Hazard Categories (311/312)

No SARA 311/312 Hazards.

State Regulatory Status

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)

This material does not contain any chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

16. OTHER INFORMATION

NFPA Rating (Health, Fire, Reactivity)	0, 1, 0
MSDS Version Number	12.0
MSDS Effective Date	07/03/2008
MSDS Revisions MSDS	A vertical bar () in the left margin indicates an amendment from the previous version.
Regulation MSDS	The content and format of this MSDS is in accordance with the OSHA Hazard Communication Standard, 29 CFR 1910.1200. The
Distribution	information in this document should be made available to all who may handle the product.
Disclaimer	The information contained herein is based on our current knowledge of the underlying data and is intended to describe the product for the purpose of health, safety and environmental requirements only. No warranty or guarantee is expressed or implied regarding the accuracy of these data or the results to be obtained from the use of the product.

5.) Grease

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1. MATERIAL AND COMPANY IDENTIFICATION

Material Name	Shell Gadus S2 V220 2
Uses	Automotive and industrial grease.
Manufacturer/Supplier	SOPUS Products PO BOX4427 Houston, TX 77210-4427 USA 877-276-7285
MSDS Request	
Emergency Telephone Number	
Spill Information	877-242-7400
Health Information	: 877-504-9351

2. COMPOSITION/INFORMATION ON INGREDIENTS

A lubricating grease consisting of highly-refined mineral oil and additives.
The highly refined mineral oil contains <3% (w/w) DMSO-extract, according to IP346.

3. HAZARDS IDENTIFICATION

	Emergency Overview
Appearance and Odour	Brown. Semi-solid at ambient temperature. Slight hydrocarbon.
Health Hazards	High-pressure injection under the skin may cause serious damage including local necrosis.
Safety Hazards	Not classified as flammable but will burn.
Environmental Hazards	Not classified as dangerous for the environment.
Health Hazards	Not expected to be a health hazard when used under normal conditions.
Health Hazards Inhalation	Under normal conditions of use, this is not expected to be a primary route of exposure.
Skin Contact	Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis. May cause slight irritation to eyes. Low toxicity if swallowed.
Eye Contact	
Ingestion	High-pressure injection under the skin may cause serious damage including local necrosis. Used grease may contain harmful impurities. Local necrosis is evidenced by delayed onset of pain and tissue damage a few hours following injection. Oil acne/folliculitis signs and symptoms may include formation of black pustules and spots on the skin of exposed areas. Ingestion may result in nausea, vomiting
Other Information	
Signs and Symptoms	

and/or diarrhoea.

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Aggravated Medical Condition	Pre-existing medical conditions of the following organ(s) or organ system(s) may be aggravated by exposure to this material: Skin. Not classified as dangerous for the environment.
Environmental Hazards Additional Information	Under normal conditions of use or in a foreseeable emergency, this product does not meet the definition of a hazardous chemical when evaluated according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

4. FIRST AID MEASURES

General Information	Not expected to be a health hazard when used under normal conditions.
Inhalation	No treatment necessary under normal conditions of use. If symptoms persist, obtain medical advice.
Skin Contact	Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available. If persistent irritation occurs, obtain medical attention. When using high pressure equipment, injection of product under the skin can occur. If high pressure injuries occur, the casualty should be sent immediately to a hospital. Do not wait for symptoms to develop. Obtain medical attention even in the absence of apparent wounds.
Eye Contact	Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.
Ingestion	In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.
Advice to Physician	Treat symptomatically. High pressure injection injuries require prompt surgical intervention and possibly steroid therapy, to minimise tissue damage and loss of function. Because entry wounds are small and do not reflect the seriousness of the underlying damage, surgical exploration to determine the extent of involvement may be necessary. Local anaesthetics or hot soaks should be avoided because they can contribute to swelling, vasospasm and ischaemia. Prompt surgical decompression, debridement and evacuation of foreign material should be performed under general anaesthetics, and wide exploration is essential.

5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

Flash point Upper/lower	> 180 °C / 356 °F (COC) Typical 1 - 10 %(V)(based on mineral oil)
Flammability or Explosion limits	
Auto ignition temperature	> 320 °C / 608 °F
Specific Hazards	Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds

Material Safety Data Sheet

Suitable Extinguishing Media Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only. Do not use water in a jet.

Unsuitable Extinguishing Media

Protective Equipment for Firefighters Proper protective equipment including breathing apparatus must be worn when approaching a fire in a confined space.

6. ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. See Chapter 13 for information on disposal. Observe the relevant local and international regulations.

Protective measures Avoid contact with skin and eyes. Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers.

Clean Up Methods Shovel into a suitable clearly marked container for disposal or reclamation in accordance with local regulations.

7. HANDLING AND STORAGE

General Precautions Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.

Handling Avoid prolonged or repeated contact with skin. Avoid inhaling vapour and/or mists. When handling product in drums, safety footwear should be worn and proper handling equipment should be used.

Storage Keep container tightly closed and in a cool, well-ventilated place. Use properly labelled and closeable containers. Storage Temperature: 0 - 50 °C/ 32 - 122 °F

Recommended Materials For containers or container linings, use mild steel or high density polyethylene.
PVC.

Unsuitable Materials Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion.

Additional Information

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

Material	Source	Type	ppm	mg/m3	Notation
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Oil mist, mineral	ACGIH	TWA(Inhalabl e fraction.)		5 mg/m3	MSDS# DEU003514
Oil mist,	OSHAZ1	PEL(Mist.)	According to	5 mg/m3	Version 1.0
Material Safety Data Sheet			OSHA Hazard Communication Standard, 29 CFR		Effective Date 02/28/2011
					1910.1200

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Oil mist, OSHA Z1A TWA(Mist.) 5 mg/m3
mineral

Additional Information

Environmental Exposure Controls

Exposure Controls

**Personal Protective
Equipment Respiratory
Protection**

Hand Protection

Eye Protection Protective

Clothing Monitoring

Methods

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Due to the product's semi-solid consistency, generation of mists and vapours may occur.

Shell has adopted as Interim Standards the OSHA Z1A values that were established in 1989 and later rescinded.

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Adequate ventilation to control airborne concentrations. Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers. No respiratory protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material. If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation.

Check with respiratory protective equipment suppliers. Where air filtering respirators are

Shell Gadus S2 V220 2
MSDS No. EU003514
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suitable, select an appropriate combination of mask and filter. Select a filter suitable for combined particulate/organic gases and vapours (boiling point >65°C (149 °F)).

Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection: PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended. Wear safety glasses or full face shield if splashes are likely to occur.

Skin protection not ordinarily required beyond standard issue work clothes.

Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Minimise release to the environment. An environmental assessment must be made to ensure compliance with local

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environmental legislation.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance Odour	Brown. Semi-solid at ambient temperature.
pH	Slight hydrocarbon.
Initial Boiling Point and Boiling Range Dropping point	Not applicable.
Flash point	Data not available
Upper/ lower Flammability or Explosion limits	> 180 °C / 356 °F
Auto-ignition temperature	> 180 °C / 356 °F (COC)
Vapour pressure	Typical 1 - 10 %(V) (based on mineral oil)
Specific gravity	> 320 °C / 608 °F
Density	< 0.5 Pa at 20 °C / 68 °F (estimated value(s)) Typical 0.9 at 15 °C / 59 °F
Water solubility	Typical 900 kg/m ³ at 15 °C / 59 °F Negligible.
n-octanol/water partition coefficient (log Pow)	> 6 (based on information on similar products)
Kinematic viscosity Vapour density (air=1)	Not applicable.
Evaporation rate (nBuAc=1)	> 1 (estimated value(s))
	Data not available

10. STABILITY AND REACTIVITY

Stability	Stable.
Conditions to Avoid Materials to Avoid Hazardous Decomposition Products	Extremes of temperature and direct sunlight. Strong oxidising agents. Hazardous decomposition products are not expected to form during normal storage.

11. TOXICOLOGICAL INFORMATION

Basis for Assessment	Information given is based on data on the components and the toxicology of similar products.
Acute Oral Toxicity Acute Dermal Toxicity Acute Inhalation Toxicity	Expected to be of low toxicity: LOSO > 5000 mg/kg , Rat Expected to be of low toxicity: LOSO > 5000 mg/kg , Rabbit Not considered to be an inhalation hazard under normal conditions of use.
Skin Irritation	Expected to be slightly irritating. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis. Expected to be slightly irritating.
Eye Irritation Respiratory Irritation Sensitisation	Inhalation of vapours or mists may cause irritation. Not expected to be a skin sensitiser.
Repeated Dose Toxicity Mutagenicity Carcinogenicity	Not expected to be a hazard. Not considered a mutagenic hazard. Product contains mineral oils of types shown to be non- carcinogenic in animal skin-painting studies. Highly refined mineral oils are not

classified as carcinogenic
by the

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International Agency for Research on Cancer (IARC). Other components are not known to be associated with carcinogenic effects.

**Reproductive and
Developmental Toxicity
Additional Information**

Not expected to be a hazard.

Used grease may contain harmful impurities that have accumulated during use. The concentration of such harmful impurities will depend on use and they may present risks to health and the environment on disposal. ALL used grease should be handled with caution and skin contact avoided as far as possible. High pressure injection of product into the skin may lead to local necrosis if the product is not surgically removed.

12. ECOLOGICAL INFORMATION

Ecotoxicological data have not been determined specifically for this product. Information given is based on a knowledge of the components and the ecotoxicology of similar products.

Acute Toxicity

Poorly soluble mixture. May cause physical fouling of aquatic organisms. Expected to be practically non toxic: LL/EL/LL50 > 100 mg/l (to aquatic organisms) (LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract). Mineral oil is not expected to cause any chronic effects to aquatic organisms at concentrations less than 1 mg/l.

Mobility

Semi-solid under most environmental conditions. Floats on water. If it enters soil, it will adsorb to soil particles and will not be mobile.

Persistence/degradability

Expected to be not readily biodegradable. Major constituents are expected to be inherently biodegradable, but the product contains components that may persist in the environment.

**Bioaccumulation Other
Adverse Effects**

Contains components with the potential to bioaccumulate. Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities. Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential.

13. DISPOSAL CONSIDERATIONS
Material Disposal

Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses.

Container Disposal

Dispose in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.

Local Legislation

Disposal should be in accordance with applicable regional, national, and local laws and regulations.

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14. TRANSPORT INFORMATION

US Department of Transportation Classification (49CFR)

This material is not subject to DOT regulations under 49 CFR Parts 171-180.

IMDG

This material is not classified as dangerous under IMDG regulations.

IATA (Country variations may apply)

This material is not classified as dangerous under IATA regulations.

15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Federal Regulatory Status

Notification Status

EINECS	All components listed or polymer exempt.
TSCA	All components listed.
DSL	All components listed.

Shell classifies this material as an "oil" under the CERCLA Petroleum Exclusion, therefore releases to the environment are not reportable under CERCLA.

SARA Hazard Categories (311/312)

No SARA 311/312 Hazards.

State Regulatory Status

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)

This material does not contain any chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

16. OTHER INFORMATION

NFPA Rating (Health, 0, 1,0
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1910.1200

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Fire, Reactivity)

MSDS Version Number 1.0

MSDS Effective Date 02/28/2011

MSDS Revisions MSDS A vertical bar (|) in the left margin indicates an amendment from the previous version.

Regulation MSDS The content and format of this MSDS is in accordance with the OSHA Hazard Communication Standard, 29 CFR 1910.1200. The

Distribution information in this document should be made available to all who may handle the product.

Disclaimer The information contained herein is based on our current knowledge of the underlying data and is intended to describe the product for the purpose of health, safety and environmental requirements only. No warranty or guarantee is expressed or implied regarding the accuracy of these data or the results to be obtained from the use of the product.

6.) *Hydraulic Oil*

Material Safety Data Sheet

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

Material Name : Shell Spirax S4 TXM
Uses : Transmission oil.
Product Code : 001D8246

Manufacturer/Supplier : Transcaucasian Distribution Company LTD
22-b Building VI Block Dighomi district Tbilisi 0159 Georgia

Telephone : +995 91 70 2000
Fax : +995 32 24 44 44 (Ext. 1119)

Emergency Telephone Number : +995 91 70 2000 (available during officehours)

2. HAZARDS IDENTIFICATION

EC Classification : Not classified as dangerous under EC criteria.

Health Hazards : Not expected to be a health hazard when used under normal conditions. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis. Used oil may contain harmful impurities.

Signs and Symptoms : Oil acne/folliculitis signs and symptoms may include formation of black pustules and spots on the skin of exposed areas. Ingestion may result in nausea, vomiting and/or diarrhoea.

Safety Hazards : Not classified as flammable but will burn.

Environmental Hazards : Not classified as dangerous for the environment.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixture Description : Highly refined mineral oils and additives.

Hazardous Components

Chemical Identity	CAS	EINECS	Symbol(s)	R-pharse(s)	Conc.
Zinc alkyl dithiophosphate	68649-42-3	272-028-3	Xi	R38; R52/53	1,00 - 3,00 %
Calcium sulphonate	68783-96-0	272-213-9		R53	1,00 - 3,00 %

Additional Information : The highly refined mineral oil contains <3% (w/w) DMSO-

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extract, according to IP346. Refer to chapter 16 for full text of EC R-phrases.

4. FIRST AID MEASURES

- General Information** : Not expected to be a health hazard when used under normal conditions.
- Inhalation** : No treatment necessary under normal conditions of use. If symptoms persist, obtain medical advice.
- Skin Contact** : Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available. If persistent irritation occurs, obtain medical attention.
- Eye Contact** : Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.
- Ingestion** : In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.
- Advice to Physician** : Treat symptomatically.

5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

- Specific Hazards** : Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds.
- Suitable Extinguishing Media** : Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
- Unsuitable Extinguishing Media** : Do not use water in a jet.
- Protective Equipment for Firefighters** : Proper protective equipment including breathing apparatus must be worn when approaching a fire in a confined space.

6. ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. See Chapter 13 for information on disposal. Observe the relevant local and international regulations.

- Protective measures** : Avoid contact with skin and eyes. Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers.
- Clean Up Methods** : Slippery when spilt. Avoid accidents, clean up immediately. Prevent from spreading by making a barrier with sand, earth or other containment material. Reclaim liquid directly or in an absorbent. Soak up residue with an absorbent such as clay, sand or other suitable material and dispose of properly.
- Additional Advice** : Local authorities should be advised if significant spillages cannot be contained.

Material Safety Data Sheet**7. HANDLING AND STORAGE**

General Precautions : Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.

Handling : Avoid prolonged or repeated contact with skin. Avoid inhaling vapour and/or mists. When handling product in drums, safety footwear should be worn and proper handling equipment should be used. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires.

Storage : Keep container tightly closed and in a cool, well-ventilated place. Use properly labelled and closeable containers. Store at ambient temperature.

Product Transfer : This material has the potential to be a static accumulator. Proper grounding and bonding procedures should be used during all bulk transfer operations.

Recommended Materials : For containers or container linings, use mild steel or high density polyethylene.

Unsuitable Materials : PVC.

Additional Information : Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

If the American Conference of Governmental Industrial Hygienists (ACGIH) value is provided on this document, it is provided for information only.

Occupational Exposure Limits

Material	Source	Type	ppm	mg/m3	Notation
Oil mist, mineral	ACGIH	TWA(Inhalable fraction.)		5 mg/m3	

Biological Exposure Index (BEI) - See reference for full details

No biological limit allocated.

Exposure Controls : The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances.

Appropriate measures include: Adequate ventilation to control airborne concentrations. Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

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Personal Protective Equipment : Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

Respiratory Protection : No respiratory protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material. If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation.

Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for combined particulate/organic gases and vapours [boiling point >65°C(149 °F)].

Hand Protection : Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection: PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care.

Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.

For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same, but recognise that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time may be acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material.

Eye Protection : Wear safety glasses or full face shield if splashes are likely to occur.

Protective Clothing : Skin protection not ordinarily required beyond standard issue work clothes.

Monitoring Methods : Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Validated exposure measurement methods should be applied by a competent person and samples analysed by an accredited laboratory. Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.

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National Institute of Occupational Safety and Health (NIOSH), USA:
Manual of Analytical Methods <http://www.cdc.gov/niosh/> Occupational
Safety and Health Administration (OSHA), USA: Sampling and Analytical
Methods <http://www.osha.gov/> Health and Safety Executive (HSE), UK:
Methods for the Determination of Hazardous Substances
<http://www.hse.gov.uk/>
Institut für Arbeitsschutz Deutschen Gesetzlichen
Unfallversicherung (IFA), Germany.
<http://www.dguv.de/inhalt/index.jsp>
L'Institut National de Recherche et de Sécurité, (INRS), France
<http://www.inrs.fr/accueil>

Environmental Exposure Controls : Minimise release to the environment. An environmental
assessment must be made to ensure compliance with local
environmental legislation.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Amber. Liquid at roomtemperature.
Odour : Slight hydrocarbon.
pH : Not applicable.
Initial Boiling Point and Boiling Range : > 280 °C / 536 °F estimated value(s)
Pour point : Typical -42 °C / -44 °F
Flash point : Typical 220 °C / 428 °F (COC)
Upper / lower Flammability or Explosion limits : Typical 1 - 10 %(V) (based on mineral oil)
Auto-ignition temperature : > 320 °C / 608 °F
Vapour pressure : < 0,5 Pa at 20 °C / 68 °F (estimated value(s))
Specific gravity : Typical 0,882 at 15 °C / 59 °F
Density : Typical 882 kg/m³ at 15 °C / 59 °F
Water solubility : Negligible.
n-octanol/water partition coefficient (log Pow) : > 6 (based on information on similar products)
Kinematic viscosity : Typical 60 mm²/s at 40 °C / 104 °F
Vapour density (air=1) : > 1 (estimated value(s))
Electrical conductivity : This material is not expected to be a static accumulator.
Evaporation rate (nBuAc=1) : Data not available

10. STABILITY AND REACTIVITY

Stability : Stable.
Conditions to Avoid : Extremes of temperature and direct sunlight.
Materials to Avoid : Strong oxidising agents.
Hazardous Decomposition Products : Hazardous decomposition products are not expected to form during normal storage.

11. TOXICOLOGICAL INFORMATION

Shell Spirax S4 TXM

Basis for Assessment

: Information given is based on data on the components and the

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to EC directive 2001/58/EC

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toxicology of similar products.

Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

- Acute Oral Toxicity** : Expected to be of low toxicity: LD50 > 5000 mg/kg, Rat **Acute**
- Dermal Toxicity** : Expected to be of low toxicity: LD50 > 5000 mg/kg, Rabbit
- Acute Inhalation Toxicity** : Not considered to be an inhalation hazard under normal conditions of use.
- Skin Irritation** : Expected to be slightly irritating. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis.
- Eye Irritation** : Expected to be slightly irritating.
- Respiratory Irritation** : Inhalation of vapours or mists may cause irritation.
- Sensitisation** : Not expected to be a skin sensitiser.
- Repeated Dose Toxicity** : Not expected to be a hazard.
- Mutagenicity** : Not considered a mutagenic hazard.
- Carcinogenicity** : Not expected to be carcinogenic. Product contains mineral oils of types shown to be non-carcinogenic in animal skin-painting studies. Highly refined mineral oils are not classified as carcinogenic by the International Agency for Research on Cancer (IARC).

Material	Carcinogenicity Classification
Highly refined mineral oil (IP346 <3%)	: ACGIH Group A4: Not classifiable as a human carcinogen.
Highly refined mineral oil (IP346 <3%)	: IARC 3: Not classifiable as to carcinogenicity to humans.
Highly refined mineral oil (IP346 <3%)	: GHS / CLP: No carcinogenicity classification

Reproductive and Developmental Toxicity : Not expected to be a hazard.

Additional Information : Used oils may contain harmful impurities that have accumulated during use. The concentration of such impurities will depend on use and they may present risks to health and the environment on disposal. ALL used oil should be handled with caution and skin contact avoided as far as possible.

12. ECOLOGICAL INFORMATION

Ecotoxicological data have not been determined specifically for this product. Information given is based on a knowledge of the components and the ecotoxicology of similar products. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

Acute Toxicity : Poorly soluble mixture. May cause physical fouling of aquatic organisms. Expected to be practically non toxic: LL/EL/IL50 > 100 mg/l (to aquatic organisms) LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract. Mineral oil is not expected to cause any chronic effects

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to aquatic organisms at concentrations less than 1 mg/l.

Mobility : Liquid under most environmental conditions. If it enters soil, it will adsorb to soil particles and will not be mobile. Floats on water.

Persistence/degradability : Expected to be not readily biodegradable. Major constituents are expected to be inherently biodegradable, but the product contains components that may persist in the environment.

Bioaccumulation : Contains components with the potential to bioaccumulate.

Other Adverse Effects : Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities. Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential.

13. DISPOSAL CONSIDERATIONS

Material Disposal : Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses.

Container Disposal : Dispose in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.

Local Legislation : Disposal should be in accordance with applicable regional, national, and local laws and regulations.

14. TRANSPORT INFORMATION

ADR

This material is not classified as dangerous under ADR regulations.

RID

This material is not classified as dangerous under RID regulations.

ADNR

This material is not classified as dangerous under ADN regulations.

IMDG

This material is not classified as dangerous under IMDG regulations.

IATA (Country variations may apply)

This material is either not classified as dangerous under IATA regulations or needs to follow country specific requirements.

Additional Information : MARPOL Annex 1 rules apply for bulk shipments by sea.

15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

EC Classification : Not classified as dangerous under EC
criteria. EC Symbols : No Hazard Symbol required
EC Risk Phrases : Not classified.
EC Safety Phrases : Not classified.
Chemical Inventory Status
EINECS : All
components listed or polymer exempt.
TSCA : All
components listed.

16. OTHER INFORMATION

R-phrases)

Not classified.

R38 Irritating to skin.

R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R53 May cause long-term adverse effects in the aquatic environment.

SDS Version Number : 1.1

SDS Effective Date : 04.02.2013

SDS Revisions : A vertical bar (|) in the left margin indicates an amendment from the previous version.

SDS Regulation : The content and format of this safety data sheet is in accordance with Commission Directive 2001/58/EC of 27 July 2001, amending for the second time Commission Directive 91/155/EEC.

SDS Distribution : The information in this document should be made available to all who may handle the product.

Disclaimer : This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

7.) *Motor Oil*



MATERIAL SAFETY DATA SHEET

Review Date: 02/13/2007

SECTION 1

PRODUCT AND COMPANY IDENTIFICATION

PRODUCT: Rotella® T Multigrade SAE 15W-40 (CJ-4)

MSDS NUMBER: 71630E - 15

PRODUCT CODE(S): 3194, 50012, 5001200001, 5001205203, 5001206021, 5001206205, 5001506205, 5056838, 5063444, 5063458, 5070719, 5071338, 5071352, 5071354, 5071355, 5071356, 5073235, 714072

MANUFACTURER

SOPUS Products
P.P. Box 4427
TX. 77210-4427

TELEPHONE NUMBERS

Spill Information: (877) 242-7400
Health Information: (877) 504-9351 Houston,
MSDS Assistance Number: (877) 276-7285

SECTION 2

PRODUCT/INGREDIENTS

INGREDIENTS

Heavy Duty Motor Oil

Highly refined petroleum oils

Zinc Dialkyldithiophosphate

Proprietary additives

CAS#

Mixture

68649-42-3

Mixture

CONCENTRATION

90 - 99 %volume

1 - 5 %volume

1 - 5 %volume

SECTION 3

HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Appearance & Odor: Bright and clear liquid. Mild odor.

Health Hazards: No known immediate health hazards.

Physical Hazards: No known physical hazards.

NFPA Rating (Health, Fire, Reactivity): 0, 1, 0

Hazard Rating: Least - 0 Slight - 1 Moderate - 2 High - 3 Extreme - 4

Inhalation:

Inhalation of vapors (generated at high temperatures only) or oil mist may cause mild irritation of the nose, throat, and respiratory tract.

Eye Irritation:

Lubricating oils are generally considered no more than minimally irritating to the eyes.

Skin Contact:

May cause slight irritation of the skin. If irritation occurs, a temporary burning sensation and minor redness and/or swelling may result.

Ingestion:

Lubricating oils are generally no more than slightly toxic if swallowed.

Other Health Effects:

The International Agency for Research on Cancer (IARC) has determined there is sufficient evidence for the carcinogenicity in experimental animals of used gasoline motor oils. Handling procedures and safety precautions in the MSDS should be followed to minimize exposure to the used product.

Signs and Symptoms:

Irritation as noted above.

Aggravated Medical Conditions:

Pre-existing eye, skin and respiratory disorders may be aggravated by exposure to this product.

For additional health information, refer to section 11.

SECTION 4**FIRST AID MEASURES****Inhalation:**

Remove victim to fresh air and provide oxygen if breathing is difficult. Get medical attention. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting or unresponsive, give 100% oxygen with rescue breathing or CPR as required and transport to the nearest medical facility.

Skin:

Remove contaminated clothing and shoes and wipe excess from skin. Flush skin with water, then wash with soap and water. If irritation occurs, get medical attention. Do not reuse clothing until cleaned. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.

Eye:

Flush with water. If irritation occurs, get medical attention.

Ingestion:

Do not induce vomiting. In general, no treatment is necessary unless large quantities of product are ingested. However, get medical attention.

Note to Physician:

In general, emesis induction is unnecessary in high viscosity, low volatility products such as oils and greases.

SECTION 5**FIRE FIGHTING MEASURES**

Flash Point [Method]: >400 °F/>204.44 °C [Pensky-Martens Closed Cup]

Extinguishing Media:

Material will float and can be re-ignited on surface of water. Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames. Do not use a direct stream of water.

Fire Fighting Instructions:

Do not enter confined fire space without full bunker gear (helmet with face shield, bunker coats, gloves and rubber boots), including a positive pressure, NIOSH approved, self-contained breathing apparatus. This material is non-flammable.

Unusual Fire Hazards:

Rotella® T Multigrade SAE 15W-40 (CJ-4)

Material may ignite when preheated.

SECTION 6	ACCIDENTAL RELEASE MEASURES
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Protective Measures:

May burn although not readily ignitable.

Wear appropriate personal protective equipment when cleaning up spills. Refer to Section 8.

Spill Management:

FOR LARGE SPILLS: Remove with vacuum truck or pump to storage/salvage vessels.

FOR SMALL SPILLS: Soak up residue with an absorbent such as clay, sand or other suitable material. Place in non-leaking container and seal tightly for proper disposal.

Place in container for proper disposal. Remove contaminated soil to remove contaminated trace residues. Dispose of in same manner as material.

Reporting:

CERCLA: Product is covered by EPA's Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) petroleum exclusion. Releases to air, land, or water are not reportable under CERCLA (Superfund).

CWA: This product is an oil as defined under Section 311 of EPA's Clean Water Act (CWA). Spills into or leading to surface waters that cause a sheen must be reported to the National Response Center, 1-800-424-8802.

SECTION 7	HANDLING AND STORAGE
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Precautionary Measures:

Wash with soap and water before eating, drinking, smoking, applying cosmetics, or using toilet. Launder contaminated clothing before reuse. Properly dispose of contaminated leather articles such as shoes or belts that cannot be decontaminated. Avoid heat, open flames, including pilot lights, and strong oxidizing agents. Use explosion-proof ventilation to prevent vapor accumulation. Ground all handling equipment to prevent sparking.

Storage:

Do not store in open or unlabeled containers. Store in a cool, dry place with adequate ventilation. Keep away from open flames and high temperatures.

Container Warnings:

Keep containers closed when not in use. Containers, even those that have been emptied, can contain explosive vapors. Do not cut, drill, grind, weld or perform similar operations on or near containers.

SECTION 8	EXPOSURE CONTROLS/PERSONAL PROTECTION
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Chemical	Limit	TWA	STEL	Ceiling	Notation
Oil mist, mineral	ACGIH TLV	5 mg/m ³	10 mg/m ³		
Oil mist, mineral	OSHA PEL	5 mg/m ³			

Exposure Controls

Provide adequate ventilation to control airborne concentrations below the exposure guidelines/limits.

Personal Protection

Personal protective equipment (PPE) selections vary based on potential exposure conditions such as handling practices, concentration and ventilation. Information on the selection of eye, skin and respiratory protection for use with this material is provided below.

Eye Protection:

Chemical Goggles, or Safety glasses with side shields

Skin Protection:

Use protective clothing which is chemically resistant to this material. Selection of protective clothing depends on potential exposure conditions and may include gloves, boots, suits and other items. The selection(s) should take into account such factors as job task, type of exposure and durability requirements.

Published literature, test data and/or glove and clothing manufacturers indicate the best protection is provided by:
Neoprene, or Nitrile Rubber

Respiratory Protection:

If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, an approved respirator must be worn. Respirator selection, use and maintenance should be in accordance with the requirements of the OSHA Respiratory Protection Standard, 29 CFR 1910.134.

Types of respirator(s) to be considered in the selection process include: For Mist:

Air Purifying, R or P style NIOSH approved respirator.

For Vapors: Air Purifying, R or P style prefilter & organic cartridge, NIOSH approved respirator. Self-contained breathing apparatus for use in environments with unknown concentrations or emergency situations.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance & Odor: Bright and clear liquid. Mild odor.

Substance Chemical Family: Petroleum Hydrocarbon

Flash Point	> 400 °F [Pensky-Martens Closed Cup]	Pour Point	-20 °F
Solubility (in Water)	Insoluble	Specific Gravity	0.88 - 0.89
Stability	Stable	Viscosity	103 cSt @ 40 °C

SECTION 10 REACTIVITY AND STABILITY

Stability:

Material is stable under normal conditions.

Conditions to Avoid:

Avoid heat and open flames.

Materials to Avoid:

Avoid contact with strong oxidizing agents.

Hazardous Decomposition Products:

Thermal decomposition products are highly dependent on combustion conditions. A complex mixture of airborne solids, liquids and gases will evolve when this material undergoes pyrolysis or combustion. Aldehydes, Carbon Monoxide, Carbon Dioxide, Hydrogen Sulfide, Ketones, Nitrogen Oxides and other unidentified organic compounds may be formed upon combustion.

SECTION 11	TOXICOLOGICAL INFORMATION
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Acute Toxicity

TEST	Result	OSHA Classification	Material Tested
Dermal LD50	>5.0 g/kg(Rabbit)	Non-Toxic	Based on components(s)
Oral LD50	>5.0 g/kg(Rat)	Non-Toxic	Based on components(s)

Carcinogenicity Classification

Chemical Name	NTP	IARC	ACGIH	OSHA
Heavy Duty Motor Oil	No	Not Reviewed by IARC	Not Reviewed	No

SECTION 12	ECOLOGICAL INFORMATION
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Environmental Impact Summary:

There is no ecological data available for this product. However, this product is an oil. It is persistent and does not readily biodegrade. However, it does not bioaccumulate.

SECTION 13	DISPOSAL CONSIDERATIONS
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RCRA Information:

Under RCRA, it is the responsibility of the user of the material to determine, at the time of the disposal, whether the material meets RCRA criteria for hazardous waste. This is because material uses, transformations, mixtures, processes, etc. may affect the classification. Refer to the latest EPA, state and local regulations regarding proper disposal.

SECTION 14	TRANSPORT INFORMATION
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US Department of Transportation Classification

This material is not subject to DOT regulations under 49 CFR Parts 171-180.

Oil: This product is an oil under 49CFR (DOT) Part 130. If shipped by rail or highway in a tank with a capacity of 3500 gallons or more, it is subject to these requirements. Mixtures or solutions containing 10% or more of this product may also be subject to this rule.

International Air Transport Association

Not regulated under IATA rules.

International Maritime Organization Classification
Not regulated under International Maritime Organization rules.

SECTION 15	REGULATORY INFORMATION
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Federal Regulatory Status

OSHA Classification:
Under normal conditions of use or in a foreseeable emergency, this product does not meet the definition of a hazardous chemical when evaluated according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Ozone Depleting Substances (40 CFR 82 Clean Air Act):
This material does not contain nor was it directly manufactured with any Class I or Class II ozone depleting substances.

Superfund Amendment & Reauthorization Act (SARA) Title III:
There are no components in this product on the SARA 302 list.

SARA Hazard Categories (311/312):

Immediate Health	Delayed Health	Fire	Pressure	Reactivity
NO	NO	NO	NO	NO

SARA Toxic Release Inventory (TRI) (313):
Zinc compounds

Toxic Substances Control Act (TSCA) Status:
All component(s) of this material is(are) listed on the EPA/TSCA Inventory of Chemical Substances.

Other Chemical Inventories:
Component(s) of this material is (are) listed on the Australian AICS, Canadian DSL, Chinese Inventory, European EINECS, Korean Inventory, Philippines PICCS,

State Regulation

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

SECTION 16	OTHER INFORMATION
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Revision#: 15
Review Date: 02/13/2007
Revision Date: 12/19/2006
Revisions since last change (discussion): This Material Safety Data Sheet (MSDS) has been reviewed to fully comply with the guidance contained in the ANSI MSDS standard (ANSI Z400.1-2003). We encourage you to take the opportunity to read the MSDS and review the information contained therein.

SECTION 17**LABEL INFORMATION**

READ AND UNDERSTAND MATERIAL SAFETY DATA SHEET BEFORE HANDLING OR DISPOSING OF PRODUCT. THIS LABEL COMPLIES WITH THE REQUIREMENTS OF THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) FOR USE IN THE WORKPLACE. THIS LABEL IS NOT INTENDED TO BE USED WITH PACKAGING INTENDED FOR SALE TO CONSUMERS AND MAY NOT CONFORM WITH THE REQUIREMENTS OF THE CONSUMER PRODUCT SAFETY ACT OR OTHER RELATED REGULATORY REQUIREMENTS.

PRODUCT CODE(S): 3194, 50012, 5001200001, 5001205203, 5001206021, 5001206205, 5001506205, 5056838, 5063444, 5063458, 5070719, 5071338, 5071352, 5071354, 5071355, 5071356, 5073235, 714072

Rotella® T Multigrade SAE 15W-40 (CJ-4)

ATTENTION!

PROLONGED OR REPEATED SKIN CONTACT MAY CAUSE OIL ACNE OR DERMATITIS. USED GASOLINE ENGINE OIL HAS BEEN SHOWN TO CAUSE CANCER IN LABORATORY ANIMALS.

Precautionary Measures:

Avoid prolonged or repeated contact with eyes, skin and clothing. Avoid breathing of vapors, fumes, or mist. Use only with adequate ventilation. Wash thoroughly after handling.

FIRST AID

Inhalation: If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting or unresponsive, give 100% oxygen with rescue breathing or CPR as required and transport to the nearest medical facility.

Skin Contact: Remove contaminated clothing and shoes and wipe excess from skin. Flush skin with water, then wash with soap and water. If irritation occurs, get medical attention. Do not reuse clothing until cleaned. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.

Eye Contact: Flush with water. If irritation occurs, get medical attention.

Ingestion: Do not induce vomiting. In general, no treatment is necessary unless large quantities of product are ingested. However, get medical attention.

FIRE

In case of fire, Use water fog, 'alcohol foam', dry chemical or carbon dioxide (CO₂) to extinguish flames. Do not use a direct stream of water. Material will float and can be re-ignited on surface of water.

SPILL OR LEAK

Dike and contain spill.

FOR LARGE SPILLS: Remove with vacuum truck or pump to storage/salvage vessels.

FOR SMALL SPILLS: Soak up residue with an absorbent such as clay, sand or other suitable material. Place in non-leaking container and seal tightly for proper disposal.

CONTAINS: Highly refined petroleum oils, Mixture; Zinc Dialkyldithiophosphate, 68649-42-3; Proprietary additives, Mixture

NFPA Rating (Health, Fire, Reactivity): 0, 1, 0

TRANSPORTATION

8.) Propane

THE LINDE GROUP



PROPANE

Material Safety Data Sheet

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	PROPANE
Product Code(s)	G-74
UN-No	UN1978
Recommended Use Synonyms	Compressed gas.
Supplier Address*	Dimethyl Methane; Liquefied Petroleum Gas (LPG) Linde Gas North America LLC - Linde Merchant Production Inc. - Linde LLC 575 Mountain Ave. Murray Hill, NJ 07974 Phone: 908-464-8100 www.lindeus.com Linde Gas Puerto Rico, Inc. Las Palmas Village Road No. 869, Street No. 7 Catano, Puerto Rico 00962 Phone: 787-641-7445 www.pr.lindegas.com Linde Canada Limited 5860 Chedworth Way Mississauga, Ontario L5R 0A2 Phone: 905-501-1700 www.lindecana.com
Chemical Emergency Phone Number	* May include subsidiaries or affiliate companies / divisions. For additional product information contact your local customer service. Chemtrec: 1-800-424-9300 for US/ 703-527-3887 outside US

2. HAZARDS IDENTIFICATION

DANGER!

Emergency Overview

Extremely flammable
 May cause central nervous system depression
 Causes adverse cardiovascular effects
 Contents under pressure
 Keep at temperatures below 52°C / 125°F

Appearance Colorless

Physical State Compressed gas.

Odor Odorless

OSHA Regulatory Status

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Potential Health Effects

Principle Routes of Exposure Inhalation.

Acute Toxicity

Inhalation May cause central nervous system depression with nausea, headache, dizziness, vomiting, and incoordination. High concentrations may also cause cardiac sensitization resulting in irregular heartbeat and may make the individual more susceptible to cardiac effects of substances such as epinephrine and adrenaline.

Eyes None known. Contact with rapidly expanding gas near the point of release may cause frostbite. None known. Contact with rapidly expanding gas near the point of release may cause frostbite. No known hazard in contact with skin.

Skin

Skin Absorption Hazard Not an expected route of exposure.

Ingestion None known.

Chronic Effects Central nervous system. Cardiovascular.

Aggravated Medical Conditions

Interactions with Other Chemicals Use of alcoholic beverages may enhance toxic effects.

Environmental Hazard See Section 12 for additional Ecological Information.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No	Volume O/o	Chemical Formula
Propane	74-98-6	>99	

4. FIRST AID MEASURES

Eye Contact Skin Flammable Properties

Contact

Inhalation

Ingestion

Notes to Physician

5. FIRE-FIGHTING MEASURES

Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Call a physician immediately.

Clothing frozen to the skin should be thawed before being removed. In case of contact with liquefied gas, thaw frosted parts with lukewarm water.

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF INHALATION OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS. Conscious inhalation victims should be assisted to an uncontaminated area and inhale fresh air. If breathing is difficult, administer oxygen. Unconscious persons should be moved to an uncontaminated area and, as necessary, given artificial resuscitation and supplemental oxygen. Treatment should be symptomatic and supportive.

se. Get medical attention if symptoms occur. Keep victim warm and quiet.

Extremely flammable. Containers may explode when heated.

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Suitable Extinguishing Media	Dry chemical or CO ₂ . Water spray or fog. DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.
Hazardous Combustion Products	Carbon monoxide. Carbon dioxide (CO ₂).
Explosion Data	
Sensitivity to Mechanical Impact	None
Sensitivity to Static Discharge	Yes
Specific Hazards Arising from the Chemical	Will be easily ignited by heat, sparks or flames. Will form explosive mixtures with air. Vapors from liquefied gas are initially heavier than air and spread along ground. Vapors may travel to source of ignition and flash back. Ruptured cylinders may rocket.
Protective Equipment and Precautions for Firefighters	<p>If possible, stop the flow of gas. Do not extinguish the fire until supply is shut off as otherwise an explosive-ignition may occur. If the fire is extinguished and the flow of gas continues, use increased ventilation to prevent build-up of explosive atmosphere. Ventilation fans must be explosion proof. Use non-sparking tools to close container valves.</p> <p>Isolate spill or leak area for at least 100 meters (330 feet) in all directions. Vapors from liquefied gas are initially heavier than air and spread along ground. Vapors may accumulate in confined areas (basement, tanks, hopper/ tankcars, etc.). Vapors may travel to source of ignition and flash back.</p> <p>Use water spray to cool surrounding containers. Be cautious of a Boiling Liquid Evaporating Vapor Explosion, BLEVE, if flame is impinging on surrounding containers.</p> <p>As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/ NIOSH (approved or equivalent) and full protective gear.</p>

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions	ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Stop leak if you can do it without risk.
Environmental Precautions	Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.
Methods for Containment	Stop the flow of gas or remove cylinder to outdoor location if this can be done without risk. If leak is in container or container valve, contact the appropriate emergency telephone number in Section 1 or call your closest Linde location.
Methods for Cleaning Up	Do not direct water at spill or source of leak. Return cylinder to Linde or an authorized distributor.

7. HANDLING AND STORAGE

Handling	<p>Ground and bond all lines and equipment associated with product system. All equipment should be non-sparking and explosion proof. Remove all sources of ignition. Ensure adequate ventilation. "NO SMOKING" signs should be posted in storage and use areas.</p> <p>Never attempt to lift a cylinder by its valve protection cap. Protect cylinders from physical damage; do not drag, roll, slide or drop. When moving cylinders, even for short distance, use a cart designed to transport cylinders. Use equipment rated for cylinder pressure. Use backflow preventive device in piping.</p>
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Use an adjustable strap wrench to remove over-tight or rusted caps. Never insert an object (e.g. wrench, screwdriver, pry bar, etc.) into valve cap openings. Doing so may damage valve, causing leak to occur. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier.

Never put cylinders into trunks of cars or unventilated areas of passenger vehicles. Never attempt to refill a compressed gas cylinder without the owner's written consent. Never strike an arc on a compressed gas cylinder or make a cylinder a part of an electrical circuit.

For additional recommendations consult Compressed Gas Association's (CGA) Safety Bulletin SB-2, Oxygen-Deficient Atmospheres.

Storage

Outside or detached storage is preferred. Protect from physical damage. Cylinders should be stored upright with valve protection cap in place and firmly secured to prevent falling. Store in cool, dry, well-ventilated area of non-combustible construction away from heavily trafficked areas and emergency exits. Keep at temperatures below 52° (/ 125°F. Full and empty cylinders should be segregated. Use a "first-in-first-out" inventory system to prevent full cylinders from being stored for excessive periods of time. Always store and handle compressed gas cylinders in accordance with Compressed Gas Association, pamphlet CGA -P1, Safe Handling of Compressed Gases in Containers.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Propane 74-98-6	TWA: 1000 ppm	TWA: 1000 ppm TWA: 1800 mg/ m ³	IDLH: 2100 ppm 100/o LEL TWA: 1800 mg/ m ³ TWA: 1000 ppm

NIOSH IDLH: Immediately Dangerous to Life or Health.

Other Exposure Guidelines

Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

Engineering Measures

Explosion proof ventilation systems. Showers. Eyewash stations.

Ventilation

Use ventilation adequate to keep exposures below recommended exposure limits.

Personal Protective Equipment

Eye/Face Protection

Wear protective eyewear (safety glasses).

Skin and Body Protection

Work gloves and safety shoes are recommended when handling cylinders. Cotton or Nomex® clothing is recommended to prevent static build-up.

Respiratory Protection General

Use

If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

Emergency Use

Use positive pressure airline respirator with escape cylinder or self contained breathing apparatus for oxygen-deficient atmospheres (<19.50/o).

Hygiene Measures

Wear suitable gloves and eye/ face protection.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Colorless.	Odor	Odorless.
Odor Threshold	No information available.	Physical State	Compressed gas
Flash Point	-156 °F / -104 °C	Flashpoint Method	Closed cup
Autoignition Temperature	480 °C / 896 °F	Decomposition Temperature	No information available.
Boiling Point/Range	-42.1 °C / -43.7 °F 44.08	Freezing Point	No information available
Molecular Weight	No information available	Water Solubility	Negligible
Evaporation Rate	1.56 (air=1)	Vapor Pressure	124 PSIA @ 70°F
Vapor Density		VOE content(%)	Not applicable.
Flammability Limits in Air			
Upper	9.50/o		
Lower	2.2%		

10. STABILITY AND REACTIVITY

Stability	Stable.
Incompatible Products Conditions	Oxidizing agents.
to Avoid	Heat, flames and sparks.
Hazardous Decomposition Products	None known.
Hazardous Polymerization	Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

LOSO Oral : LOSO	No information available .
Dermal:	No information available.
LCSO Inhalation:	658 ppm/ 4 hr. (Rat)
Inhalation	High concentrations of aliphatic hydrocarbon gases may cause CNS depression. Recent information suggest that C1-C4 aliphatic (alkane) hydrocarbon gases can cause potentially fatal cardiac arrhythmias. cardiac sensitization to adrenalin in dogs has been noted following inhalation. In dogs, the heart is more sensitive to epinephrine induced ventricular fibrillations following exposure to 15- 900/o propane for 10 minutes. Ventricular fibrillations have been reported in humans following inhalation of n-butane.
Repeated Dose Toxicity	No information available.
Chronic Toxicity	
Chronic Toxicity carcinogenicity	None known.
Irritation	Non-irritating to the skin. Non-irritating to the eye.

Contains no ingredient listed as a carcinogen.

Irritation

Non-irritating to the skin. Non-irritating to the eye.

Sensitization Reproductive No information available.
 Toxicity Developmental No information available.
 Toxicity Synergistic No information available.
 Materials Target Organ None known.
 Effects Central nervous system (CNS).

12. ECOLOGICAL INFORMATION

Ecotoxicity

Will not bioconcentrate.

Ozone depletion potential; ODP; (R-11=1): Does not contain ozone depleting chemical (40 CFR Part 82). Chemical

Name	LogPow
Propane	2.3

13. DISPOSAL CONSIDERATIONS

Waste Disposal Methods

Do not attempt to dispose of residual waste or unused quantities. Return in the shipping container PROPERLY LABELED WITH ANY VALVE OUTLET PLUGS OR CAPS SECURED AND VALVE PROTECTION CAP IN PLACE to Linde for proper disposal.

14. TRANSPORT INFORMATION

DOT

Proper Shipping Name
 Hazard Class Subsidiary Class
 UN-No
 Description
 Emergency Response Guide Number

Proper Shipping Name Hazard Class
 UN-No
 Description

TDG

Proper Shipping Name
 Hazard Class
 UN-No
 Description

MEX
 IATA

UN-No	UN1978
Proper Shipping Name Hazard	Propane
Class	2.1
ERG Code	10L
Description	UN1978 ,Propane,2.1 Forbidden
Maximum Quantity for Passenger	150 kg
Maximum Quantity for Cargo Only	No information available.
Limited Quantity	

IMDG/IMO

Proper Shipping Name Hazard	Propane
Class	2.1
UN-No	UN1978
Ems No.	F-D, S-U
Description	UN1978, Propane,2.1, FP-104C

ADR

Proper Shipping Name	Propane
Hazard Class	2.1
UN-No	UN1978
Classification Code	2F
Description	UN1978 , Propane,2.1,

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL	Complies
EINECS/ELINCS	Complies

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
 DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
 EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	No
Fire Hazard	Yes
Sudden Release of Pressure Hazard	Yes
Reactive Hazard	No

Clean Water Act

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

Risk and Process Safety Management Programs

This material, as supplied, contains one or more regulated substances with specified thresholds under 40 CFR Part 68 or regulated as a highly hazardous chemical pursuant to the 29 CFR Part 1910.110 with specified thresholds:

Chemical Name	U.S. - CAA (Clean Air Act) - Accidental Release Prevention - Toxic Substances	U.S. - CAA (Clean Air Act) - Accidental Release Prevention - Flammable Substances	U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals
Propane		10000 lbs	

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)

This product does not contain any substances regulated as hazardous air pollutants (HAPs) under Section 112 of the Clean Air Act Amendments of 1990.

CERCLA/SARA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

U.S. State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals. U.S.

State Right-to-Know Regulations

Chemical Name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Propane	X	X	X		X

International Regulations

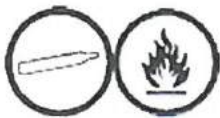
Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS Hazard Class A

Compressed gases B1

Flammable gas



16. OTHER INFORMATION

Prepared By

Product Stewardship
23 British American Blvd.
Latham, NY 12110
1-800-572-6501

Issuing Date 5 Mar-2010
Revision Date 02-Sep-2010
Revision Number
Revision Note (M)SDS sections updated. 1.

NFPA	Health Hazard 2	Flammability 4	Stability 0	Physical and Chemical Hazards -
HMIS	Health Hazard 1	Flammability 4	Physical Hazard 2	Personal Protection -

Note: Ratings were assigned in accordance with Compressed Gas Association (CGA) guidelines as published in CGA Pamphlet P- 19-2009, CGA Recommended Hazard Ratings for Compressed Gases, 3rd Edition.

General Disclaimer

For terms and conditions, including limitation of liability, please refer to the purchase agreement in effect between Linde LLC, Linde Merchant Production, Inc. or Linde Gas North America LLC (or any of their affiliates and subsidiaries) and the purchaser.

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

End of Safety Data Sheet

C. General Jobsite Supplies

1.) *Battery Acid*

1. Identification

Product identifier	Lead Acid Battery Wet, Filled With Acid
Other means of identification	
Synonyms	may include gel/absorbed electrolyte type lead acid batteries
Recommended use	Electric storage battery.
Recommended restrictions	None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer/Supplier	East Penn Manufacturing Company, Inc. 102
Address	Deka Road, Lyon Station PA 19536 (610) 682-
Telephone number	6361
Contact person	East Penn EHS Department
Emergency telephone number	USA/Canada: CHEMTREC (800) 424-9300, Outside USA 1 (703) 527-3887
E-mail	contactus@eastpenn-deka.com

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Acute toxicity, oral Acute	Category 4
	toxicity, inhalation Skin	Category 4
	corrosion/irritation	Category 1A
	Serious eye damage/eye irritation	Category 1
	Carcinogenicity	Category 1A
	Reproductive toxicity	Category 1A
	Specific target organ toxicity, single exposure	Category 1 (respiratory system)
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation
	Specific target organ toxicity, repeated exposure	Category 1 (respiratory system)
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 1
	Hazardous to the aquatic environment, long-term hazard	Category 1
OSHA defined hazards	Not classified.	
Label elements		



Signal word Danger

Hazard statement Harmful if swallowed. Harmful if inhaled. Causes severe skin burns and eye damage. May cause cancer. May damage fertility or the unborn child. Causes damage to organs (respiratory system). Causes damage to organs (respiratory system) through prolonged or repeated exposure. May cause respiratory irritation. Very toxic to aquatic life with long lasting effects.

Precautionary statement

Prevention

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Do not breathe dust/mist/vapors. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.

Response	If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Wash contaminated clothing before reuse. Collect spillage.
Storage	Store in a well-ventilated place. Keep container tightly closed.
Disposal	Refer to manufacturer/supplier for information on recovery/recycling. Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	Under normal conditions of processing and use, exposure to the chemical constituents in this product is unlikely. The battery should not be opened or burned. Exposure to the ingredients contained within or their combustion products could be harmful.
Supplemental information	In use, may form flammable/explosive vapor-air mixture.

3. Composition/information on ingredients

Mixtures

Chemical name	equipment/instructions
Lead and lead compounds (inorganic)	General fire hazards
Electrolyte (Sulfuric acid)	
Antimony	

Composition comments

4. First-aid measures

Inhalation

Skin contact

Eye contact

Ingestion

Most important symptoms/effects, acute and delayed

Indication of immediate medical attention and special treatment needed

General information

5. Fire-fighting measures

Suitable extinguishing media

Unsuitable extinguishing media

Specific hazards arising from the chemical

Special protective equipment and precautions for firefighters

Fire fighting

C

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Exposure to contents of an open or damaged battery: Move injured person into fresh air and keep person under observation. Get medical attention if any discomfort continues.

Exposure to contents of an open or damaged battery: Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention if irritation develops and persists.

Exposure to contents of an open or damaged battery: Flush thoroughly with water for at least 15 minutes. Hold eyelids open during flushing. If irritation persists, repeat flushing. Get medical attention if irritation develops and persists.

Exposure to contents of an open or damaged battery: Rinse mouth thoroughly with water. DO NOT induce vomiting because of danger of aspirating liquid into lungs. Get medical attention immediately.

Under normal conditions of processing and use, exposure to the chemical constituents in this product is unlikely. The battery should not be opened or burned. Exposure to the ingredients contained within or their combustion products could be harmful.

Heavy lead exposure may result in central nervous system damage, encephalopathy and damage to the blood-forming (hematopoietic) tissues.

Treat symptomatically.

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Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

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Dry chemical, foam, carbon dioxide, water fog. Do

NOT use water on live electrical circuits.

7

Batteries evolve flammable hydrogen gas during charging and may increase fire risk. Containers may explode when heated.

Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace.

Use standard firefighting procedures and consider the hazards of other involved materials.

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Like any sealed container, battery cells may rupture when exposed to excessive heat; this could result in the release of corrosive and flammable materials.

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All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Content composition concentrations will vary with

Lead-Acid Battery Wet, Filled With Acid

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6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Avoid contact with skin.

Methods and materials for containment and cleaning up

Neutralize the spilled material before disposal. Sweep up or vacuum up spillage and collect in suitable container for disposal. Dispose of waste and residues in accordance with local authority requirements. Prevent runoff from entering drains, sewers, or streams.

Environmental precautions

7. Handling and storage

Precautions for safe handling

In the event of damage resulting in a leak of exposed materials, avoid contact with contents of an open or damaged cell or battery. Keep away from heat, sparks and open flame. Do not allow conductive material to touch the battery terminals. A dangerous short-circuit may occur and cause battery failure and fire. Store in original tightly closed container. Protect containers from damage. Place cardboard between layers of stacked batteries to avoid damage and short circuits.

Conditions for safe storage, including any incompatibilities

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Components	Type	Value
Lead and lead compounds (inorganic) (CAS 7439-92-1)	TWA	0.05 mg/m ³

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Antimony (CAS 7440-36-0)	PEL	0.5 mg/m ³
Electrolyte (Sulfuric acid) (CAS 7664-93-9)	PEL	1 mg/m ³

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Antimony (CAS 7440-36-0)	TWA	0.5 mg/m ³	
Electrolyte (Sulfuric acid) (CAS 7664-93-9)	TWA	0.2 mg/m ³	Thoracic fraction.
Lead and lead compounds (inorganic) (CAS 7439-92-1)	TWA	0.05 mg/m ³	

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Antimony (CAS 7440-36-0)	TWA	0.5 mg/m ³
Electrolyte (Sulfuric acid) (CAS 7664-93-9)	TWA	1 mg/m ³
Lead and lead compounds (inorganic) (CAS 7439-92-1)	TWA	0.05 mg/m ³

Biological limit values

No biological exposure limits noted for the ingredient(s).

ACGIH Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time
Lead and lead compounds (CAS 7439-92-1)	200 µg/l	Lead * (inorganic) (CAS	Blood	

* - For sampling details, please see the source document.

Appropriate engineering controls

Lead Acid Battery Wet, Filled With Acid

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Provide adequate ventilation. Provide easy access to water supply and eye wash facilities.

Individual protection measures, such as personal protective equipment

Eye/face protection

None under normal conditions. Leak from a damaged or opened battery: Wear safety glasses with side shields (or goggles).

Skin protection Hand protection	None under normal conditions. Leak from a damaged or opened battery: Wear appropriate chemical resistant gloves.
Skin protection Other	None under normal conditions. Leak from a damaged or opened battery: Wear suitable protective clothing. Use of an impervious apron is recommended.
Respiratory protection	None under normal conditions.
Thermal hazards	When material is heated, wear gloves to protect against thermal burns.
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state	Solid.
Form	Sulfuric acid, liquid. Lead, solid.
Color	Not available.
Odor	Odorless.
Odor threshold	Not available.
pH	< 1
Melting point/freezing point	Not available.
Initial boiling point and boiling range	235 - 240 °F (112.78 - 115.56 °C) (Sulfuric acid)

Flash point Below room temperature (as hydrogen gas).

Evaporation rate < 1 (n-BuAc=1)

Flammability (solid, gas)

Upper/lower flammability or explosive limits

Flammability limit - lower (%)	4 % (Hydrogen)
Flammability limit - upper (%)	74 % (Hydrogen)

Vapor pressure	10 mm Hg
Vapor density	> 1 (Air=1)
Relative density	1.27 - 1.33
Solubility(ies)	
Solubility (water)	100 % (Sulfuric acid)
Partition coefficient (n-octanol/water)	Not available.

Auto-ignition temperature Not available.

Decomposition temperature Not available.

Viscosity Not available.

Other information

Explosive properties	stability
Oxidizing properties	Possibility of hazardous reactions
	Conditions to avoid Incompatible materials

10. Stability and reactivity

Reactivity Chemical

Hazardous decomposition products Sulfur dioxide. Sulfur trioxide. Carbon monoxide. Sulfuric acid. Hydrogen.

11. Toxicological information

Information on likely routes of exposure

Inhalation Exposure to contents of an open or damaged battery: Harmful if inhaled. Causes severe respiratory tract irritation.

Skin contact Exposure to contents of an open or damaged battery: Causes severe skin burns. **Eye contact** Exposure to contents of an open or damaged battery: Causes serious eye damage.

Ingestion Exposure to contents of an open or damaged battery: Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics Exposure to contents of an open or damaged battery: Dust may irritate the eyes and the respiratory system.

Information on toxicological effects

Acute toxicity Exposure to contents of an open or damaged battery: Harmful if inhaled or swallowed.

Components	Species	Test Results
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Electrolyte (Sulfuric acid) (CAS 7664-93-9)

Acute

Oral

LD50

Rat

2140 mg/kg

Skin corrosion/irritation Exposure to contents of an open or damaged battery: Causes severe skin burns. Exposure to contents of an open or damaged battery: Causes serious eye damage.

Serious eye damage/eye irritation

Respiratory or skin sensitization

Respiratory sensitization No data available.

Skin sensitization No data available.

Germ cell mutagenicity No data available.

Carcinogenicity

The International Agency for Research on Cancer (IARC) has classified "strong inorganic acid mists containing sulfuric acid" as a known human carcinogen, (IARC category 1). This classification applies only to mists containing sulfuric acid and not to sulfuric acid or sulfuric acid solutions.

IARC Monographs. Overall Evaluation of Carcinogenicity

Electrolyte (Sulfuric acid) (CAS 7664-93-9) 1 Carcinogenic to humans.

Lead and lead compounds (inorganic) (CAS 7439-92-1) 2B Possibly carcinogenic to humans.

NTP Report on Carcinogens

Electrolyte (Sulfuric acid) (CAS 7664-93-9) Known To Be Human Carcinogen.

Lead and lead compounds (inorganic) (CAS 7439-92-1) Reasonably Anticipated to be a Human Carcinogen.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not regulated.

Reproductive toxicity None under normal conditions. Exposure to contents of an open or damaged battery: May damage fertility or the unborn child.

Specific target organ toxicity - single exposure None under normal conditions. Exposure to contents of an open or damaged battery: Causes damage to organs (respiratory system).

Specific target organ toxicity - repeated exposure None under normal conditions. Exposure to contents of an open or damaged battery: Causes damage to organs through prolonged or repeated exposure: Respiratory system.

Aspiration hazard Due to the physical form of the product it is not an aspiration hazard.

Chronic effects Exposure to contents of an open or damaged battery: Heavy lead exposure may result in central nervous system damage, encephalopathy and damage to the blood-forming (hematopoietic) tissues. Chronic inhalation of sulfuric acid mist may increase the risk of lung cancer.

Hazardous decomposition

Sulfur dioxide. Sulfur trioxide. Carbon monoxide. Sulfuric acid. Hydrogen.

12. Ecological information

Ecotoxicity

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. Exposure to contents of an open or damaged battery: Very toxic to aquatic life with long lasting effects.

Components	Species	Test Results
Lead and lead compounds (inorganic) (CAS 7439-92-1)	LC50 Rainbow trout, donaldson trout (Oncorhynchus mykiss)	1.17 mg/l, 96 Hours
Persistence and degradability	The degradation half-life of the product is not known. Lead and its compounds are highly persistent in water.	
Bioaccumulative potential	Bioaccumulation of lead occurs in aquatic and terrestrial animals and plants, but very little bioaccumulation occurs through the food chain.	
Mobility in soil	If the product enters soil, one or more constituents will or may be mobile and may contaminate groundwater.	
Mobility in general	The product is insoluble in water and will spread on water surfaces.	
Other adverse effects	None known.	
13. Disposal considerations		
Disposal instructions	Recycle the batteries, as the primary disposal method. Neutralize electrolyte/sulfuric acid. Avoid discharge into water courses or onto the ground. Dispose of in accordance with local regulations.	
Local disposal regulations	Empty containers should be taken to an approved waste handling site for recycling or disposal. RCRA:	
Hazardous waste code	Spent lead-acid batteries are not regulated as hazardous waste when recycled. Depending upon circumstances, the following waste codes may apply: Spilled electrolyte/Sulfuric acid. D002: Corrosive waste	
Waste from residues / unused products	Avoid discharge into water courses or onto the ground.	
Contaminated packaging	Since emptied containers retain product residue, follow label warnings even after container is emptied.	
14. Transport information		
DOT		
UN number	UN2794	
UN proper shipping name	Batteries, wet, filled with acid, electric storage	
Transport hazard class(es)		
Class Subsidiary risk	8	
risk Label(s)	-	
Packing group	8	
Environmental hazards	-	
Marine pollutant	No	
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.	
Packaging exceptions	159	
Packaging non bulk	159	
Packaging bulk	159	
IATA		
UN number	UN2794	
UN proper shipping name	Batteries, wet, filled with acid electric storage	
Transport hazard class(es)		
Class Subsidiary risk	8	
risk	-	
Packing group	-	
Environmental hazards	No	
ERG Code	8L	
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. Packing Instruction: 870	
IMDG		
	Transport hazard class(es)	
UN number	Class Subsidiary risk	
UN proper shipping name	Packing group Environmental hazards	

Components

Marine pollutant

Species

UN2794

BATTERIES, WET, FILLED WITH ACID electric storage

8

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No

Test Results

Ems

F-A, S-B

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

Packing Instruction: P801

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable.

15. Regulatory information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. All components are on the U.S. EPA TSCA Inventory List.

Hazardous Chemical Reporting Requirements apply when an Extremely Hazardous Substance is present at a facility in an amount equal to or exceeding 500 pounds or the Threshold Planning Quantity, whichever is lower per 40CFR370.10(a)(1)

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Antimony (CAS 7440-36-0) Listed.
Electrolyte (Sulfuric acid) (CAS 7664-93-9) Listed.
Lead and lead compounds (inorganic) (CAS 7439-92-1) Listed.

SARA 304 Emergency release notification

Electrolyte (Sulfuric acid) (CAS 7664-93-9) 1000 LBS

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Lead and lead compounds (inorganic) (CAS 7439-92-1) Reproductive toxicity
Central nervous system
Kidney
Blood
Acute toxicity

Superfund Amendments and Reauthorization Act of 1986 (SARA) SARA

302 Extremely hazardous substance

Chemical name	CAS number	Reportable quantity (pounds)	Threshold planning quantity (pounds)	Threshold planning quantity, lower value (pounds)	Threshold planning quantity, upper value (pounds)
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Electrolyte (Sulfuric acid)	7664-93-9	1000	1000		
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SARA 311/312 Hazardous chemical

Yes

Classified hazard categories

Acute toxicity (any route of exposure)
Skin corrosion or irritation
Serious eye damage or eye irritation
Carcinogenicity
Reproductive toxicity
Specific target organ toxicity (single or repeated exposure)

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Antimony	7440-36-0	3 - 5
Electrolyte (Sulfuric acid)	7664-93-9	20 - 44
Lead and lead compounds (inorganic)	7439-92-1	43 - 70

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Antimony (CAS 7440-36-0)
Lead and lead compounds (inorganic) (CAS 7439-92-1)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

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Electrolyte (Sulfuric acid) (CAS 7664-93-9)

**Safe Drinking Water Act
(SDWA)**

Not regulated.

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Electrolyte (Sulfuric acid) (CAS 7664-93-9) 6552

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Electrolyte (Sulfuric acid) (CAS 7664-93-9) 20 %WV

DEA Exempt Chemical Mixtures Code Number

Electrolyte (Sulfuric acid) (CAS 7664-93-9) 6552

US state regulations

US. Massachusetts RTK - Substance List

Antimony (CAS 7440-36-0)
Electrolyte (Sulfuric acid) (CAS 7664-93-9)
Lead and lead compounds (inorganic) (CAS 7439-92-1)

US. New Jersey Worker and Community Right-to-Know Act

Antimony (CAS 7440-36-0)
Electrolyte (Sulfuric acid) (CAS 7664-93-9)
Lead and lead compounds (inorganic) (CAS 7439-92-1)

US. Pennsylvania Worker and Community Right-to-Know Law

Antimony (CAS 7440-36-0)
Electrolyte (Sulfuric acid) (CAS 7664-93-9)
Lead and lead compounds (inorganic) (CAS 7439-92-1)

US. Rhode Island RTK

Antimony (CAS 7440-36-0)
Electrolyte (Sulfuric acid) (CAS 7664-93-9)
Lead and lead compounds (inorganic) (CAS 7439-92-1)

California Proposition 65



WARNING: Cancer and Reproductive Harm. www.P65warnings.ca.gov or PROPOSITION 65 WARNING: Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Batteries also contain other chemicals known to the State of California to cause cancer. WASH HANDS AFTER HANDLING.

California Proposition 65 - CRT: Listed date/Carcinogenic substance

Arsenic (CAS 7440-38-2)	Listed: February 27, 1987
Electrolyte (Sulfuric acid) (CAS 7664-93-9)	Listed: March 14, 2003
Lead and lead compounds (inorganic) (CAS 7439-92-1)	Listed: October 1, 1992

California Proposition 65 - CRT: Listed date/Developmental toxin

Lead and lead compounds (inorganic) (CAS 7439-92-1)	Listed: February 27, 1987
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California Proposition 65 - CRT: Listed date/Female reproductive toxin

Lead and lead compounds (inorganic) (CAS 7439-92-1)	Listed: February 27, 1987
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California Proposition 65 - CRT: Listed date/Male reproductive toxin

Lead and lead compounds (inorganic) (CAS 7439-92-1)	Listed: February 27, 1987
---	---------------------------

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

Antimony (CAS 7440-36-0)
Electrolyte (Sulfuric acid) (CAS 7664-93-9)
Lead and lead compounds (inorganic) (CAS 7439-92-1)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	China	
Canada		
Canada		

Australia	Substances (AICS)	Yes
n		
Inventor	Domestic Substances List (DSL)	Yes
y of	Non-Domestic Substances List (NDSL)	No
Chemical	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No

Country(s) or region	Inventory name	On inventory (yes/no)*
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	19-September-2017
Revision date	08-January-2018
Version #	02
List of abbreviations	LD50: Lethal Dose 50%. LC50: Lethal Concentration 50%

2.) *Brake Fluid*



SAFETY DATA SHEET

Lucas DOT 4 Brake Fluid

Section 1. Identification

GHS product identifier : Lucas DOT 4 Brake Fluid
Other means of identification : Not available.

Product number : 10827

Identified uses
 Brake and Clutch Systems.

Supplier's details : Lucas Oil Products, Inc 302
 North Sheridan Street
 Corona, California 92880-2067
 Toll Free: (800) 342-2512
 Tel: (951) 270-0154
 Fax: (951) 270-1902
 Website: www.LucasOil.com

Emergency telephone number (with hours of operation) : (951) 493-1149
 (951) 847-5949
 Markn@lucasoil.com
 7:00A.M. to 5:00P.M. Monday thru Friday

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2B

GHS label elements

Signal word : Warning

Hazard statements : Causes eye irritation.

Precautionary statements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Prevention : Wear eye or face protection. Wash hands thoroughly after handling.

Response : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Not applicable.

Disposal : Not applicable.
Hazards not otherwise classified : None known.



Section 3. Composition/information on ingredients

Substance/mixture : Mixture
 Other means of identification : Not available.

CAS number/other identifiers

CAS number : Not applicable.
 Product code : 10827

Ingredient name	%	CAS number
Poly(oxy-1,2-ethanediyl), α -methyl- ω -hydroxy-2,2'-Oxybisethanol	10 - 30	9004-74-4
2-[2-(2-Butoxyethoxy)ethoxy]ethanol	1 - 5	111-46-6
	1 - 5	143-22-6

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 20 minutes. If irritation persists, get medical attention.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : Flush contaminated skin with plenty of water. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed Potential acute

health effects

- Eye contact** : Causes eye irritation.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : No known significant effects or critical hazards.
- Ingestion** : May be irritating to mouth, throat and stomach.

Section 3. Composition/information on ingredients

Section 4. First aid measures

Eye contact	: Adverse symptoms may include the following: irritation watering redness
Inhalation	: No known significant effects or critical hazards.
Skin contact	: No known significant effects or critical hazards.
Ingestion	: No known significant effects or critical hazards.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	: Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments	: No specific treatment.
Protection of first-aiders	: No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media	: Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	: None known.

Specific hazards arising from the chemical : No specific fire or explosion hazard.

Hazardous thermal decomposition products : Decomposition products may include the following materials: carbon dioxide
carbon monoxide

Special protective actions for fire-fighters : No special measures are required.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewer. **Lucas DOT Brake Fluid**
Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Section 4. First aid measures

Section 6. Accidental release measures

Methods and materials for containment and cleaning up

- Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

- : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters Occupational

exposure limits

Ingredient name	Exposure limits
2,2'-Oxybisethanol	AIHA WEEL (United States, 5/2010). TWA: 10 mg/m ³ 8 hours.

- Appropriate engineering controls** : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

Individual protection measures

Section 8. Exposure controls/personal protection

Hygiene measures	: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
Eye/face protection	: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.
Skin protection Hand protection	: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
Body protection	: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Other skin protection	: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	: Use a properly fitted, air-purifying or supplied air respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state	: Liquid. [Clear.]
Color	: Pale yellow.
Odor	: Mild, sweet odor.
Odor threshold	: Not available.
pH	: 7 to 11
Melting point	: <-50°C (<-58°F)
Boiling point	: >232°C (>449.6°F)
Flash point	: Closed cup: 121°C (249.8°F) [Pensky-Martens.]
Evaporation rate	: Not available.

Flammability (solid, gas)	: Not available.
Lower and upper explosive (flammable) limits	Partition coefficient: n- octanol/water
Vapor pressure Vapor density Relative density	Auto-ignition temperature
Solubility	

: Not available.

Lucas DOT 4 Brake Fluid

Section 8. Exposure controls/personal protection

: Not available.

: 1.06

: Miscible in water, alcohol,
sparingly soluble in some
organic solvents.

: Not available.

: 310°C (590°F)

Section 9. Physical and chemical properties

Decomposition temperature : Not available.
Viscosity : Kinematic (100°C (212°F)): 0.018 cm²/s (1.8cSt)

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Poly(oxy-1,2-ethanediyl), α -methyl- ω -hydroxy-	LD50 Dermal	Rabbit	>20000 mg/kg	-
2,2'-Oxybisethanol	LD50 Oral LD50 Dermal	Rat Rabbit	39800 mg/kg 11890 mg/kg	- -
2-[2-(2-Butoxyethoxy)ethoxy]ethanol	LD50 Oral LD50 Oral	Rat Rat	12000 mg/kg 5300 mg/kg	- -

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Poly(oxy-1,2-ethanediyl), α -methyl- ω -hydroxy-	Skin - Mild irritant	Rabbit	-	500 mg	-
2,2'-Oxybisethanol	Eyes - Mild irritant Skin - Mild irritant	Rabbit Human	- -	50 mg 72 hours 112 mg Intermittent	- -
2-[2-(2-Butoxyethoxy)ethoxy]ethanol	Skin - Mild irritant Eyes - Moderate irritant Eyes - Severe irritant Skin - Mild irritant	Rabbit Rabbit Rabbit Rabbit	- - - -	500 mg 24 hours 20 mg 50 mg 24 hours 500 mg	- - - -

Sensitization

There is no data available.

Carcinogenicity Classification

Product/ingredient name	OSHA	IARC	NTP	ACGIH	EPA	NIOSH
2,2'-Oxybisethanol	-	-	-	-	-	None.

Specific target organ toxicity (single exposure)

There is no data available.



Section 9. Physical and chemical properties

Section 11. Toxicological information

There is no data available.

Aspiration hazard

There is no data available.

Information on the likely routes of exposure : Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Eye contact : Causes eye irritation.
Inhalation : No known significant effects or critical hazards.
Skin contact : No known significant effects or critical hazards.
Ingestion : May be irritating to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics **Eye contact**

: Adverse symptoms may include the following:
 irritation
 watering
 redness

Inhalation : No known significant effects or critical hazards.
Skin contact : No known significant effects or critical hazards.
Ingestion : No known significant effects or critical hazards.

Delayed and immediate effects and also chronic effects from short and long term exposure **Short term**

exposure

Potential immediate effects : No known significant effects or critical hazards.

Potential delayed effects : No known significant effects or critical hazards.

Long term exposure

Potential immediate effects : No known significant effects or critical hazards.

Potential delayed effects : No known significant effects or critical hazards.

Potential chronic health effects

General : No known significant effects or critical hazards. No
Carcinogenicity : known significant effects or critical hazards. No
Mutagenicity : known significant effects or critical hazards. No
Teratogenicity : known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Lucas DOT 4 Brake Fluid

Route

ATE value

Section 11. Toxicological information

10000 mg/kg



Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
2,2'-Oxybisethanol	Acute LC50 32000 ppm Fresh water	Fish - Gambusia affinis - Adult	96 hours

Persistence and degradability

There is no data available.

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
2,2'-Oxybisethanol	-1.98	100	low
2-[2-(2-Butoxyethoxy)ethoxy]ethanol	0.51	-	low

Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods

: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling empty containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-
Transport hazard class(es)	-	-	-
Packing group	-	-	-
Environmental hazards	No.	No.	No.



Section 12. Ecological Information

Section 14. Transport information

Additional information

AERG : Not applicable

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA8(a) CDR Exempt/Partial exemption:** Not determined
United States inventory (TSCA 8b): All components are listed or exempted.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Immediate (acute) health hazard

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Poly(oxy-1,2-ethanediyl), α -methyl- ω -hydroxy-2,2'-Oxybisethanol	10 - 30	No.	No.	No.	Yes.	No.
2-[2-(2-Butoxyethoxy)ethoxy]ethanol	1 - 5	No.	No.	No.	Yes.	No.
	1 - 5	No.	No.	No.	Yes.	No.

SARA 313

Section 15. Regulatory information

	Product name	CAS number	%
Form R - Reporting requirements	2-(2-(2-Methoxyethoxy)ethoxy)ethanol 2-(2-(2-Butoxyethoxy)ethoxy)ethanol	112-35-6 143-22-6	30 - 60 1 - 5
Supplier notification	2-(2-(2-Methoxyethoxy)ethoxy)ethanol 2-(2-(2-Butoxyethoxy)ethoxy)ethanol	112-35-6 143-22-6	30 - 60 1 - 5

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

- Massachusetts** : None of the components are listed.
- New York** : None of the components are listed.
- New Jersey** : The following components are listed: 2-(2-(2-Methoxyethoxy)ethoxy)ethanol; 2-[2-(2-Butoxyethoxy)ethoxy]ethanol
- Pennsylvania** : The following components are listed: 2-(2-(2-Methoxyethoxy)ethoxy)ethanol; 2,2'-Oxybisethanol; 2-[2-(2-Butoxyethoxy)ethoxy]ethanol

California Prop. 65

No products were found.

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health : 1 * Flammability : 1 Physical hazards : 0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on SDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)

Health : 1 Flammability : 1 Instability : 0

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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

History

Date of issue mm/dd/yyyy : 06/15/2014

Version : 1

Revised Section(s) : Not applicable.

Prepared by : KMK Regulatory Services Inc.

Key to abbreviations

- : ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods



LogPow = logarithm of the octanol/water partition coefficient

MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships,



Section 16. Other information

1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) UN
= United Nations

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

3.) Calibration Kit for Air Monitor

Manufactured for

INDUSTRIAL SCIENTIFIC CORPORATION

1001 Oakdale Road
Oakdale, PA 15071-1500

Phone (412) 788-4353
TOLL-FREE 800-DETECTS
Fax (412) 788-8353

MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards

1. PRODUCT IDENTIFICATION

CHEMICAL NAME; CLASS: NON-FLAMMABLE GAS MIXTURE

Containing One or More of the Following Components in a Nitrogen Balance Gas:

Oxygen, 0-23.5%; Methane, 0-2.5%; Hydrogen, 0-2.0%; Carbon Monoxide, 0.0005-1.0%

NOTE: MIXTURES COMPRISED OF AN AIR BALANCE GAS CONTAIN BETWEEN 19.5-23.5% OXYGEN.

SYNONYMS: Not Applicable

CHEMICAL FAMILY NAME: Not Applicable

FORMULA: Not Applicable

Document Number: 50009 (Replaces ISC MSDS No.1810-0701,1810-0719,1810-1063,1810-1246, 1810-1352,1810-1493,1810-2163,1810-2165,1810-2230,1810-2243,1810-2259,1810-2301 1810-2302,1810-2303,1810-2665,1810-3101,1810-3689, 1810-4125, 1810-4265, 1810-6605, 1810-6278, 1810-7441)

Note: The Material Safety Data Sheet is for this gas mixture supplied in cylinders with 33 cubic feet (935 liters) or less gas capacity (DOT - 39 cylinders). This MSDS has been developed for various gas mixtures with the composition of components within the ranges listed in Section 2 (Composition and Information on Ingredients). Refer to the product label for information on the actual composition of the product.

PRODUCT USE:	Calibration of Monitoring and Research Equipment
SUPPLIER/MANUFACTURER'S NAME:	CALGAZ
ADDRESS:	821 Chesapeake Drive Cambridge, MD 21613
EMERGENCY PHONE:	CHEMTREC: 1-800-424-9300
BUSINESS PHONE:	1-410-228-6400
General MSDS Information:	1-713-868-0440
Fax on Demand:	1-800-231-1366

2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	mole %	EXPOSURE LIMITS IN AIR					
			ACGIH-TLV		OSHA-PEL		NIOSH IDLH	OTHER ppm
			TWA ppm	STEL ppm	PEL ppm	STEL ppm		
Carbon Monoxide	630-08-0	0.0005-1.0%	25	NE	50 35 (Vacated 1989 PEL)	200 [ceiling] (Vacated 1989 PEL)	1200	NIOSH RELs:TWA = 35 STEL = 200 ceiling DFG MAKs:TWA = 30 PEAK = 2*MAK, 15 min., average value, 1 hr interval DFG MAK Pregnancy Risk Classification: B
Hydrogen	1333-74-0	0-2.0%	There are no specific exposure limits for Hydrogen. Hydrogen is a simple asphyxiant (SA). Oxygen levels should be maintained above 19.5%.					
Methane	74-82-8	0-2.5%	There are no specific exposure limits for Methane. Methane is a simple asphyxiant (SA). Oxygen levels should be maintained above 19.5%.					
Oxygen	7782-44-7	0-23.5%	There are no specific exposure limits for Oxygen. Oxygen levels should be maintained above 19.5%.					
Nitrogen	7727-37-9	Balance	There are no specific exposure limits for Nitrogen. Nitrogen is a simple asphyxiant (SA). Oxygen levels should be maintained above 19.5%.					

NE = Not Established.

See Section 16 for Definitions of Terms Used.

NOTE (1): ALL WHMIS required information is in appropriate sections based on the ANSI Z400.1-1998 format. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: This product is a colorless, odorless gas. Carbon Monoxide, a component of this gas mixture, is a chemical asphyxiant and can produce significant adverse health effects at relatively low concentrations. Over-exposure to Carbon Monoxide can cause nausea, dizziness, headaches, and collapse. Additionally, releases of this product may produce oxygen-deficient atmospheres (especially in small confined spaces or other poorly-ventilated environments); individuals in such atmospheres may be asphyxiated.

SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE: The most significant route of over-exposure for this product is by inhalation.

INHALATION: Due to the small size of an individual cylinder of this product, no unusual health effects from over-exposure to the product are anticipated under routine circumstances of use. Inhalation over-exposures to atmospheres containing more than the Threshold Limit Value of Carbon Monoxide (25 ppm) can result in serious health consequences. Carbon Monoxide is classified as a chemical asphyxiant, producing a toxic action by combining with the hemoglobin of the blood and replacing the available oxygen. Through this replacement, the body is deprived of the required oxygen, and asphyxiation occurs.

Since the affinity of carbon monoxide for hemoglobin is about 200-300 times that of oxygen, only a small amount of Carbon Monoxide will cause a toxic reaction to occur. Carbon Monoxide exposures in excess of 50 ppm will produce symptoms of poisoning if breathed for a sufficiently long time. If this product is released in a small, poorly ventilated area (i.e. an enclosed or confined space), symptoms which may develop include the following:

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM			
HEALTH HAZARD	(BLUE)	2	
FLAMMABILITY HAZARD	(RED)	0	
PHYSICAL HAZARD	(YELLOW)	0	
PROTECTIVE EQUIPMENT			
EYES	RESPIRATORY	HANDS	FOOT
See Section 8			
For Routine Industrial Use and Handling Applications			

3. HAZARD IDENTIFICATION

CONCENTRATION OF

CARBON MONOXIDE

All exposure levels:

200 ppm:

400 ppm:

1,000 -2000 ppm:

2000-2500 ppm:

> 2500 ppm:

Additionally, releases of this product may produce oxygen-deficient atmospheres (especially in small confined spaces or other poorly-ventilated environments); individuals in such atmospheres may be asphyxiated.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms. Over-exposure to this gas mixture may cause the following health effects:

ACUTE: Due to the small size of the individual cylinder of this product, no unusual health effects from exposure to the product are anticipated under routine circumstances of use. However, Carbon Monoxide (a component of this gas mixture) is toxic to humans. Symptoms of Carbon Monoxide poisoning can develop gradually, or can arise suddenly, depending on the concentration and duration of exposure. Lips and fingernails will turn bright red, which is a significant sign of Carbon Monoxide over-exposure. Other symptoms of over-exposure can include respiratory difficulty, headaches, shortness of breath, wheezing, headache, blurred vision, memory loss, dizziness, indigestion, nausea, unconsciousness, and death.

CHRONIC: Chronic exposure to oxygen-deficient atmospheres (below 18% oxygen in air) may effect the heart and nervous system. Clinical studies indicate that there is a relationship between exposure to Carbon Monoxide in specific occupations (i.e. fire-fighters, foundry workers) and an increased incidence of cardiovascular problems. Carbon Monoxide is a reproductive toxin. Refer to Section 11 (Toxicological Information) of this MSDS for further information.

TARGET ORGANS: ACUTE: Respiratory system, blood system. CHRONIC: Heart, cardiovascular system, central nervous system, reproductive system.

OBSERVED EFFECT

Over-exposure to Carbon Monoxide can be indicated by the lips and fingernails turning bright red.

Slight symptoms (headache, discomfort) after several hours of exposure.

Headache and discomfort experienced within 2-3 hours of exposure.

Within 30 minutes, slight palpitations of the heart occurs. Within 1.5 hours, there is a tendency to stagger.

Within 2 hours, there is mental confusion, headaches, and nausea. Unconsciousness within 30 minutes.

Potential for collapse and death before warning symptoms are produced.

4. FIRST-AID MEASURES

RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF OVER-EXPOSURE TO THIS PRODUCT WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self-Contained Breathing Apparatus and Fire-Retardant Personal Protective equipment should be worn. Adequate fire protection must be provided during rescue situations. Victim(s) must be taken for medical attention. Rescuers should be taken for medical attention, if necessary. Take copy of label and MSDS to physician or other health professional with victim(s).

No unusual health effects are anticipated after exposure to this product, due to the small cylinder size. If any adverse symptom develops after over-exposure to this product, remove victim(s) to fresh air, as quickly as possible. Only Trained personnel should administer supplemental oxygen and/or cardio-pulmonary resuscitation, if necessary. Only trained personnel should administer supplemental oxygen.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing respiratory conditions may be aggravated by over-exposure to this product. The Carbon Monoxide component of this gas mixture can aggravate some diseases of the cardiovascular system, such as coronary artery disease and angina pectoris.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and reduce over-exposure. Provide oxygen. Hyperbaric oxygen is the most efficient antidote to Carbon Monoxide poisoning, the optimum range being 2-2.5 atm. A special mask, or, preferably, a compression chamber to utilize oxygen at these pressures is required. Avoid administering stimulant drugs.

5. FIRE-FIGHTING MEASURES

FLASH POINT: Not applicable.

AUTOIGNITION TEMPERATURE: Not applicable.

FLAMMABLE LIMITS (in air by volume, %):

Lower (LEL): Not applicable.

Upper (UEL): Not applicable.

FIRE EXTINGUISHING MATERIALS: Non-flammable gas mixture. Use extinguishing media appropriate for surrounding fire.

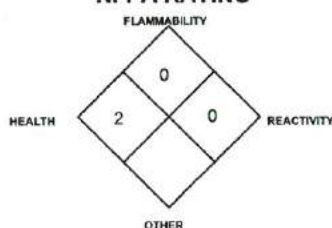
UNUSUAL FIRE AND EXPLOSION HAZARDS: This gas mixture is not flammable; however, containers, when involved in fire, may rupture or burst in the heat of the fire.

Explosion Sensitivity to Mechanical Impact: Not Sensitive.

Explosion Sensitivity to Static Discharge: Not Sensitive.

SPECIAL FIRE-FIGHTING PROCEDURES: Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment.

NFPA RATING



6. ACCIDENTAL RELEASE MEASURES

LEAK RESPONSE: Due to the small size and content of the cylinder, an accidental release of this product presents significantly less risk of an oxygen deficient environment and other safety hazards than a similar release from a larger cylinder. However, as with any chemical release, extreme caution must be used during emergency response procedures. In the event of a release in which the atmosphere is unknown, and in which other chemicals are potentially involved, evacuate immediate area. Such releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a leak, clear the affected area, protect people, and respond with trained personnel.

For emergency disposal, secure the cylinder and slowly discharge the gas to the atmosphere in a well-ventilated area or outdoors. Allow the gas mixture to dissipate. If necessary, monitor the surrounding area (and the original area of the release) for oxygen and Carbon Monoxide. Carbon Monoxide level must be below exposure level listed in Section 2 (Composition and Information on Ingredients) before non-emergency personnel are allowed to re-enter area.

If leaking incidentally from the cylinder or its valve, contact your supplier.

7. HANDLING and USE

WORK PRACTICES AND HYGIENE PRACTICES: Be aware of any signs of dizziness or fatigue; exposures to fatal concentrations of this product could occur without any significant warning symptoms, due to oxygen deficiency. Do not attempt to repair, adjust, or in any other way modify the cylinders containing Carbon Monoxide. If there is a malfunction or another type of operational problem, contact nearest distributor immediately.

STORAGE AND HANDLING PRACTICES: Cylinders should be firmly secured to prevent falling or being knocked-over. Cylinders must be protected from the environment, and preferably kept at room temperature (approximately 21°C, 70°F). Cylinders should be stored in dry, well-ventilated areas, away from sources of heat, ignition, and direct sunlight. Protect cylinders against physical damage. Full and empty cylinders should be segregated. Use a first-in, first-out inventory system to prevent full containers from being stored for long periods of time. These cylinders are not refillable. **WARNING! Do not refill DOT 39 cylinders. To do so may cause personal injury or property damage.**

SPECIAL PRECAUTIONS FOR HANDLING GAS CYLINDERS: WARNING! Compressed gases can present significant safety hazards. During cylinder use, use equipment designed for these specific cylinders. Ensure all lines and equipment are rated for proper service pressure.

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain that application equipment is locked and tagged-out safely. Always use product in areas where adequate ventilation is provided.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: No special ventilation systems or engineering controls are needed under normal circumstances of use. As with all chemicals, use this product in well-ventilated areas. If this product is used in a poorly-ventilated area, install automatic monitoring equipment to detect the levels of Carbon Monoxide and oxygen.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

RESPIRATORY PROTECTION: No special respiratory protection is required under normal circumstances of use. Use supplied air respiratory protection if Oxygen levels are below 19.5%, or unknown, during emergency response to a release of this product. If respiratory protection is needed, use only protection authorized in the U.S. Federal OSHA Standard (29 CFR 1910.134), applicable U.S. State regulations, or the Canadian CSA Standard Z94.4-93 and applicable standards of Canadian Provinces. Oxygen levels below 19.16.33% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998). In the event that exposure limits may be exceeded for Carbon Monoxide, the following NIOSH respiratory protection equipment guidelines should be consulted.

CARBON MONOXIDE

CONCENTRATION

Up to 350 ppm:
Up to 875 ppm:
Up to 1200 ppm:

RESPIRATORY PROTECTION

Any Supplied-Air Respirator (SAR).

Any SAR operated in a continuous-flow mode.

Any Air-Purifying, Full-Facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against Carbon Monoxide, or any Self-Contained Breathing Apparatus(SCBA) with a full facepiece, or any SAR with a full facepiece.

Emergency or Planned Entry into Unknown Concentrations or IDLH Conditions: Any SCBA that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode, or any SAR that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary SCBA operated in pressure-demand or other positive-pressure mode.

Escape: Any Air-Purifying, Full-Facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against Carbon Monoxide, or any appropriate escape-type, SCBA.

EYE PROTECTION: Safety glasses. If necessary, refer to U.S. OSHA 29 CFR 1910.133 or appropriate Canadian Standards.

HAND PROTECTION: No special protection is needed under normal circumstances of use. If necessary, refer to U.S. OSHA 29 CFR 1910.138 or appropriate Standards of Canada.

BODY PROTECTION: No special protection is needed under normal circumstances of use. If a hazard of injury to the feet exists due to falling objects, rolling objects, where objects may pierce the soles of the feet or where employee's feet may be exposed to electrical hazards, use foot protection, as described in U.S. OSHA 29 CFR 1910.136.

9. PHYSICAL and CHEMICAL PROPERTIES

The following physical property values are for the main component, Nitrogen:

GAS DENSITY @ 32°F (0°C) and 1 atm: .072 lbs/ ft³ (1.153 kg/m³)

BOILING POINT: -320.4°F (-195.8°C)

FREEZING/MELTING POINT @ 10 psig -210°C (-345.8°F)

SPECIFIC GRAVITY (air = 1) @ 70°F (21.1°C): 0.906

SOLUBILITY IN WATER vol/vol @ 32°F (0°C) and 1 atm: 0.023

EVAPORATION RATE (nBuAc = 1): Not applicable.

ODOR THRESHOLD: Not applicable. Odorless.

VAPOR PRESSURE @ 70°F (21.1°C) psig: Not applicable.

COEFFICIENT WATER/OIL DISTRIBUTION: Not applicable.

pH: Not applicable.

MOLECULAR WEIGHT: 28.01

EXPANSION RATIO: Not applicable.

SPECIFIC VOLUME (ft³/lb): 13.8

The following values are for the gas mixture:

APPEARANCE, ODOR AND COLOR: This product is a colorless, odorless gas mixture.

HOW TO DETECT THIS SUBSTANCE (warning properties): There are no unusual warning properties associated with a release of this product.

10. STABILITY and REACTIVITY

STABILITY: Stable at normal temperature and pressure.

DECOMPOSITION PRODUCTS: The thermal decomposition products of Methane include carbon oxides. The other components of this gas mixture do not decompose, per se, but can react with other compounds in the heat of a fire.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Titanium will burn in Nitrogen (the main component of this product). Lithium reacts slowly with Nitrogen at ambient temperatures. Components of this product (Hydrogen, Carbon Monoxide, Methane) are also incompatible with strong oxidizers (i.e. chlorine, bromine pentafluoride, oxygen, oxygen difluoride, and nitrogen trifluoride). Carbon Monoxide is mildly corrosive to nickel and iron (especially at high temperatures and pressures).

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Contact with incompatible materials. Cylinders exposed to high temperatures or direct flame can rupture or burst.

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: The following toxicology data are available for the components of this product:

CARBON MONOXIDE:

LC₅₀ (Inhalation-Rat) 1807 ppm/4 hours
LC₅₀ (Inhalation-Mouse) 2444 ppm/4 hours
LC₅₀ (Inhalation-Guinea Pig) 5718 ppm/4 hours
LC₅₀ (Inhalation-wild bird species) 1334 ppm
LCLo (Inhalation-Human) 4 mg/m³/12 hours:
Behavioral: coma; Vascular: BP lowering not characterized in autonomic section; Blood: methemoglobinemia-carboxyhemoglobin
LCLo (Inhalation-Man) 4000 ppm/30 minutes
LCLo (Inhalation-Human) 5000 ppm/5 minutes
LCLo (Inhalation-Dog) 4000 ppm/46 minutes
LCLo (Inhalation-Rabbit) 4000 ppm/5000 ppm/5 minutes
LCLo (Inhalation-Mammal-species unspecified) 5000 ppm/5 minutes
hours/90 days-continuous: Blood: pigmented or nucleated red blood cells, other changes
TCLo (Inhalation-Rabbit) 200 mg/m³/3 hours/13 weeks-intermittent: Brain and Coverings: other degenerative changes; Cardiac: other changes; Blood: hemorrhage
TCLo (Inhalation-Rabbit) 50 ppm/24 hours/8 weeks-continuous: Blood: changes in platelet count
TCLo (Inhalation-Guinea Pig) 200 mg/m³/5 hours/4 weeks-intermittent: Endocrine: hyperglycemia
TCLo (Inhalation-Guinea Pig) 200 mg/m³/5 hours/30 weeks-continuous: Cardiac: arrhythmias (including changes in conduction).
EKG changes not diagnostic of specified effects, pulse rate increase, without fall in BP
TCLo (Inhalation-Guinea Pig) 200 ppm/24 hours/90 days-continuous: Blood: pigmented or nucleated red blood cells, other changes
TCLo (Inhalation-Rat) 75 ppm/24 hours: female 0-20 day(s) after conception: Reproductive: Maternal Effects: other effects; Effects on Newborn: behavioral
TCLo (Inhalation-Rat) 150 ppm/24 hours: female 1-22 day(s) after conception: Reproductive: Specific Developmental Abnormalities: cardiovascular (circulatory) system

TCLo (Inhalation-Human) 600 mg/m³/10 minutes: Behavioral: headache
TCLo (Inhalation-Man) 650 ppm/45 minutes: Blood: methemoglobinemia-carboxyhemoglobin; Behavioral: changes in psychophysiological tests
TCLo (Inhalation-Rat) 1800 ppm/1 hour/14 days-intermittent: Cardiac: other changes
TCLo (Inhalation-Rat) 30 mg/m³/8 hours/10 weeks-intermittent: Brain and Coverings: other degenerative changes;
Behavioral: muscle contraction or spasticity
TCLo (Inhalation-Rat) 96 ppm/24 hours/90 days-continuous: Blood: pigmented or nucleated red blood cells, other changes
TCLo (Inhalation-Rat) 150 ppm/24 hours: female 1-22 day(s) after conception: Reproductive: Effects on Newborn: growth statistics (e.g.%, reduced weight gain), behavioral
TCLo (Inhalation-Rat) 1 mg/m³/24 hours: female 72 day(s) pre-mating: Reproductive: Maternal Effects: menstrual cycle changes or disorders, parturition; Fertility: female fertility index (e.g. # females pregnant per # females mated)
TCLo (Inhalation-Rat) 150 ppm/24 hours: female 0-20 day(s) after conception: Reproductive: Effects on Newborn: behavioral
TCLo (Inhalation-Rat) 75 ppm/24 hours: female 0-20 day(s) after conception: Reproductive: Specific Developmental Abnormalities: immune and reticuloendothelial system
TCLo (Inhalation-Mouse) 65 ppm/24 hours: female 7-18 day(s) after conception: Reproductive: Effects on Newborn: behavioral
TCLo (Inhalation-Mouse) 250 ppm/7 hours: female 6-15 day(s) after conception: Reproductive: Fertility: post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants); Specific Developmental Abnormalities: musculoskeletal system
TCLo (Inhalation-Mouse) 125 ppm/24 hours:

TCLo (Inhalation-Rat) 250 ppm/5 hours/20 days-intermittent: Blood: pigmented or nucleated red blood cells, changes in other cell count (unspecified), changes in erythrocyte (RBC) count
TDLo (Subcutaneous-Rat) 5963 mg/kg/18 weeks-intermittent: Blood: changes in serum composition (e.g. TP, bilirubin, cholesterol)
TCLo (Inhalation-Mouse) 50 ppm/30 days-intermittent: Lungs, Thorax, or Respiration: structural or functional change in trachea or bronchi
TCLo (Inhalation-Monkey) 200 ppm/24 hours: female 7-18 day(s) after conception: Reproductive: Effects on Embryo or Fetus: fetotoxicity (except death, e.g., stunted fetus)
TCLo (Inhalation-Mouse) 8 ppm/1 hour: female 8 day(s) after conception: Reproductive: Fertility: litter size (e.g. # fetuses per litter; measured before birth); Effects on Embryo or Fetus: fetotoxicity (except death, e.g., stunted fetus), fetal death
TCLo (Inhalation-Mouse) 8 ppm/1 hour: female 8 day(s) after conception: Reproductive: Specific Developmental Abnormalities: Central Nervous System
TCLo (Inhalation-Rabbit) 180 ppm/24 hours: female 1-30 day(s) after conception: Reproductive: Effects on Newborn: stillbirth, viability index (e.g., # alive at day 4 per # born alive)
Micronucleus Test (Inhalation-Mouse) 1500 ppm/10 minutes
Sister Chromatid Exchange (Inhalation-Mouse) 2500 ppm/10 minutes

11. TOXICOLOGICAL INFORMATION (continued)

HYDROGEN:

There are no specific toxicology data for Hydrogen. Hydrogen is a simple asphyxiant (SA), which acts to displace oxygen in the environment.

METHANE:

There are no specific toxicology data for Methane. Methane is a simple asphyxiant, which acts to displace oxygen in the environment.

NITROGEN:

There are no specific toxicology data for Nitrogen. Nitrogen is a simple asphyxiant, which acts to displace oxygen in the environment.

OXYGEN:

The toxicity data for Oxygen are related to exposures in a hyperbaric environment and are not likely to occur in industrial exposure situations.

SUSPECTED CANCER AGENT: The components of this gas mixture are not found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, and IARC; therefore are not considered to be, nor suspected to be, cancer-causing agents by these agencies.

IRRITANCY OF PRODUCT: Contact with rapidly expanding gases can be irritating to exposed skin and eyes.

SENSITIZATION OF PRODUCT: The components of this gas mixture are not sensitizers.

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of this gas mixture on the human reproductive system.

Mutagenicity: The components of this gas mixture are not reported to cause mutagenic effects in humans.

Embryotoxicity: The components of this gas mixture are not reported to cause embryotoxic effects in humans.

Teratogenicity: This gas mixture is not expected to cause teratogenic effects in humans due to the small cylinder size and small total amount of all components. The Carbon Monoxide component of this gas mixture, which exists up to 1%, can cause teratogenic effects in humans. Severe exposure to Carbon Monoxide during pregnancy has caused adverse effects and the death of the fetus. In general, maternal symptoms are an indicator of the potential risk to the fetus since Carbon Monoxide is toxic to the mother before it is toxic to the fetus.

Reproductive Toxicity: The components of this gas mixture are not reported cause adverse reproductive effects in humans.

A **mutagen** is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generation lines. An **embryotoxin** is a chemical which causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A **teratogen** is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A **reproductive toxin** is any substance which interferes in any way with the reproductive process.

BIOLOGICAL EXPOSURE INDICES (BEIs): Biological Exposure Indices (BEIs) have been determined for the Carbon Monoxide component, as follows:

CHEMICAL DETERMINANT	SAMPLING TIME	BEI
CARBON MONOXIDE • Carboxyhemoglobin in blood • Carbon monoxide in end-exhaled air	• End of shift • End of shift	• 3.5% of hemoglobin • 20 ppm

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL STABILITY: The components of this gas mixture occur naturally in the atmosphere. The gas will be dissipated rapidly in well-ventilated areas.

EFFECT OF MATERIAL ON PLANTS OR ANIMALS: No evidence is currently available on the effects of this gas mixture on plant and animal life. The Carbon Monoxide component of this gas mixture can be deadly to exposed animal life, producing symptoms similar to those experienced by humans. Carbon Monoxide may also be harmful to plant life.

EFFECT OF CHEMICAL ON AQUATIC LIFE: No evidence is currently available on this product's effects on aquatic life. The presence of more than a trace of the Carbon Monoxide component of this product is a hazard to fish.

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate U.S. Federal, State, and local regulations and those of Canada and its Provinces. Cylinders with undesired residual product may be safely vented outdoors with the proper regulator. For further information, refer to Section 16 (Other Information)

14. TRANSPORTATION INFORMATION

THIS GAS MIXTURE IS HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Compressed gases, n.o.s. (*Oxygen, Nitrogen,) or the gas component with the next highest concentration next to Nitrogen.

HAZARD CLASS NUMBER and DESCRIPTION: 2.2 (Non-Flammable Gas)

UN IDENTIFICATION NUMBER: UN 1956

PACKING GROUP: Not applicable.

DOT LABEL(S) REQUIRED: Class 2.2 (Non-Flammable Gas)

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2000): 126

MARINE POLLUTANT: The components of this gas mixture are not classified by the DOT as Marine Pollutants (as defined by 49 CFR 172.101, Appendix B)

SPECIAL SHIPPING INFORMATION: Cylinders should be transported in a secure position, in a well-ventilated vehicle. The transportation of compressed gas cylinders in automobiles or in closed-body vehicles can present serious safety hazards. If transporting these cylinders in vehicles, ensure these cylinders are not exposed to extremely high temperatures (as may occur in an enclosed vehicle on a hot day). Additionally, the vehicle should be well-ventilated during transportation.

Note: DOT 39 Cylinders ship in a strong outer carton (overpack). Pertinent shipping information goes on the outside of the overpack. DOT 39 Cylinders do not have transportation information on the cylinder itself.

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: This gas mixture is considered as Dangerous Goods, per regulations of Transport Canada.

PROPER SHIPPING NAME: Compressed gases, n.o.s. (*Oxygen, Nitrogen) or the gas component with the next highest concentration next to Nitrogen.

HAZARD CLASS NUMBER and DESCRIPTION: 2.2 (Non-Flammable Gas)

UN IDENTIFICATION NUMBER: UN 1956

PACKING GROUP: Not Applicable

HAZARD LABEL: Class 2.2 (Non-Flammable Gas)

SPECIAL PROVISIONS: None

EXPLOSIVE LIMIT AND LIMITED QUANTITY INDEX: 0.12

ERAP INDEX: None

PASSENGER CARRYING SHIP INDEX: None

PASSENGER CARRYING ROAD VEHICLE OR PASSENGER CARRYING RAILWAY VEHICLE INDEX: 75

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2000): 126

NOTE: Shipment of compressed gas cylinders via Public Passenger Road Vehicle is a violation of Canadian law (Transport Canada Transportation of Dangerous Goods Act, 1992)

15. REGULATORY INFORMATION

ADDITIONAL U.S. REGULATIONS:

U.S. SARA REPORTING REQUIREMENTS: The components of this gas mixture are not subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act., as follows:

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for the components of this gas mixture. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

U.S. TSCA INVENTORY STATUS: The components of this gas mixture are listed on the TSCA Inventory.

U.S. CERCLA REPORTABLE QUANTITIES (RQ): Not applicable.

U.S. STATE REGULATORY INFORMATION: The components of this gas mixture are covered under the following specific State regulations:

Alaska - Designated Toxic and Hazardous Substances: Carbon Monoxide, Methane, Hydrogen.

California - Permissible Exposure Limits for Chemical Contaminants: Carbon Monoxide, Nitrogen, Methane, Hydrogen.

Florida - Substance List: Oxygen, Carbon Monoxide, Hydrogen.

Illinois - Toxic Substance List: Carbon Monoxide, Hydrogen.

Kansas - Section 302/313 List: No.

Massachusetts - Substance List: Oxygen, Carbon Monoxide, Methane, Hydrogen.

Michigan - Critical Materials Register: No.

Minnesota - List of Hazardous Substances: Carbon Monoxide, Methane, Hydrogen.

Missouri - Employer Information/Toxic Substance List: Methane, Hydrogen

New Jersey - Right to Know Hazardous Substance List: Oxygen, Carbon Monoxide, Nitrogen, Methane, Hydrogen.

North Dakota - List of Hazardous Chemicals, Reportable Quantities: No.

Pennsylvania - Hazardous Substance List: Oxygen, Carbon Monoxide, Nitrogen, Methane, Hydrogen.

Rhode Island - Hazardous Substance List: Oxygen, Carbon Monoxide, Nitrogen, Methane, Hydrogen.

Texas - Hazardous Substance List: No.

West Virginia - Hazardous Substance List: No.

Wisconsin - Toxic and Hazardous Substances: No.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): Carbon Monoxide is on the California Proposition 65 lists. **WARNING:** This gas mixture contains a chemical known to the State of California to cause birth defects or other reproductive harm.

OTHER U.S. FEDERAL REGULATIONS:

- Carbon Monoxide is subject to the reporting requirements of CFR 29 1910.1000. Carbon Monoxide is listed on Table Z.1.
- Hydrogen and Methane are subject to the reporting requirements of Section 112(r) of the Clean Air Act. The Threshold Quantity for each of these gases is 10,000 pounds and so this mixture will not be affected by the regulation.
- This gas mixture does not contain any Class I or Class II ozone depleting chemicals (40 CFR part 82).
- Nitrogen and Oxygen are not listed as Regulated Substances, per 40 CFR, Part 68, of the Risk Management for Chemical Releases. Carbon Monoxide, Methane, and Hydrogen are listed under this regulation in Table 3 as Regulated Substances (Flammable Substances), in quantities of 10,000 lbs (4,553 kg) or greater, and so this mixture will not be affected by the regulation.

ADDITIONAL CANADIAN REGULATIONS:

CANADIAN DSL/NDL INVENTORY STATUS: The components of this gas mixture are on the DSL Inventory.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: The components of this gas mixture are not on the CEPA Priorities Substances Lists.

OTHER CANADIAN REGULATIONS: This gas mixture is categorized as a Controlled Product, Hazard Classes A and D2A, as per the Controlled Product Regulations.

16. OTHER INFORMATION

INFORMATION ABOUT DOT-39 NRC (Non-Refillable Cylinder) PRODUCTS

DOT 39 cylinders ship as hazardous materials when full. Once the cylinders are relieved of pressure (empty) they are not considered hazardous material or waste. Residual gas in this type of cylinder is not an issue because toxic gas mixtures are prohibited. Calibration gas mixtures typically packaged in these cylinders are Nonflammable n.o.s., UN 1956. A small percentage of calibration gases packaged in DOT 39 cylinders are flammable or oxidizing gas mixtures.

For disposal of used DOT-39 cylinders, it is acceptable to place them in a landfill if local laws permit. Their disposal is no different than that employed with other DOT containers such as spray paint cans, household aerosols, or disposable cylinders of propane (for camping, torch etc.). When feasible, we recommended recycling for scrap metal content. CALGAZ will do this for any customer that wishes to return cylinders to us prepaid. All that is required is a phone call to make arrangements so we may anticipate arrival. Scrapping cylinders involves some preparation before the metal dealer may accept them. We perform this operation as a service to valued customers who want to participate.

MIXTURES: When two or more gases or liquefied gases are mixed, their hazardous properties may combine to create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an Industrial Hygienist or other trained person when you make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death.

Further information about the handling of compressed gases can be found in the following pamphlets published by: Compressed Gas Association Inc. (CGA), 1725 Jefferson Davis Highway, Suite 1004, Arlington, VA 22202-4102. Telephone: (703) 412-0900.

P-1 "Safe Handling of Compressed Gases in Containers"
AV-1 "Safe Handling and Storage of Compressed Gases"
"Handbook of Compressed Gases"

PREPARED BY:

CHEMICAL SAFETY ASSOCIATES, Inc.
PO Box 3519, La Mesa, CA 91944-3519
619/670-0609

Fax on Demand: 1-800/231-1366



This Material Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR, 1910.1200. Other government regulations must be reviewed for applicability to this product. To the best of CALGAZ knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness are not guaranteed and no warranties of any type, either express or implied, are provided. The information contained herein relates only to this specific product. If this product is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.

4.) Chlorine (Granular)

Chlorine

Safety Data Sheet P-4580

This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.
 Date of issue: 01/01/1979 Revision date: 11/30/2016 Supersedes: 10/17/2016

SECTION 1: Product and company identification

1.1. Product identifier

Product form : Substance
 Name : Chlorine
 CAS No : 7782-50-5
 Formula : Cl₂

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Industrial use. Use as directed.

1.3. Details of the supplier of the safety data sheet

Praxair, Inc.
 10 Riverview Drive
 Danbury, CT 06810-6268 - USA
 T 1-800-772-9247 (1-800-PRAXAIR) - F 1-716-879-2146
www.praxair.com

1.4. Emergency telephone number

Emergency number : Onsite Emergency: 1-800-645-4633

CHEMTREC, 24hr/day 7days/week
 — Within USA: 1-800-424-9300, Outside USA: 001-703-527-3887
 (collect calls accepted, Contract 17729)

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

GHS-US classification

Ox. Gas 1	H270
Liquefied gas	H280
Acute Tox. 2 (Inhalation: gas)	H330
Skin Corr. 1A	H314
Eye Dam. 1	H318
STOT SE 3	H335
Aquatic Acute 1	H400

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US) :



Signal word (GHS-US) :

DANGER

Hazard statements (GHS-US) :

H270 - MAY CAUSE OR INTENSIFY FIRE; OXIDIZER
 H280 - CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED
 H314 - CAUSES SEVERE SKIN BURNS AND EYE DAMAGE
 H330 - FATAL IF INHALED
 H400 - VERY TOXIC TO AQUATIC LIFE
 CGA-HG22 - CORROSIVE TO THE RESPIRATORY TRACT

Precautionary statements (GHS-US) :

P202 - Do not handle until all safety precautions have been read and understood
 P244 - Keep reduction valves/valves and fittings free from oil and grease
 P260 - Do not breathe gas
 P264 - Wash hands thoroughly after handling
 P271+P403 - Use and store only outdoors or in a well-ventilated place
 P273 - Avoid release to the environment

Chlorine

Safety Data Sheet P-4580

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Date of issue: 01/01/1979 Revision date: 11/30/2016 Supersedes: 10/17/2016

P280+P284 - Wear protective gloves, protective clothing, eye protection, respiratory protection, and/or face protection
 P370+P376 - In case of fire: Stop leak if safe to do so
 P405 - Store locked up
 P501 - Dispose of contents/container Dispose in a safe manner in accordance with local/national regulations
 CGA-PG05 - Use a back flow preventive device in the piping
 CGA-PG20+CGA-PG10 - Use only with equipment of compatible materials of construction and rated for cylinder pressure
 CGA-PG12 - Do not open valve until connected to equipment prepared for use
 CGA-PG18 - When returning cylinder, install leak tight valve outlet cap or plug
 CGA-PG06 - Close valve after each use and when empty
 CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F)

2.3. Other hazards

Other hazards not contributing to the classification : None.

2.4. Unknown acute toxicity (GHS US)

No data available

SECTION 3: Composition/Information on ingredients

3.1. Substance

Name	Product identifier	%
Chlorine (Main constituent)	(CAS No) 7782-50-5	100

3.2. Mixture

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Remove to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. If breathing is difficult, trained personnel should give oxygen. Call a physician. . WARNING: To avoid possible chemical burns, the rescuer should avoid breathing any exhaled air from the victim.

First-aid measures after skin contact : Avoid breathing vapors. In case of contact, immediately flush affected areas with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician. Wash clothing before reuse. Discard contaminated shoes.

First-aid measures after eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. Contact an ophthalmologist immediately.

First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation : Overexposure to concentrations moderately above the TLV of 1 ppm irritates the eyes and respiratory tract. Very brief exposure to a concentration of 1000 ppm may be fatal. Acts as an asphyxiant at high concentrations. Inhalation of high concentrations (e.g. greater than 15 ppm) causes choking, coughing, burning of the throat, and severe irritation of the upper respiratory tract; additionally, pulmonary edema, bronchitis, and pneumonitis may result.

4.3. Indication of any immediate medical attention and special treatment needed

Obtain medical assistance.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Oxidizer. May accelerate the burning of other combustible materials.
 Reactivity : No reactivity hazard other than the effects described in sub-sections below.

Chlorine

Safety Data Sheet P-4580

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5.3. Advice for firefighters

Firefighting instructions	: Evacuate all personnel from the danger area. Use self-contained breathing apparatus (SCBA) and protective clothing. Immediately cool containers with water from maximum distance. Stop flow of gas if safe to do so, while continuing cooling water spray. Remove ignition sources if safe to do so. Remove containers from area of fire if safe to do so. On-site fire brigades must comply with OSHA 29 CFR 1910.156 and applicable standards under 29 CFR 1910 Subpart L—Fire Protection.
Protection during firefighting	: DANGER! Toxic, corrosive, high-pressure gas.
Special protective equipment for fire fighters	: Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.
Specific methods	: Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas containers to rupture. Cool endangered containers with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems Stop flow of product if safe to do so Use water spray or fog to knock down fire fumes if possible.
Other information	: Containers are equipped with a pressure relief device. (Exceptions may exist where authorized by DOT.)

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	: DANGER: Oxidizing gas. Corrosive. Evacuate personnel to a safe area. Wear a self-contained breathing apparatus and appropriate personal protective equipment (PPE). (gas tight, chemical-protective) Approach suspected leak area with caution. Remove all sources of ignition. Toxic, corrosive vapor can spread from spill. Contact with flammable materials may cause fire or explosion. Ventilate area or move container to a well-ventilated area. Before entering the area, especially a confined area, check the atmosphere with an appropriate device. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.
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6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Prevent waste from contaminating the surrounding environment. Prevent soil and water pollution. Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.

6.3. Methods and material for containment and cleaning up

No additional information available

6.4. Reference to other sections

See also sections 8 and 13.

Chlorine

Safety Data Sheet P-4580

This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.
 Date of issue: 01/01/1979 Revision date: 11/30/2016 Supersedes: 10/17/2016

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling

: Do not breathe gas/vapor. Avoid all contact with skin, eyes, or clothing. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure

Wear leather safety gloves and safety shoes when handling cylinders. Protect cylinders from physical damage; do not drag, roll, slide or drop. While moving cylinder, always keep in place removable valve cover. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Never insert an object (e.g. wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the container valve after each use; keep closed even when empty. Never apply flame or localized heat directly to any part of the container. High temperatures may damage the container and could cause the pressure relief device to fail prematurely, venting the container contents. For other precautions in using this product, see section 16.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions

: Avoid oil, grease and all other combustible materials

Store only where temperature will not exceed 125°F (52°C). Post "No Smoking/No Open Flames" signs in storage and use areas. There must be no sources of ignition. Separate packages and protect against potential fire and/or explosion damage following appropriate codes and requirements (e.g. NFPA 30, NFPA 55, NFPA 70, and/or NFPA 221 in the U.S.) or according to requirements determined by the Authority Having Jurisdiction (AHJ). Always secure containers upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand when the container is not in use. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods. For other precautions in using this product, see section 16

OTHER PRECAUTIONS FOR HANDLING, STORAGE, AND USE: When handling product under pressure, use piping and equipment adequately designed to withstand the pressures to be encountered. Never work on a pressurized system. Use a back flow preventive device in the piping. Gases can cause rapid suffocation because of oxygen deficiency; store and use with adequate ventilation. If a leak occurs, close the container valve and blow down the system in a safe and environmentally correct manner in compliance with all international, federal/national, state/provincial, and local laws; then repair the leak. Never place a container where it may become part of an electrical circuit.

7.3. Specific end use(s)

None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Chlorine (7782-50-5)		
ACGIH	ACGIH TLV-TWA (ppm)	0.5 ppm
ACGIH	ACGIH TLV-STEL (ppm)	1 ppm
USA OSHA	OSHA PEL (Ceiling) (mg/m³)	3 mg/m³
USA OSHA	OSHA PEL (Ceiling) (ppm)	1 ppm
USA IDLH	US IDLH (ppm)	10 ppm

8.2. Exposure controls

Appropriate engineering controls

: Use only in a closed system. A corrosion-resistant, forced-draft fume hood is preferred. LOCAL EXHAUST: A corrosion-resistant system is acceptable.

Eye protection

: Wear safety glasses with side shields. Wear goggles and a face shield when transfilling or breaking transfer connections. Provide readily accessible eye wash stations and safety showers. Wear safety glasses with side shields or goggles when transfilling or breaking transfer connections.

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Skin and body protection	: Wear metatarsal shoes and work gloves for cylinder handling, and protective clothing where needed. Wear appropriate chemical gloves during cylinder changeout or wherever contact with product is possible. Select per OSHA 29 CFR 1910.132, 1910.136, and 1910.138.
Respiratory protection	: When workplace conditions warrant respirator use, follow a respiratory protection program that meets OSHA 29 CFR 1910.134, ANSI Z88.2, or MSHA 30 CFR 72.710 (where applicable). Use an air-supplied or air-purifying cartridge if the action level is exceeded. Ensure that the respirator has the appropriate protection factor for the exposure level. If cartridge type respirators are used, the cartridge must be appropriate for the chemical exposure. For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA).
Thermal hazard protection	: Wear cold insulating gloves when transfilling or breaking transfer connections.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Gas
Appearance	: Greenish-yellow gas. Amber liquid (under pressure).
Molecular mass	: 71 g/mol
Color	: Greenish gas.
Odor	: Pungent.
Odor threshold	: Odor threshold is subjective and inadequate to warn for overexposure. 0.23 mg/m ³ (Dixon and Ikels)
pH	: Not applicable.
Relative evaporation rate (butyl acetate=1)	: No data available
Relative evaporation rate (ether=1)	: Not applicable.
Melting point	: -101 °C (-149.85°F)
Freezing point	: No data available
Boiling point	: -34.05 °C (-29.25°F)
Flash point	: Not applicable.
Critical temperature	: 144 °C
Auto-ignition temperature	: Not applicable.
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: 6.9 bar (100 psia) (@20°C [68°F])
Critical pressure	: 77.11 bar (1118.4 psia)
Relative vapor density at 20 °C	: No data available
Relative density	: 1.6
Density	: 2.7 kg/m ³ (at 50 °C)
Relative gas density	: 2.5
Solubility	: Water: 8620 mg/l
Log Pow	: Not applicable.
Log Kow	: Not applicable.
Viscosity, kinematic	: Not applicable.
Viscosity, dynamic	: Not applicable.
Explosive properties	: Not applicable.
Oxidizing properties	: Oxidizer.
Explosion limits	: Non flammable.

9.2. Other information

Gas group	: Liquefied gas
Additional information	: Gas/vapor heavier than air. May accumulate in confined spaces, particularly at or below ground level

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SECTION 10: Stability and reactivity

- 10.1. Reactivity**
No reactivity hazard other than the effects described in sub-sections below.
- 10.2. Chemical stability**
Stable under normal conditions.
- 10.3. Possibility of hazardous reactions**
May occur.
- 10.4. Conditions to avoid**
Air contact. High temperature. Moisture. Incompatible materials.
- 10.5. Incompatible materials**
Chlorine reacts with most materials, especially flammable materials, other reducing agents, and nearly all metals. At temperatures below 250°F (121°C) certain common metals (e.g. iron, copper, steel, lead, nickel) resist reaction with dry chlorine, but others (e.g. aluminum, arsenic, gold, mercury, tin, titanium) react. Moist chlorine is highly corrosive except to glass, stoneware, porcelain, and certain alloys and only at low pressure. Titanium ignites spontaneously on contact with dry chlorine. Carbon steel ignites in chlorine at temperatures near 483°F (251°C).
- 10.6. Hazardous decomposition products**
Toxic fumes. Chlorides.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Inhalation:gas: FATAL IF INHALED.

Chlorine (lf)7782-50-5	
LC50 inhalation rat (ppm)	146.5 ppm/4h
ATE US (gases)	146.500 ppmV/4h

- Skin corrosion/irritation : CAUSES SEVERE SKIN BURNS AND EYE DAMAGE.
pH: Not applicable.
- Serious eye damage/irritation : CAUSES SERIOUS EYE DAMAGE.
pH: Not applicable.
- Respiratory or skin sensitization : Not classified
- Germ cell mutagenicity : Not classified
- Carcinogenicity : Not classified
- Reproductive toxicity : Not classified
- Specific target organ toxicity (single exposure) : MAY CAUSE RESPIRATORY IRRITATION.
- Specific target organ toxicity (repeated exposure) : Not classified
- Aspiration hazard : Not classified
- Symptoms/injuries after inhalation : Overexposure to concentrations moderately above the TLV of 1 ppm irritates the eyes and respiratory tract. Very brief exposure to a concentration of 1000 ppm may be fatal. Acts as an asphyxiant at high concentrations. Inhalation of high concentrations (e.g. greater than 15 ppm) causes choking, coughing, burning of the throat, and severe irritation of the upper respiratory tract; additionally, pulmonary edema, bronchitis, and pneumonitis may result.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : VERY TOXIC TO AQUATIC LIFE.

Chlorine (7782-50-5)	
LC50 fish 1	0.44 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [flow-through])
EC50 Daphnia 1	0.017 mg/l (Exposure time: 48 h - Species: Daphnia magna)

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Chlorine (7782-50-5)	
LC50 fish 2	0.014 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through])

12.2. Persistence and degradability

Chlorine (7782-50-5)	
Persistence and degradability	Not applicable for inorganic gases.

12.3. Bioaccumulative potential

Chlorine (7782-50-5)	
BCF fish 1	(no bioaccumulation expected)
Log Pow	Not applicable.
Log Kow	Not applicable.
Bioaccumulative potential	No data available.

12.4. Mobility in soil

Chlorine (7782-50-5)	
Mobility in soil	No data available.
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.

12.5. Other adverse effects

Other adverse effects : May cause pH changes in aqueous ecological systems.
Effect on ozone layer : None

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Do not attempt to dispose of residual or unused quantities. Return container to supplier.

SECTION 14: Transport information

In accordance with DOT

Transport document description : UN1017 Chlorine, 2.3
UN-No.(DOT) : UN1017
Proper Shipping Name (DOT) : Chlorine
Class (DOT) : 2.3 - Class 2.3 - Poisonous gas 49 CFR 173.115
Hazard labels (DOT) : Poison Gas
2.3 - Poison gas



DOT Special Provisions (49 CFR 172.102) : 2 - This material is poisonous by inhalation (see 171.8 of this subchapter) in Hazard Zone B (see 173.116(a) or 173.133(a) of this subchapter), and must be described as an inhalation hazard under the provisions of this subchapter
B9 - Bottom outlets are not authorized
B14 - Each bulk packaging, except a tank car or a multi-unit-tank car tank, must be insulated with an insulating material so that the overall thermal conductance at 15.5 C (60 F) is no more than 1.5333 kilojoules per hour per square meter per degree Celsius (0.075 Btu per hour per square foot per degree Fahrenheit) temperature differential. Insulating materials must not promote corrosion to steel when wet
N86 - UN pressure receptacles made of aluminum alloy are not authorized
T50 - When portable tank instruction T50 is referenced in Column (7) of the 172.101 Table, the applicable liquefied compressed gases are authorized to be transported in portable tanks in accordance with the requirements of 173.313 of this subchapter
TP19 - The calculated wall thickness must be increased by 3 mm at the time of construction. Wall thickness must be verified ultrasonically at intervals midway between periodic hydraulic tests (every 2.5 years). The portable tank must not be used if the wall thickness is less than that prescribed by the applicable T code in Column (7) of the Table for this material

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Marine pollutant : P



Additional information

Emergency Response Guide (ERG) Number : 124;173

Other information : No supplementary information available.

Special transport precautions : Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers:
 - Ensure there is adequate ventilation. - Ensure that containers are firmly secured. - Ensure cylinder valve is closed and not leaking. - Ensure valve outlet cap nut or plug (where provided) is correctly fitted. - Ensure valve protection device (where provided) is correctly fitted.

Transport by sea

UN-No. (IMDG) : 1017

Proper Shipping Name (IMDG) : CHLORINE

Class (IMDG) : 2 - Gases

MFAG-No : 124

Air transport

UN-No. (IATA) : 1017

Proper Shipping Name (IATA) : Chlorine

Class (IATA) : 2

Civil Aeronautics Law : Gases under pressure/Gases toxic under pressure

SECTION 15: Regulatory information

15.1. US Federal regulations

Chlorine (7782-50-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Listed on the United States SARA Section 302	
Subject to reporting requirements of United States SARA Section 313	
CERCLA RQ	10 lb
SARA Section 302 Threshold Planning Quantity (TPQ)	100 lb
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard Delayed (chronic) health hazard Sudden release of pressure hazard Fire hazard
SARA Section 313 - Emission Reporting	1.0 %

15.2. International regulations

CANADA

Chlorine (7782-50-5)
Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

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Chlorine (7782-50-5)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

15.2.2. National regulations

Chlorine (7782-50-5)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Japanese Poisonous and Deleterious Substances Control Law
Listed on the Canadian IDL (Ingredient Disclosure List)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on CICR (Turkish Inventory and Control of Chemicals)

15.3. US State regulations

Chlorine(7782-50-5)

U.S. - California - Proposition 65 - Carcinogens List	No
U.S. - California - Proposition 65 - Developmental Toxicity	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Female	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No
State or local regulations	U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16: Other information

Other information

: When you mix two or more chemicals, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an industrial hygienist or other trained person when you evaluate the end product. Before using any plastics, confirm their compatibility with this product

Praxair asks users of this product to study this SDS and become aware of the product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this SDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information

The opinions expressed herein are those of qualified experts within Praxair, Inc. We believe that the information contained herein is current as of the date of this Safety Data Sheet. Since the use of this information and the conditions of use are not within the control of Praxair, Inc, it is the user's obligation to determine the conditions of safe use of the product

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- NFPA health hazard : 4 - Very short exposure could cause death or serious residual injury even though prompt medical attention was given.
- NFPA fire hazard : 0 - Materials that will not burn.
- NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.
- NFPA specific hazard : OX - This denotes an oxidizer, a chemical which can greatly increase the rate of combustion/fire.



HMIS III Rating

- Health : 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given
- Flammability : 0 Minimal Hazard
- Physical : 2 Moderate Hazard

SDS US (GHS HazCom 2012) - Praxair

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

5.) Coal Tar Epoxy

0

Reactivity
Personal
Protection

0
A

Material Safety Data Sheet

Coal tar MSDS

Section 1: Chemical Product and Company Identification

Product Name: Coal tar

Catalog Codes: SLC1108

CAS#: 8007-45-2

RTECS: GF8600000

TSCA: TSCA 8(b) inventory: Coal tar

CI#: Not available.

Synonym: Estar; Lavatar; Zetar; Tar, coal; Pixalbol; Tar, coking; coke oven emissions

Chemical Name: Coal Tar

Chemical Formula: Not available.

Contact Information:

ScienceLab.com, Inc.

1025 Smith Rd.

Houston, Texas 77396

US Sales: 1-800-901-7247

International Sales: 1-281-441-4400

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:

1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name CAS # % by Weight

Coal tar 8007-45-2 100

Toxicological Data on Ingredients: Coal tar LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects: Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.

Potential Chronic Health Effects:

CARCINOGENIC EFFECTS: Classified 1 (Proven for human.) by IARC, 1 (Clear evidence; known carcinogen) by NTP.

MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. **TERATOGENIC**

EFFECTS: Not available. **DEVELOPMENTAL TOXICITY:** Not available. The substance may be toxic to skin. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Remove contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

Serious Skin Contact: Not available.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical

attention.

Serious Inhalation: Not available.

Ingestion:

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: CLOSED CUP: 96°C (204.8°F).

Flammable Limits: Not available.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances:

Slightly flammable to flammable in presence of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:

SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards: On ignition it burns with reddish, luminous, and very sooty flame.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:

Absorb with an inert material and put the spilled material in an appropriate waste disposal. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

Section 7: Handling and Storage

Precautions:

Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not breathe gas/vapors/aerosols/mists/fumes/vapor/spray. Wear suitable protective clothing. If you feel unwell, seek medical attention and show the label when possible. Keep away from incompatibles such as oxidizing agents.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

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Section 8: Exposure Controls/Personal Protection

Engineering Controls:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection: Safety glasses. Lab coat.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits: Not available.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid. (Viscous liquid.)

Odor: Tar-like; naphthalene-like

Taste: Sharp burning.

Molecular Weight: Not available.

Color: Black

pH (1% soln/water): Not applicable.

Boiling Point: 66°C (150.8°F)

Melting Point: Not available.

Critical Temperature: Not available.

Specific Gravity: 1.2 (Water = 1)

Vapor Pressure: <0.1 kPa (@ 20°C)

Relative Density: >1 (Air = 1)

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, methanol, diethyl ether, acetone.

Solubility:

Partially soluble in methanol, diethyl ether, acetone. Insoluble in cold water, hot water. Soluble in benzene, nitrobenzene. Partly dissolves in alcohol, chloroform, carbon disulfide, petroleum ether, sodium hydroxide solution, hexane

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Excess heat, incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Not considered to be corrosive for metals and glass.

Special Remarks on Reactivity:

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It reacts violently with strong oxidizers such as liquid chlorine, sodium or potassium hypochlorite, nitric acid and peroxides.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Inhalation. Ingestion.

Toxicity to Animals:

LD50: Not available. LC50: Not available.

Chronic Effects on Humans:

CARCINOGENIC EFFECTS: Classified 1 (Proven for human.) by IARC, 1 (Clear evidence; known carcinogen.) by NTP.

MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. May cause damage to the following organs: skin.

Other Toxic Effects on Humans: Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:

May affect genetic material (mutagenic). May cause cancer

Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects: Skin: It can cause skin irritation. Existing skin disorders (e.g. eczema) may be aggravated by exposure to this material. Eyes: It can cause eye irritation. Inhalation: Inhalation of mist or vapor can irritate the respiratory tract. Ingestion: Ingestion can cause severe gastrointestinal tract irritation with nausea, vomiting. It may also affect behavior/central nervous system and cause central nervous system depression. Aspiration can cause lung inflammation and damage. Chronic Potential Health Effects: Skin: Prolonged or repeated exposure to coal tar may cause irritation and dermatitis (including acne), melanosis, or photosensitization dermatitis. Eyes: Repeated or prolonged exposure may cause eye damage. Inhalation: Prolonged or repeated inhalation may contribute to gallbladder disease, pneumonitis, and pulmonary vessel thrombosis.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: Not available.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

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Special Provisions for Transport: No DOT per N50 Marine Pollutant

Section 15: Other Regulatory Information

Federal and State Regulations:

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Coal tar California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Coal tar (listed as coke oven emissions New York release reporting list: Coal tar Rhode Island RTK hazardous substances: Coal tar Pennsylvania RTK: Coal tar Massachusetts RTK: Coal tar California Director's List of Hazardous Substances: Coal tar TSCA 8(b) inventory: Coal tar

Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Equipment If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as reducing agents, combustible materials, organic materials, acids, moisture.

Storage:

May corrode metallic surfaces. Store in a metallic or coated fiberboard drum using a strong polyethylene inner package. Corrosive materials should be stored in a separate safety storage cabinet or room.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection:

Splash goggles. Lab coat. Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor and dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits: Not available.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid.

Odor: Not available.

Taste: Not available.

Molecular Weight: 142.99 g/mole

Color: Not available.

pH (1% soln/water): Not available.

Boiling Point: Decomposes.

Melting Point: 100°C (212°F)

Critical Temperature: Not available.

Specific Gravity: Not available.

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

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Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water.

Solubility: Soluble in cold water, hot water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Reactive with reducing agents, combustible materials, organic materials, acids, moisture.

Corrosivity:

Extremely corrosive in presence of aluminum, of zinc. Corrosive in presence of steel, of copper. Slightly corrosive to corrosive in presence of glass, of stainless steel(304), of stainless steel(316).

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Eye contact. Inhalation. Ingestion.

Toxicity to Animals: Acute oral toxicity (LD50): 850 mg/kg [Rat].

Chronic Effects on Humans: The substance is toxic to lungs, mucous membranes.

Other Toxic Effects on Humans:

Very hazardous in case of skin contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are more toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

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Waste Disposal:

Section 14: Transport Information

DOT Classification: CLASS 5.1: Oxidizing material.

Identification: : Calcium hypochlorite, dry : UN1748 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:

Pennsylvania RTK: Calcium hypochlorite Massachusetts RTK: Calcium hypochlorite TSCA 8(b) inventory: Calcium hypochlorite CERCLA: Hazardous substances.: Calcium hypochlorite

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada):

CLASS C: Oxidizing material. CLASS E: Corrosive solid.

DSCL (EEC):

R22- Harmful if swallowed. R38- Irritating to skin. R41- Risk of serious damage to eyes.

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 0

Reactivity: 2

Personal Protection: j

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 0

Reactivity: 1

Specific hazard:

Protective Equipment:

Gloves. Lab coat. Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/11/2005 11:31 AM

Last Updated: 05/21/2013 12:00 PM

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume

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6.) *Epoxy (Anchoring)*

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name CS Epoxy Adhesive
Version# Revision 01
date CAS# 06-09-2010
Product Code Mixture
Product use C6
Manufacturer/Supplier Concrete anchoring adhesive.
ITWRed Head
2171 Executive Drive, Suite 100 Addison, IL
60101 US
Telephone Number: (630) 350-0370 Contact
Person: Andrew Rourke
Emergency CHEMTREC: (800) 424-9300

2. Hazards Identification

Physical state Appearance

Emergency overview Liquid.
Paste.
DANGER!

OSHA regulatory status Potential

health effects

Causes skin and eye burns. Causes severe respiratory tract irritation. Harmful if absorbed through skin or swallowed. May cause sensitization by skin contact. Prolonged exposure may cause chronic effects.

This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

Routes of exposure Eyes

Skin

Inhalation. Ingestion. Skin contact. Eye contact.

Causes eye burns. Risk of corneal damage. Contact may cause irritation, redness, tearing, blurred vision and/or burns.

Inhalation

Causes skin burns. Harmful if absorbed through the skin. May cause sensitization by skin contact. Contact may cause irritation, redness and/or drying.

Ingestion

Causes severe respiratory tract irritation. Vapors irritate the respiratory system, and may cause coughing and difficulties in breathing.

Target organs

Harmful if swallowed. Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract.

Chronic effects

Potential environmental effects

Eyes. Skin. Respiratory system. Lungs.

Overexposure can cause lung damage - pulmonary toxin.

The product contains a substance which is toxic to aquatic organisms and which may cause long-term adverse effects in the aquatic environment.

3. Composition/ Information on Ingredients

Components	CAS#	Percent
Bisphenol A Diglycidyl Ether Resin (Part A)	25068-38-6	60- 80
Mercaptan/Amine Polymer Blend (Part B)	Trade Secret	20 -40
2,4,6-Tris(dimethylaminomethyl) Phenol (Part B)	90-72-2	Trade Secret
Isopropanol (Part B)	67-63-0	Trade Secret

4. First Aid Measures

First aid procedures

Eye contact

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Skin contact	Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing separately before reuse. Destroy or thoroughly clean contaminated shoes.
Inhalation	Move to fresh air. If breathing is difficult, give oxygen. Get medical attention.
Ingestion	Rinse mouth thoroughly. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content does not get into the lungs. Never give anything by mouth to a victim who is unconscious or is having convulsions. Get medical attention immediately.
Notes to physician	Keep victim under observation. In case of shortness of breath, give oxygen. Symptoms may be delayed.
General advice	Take off contaminated clothing and shoes immediately. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before re-use.

5. Fire Fighting Measures

Flammable properties Extinguishing media

Suitable extinguishing media

Protection of firefighters Protective equipment and precautions for firefighters

Special protective equipment for fire-fighters

Specific methods

Hazardous combustion products

Not flammable by OSHA criteria. Material may burn but not ignite readily. Water.

Water fog. Foam. Dry chemical powder. Carbon dioxide (CO₂).

Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Move containers from fire area if you can do so without risk. Cool containers exposed to flames with water until well after the fire is out. Water runoff can cause environmental damage.

Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

In the event of fire and/or explosion do not breathe fumes.

Carbon monoxide. Carbon Dioxide. Nitrogen oxides (NO_x). Hydrogen chloride. Sulfur oxides.

6. Accidental Release Measures

Personal precautions

Environmental precautions

Methods for containment

Methods for cleaning up

Other information

Keep unnecessary personnel away. Local authorities should be advised if significant spillages cannot be contained. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering them. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. See Section 8 of the MSDS for Personal Protective Equipment.

Prevent further leakage or spillage if safe to do so. Do not contaminate water.

Stop leak if you can do so without risk. Dike the spilled material, where this is possible. Collect spillage. Prevent entry into waterways, sewers, basements or confined areas.

Small Spills: Absorb spill with vermiculite or other inert material. Clean surface thoroughly to remove residual contamination. This material and its container must be disposed of as hazardous waste. Should not be released into the environment.

Large Spills: Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Prevent product from entering drains. Do not allow material to contaminate ground water system.

Clean up in accordance with all applicable regulations.

7. Handling and Storage

Handling

Storage

Wear personal protective equipment. Avoid breathing vapor. Do not get in eyes, on skin, on clothing. Avoid prolonged exposure. Do not taste or swallow. Use only with adequate ventilation. Wash thoroughly after handling. When using, do not eat, drink or smoke. Avoid release to the environment.

Keep container tightly closed. For maximum shelf life, store between 4.4°C (40°F) to 26.7 °C (80 °F). Do not store above 43.3°C (110°F). Keep away from food, drink and animal feedings. Keep out of the reach of children.

8. Exposure Controls / Personal Protection

Occupational exposure limits

ACGIH

Components

Type

Value

Isopropanol (Part B) (67-63-0)

STEL
TWA

400 ppm
200 ppm

U.S. -OSHA

Components	Type	Value
Isopropanol (Part B) (67-63-0)	PEL	400 ppm
		980 mg/m3

Canada - Alberta

Components	Type	Value
Isopropanol (Part B) (67-63-0)	STEL	984 mg/m3
		400 ppm
	TWA	492 mg/m3
		200 ppm

Canada - British Columbia

Components	Type	Value
Isopropanol (Part B) (67-63-0)	STEL	400 ppm
	TWA	200 ppm

Canada - Ontario

Components	Type	Value
Isopropanol (Part B) (67-63-0)	STEL	400 ppm
	TWA	200 ppm

Canada - Quebec

Components	Type	Value
Isopropanol (Part B) (67-63-0)	STEL	1230 mg/m3
		500 ppm
	TWA	983 mg/m3
		400 ppm

Mexico

Components	Type	Value
Isopropanol (Part B) (67-63-0)	STEL	1225 mg/m3
		500 ppm
	TWA	980 mg/m3
		400 ppm

Engineering controls Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

Personal protective equipment Eye

/ face protection Wear safety glasses with side shields (or goggles) and a face shield.

Skin protection Wear chemical-resistant gloves, footwear and protective clothing appropriate for risk of exposure. Contact glove manufacturer for specific information.

Respiratory protection In case of insufficient ventilation, wear suitable respiratory equipment. If permissible levels are exceeded use NIOSH mechanical filter/ organic vapor cartridge or an air-supplied respirator.

General hygiene considerations Avoid contact with eyes. Avoid contact with skin. Provide eyewash station and safety shower. When using, do not eat, drink or smoke. Handle in accordance with good industrial hygiene and safety practice.

9. Physical & Chemical Properties

Appearance	rate
Color	Flammability.
Odor	
Odor threshold	
Physical state	
Form	
pH	
Melting point	
Freezing point	
Boiling point Flash	
point Evaporation	

Bioaccumulation / Accumulation	No data available. Not available.
Partition coefficient (n-octanol/water)	
Mobility in environmental media	No data available.

13. Disposal Considerations

Disposal instructions Dispose of contents/container in accordance with local/regional/national/international regulations. Incinerate the material under controlled conditions in an approved incinerator. Do not incinerate sealed containers. Do not contaminate ponds, waterways or ditches with chemical or used container.

14. Transport Information

Product Specific Note: This product meets the limited quantities exception requirements for the below listed transportation agencies. Under DOT and TOG regulations, this product may be reclassified as a Consumer Commodity (ORM-D). Please see the specific regulations for the shipping and packaging requirements.

DOT

Basic shipping requirements:
 Proper shipping name Consumer commodity
 Hazard class Subsidiary ORM-D
 hazard class Labels None None
 required Additional information: 156, 306
 Packaging exceptions 156,306
 Packaging non bulk Packaging bulk None

IATA

Basic shipping requirements:
 UN number 2735
 Proper shipping name Amines, liquid, corrosive, n.o.s. (2,4,6-Tris(dimethylaminomethyl) Phenol (Part B)) 8
 Hazard class III
 Packing group

IMDG

Basic shipping requirements:
 UN number 2735
 Proper shipping name AMINES, LIQUID, CORROSIVE, N.O.S. (2,4,6-Tris(dimethylaminomethyl) Phenol (Part B)) 8
 Hazard class III
 Packing group F-A, S-B
 EmS No.

TOG

Basic shipping requirements: Packaging bulk
 Proper shipping name
 Hazard class
 Subsidiary hazard class
 Labels required Additional information:
 Packaging exceptions
 Packaging non bulk

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156,306
156,306
None

Flammability limits in air, upper, Not available.
 % by volume

Flammability limits in air, lower, Not available.
 % by volume

Vapor pressure Vapor Not available.

density Specific gravity Not available.

Solubility (water) Not available.

Partition coefficient None.
 (n-octanol/water) Not available.

Auto-ignition temperature

Decomposition temperature Not available.

Density Not available.

1.3 g/cm³ Part A
 1.7 g/cm³ Part B

10. Chemical Stability & Reactivity Information

Chemical stability Conditions Stable at normal conditions. Elevated
 to avoid incompatible temperatures.
 materials Strong oxidizing agents. Strong acids.

Hazardous decomposition Carbon oxides. Nitrogen oxides (NO_x) . Sulfur oxides. Hydrogen chloride.
 products

Possibility of hazardous Will not occur by itself. More than 1 pound of the Part B material added to epoxy resins will cause irreversible
 reactions polymerization with considerable heat build-up.

11. Toxicological Information

Toxicological data Components

Isopropanol (Part B) (67-63-0)	Test Results
	Acute Dermal LD50 Rabbit: 5030 - 7900 mg/kg
Mercaptan/Amine Polymer Blend (Part B) (Trade Secret)	Acute Oral LD50 Rat: 4700 - 5800 mg/kg Acute Dermal LD50 Rabbit: > 10000 mg/kg Acute Oral LD50 Rat: > 3000 mg/kg

Local effects Causes skin and eye burns. Causes severe respiratory tract irritation. Harmful in contact with skin and if swallowed. May cause sensitization by skin contact.

Sensitization Chronic May cause an allergic skin reaction. Overexposure
 effects Carcinogenicity can cause lung damage.

ACGIH Carcinogens This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

Isopropanol (Part B) (CAS 67-63-0) A4 Not classifiable as a human carcinogen

Epidemiology This product is not reported to cause epidemiological effects in humans. This
 Mutagenicity product is not expected to cause mutagenic or genotoxic effects. Not
 Neurological effects available.

Reproductive effects Isopropyl alcohol has demonstrated animal effects of reproductive toxicity. Isopropyl

Teratogenicity Further alcohol has demonstrated animal effects of teratogenicity.

information Symptoms may be delayed.

12. Ecological Information

Ecotoxicological data

Components	Test Results
Isopropanol (Part B) (67-63-0) C6 Epoxy Adhesive	LC50 Bluegill (<i>Lepomis macrochirus</i>): > 1400 mg/196 hours

Ecotoxicity	Contains a substance which causes risk of hazardous effects to the environment.
Environmental effects	The product contains a substance which is toxic to aquatic organisms and which may cause long-term adverse effects in the aquatic environment. An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Persistence and degradability	Not available.



IATA



IMDG

15. Regulatory Information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

All components are on the U.S. EPA TSCA Inventory List.

US EPCRA (SARA Title III) Section 313 -Toxic Chemical: De minimis concentration

Isopropanol (Part B) (GAS 67-63-0) 1.0 %

US EPCRA (SARA Title III) Section 313 -Toxic Chemical: Listed substance

Isopropanol (Part B) (GAS 67-63-0) Listed.

CERCLA (Superfund) reportable quantity (lbs)

Isopropanol (Part B) 100

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Immediate Hazard - Yes
Delayed Hazard - Yes Fire
Hazard - No Pressure
Hazard - No Reactivity
Hazard - No

Section 302 extremely hazardous substance

No

Section 311 hazardous chemical

No

Drug Enforcement Agency (DEA)

Not controlled

Canadian regulations

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS status WHMIS classification

Controlled
D2B - Other Toxic Effects-TOXIC E - Corrosive

WHMIS labeling

Cf)@

Inventory status

Country(s) or region	Philippines	Inventory name
Australia		Australian Inventory of Chemical Substances (AICS)
Canada		Domestic Substances List (DSL)
Canada China		Non-Domestic Substances List (NDSL)
Europe		Inventory of Existing Chemical Substances in China (IECSC)
Europe		European Inventory of
Japan		
Korea		
New Zealand		

Existing Commercial
Chemical Substances
(EINECS)

On inventory (yes/no)*

No Yes No No No

European List of
Notified Chemical
Substances (ELINCS)

No No No No No

Inventory of Existing
and New Chemical
Substances (ENCS)

Existing Chemicals List
(EGL)

New Zealand Inventory

Philippine Inventory of
Chemicals and
Chemical Substances
(PIGGS)

7.) *Fertilizer*

Agrium

Material Safety Data Sheet

NFPA Classification		DOT / TDG Pictograms	WHMIS Classification	HMIS		PROTECTIVE CLOTHING
Health	0	@	@	Health	1	UV
Flammability	0			Flammability	0	
Reactivity	0			Reactivity	0	
Specific Hazard				PPE	A	

Section I. Chemical Product and Company Identification

PRODUCT NAME/ TRADE NAME		International Plant Food 13-13-13, Americus, Florence, Carolinas	
SYNONYM	This MSDS is applicable to all Agrium International Plant Foods containing Ammonium Phosphate (MAP or OAP), Potash, Ammonium Sulfate and depending on formulation, Ammonium Nitrate, with less than 1% by weight of compounds containing Boron, Calcium, Copper, Iron, Magnesium, Manganese and Zinc if any.		MSDS NUMBER: 16014g
CHEMICAL NAME	Not applicable. A homogeneously granulated product.		REVISION NUMBER 1.5
CHEMICAL FAMILY	Ammonium salt.		MSDS prepared by August 31, 2013 the Environment, Health and Safety Department on:
CHEMICAL FORMULA	Not applicable.		24 HR EMERGENCY TELEPHONE NUMBER: Transportation: 1-800-792-8311 Medical: 0-303-389-1653 Collect
MATERIAL USES	Agricultural industry: Fertilizer.		
MANUFACTURER Agrium North American Wholesale 13131 Lake Fraser Drive, S.E. Calgary, Alberta, Canada, T2J 7E8 Agrium U.S. Inc. Suite 1700, 4582 South Ulster St. Denver, Colorado U.S.A. 80237		SUPPLIER Agrium North American Wholesale 13131 Lake Fraser Drive, S.E. Calgary, Alberta, Canada, T2J 7E8 Agrium U.S. Inc. Suite 1700, 4582 South Ulster St. Denver, Colorado U.S.A. 80237	

Section II. Hazardous Ingredients

NAME	CAS#	Exposure Limits (ACGIH)						%by Weight
		TLV-TWA mg/m ³	TLV-TWA ppm	STEL mg/m ³	STEL ppm	CEIL mg/m ³	CEIL ppm	
Monoammonium phosphate	7722-76-1	-	-	-	-	-	-	0-70
Diammonium phosphate	7783-28-0	-	-	-	-	-	-	0-70
Ammonium nitrate	6484-52-2	-	-	-	-	-	-	0-10
Ammonium sulfate	7783-20-2	-	-	-	-	-	-	10-30
Potassium chloride	7447-40-7	-	-	-	-	-	-	10-30
Iron oxide	1309-37-1	5 (R)	-	-	-	-	-	0-1
Sodium borate decahydrate (borax)	1303-96-4	2 (I)	-	6(1)	-	-	-	0-1
Zinc oxide	1314-13-2	2 (R)	-	10(R)	-	-	-	0-1

Continued on Next Page

ACGIH TLV notations:

- No assigned TLV

(C) - Ceiling • the concentration not to be exceeded at any time

(I) - measured as the Inhalable fraction of the aerosol

(R) • measured as the Respirable fraction of the aerosol

(T) • measured as the Thoracic fraction of the aerosol

**TOXICOLOGICAL DATA ON
INGREDIENTS****Monoammonium Phosphate (MAP) TFI Product Testing Program:**

Acute oral LD₅₀, rat, OECD 425 protocol: >2,000mg/kg. MAP is not acutely toxic by the oral route of exposure.

Acute dermal LD₅₀, rat, OECD 402 protocol: >5,000mg/kg. MAP is not acutely toxic by the dermal route of exposure.

Dibasic Ammonium phosphate (DAP)

TFI Product Testing Results, OECD 402 acute dermal toxicity: LD₅₀: > 5,000 mg/kg rat, not acutely toxic

TFI Product Testing Results, OECD 425 acute oral toxicity: LD₅₀: > 2,000 mg/kg rat, not acutely toxic

TFI Product Testing Results, OECD 201 green algae acute toxicity testing, no toxicity observed at up to 97.1 mg/L (highest cone tested); growth stimulated at 6.4 mg/L and higher.

Ecotoxicity:

Acute fish toxicity, 96hr LC₅₀, rainbow trout, OECD 203 protocol: >85.9 mg/L. The acute toxicity of MAP to fish is low.

Ammonium Sulfate TFI Product Testing Program Results : Acute

oral LD₅₀: 640-4,250 mg/kg (rat, mouse)

Acute dermal LD₅₀: >2,000 mg/kg (rat, mouse) Ecotoxicity:

Acute toxicity to fish, various species, 96 hr LC₅₀: >13 . 6-159.8 mg total NH₃-L Acute

toxicity to aquatic invertebrates, Daphnia, 96 hr LC₅₀: >27 mg total NH₃-L

Ammonium Nitrate:"

Rat oral LD₅₀: 4500 mg/kg. [Peer Reviewed] [Environment Canada;Tech Info for Problem Spills: Ammonium Nitrate (Draft) p.59 (1981)]

Rat oral LD₅₀: 2217 mg/kg (Rat) [Gigiena i Sanitariya. For English translation, see HYSAAV. (V/O Mezhdunarodnaya Kniga, 113095 Moscow, USSR) V.1- 1936- (52(8),25,1987)]

Huntingdon Research Center Testing Results (3 studies), OECD Guide 401: 2462- 2900 mg/kg (rat oral)

TFI Product Testing Results, OECD Guideline 402: > 5,000 mg/kg acute dermal LD₅₀, rat, Bacterial reverse

mutation assay: negative, with and without metabolic activation, (Salmonella) Developmental

teratogenicity: Not teratogenic to rats. NOAEL >57 mg/kg

Ecotoxicity Values:

Acute fish toxicity: Chinook salmon, rainbow trout, bluegill: 96hr LC₅₀ = 420-1360 mg NO₃-L Acute toxicity

to aquatic invertebrates: Daphnia magna EC₅₀ = 555mg/L

Acute toxicity to aquatic plants (algae): Scenedesmus quadricauda EC₅₀ = 83mg/L

LD₅₀ Aspergillus niger (fungus) 15 mg/1/40 hr (36 deg C). [Peer Reviewed] [Environment Canada ; Tech Info]

Potash TFI Product Testing Program Results:

Acute oral toxicity: 2,600 mg/kg rat; 1,500 mg/kg mouse

Ecotoxicity:

Acute toxicity to fish, species unspecified, LC₅₀, 96hr: 2,010 mg/L Acute

toxicity to invertebrates, Daphnia, 48hr TL₅₀ 337mg/L

Borax:

Rat Oral LD₅₀, Acute: 2660 mg/kg, RTECS.

Algal toxicity: Green algae, Scenedesmus subspicatus 96-hr EC₁₀ = 24 mg B/L

Invertebrate toxicity: Daphnids, Daphnia magna Straus 24-hr EC₅₀ = 242 mg B/L Fish

toxicity.Seawater: Dab, Limanda limanda 96-hr LC₅₀ = 74 mg B/L

Fish toxicity, Freshwater: Rainbow trout, S. gairdneri (embryo-larval stage) 24-day LC₅₀ = 88 mg B/L; 32-

day LC₅₀ = 54 mg B/L

Goldfish, Carassius auratus (embryo-larval stage) 7-day LC₅₀ = 65 mg B/L; 3-day LC₅₀ = 71 mg

B/L

Iron oxide:

Rat inhalation (TCLo): 0.5mg/m³ continuous, 61 days RTECS.

Zinc oxide

Mouse oral LD₅₀, Acute: 7950 mg/kg, RTECS.

Section III. Hazards Identification.

POTENTIAL ACUTE HEALTH EFFECTS	<p>This product may irritate eyes and skin upon prolonged or repeated contact due to mechanical or desiccant action. Over-exposure by inhalation may cause respiratory tract irritation. Ingestion of this substance may produce irritation of the gastro-intestinal tract, characterized by burning and diarrhea.</p>
	<p>For nitrate containing formulations only: May interfere with the oxygen carrying capacity of the blood if ingested in large quantities or over a prolonged period of time. Persons with anemia, bowel diseases, or infants, are more likely to develop effects. Over-exposure by ingestion is unlikely under normal working conditions. Inhalation of dusts may cause respiratory irritation. This product may irritate eyes and skin upon contact but is unlikely to injure tissue. Symptoms of overexposure may include : Cardiovascular: methemoglobinemia, low blood pressure (hypotension), irregular heart beat (arrhythmia), shock (vasodilation) CNS: headache, dizziness, generalized tingling sensation (parasthesia) Gastrointestinal: nausea, vomiting, diarrhea, abdominal pain Eye: redness and inflammation (conjunctivitis) Skin: bluish discoloration (cyanosis) with profuse sweating following ingestion or irritation and flushed skin following contact with moist skin surfaces.</p>
POTENTIAL CHRONIC HEALTH EFFECTS	<p>CARCINOGENIC EFFECTSNONE by ACGIH, EPA, IARC, NTP, OSHA. MUTAGENIC EFFECTSNONE by ACGIH, EPA, IARC, NTP, OSHA. TERATOGENIC EFFECTSNONE by ACGIH, EPA, IARC, NTP, OSHA.</p> <p>Chronic borax inhalation overexposures may result in lung irritation and inflammation, as well as dermatitis. For nitrate containing formulations only: Repeated or prolonged overexposure by ingestion can reduce the oxygen carrying capacity of the blood producing anoxia in infants or individuals with preexisting bowel or blood diseases.</p>

Section IV. First Aid Measures

EYE CONTACT	<p>May cause eye irritation. Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Obtain medical attention if irritation persists.</p>
MINOR SKIN CONTACT	<p>May cause skin irritation. Wash contaminated skin with soap and water. Cover dry or irritated skin with a good quality skin lotion. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.</p>
EXTENSIVE SKIN CONTACT	<p>No additional information.</p>
MINOR INHALATION	<p>Repeated or prolonged inhalation of dust may lead to respiratory irritation. Loosen tight clothing around the individual's neck and waist. Allow the person to rest in a well ventilated area. Obtain medical attention if irritation persists.</p>
SEVERE INHALATION	<p>In emergency situations use proper respiratory protection to evacuate affected individuals to a safe area as soon as possible. Loosen tight clothing around the person's neck and waist. Oxygen may be administered if breathing is difficult. If the person is not breathing, perform artificial respiration. Obtain immediate medical attention.</p>
SLIGHT INGESTION	<p>Do not induce vomiting. Quickly transport the person to an emergency care facility. Removal of the substance from the stomach must be done by medical personnel. If tolerated, give no more than 1 cup of milk or water (or 1/2 cup for children) to rinse the mouth and throat and dilute the stomach contents.</p> <p>If spontaneous vomiting does occur, lower the head so that the vomit will not reenter the mouth and throat. Rinse mouth with water.</p>
EXTENSIVE INGESTION	<p>No additional information.</p>

Continued on Next Page

Section V. Fire and Explosion Data	
THE PRODUCT IS	Non-flammable.
AUTO-IGNITION TEMPERATURE	Not applicable.
FLASH POINT	Not applicable .
FLAMMABILITY LIMITS	Not applicable.
PRODUCTS OF COMBUSTION	Material will not burn. Undergoes thermal decomposition at elevated temperatures to release toxic and combustible gases: ammonia, nitrogen oxides, sulfur oxides, phosphorous oxides.
FIRE HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES	Not applicable.
EXPLOSION HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES	This product is non-Explosive.
FIRE FIGHTING MEDIA AND INSTRUCTIONS	Material will not burn. Undergoes thermal decomposition at elevated temperatures to release toxic and combustible gases. Use extinguishing media suitable for surrounding materials. Fire fighters should wear self-contained breathing apparatus (SCBA) and full turnout gear.
SPECIAL REMARKS ON FIRE HAZARDS	Non combustible. Flammable/toxic gases will form at elevated temperatures (>190 °C) by thermal decomposition (ammonia, sulfur oxides, nitrogen oxides, phosphorus oxides). A self contained breathing apparatus should be used to avoid inhalation of toxic fumes.
SPECIAL REMARKS ON EXPLOSION HAZARDS	No additional remark.

Section VI. Accidental Release Measures	
SMALL SPILL	Use appropriate tools to put the spilled solid in a suitable container for intended use or disposal.
LARGE SPILL	Prevent additional discharge of material, if possible to do so without hazard. Prevent spills from entering sewers, watercourses, wells, etc. Product will promote algae growth and may degrade water quality and taste. Notify downstream water users. Sulfate in potable drinking water should be maintained below 250 mg/L. Will dissolve and disperse in water. Nitrate in potable drinking water should be maintained below 10 mg/L. Reclaiming material may not be viable. Recover and place material in suitable containers for recycle, reuse, or disposal. Ensure disposal is in compliance with <u>government requirements and local regulations</u> .

Section VII. Handling and Storage	
PRECAUTIONS	Avoid contact with skin and eyes. After handling, always wash hands thoroughly with soap and water. Do not breathe dust. Keep away from food, drink and animal feed. Avoid contact with incompatible substances. Keep out of reach of children.
STORAGE	Store in a dry, cool and well ventilated area.

sleeved clothing, coveralls, chemical resistant gloves, and safety glasses with side shields.

Wear appropriate respiratory protection for dust/mist when ventilation is inadequate. A filtering facepiece dust mask is appropriate for most applications. A NIOSH approved full facepiece or half mask dust respirator with N-100 or P-100 filters should be used under conditions where airborne concentrations may exceed occupational exposure limits. Page Number: 5

International Plant Food 13-13-13 Americus, Florence, Carolines

~~Continued on Next Page~~

If the use of non-disposable half or full facepiece respirators is warranted, a respiratory protection program that meets OSHA 29 CFR 1910.134 requirements must be followed.

**PERSONAL PROTECTION IN
CASE OF LARGE RELEASE**

No additional information.

EXPOSURE LIMITS

Borate Compounds, Inorganic:

ACGIH TLV-1WA 2 mg/m³ as inhalable dust; STEL 6 mg/m³ as inhalable dust.

Iron oxide:

ACGIH TLV-1WA 5 mg/m³ as respirable dust

Fed OSHA Permissible Exposure Limit: Table Z-1 8-hr Time Weighted Avg: 10 mg/m³ as fume

as

Zinc oxide:

ACGIH TLV-1WA 2 mg/m³; STEL 10 mg/m³ as respirable dust

Fed OSHA Permissible Exposure Limit: Table Z-1 8-hr Time Weighted Avg: 15 mg/m³ as total dust

MI OSHA Permissible Exposure Limit: R325.51103 Table G-1-A, 8-hr Time Weighted Avg: 10 mg/m³ as total dust

OSHA PEL: 15 mg/m³ for Particulates Not Otherwise Regulated (nuisance particulates) as total dust.

Federal, State, and Provincial exposure limits may vary. Consult local officials for acceptable exposure limits in your jurisdiction.

Section IX. Physical and Chemical Properties

PHYSICAL STATE AND APPEARANCE	Solid granules.		
MOLECULAR WEIGHT	Not applicable.	COLOR	Grey.
pH (10% SOLN/WATER)	-5	ODOR	Odorless.
BOILING POINT	Decomposes.	ODOR THRESHOLD	Not applicable
MELTING POINT	Not available	TASTE	Acrid and saline.
CRITICAL TEMPERATURE	Not available.	VOLATILITY	Not applicable.
SPECIFIC GRAVITY <i>g/cc</i>	<1 (Water= 1)	SOLUBILITY	Easily soluble in hot water. in Soluble cold water.
BULK DENSITY kg/m³ ; lbs/ft³	Variable depending on formulation	DISPERSION PROPERTIES	See solubility in water.
VAPOR PRESSURE	Not applicable.	WATER/OIL DIST. COEFF.	Not available.
VAPOR DENSITY	Not applicable.		

Section X. Stability and Reactivity Data

STABILITY	The product is stable.
INSTABILITY TEMPERATURE	Not available.
CONDITIONS OF INSTABILITY	No additional remark.
INCOMPATIBILITY WITH VARIOUS SUBSTANCES	Slightly reactive with oxidizing agents, metals, alkalis, and moisture.
CORROSIVITY	Corrosive to aluminum, zinc, and copper. Slightly corrosive to steel, and 304 stainless steel. Non-corrosive to 316 stainless steel.
SPECIAL REMARKS ON REACTIVITY	Avoid contact with moisture. Hygroscopic. Material will absorb moisture impairing flowability. Hydrolysis will slowly produce acids corrosive to metals.

Continued on Next Page

SPECIAL REMARKS ON CORROSIVITY	Incompatible with copper alloys. Corrosive to brass. Corrosive to ferrous metals and alloys. Contact your sales representative or a metallurgical specialist to ensure compatability with your equipment.
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Section XI. Toxicological Information


SIGNIFICANT ROUTES OF EXPOSURE	Ingestion. Inhalation.
TOXICITY TO ANIMALS	See Section II.
SPECIAL REMARKS ON TOXICITY TO ANIMALS	Will release ammonium ions. Ammonia is a toxic hazard to fish. Avoid spills or release to watercourses. May be harmful to livestock and wildlife if ingested. Clean up all spilled material, especially where bulk fertilizer loading of equipment occurs. The product itself and its products of degradation are not harmful under normal conditions of careful and responsible use. Will release ammonium ions. Ammonia is a toxic hazard to fish. Avoid spills or release to watercourses.
OTHER EFFECTS ON HUMANS	Our data base contains no additional remark on the toxicity of this product
SPECIAL REMARKS ON CHRONIC EFFECTS ON HUMANS	No additional remark.
SPECIAL REMARKS ON OTHER EFFECTS ON HUMANS	No additional information.


Section XII. Ecological Information

ECOTOXICITY	Low toxicity for humans or animals under normal conditions of use. May be harmful to livestock and wildlife if ingested. Clean up all spilled material, especially where bulk fertilizer loading of equipment occurs to prevent animal exposure. Aquatic/Marine Toxicity: Will release ammonium ions. Ammonia is a toxic hazard to fish. Avoid spills or release to watercourses. Will disperse with current. Release to watercourses may cause effects down stream from the point of release. U.S. D.O.T.: This material NOT listed as a Marine pollutant.
BOD and COD	Not available.
PRODUCTS OF DEGRADATION	Nitrogen oxides (NO, NO ₂ , ...), sulfur oxides (SO ₂ , SO ₃ ...), phosphates, inorganic mineral salts and oxides.
TOXICITY OF THE PRODUCTS OF DEGRADATION	The products of biodegradation are not harmful under normal conditions.
SPECIAL REMARKS ON THE PRODUCTS OF DEGRADATION	Product will promote algae growth which may degrade water quality and taste. Notify downstream water users. Sulfate in potable drinking water should be maintained below 250 mg/L. Nitrate in potable drinking water should be maintained below 10mg/L. Will dissolve and disperse in water. Reclaiming material may not be viable.

Section XIII. Disposal Considerations

WASTE DISPOSAL OR RECYCLING	Recover and place material in a suitable container for intended use or disposal. Ensure disposal complies with government requirements and local regulations.
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Section XIV. Transport Information	
DOT / TDG CLASSIFICATION	<p>Not controlled under TOG (Canada) or D.O.T. (U.S.A.) unless granulated with Ammonium Nitrate, and transported by air or water. Not subject to the requirements of the Hazardous Materials Regulation 49 CFR Parts 171-180 for rail or vehicular transport.</p> <p>For ammonium nitrate containing products transported by air or water:</p> <p>Class 9, UN2071, PGIII. Proper shipping name: "Ammonium nitrate fertilizer; uniform non-segregating mixtures of nitrogen/phosphate or nitrogen/potash types or complete fertilizers of nitrogen/phosphate/potash type, with not more than 70% ammonium nitrate and not more than 0.4 percent total added combustible material or with not more than 45% ammonium nitrate with restricted combustible material."</p>
PIN and Shipping Name	See above.
SPECIAL PROVISIONS FOR TRANSPORT	Not applicable, unless transported by air or water. If transported by air or water: 132, 188.
DOT (U.S.A) (Pictograms)	

Section XV. Other Regulatory Information and Pictograms							
OTHER REGULATIONS	<p>CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA): This product is on the Domestic Substances List (DSL), and acceptable for use under the provisions of CEPA.</p> <p>TSCA (Toxic Substance Control Act): This product is listed on the TSCA Inventory.</p> <p>CERCLA/SUPERFUND, 40 CFR 117,302: This product contains no Reportable Quantity (RQ) Substances.</p> <p>This product is not considered as a priority pollutant as regulated under the Clean Water Act.</p> <p>This material contains the following chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372:</p> <p>Aqueous ammonia from water dissociable ammonium ions, 10% of which is reportable as CAS#7783-20-2 and as CAS#7722-76-1 and/or 7783-28-0. Ammonium nitrate CAS# 6484-52-2 may be present in your formulation. Refer to EPA documents 745-R-00-005 and 745-R-00-006, and the specific product analysis for your product to determine your reporting requirements under this regulation.</p> <p>This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by the Controlled Products</p>						
OTHER CLASSIFICATIONS	<table border="0"> <tr> <td>HCS (U.S.A.)</td> <td>HCS CLASS: Irritating substance.</td> </tr> <tr> <td>DSCL (EEC)</td> <td>Not available.</td> </tr> </table>	HCS (U.S.A.)	HCS CLASS: Irritating substance.	DSCL (EEC)	Not available.		
HCS (U.S.A.)	HCS CLASS: Irritating substance.						
DSCL (EEC)	Not available.						
National Fire Protection Association (U.S.A.)	<table border="0"> <tr> <td>Hazards presented under acute emergency conditions only:</td> <td>Fire Hazard Reactivity</td> </tr> <tr> <td style="text-align: center;">Health</td> <td style="text-align: center;">0</td> </tr> <tr> <td></td> <td>Specific Hazard</td> </tr> </table>	Hazards presented under acute emergency conditions only:	Fire Hazard Reactivity	Health	0		Specific Hazard
Hazards presented under acute emergency conditions only:	Fire Hazard Reactivity						
Health	0						
	Specific Hazard						
TDG (Pictograms - Canada)							
DSCL (Europe) (Pictograms)	<p>Not Available</p> <p>No Disponible</p> <p>Pas Disponible</p>						

ADR (Europe)
(Pictograms)**Section XVI. Other Information****REFERENCES**

- Transportation of Dangerous Goods Act and Clear Language Regulations, current revision.
- Canada Gazette Part II, Vol. 122, No. 2 Registration SOR/88-64 31 December, 1987 Hazardous Products Act "Ingredient Disclosure List".
- Domestic Substances List, Canadian Environmental Protection Act.
- 29 CFR Part 1910
- 33 CFR Parts 151, 153, 154, 156
- 40 CFR Parts 1-799
- 46 CFR Part 153
- 49 CFR Parts 1-199
- American Conference of Governmental Industrial Hygienists, Threshold Limit Values for Chemical Substances, 2012.
- NFPA 704, National Fire Codes Online, National Fire Protection Association, current edition at time of MSDS preparation.
- Corrosion Data Survey, Sixth Edition, 1985, National Association of Corrosion Engineers
- ERG2008 Emergency Response Guidebook
- CHRIS Hazardous Chemical Data: U.S. Coast Guard, Washington, D.C.
- HSDB: Hazardous Substances Data Bank. National Library of Medicine, Bethesda, Maryland
- IRIS: Integrated Risk Information System. U.S. Environmental Protection Agency, Washington, D.C.
- NIOSH: Pocket Guide to Chemical Hazards. National Institute for Occupational Safety and Health, Cincinnati, Ohio
- OHM/TADS: Oil and Hazardous Materials Technical Assistance Data System U.S. Environmental Protection Agency, Washington, D.C.
- RTECS®: Registry of Toxic Effects of Chemical Substances. National Institute for Occupational Safety and Health, Cincinnati, Ohio
- The Fertilizer Institute Product Testing Program Results, March 2003

OTHER SPECIAL CONSIDERATIONS

Three year review. Sections 1, 2, 8 and 16 updated.

FOR FURTHER SAFETY, HEALTH, OR ENVIRONMENTAL INFORMATION ON PRODUCT, CONTACT

AGRIUM
Wholesale Environment, Health and Safety **THIS**
Telephone (780) 998-6906 or Fax (780)998-6677

NOTICE TO READER

The buyer assumes all risk in connection with the use of this material. The buyer assumes all responsibility for ensuring this material is used in a safe manner in compliance with applicable environmental, health and safety laws, regulations and guidelines. Agrium assumes no responsibility or liability for the information supplied on this sheet.

in writing. Agrium does not warrant the fitness of this material for any particular use and assumes no responsibility for injury or damage caused directly or indirectly by or related to the use of the material.

The information contained in this sheet is developed from what Agrium believes to be accurate and reliable sources, and is based on the opinions and facts available on the date of preparation.

8.) Galvanize Coating

Material Safety Data Sheet

Date Prepared/Revised: 11/27/2012 Version no.: 02 Supersedes: (11/30/2010)

Material Safety Data Sheet

Date Prepared/Revised: 3/12/2014 Version no.: 02 Supersedes: (11/30/2010)

Product identifier: **Crown Cold Galvanize Coating 93% Zinc Rich - Aerosol**

Product name:

7007 Cold Galvanize Coating 93% Zinc Rich

Relevant identified uses of the substance: Apply directly to metal or galvanized surfaces that are free of

loose rust, heavy mill scale, old paint, grease, moisture, and other contaminants.

Uses advised against: Do not apply at temperatures below 40°F (4°C), or if rain is imminent within 6 hours of application

CAS No.: **Not Applicable (mixture)**

Manufacturer/Supplier: **Aervoe Industries Incorporated**

Street address/P.O. Box: **1100 Mark Circle**

Country ID/Postcode/Place **Gardnerville, Nevada 89410**

Telephone number: **001 (0) 1-775-782-0100**

e-mail: **mailbox@aervoe.com**

National contact: **Aervoe industries Incorporated**

For Product Information: **001 (0) 1-800-227-0196**

Emergency telephone number: **001 (0) 1-800-424-9300 (CHEMTREC – 24 hrs)**

English Language Service

This product does not meet the criteria for classification according to Directive 1999/45/EC

Potential health effects: **See Section 11**

Primary routes of entry: **Inhalation, Skin, Eyes, Ingestion**

Material CAS

Number

EINECS

Number

Weight

Percent

Risk and Safety Phrases Notes

Hydrocarbon Propellant 68476-86-8 270-705-8 30-60% R12, R45, R46, S45, S53

VM & P Naphtha 64742-89-8 265-192-2 15-40% R45, R46, R65, S45, S53

Zinc 7440-66-6 231-175-3 30-60% R15, R17, R50/53, S2, S43, S46, S60, S61

Methyl Ethyl Ketone 78-93-3 201-159-0 5-7% R11, R36, R66, R67, S2, S9, S16

For full text of R&S- phrases: see section 16.

R Code Summation: R11, R12, R17, R36, R45, R46, R50/53, R53, R66, R67

S Code Summation: S2, S9, S16, S43, S45, S46, S53, S60, S61

1.) Identification of the Mixture and of the Company

2. Hazards identification

3. Composition / Information on Ingredients

4.) First Aid Measures

Material Safety Data Sheet

Date Prepared/Revised: 3/12/2014 Version no.: 02 Supersedes: (11/30/2010)

General Advice: If symptoms persist, always call a doctor.

Inhalation First Aid: Remove victim to fresh air and provide oxygen if breathing is difficult. If not breathing, give artificial respiration, preferably

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mouth to mouth. Get medical attention immediately.

Skin Contact First Aid: Wash with soap and water. Remove contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse.

Eye Contact First Aid: If contact with eyes, immediately flush eyes with plenty of water for at least 15 minutes, while holding eyelids open. Get medical attention immediately.

Ingestion First Aid: If swallowed, wash out mouth with water provided the person is conscious. Do not induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Flammable Properties: Aerosol

Flash Point: <0° F (-18° C)

Auto Ignition Temperature: Not Available

Flammable Limits in Air:

% by Volume: LEL: 0.9% UEL: 11.5%

Suitable extinguishing media: Carbon dioxide, dry chemical, water spray.

Unsuitable extinguishing media: None known

Special hazards arising from the substance or mixture: None known

Hazardous combustion products: Carbon dioxide, Carbon monoxide

Fire & Explosion Hazards: Closed Containers may rupture due to the buildup of pressure from extreme temperatures.

Advice for fire-fighters: Use water spray to cool containers exposed to heat or fire to prevent pressure

build up. In the event of a fire, wear full protective clothing and NIOSH approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.

PERSONAL PRECAUTIONARY MEASURES:

- 1) Follow personal protective equipment recommendations found in section 8.
- 2) Maintain adequate ventilation.

SPILL CLEAN-UP PROCEDURES:

- 1.) Evacuate unprotected personnel from the area.
- 2.) Remove sources of ignition if safe to do so.
- 3.) Pickup spilled materials using non-sparking tools and place in an appropriate container for disposal.
- 4.) Contain spill to prevent material from entering sewage or ground water systems.

5. Fire Fighting Measures

6. Accidental Release Measures

Material Safety Data Sheet

Date Prepared/Revised: 3/12/2014 Version no.: 02 Supersedes: (11/30/2010)

5.) Always dispose of waste materials in accordance with all EU, National and Local Regulations.

Flammable Aerosol, use in a well ventilated area.

Do not use near sources of ignition.

Store out of direct sunlight.

Storage Temperature: 32° to 120°F (0° to 49°C)

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Do not to eat, drink and smoke while working with this material.

Wash hands after use.

Appropriate engineering controls:

Ensure adequate ventilation. A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits.

Keep away from sources of ignition.

Take precautionary measures against static discharge.

Personal Protection:

Eye & face protection devices such as safety glasses, safety goggles or face shield are recommended.

Skin protection

Wear the appropriate protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Respiratory protection:

Use only in an adequately ventilated area. For unknown vapor concentrations use a positive-pressure,

pressure-demand, self-contained breathing apparatus (SCBA).

Hazardous Ingredient CAS Number TWA STEL

Hydrocarbon Propellant 68476-86-8 N/AV N/AV

VM & P Naphtha 64742-89-8 N/AV N/AV

Zinc 7440-66-6 N/AV N/AV

Methyl Ethyl Ketone 78-93-3 200 300

Appearance: Metallic gray Odor: Ketone Odor

Odor Threshold: N/AV pH: Not Applicable (solvent Base)

Melting Point: N/AV Freezing Point: N/AV

Initial Boiling Point: N/AV Boiling Point Range: N/AV

7. Handling and Storage

8. Exposure Controls / Personal Protection

9. Information on Basic Physical and Chemical Properties

Material Safety Data Sheet

Date Prepared/Revised: 3/12/2014 Version no.: 02 Supersedes: (11/30/2010)

Flash Point: <0° F (-18° C) Evaporation Rate: Faster than n-Butyl

Acetate

Flammability Solid/Gas: Flammable gas Upper LEL: 0.9% Lower LEL: 11.5%

Vapor Pressure: N/AV Vapor Density: Heavier Than Air

Relative Density: N/AV Solubility: Negligible

Partition Coefficient:

n-octanol/ water: N/AV

Auto-ignition Temperature: N/AV

Decomposition Temperature: N/AV Viscosity: N/AV

Explosive Properties: N/AV Oxidizing Properties: N/AV

Possibility of hazardous reactions: Hazardous polymerization will not occur under normal conditions

Conditions to avoid: Heat and ignition sources

Incompatible materials: Strong Oxidizing Agents

Hazardous decomposition products: Will not occur

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Reports have associated repeated and prolonged overexposure to solvents with permanent brain and

nervous system damage. Repeated overexposure can also damage kidneys, lungs, liver, heart and blood

Toxicity: **No Data Available**

Persistence and degradability: **No Data Available**

Bioaccumulative potential: **No Data Available**

Mobility in soil: **No Data Available**

Results of PBT and vPvB assessment: **No Data Available**

Other adverse effects: **No Data Available**

Waste Disposal: Dispose of material in accordance with EU, national and local requirements.

For proper disposal of used material, an assessment must be completed to determine the proper and permissible waste management options permitted under applicable rules, regulations and/or laws governing your location.

Product / Packaging disposal: Dispose of packaging in accordance with federal, state and local requirements, regulations and/or laws governing your location.

US DOT

UN Proper Shipping Name Hazard Packing Marine Special

10. Stability & Reactivity

11. Toxicological Information

12. Ecological Information

13. Disposal Considerations

14. Transportation Information

Material Safety Data Sheet

Date Prepared/Revised: 3/12/2014 Version no.: 02 Supersedes: (11/30/2010)

Number Class Group Pollutant Provisions

UN1950 Aerosols 2.1 Not

Applicable

Not

Applicable

Not

Applicable

IMDG

UN

Number

Proper Shipping Name Hazard

Class

Packing

Group

Marine

Pollutant

Special

Provisions

UN1950 Aerosols 2.1 Not

Applicable

Not

Applicable

Not

Material Safety Data Sheet

Date Prepared/Revised: 11/27/2012 Version no.: 02 Supersedes: (11/30/2010)

Applicable

IATA:

UN

Number

Proper Shipping Name Hazard

Class

Packing

Group

Marine

Pollutant

Special

Provisions

UN1950 Aerosols 2.1 Not

Applicable

Not

Applicable

Not

Applicable

Workplace classification:

This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200). The Occupational Safety and Health Administration's interpretation of the product's hazard to workers.

SARA Title 3:

Section 311/312 Categorizations (40 CFR 372): This product is a hazardous chemical under 29 CFR 1910.1200, and is categorized as an immediate and delayed health, and flammability physical hazard.

Superfund Amendment and Reauthorization Act (SARA) category. SARA requires reporting any spill of any hazardous substance.

WHMIS: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the (M)SDS contains all of the information required by the CPR.

TSCA status: All chemicals in this product are listed, or are exempt from listing, on the TSCA Inventory.

PROP 65 (CA): Warning: This product may contain chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.

List of relevant Risk and Safety phrases:

R Phrases:

R11: Highly flammable

R12: Extremely flammable

R17: Spontaneously flammable in air

R36: Irritating to eyes

R45: May cause cancer

R46: May cause heritable genetic damage

15. Regulatory Information

16. Other Information

9.) *Glue (PVC)*

SAFETY DATA SHEET

1. Identification

Product identifier PVC Medium Clear Cement

Other means of identification

SDS number 1101E

Part Numbers: Clear - 30350, 31017, 31018, 31019, 31020, 31021, 31550, 31551, 31552, 31553, 31946, 31947, 31948, 31949, 32222, 32223, 32224, 32225

Synonyms

Recommended use Joining PVC Pipes

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Company Name Oatey Co.

Address 4700 West 160th St.

Cleveland, OH 44135

Telephone 216-267-7100

E-mail info@oatey.com

Transport Emergency Chemtrec 1-800-424-9300 (Outside the US 1-703-527-3887)

Emergency First Aid 1-877-740-5015

Contact person MSDS Coordinator

2. Hazard(s) identification

Physical hazards Flammable liquids Category 2

Health hazards Acute toxicity, oral Category 4

Skin corrosion/irritation Category 2

Serious eye damage/eye irritation Category 2A

Specific target organ toxicity, single exposure Category 3 respiratory tract irritation

Specific target organ toxicity, single exposure Category 3 narcotic effects

Aspiration hazard Category 1

OSHA defined hazards Not classified.

Label elements

Signal word Danger

Hazard statement Highly flammable liquid and vapor. Harmful if swallowed. May be fatal if swallowed and enters airways. Causes skin irritation. Causes serious eye irritation. May cause respiratory irritation. May cause drowsiness or dizziness.

Precautionary statement

Prevention Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Use only outdoors or in a well-ventilated area. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Avoid breathing mist or vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection.

Response Rinse mouth. Do NOT induce vomiting. If skin irritation occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. Take off contaminated clothing and wash before reuse. In case of fire: Use appropriate media to extinguish.

Storage Store in a well-ventilated place. Keep container tightly closed. Keep cool. Store locked up.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

PVC Medium Clear Cement SDS US

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Hazard(s) not otherwise classified (HNOC)

Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis. May form explosive peroxides. Contains a chemical classified by the US EPA as a suspected possible carcinogen.

Supplemental information

Not applicable.

3. Composition/information on ingredients

Mixtures

Furan, Tetrahydro, 109-99-9 30-50

Chemical name CAS number %

Acetone 67-64-1 10-25

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Print Date: 9/26/2012

Methyl ethyl ketone 78-93-3 10-25

Polyvinyl chloride 9002-86-2 12-20

Cyclohexanone 108-94-1 10-20

Fumed Silica 112945-52-5 1-5

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

Inhalation

Take off immediately all contaminated clothing. Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse.

Skin contact

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Eye contact

Call a physician or poison control center immediately. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Aspiration may cause pulmonary edema and pneumonitis.

Ingestion

Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea. May cause redness and pain.

Most important symptoms/effects, acute and delayed

Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

Indication of immediate medical attention and special treatment needed

Take off all contaminated clothing immediately. IF exposed or concerned: Get medical advice/attention. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

General information

5. Fire-fighting measures

Suitable extinguishing media Alcohol resistant foam. Water fog. Dry chemical powder. Carbon dioxide (CO₂).

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

Vapors may form explosive mixtures with air. Vapors may travel considerable distance to a source of ignition and flash back. During fire, gases hazardous to health may be formed.

Specific hazards arising from the chemical

Special protective equipment and precautions for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk.

Fire fighting equipment/instructions

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials. Highly flammable liquid and vapor. This product contains tetrahydrofuran that may form explosive organic peroxide when exposed to air or light or with age.

General fire hazards

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6. Accidental release measures

Keep personnel away. Keep people away from low areas. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Avoid inhalation of vapors or

Print Date: 9/26/2012

mists. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

**Personal precautions,
protective equipment and
emergency procedures**

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Take precautionary measures against static discharge. Use only non-sparking tools. Keep combustibles (wood, paper, oil, etc.) away from spilled material.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Use water spray to reduce vapors or divert vapor cloud drift. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

**Methods and materials for
containment and cleaning up**

Environmental precautions Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Vapors may form explosive mixtures with air. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. Do not taste or swallow. Avoid breathing mist or vapor. Avoid contact with skin. Avoid contact with eyes. Avoid prolonged exposure. Avoid contact with clothing. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. When using, do not eat, drink or smoke. Wash hands thoroughly after handling.

Precautions for safe handling

Store locked up. Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in original tightly closed container. Store in a cool, dry place out of direct sunlight. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS). Keep in an area equipped with sprinklers.

**Conditions for safe storage,
including any incompatibilities**

8. Exposure controls/personal protection

Occupational exposure limits

U.S. - OSHA

Components Type Value Form

Fumed Silica (CAS TWA 0.8 mg/m³ Unspecified.

112945-52-5)

20 mppcf Unspecified.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Components Type Value

Polyvinyl chloride (CAS STEL 5 ppm

9002-86-2)

TWA 1 ppm

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components Type Value Form

Acetone (CAS 67-64-1) PEL 2400 mg/m³

1000 ppm

Cyclohexanone (CAS PEL 200 mg/m³

108-94-1)

50 ppm

Furan, Tetrahydro- (CAS PEL 590 mg/m³

109-99-9)

200 ppm

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US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components Type Value Form

Methyl ethyl ketone (CAS PEL 590 mg/m³
78-93-3)

200 ppm

Polyvinyl chloride (CAS PEL 5 mg/m³ Respirable fraction.
9002-86-2)

15 mg/m³ Total dust.

US. OSHA Table Z-3 (29 CFR 1910.1000)

Components Type Value

Fumed Silica (CAS TWA 0.8 mg/m³
112945-52-5)

20 mppcf

US. ACGIH Threshold Limit Values

Components Type Value Form

Acetone (CAS 67-64-1) STEL 750 ppm
TWA 500 ppm

Cyclohexanone (CAS STEL 50 ppm
108-94-1)

TWA 20 ppm

Furan, Tetrahydro- (CAS STEL 100 ppm
109-99-9)

TWA 50 ppm

Methyl ethyl ketone (CAS STEL 300 ppm
78-93-3)

TWA 200 ppm

Polyvinyl chloride (CAS TWA 1 mg/m³ Respirable fraction.
9002-86-2)

U.S. - NIOSH

Components Type Value Form

Fumed Silica (CAS REL 6 mg/m³ Unspecified.
112945-52-5)

US. NIOSH: Pocket Guide to Chemical Hazards

Components Type Value

Acetone (CAS 67-64-1) TWA 590 mg/m³
250 ppm

Cyclohexanone (CAS TWA 100 mg/m³
108-94-1)

25 ppm

Fumed Silica (CAS TWA 6 mg/m³
112945-52-5)

Furan, Tetrahydro- (CAS STEL 735 mg/m³
109-99-9)

250 ppm

TWA 590 mg/m³

200 ppm

Methyl ethyl ketone (CAS STEL 885 mg/m³
78-93-3)

300 ppm

TWA 590 mg/m³

200 ppm

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Biological limit values

ACGIH Biological Exposure Indices

Components Value Determinant Specimen Sampling Time

Acetone (CAS 67-64-1) 50 mg/l Acetone Urine *

80 mg/l 1,2-Cyclohexan
ediol, with

hydroxyls

Cyclohexanone (CAS Urine *
108-94-1)

8 mg/l Cyclohexanol,
with hydrolysis
Urine *

2 mg/l Tetrahydrofuran

Furan, Tetrahydro- (CAS Urine *
109-99-9)

Methyl ethyl ketone (CAS 2 mg/l MEK Urine *
78-93-3)

* - For sampling details, please see the source document.

Exposure guidelines

US - California OELs: Skin designation

Cyclohexanone (CAS 108-94-1) Can be absorbed through the skin.

US - Minnesota Haz Subs: Skin designation applies

Cyclohexanone (CAS 108-94-1) Skin designation applies.

US - Tennessee OELs: Skin designation

Cyclohexanone (CAS 108-94-1) Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

Cyclohexanone (CAS 108-94-1) Can be absorbed through the skin.

Furan, Tetrahydro- (CAS 109-99-9) Can be absorbed through the skin.

US. NIOSH: Pocket Guide to Chemical Hazards

Cyclohexanone (CAS 108-94-1) Can be absorbed through the skin.

Explosion-proof general and local exhaust ventilation. Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Appropriate engineering controls

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection Wear appropriate chemical resistant gloves.

Other Wear appropriate chemical resistant clothing.

If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.

Respiratory protection

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene When using, do not eat, drink or smoke. Wash hands after handling and before eating.
considerations

9. Physical and chemical properties

Appearance

Physical state Liquid.

Form Translucent liquid.

Color Clear.

Odor Solvent.

Odor threshold Not available.

pH Not available.

Melting point/freezing point Not available.

Initial boiling point and boiling range

151 °F (66.11 °C)

Flash point 14.0 - 23.0 °F (-10.0 - -5.0 °C)

Evaporation rate 5.5 - 8

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Flammability (solid, gas) Not available.

Upper/lower flammability or explosive limits

Flammability limit - lower

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(%)

1.8

Flammability limit - upper

(%)

11.8

Explosive limit - lower (%) Not available.

Explosive limit - upper (%) Not available.

Vapor pressure 145 mm Hg @ 20 C

Vapor density 2.5

Relative density 0.93 +/- 0.02

Solubility(ies)

Solubility (water) Negligible

Partition coefficient

(n-octanol/water)

Not available.

Auto-ignition temperature Not available.

Decomposition temperature Not available.

Viscosity 1200 - 2500 cP

Viscosity temperature 77 °F (25 °C)

Other information

Bulk density 7.7 lbs/gal

VOC (Weight %) 484 g/l SCAQMD 1168/M316A

10. Stability and reactivity

Reactivity The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability Material is stable under normal conditions.

Possibility of hazardous reactions No dangerous reaction known under conditions of normal use.

reactions

Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.

Conditions to avoid

Incompatible materials Acids. Strong oxidizing agents. Ammonia. Amines. Isocyanates. Caustics.

Hazardous decomposition products No hazardous decomposition products are known.

products

11. Toxicological information

Information on likely routes of exposure

Inhalation May be fatal if swallowed and enters airways. Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea. Prolonged inhalation may be harmful. May cause irritation to the respiratory system.

Skin contact Causes skin irritation.

Eye contact Causes serious eye irritation.

Ingestion May be fatal if swallowed and enters airways. Harmful if swallowed.

Symptoms related to the

physical, chemical and

toxicological characteristics

Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

Information on toxicological effects

Acute toxicity May be fatal if swallowed and enters airways. Narcotic effects. May cause respiratory irritation.

Components Species Test Results

Cyclohexanone (CAS 108-94-1)

LD50 Rabbit

Dermal

Acute

948 mg/kg

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Components Species Test Results

LC50 Rat

Inhalation

8000 ppm, 4 hours

LD50 Rat

Oral

1540 mg/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation Causes skin irritation.

Serious eye damage/eye irritation Causes serious eye irritation.

Respiratory or skin sensitization

Respiratory sensitization Not available.

Skin sensitization This product is not expected to cause skin sensitization.

No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Germ cell mutagenicity

Carcinogenicity Suspected of causing cancer. In 2012 USEPA Integrated Risk Information System (IRIS) reviewed a two species inhalation lifetime study on THF conducted by NTP (1998). Male rats developed renal tumors and female mice developed liver tumors while neither the female rats nor the male mice showed similar results. Because the carcinogenic mechanisms could not be identified clearly in either species for either tumor, the EPA determined that the male rat and female mouse findings are relevant to the assessment of carcinogenic potential in humans. Therefore, the IRIS review concludes that these data in aggregate indicate that there is "suggestive evidence of carcinogenic potential" following exposure to THF by all routes of exposure. This product contains polyvinyl chloride (PVC) that is not a fabricated product, and is therefore, defined and regulated as a toxic and hazardous substance under 29 C.F.R. § 1910.1017 due to the presumed presence of residual vinyl chloride monomer. The concentrations of residual vinyl chloride calculated to be contained in this product are well below the threshold for classification in accordance with 29 C.F.R. § 1910.1200.

IARC Monographs. Overall Evaluation of Carcinogenicity

Cyclohexanone (CAS 108-94-1) 3 Not classifiable as to carcinogenicity to humans.

Fumed Silica (CAS 112945-52-5) 3 Not classifiable as to carcinogenicity to humans.

Polyvinyl chloride (CAS 9002-86-2) 3 Not classifiable as to carcinogenicity to humans.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Polyvinyl chloride (CAS 9002-86-2) Cancer

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity -

single exposure

Respiratory tract irritation. Narcotic effects.

Specific target organ toxicity -

repeated exposure

Not classified.

Aspiration hazard May be fatal if swallowed and enters airways.

Chronic effects Prolonged inhalation may be harmful.

12. Ecological information

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Ecotoxicity

Components Species Test Results

* Estimates for product may be based on additional component data not shown.

Cyclohexanone (CAS 108-94-1)

Aquatic

Fish LC50 Fathead minnow (Pimephales promelas) 481 - 578 mg/l, 96 hours

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential No data available.

Partition coefficient n-octanol / water (log Kow)

Acetone (CAS 67-64-1) -0.24

Cyclohexanone (CAS 108-94-1) 0.81

Furan, Tetrahydro- (CAS 109-99-9) 0.46

Methyl ethyl ketone (CAS 78-93-3) 0.29

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Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation)

potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Disposal instructions

Local disposal regulations Dispose in accordance with all applicable regulations.

The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Hazardous waste code

Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Waste from residues / unused products

Empty containers should be taken to an approved waste handling site for recycling or disposal.

Since emptied containers may retain product residue, follow label warnings even after container is emptied.

Contaminated packaging

14. Transport information

DOT

UN number UN1133

UN proper shipping name Adhesives

Class 3

Transport hazard class(es)

Subsidiary risk -

Label(s) 3

Packing group II

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

Special provisions T11, TP1, TP8, TP27

Packaging exceptions 150

Packaging non bulk 201

Packaging bulk 243

IATA

UN number UN1133

UN proper shipping name Adhesives

Class 3

Transport hazard class(es)

Subsidiary risk -

Packing group II

Environmental hazards No.

ERG Code 3L

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number UN1133

UN proper shipping name ADHESIVES

Class 3

Transport hazard class(es)

Subsidiary risk -

Packing group II

Marine pollutant No.

Environmental hazards

EmS F-E, S-D

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Not available.

Annex II of MARPOL 73/78 and

the ISG Code of 11

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15. Regulatory information

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

All components are on the U.S. EPA TSCA Inventory List.

US federal regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Polyvinyl chloride (CAS 9002-86-2) Cancer

Central nervous system

Liver

Blood

Flammability

CERCLA Hazardous Substance List (40 CFR 302.4)

Acetone (CAS 67-64-1) LISTED

Cyclohexanone (CAS 108-94-1) LISTED

Furan, Tetrahydro- (CAS 109-99-9) LISTED

Methyl ethyl ketone (CAS 78-93-3) LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Immediate Hazard - Yes

Delayed Hazard - No

Fire Hazard - Yes

Pressure Hazard - No

Reactivity Hazard - No

Hazard categories

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous No chemical

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act Not regulated.

(SDWA)

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Acetone (CAS 67-64-1) 6532

Methyl ethyl ketone (CAS 78-93-3) 6714

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Acetone (CAS 67-64-1) 35 %WV

Methyl ethyl ketone (CAS 78-93-3) 35 %WV

DEA Exempt Chemical Mixtures Code Number

Acetone (CAS 67-64-1) 6532

Methyl ethyl ketone (CAS 78-93-3) 6714

US state regulations

US. Massachusetts RTK - Substance List

Acetone (CAS 67-64-1)

Cyclohexanone (CAS 108-94-1)

Fumed Silica (CAS 112945-52-5)

Furan, Tetrahydro- (CAS 109-99-9)

Methyl ethyl ketone (CAS 78-93-3)

US. New Jersey Worker and Community Right-to-Know Act

Acetone (CAS 67-64-1)

Cyclohexanone (CAS 108-94-1)

Furan, Tetrahydro- (CAS 109-99-9)

Methyl ethyl ketone (CAS 78-93-3)

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Polyvinyl chloride (CAS 9002-86-2)

US. Pennsylvania Worker and Community Right-to-Know Law

Acetone (CAS 67-64-1)

Cyclohexanone (CAS 108-94-1)

Fumed Silica (CAS 112945-52-5)

Furan, Tetrahydro- (CAS 109-99-9)

Methyl ethyl ketone (CAS 78-93-3)

US. Rhode Island RTK

Acetone (CAS 67-64-1)

Cyclohexanone (CAS 108-94-1)

Furan, Tetrahydro- (CAS 109-99-9)

Methyl ethyl ketone (CAS 78-93-3)

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. This product contains trace amounts of chemicals known to the state of California to cause cancer. Under normal use conditions, exposure to these chemicals at levels above the State of California "No significant Risk Level" (NSRL) are unlikely. The use of proper personal protective equipment (PPE) and ventilation guidelines noted in Section 8 will minimize exposure levels to these chemicals.

International Inventories

Country(s) or region Inventory name On inventory (yes/no)*

Australia Australian Inventory of Chemical Substances (AICS) Yes

Canada Domestic Substances List (DSL) Yes

Canada Non-Domestic Substances List (NDSL) No

China Inventory of Existing Chemical Substances in China (IECSC) Yes

European Inventory of Existing Commercial Chemical Substances (EINECS)

Europe No

Europe European List of Notified Chemical Substances (ELINCS) No

Japan Inventory of Existing and New Chemical Substances (ENCS) Yes

Korea Existing Chemicals List (ECL) Yes

New Zealand New Zealand Inventory Yes

Philippine Inventory of Chemicals and Chemical Substances (PICCS)

Philippines Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

United States & Puerto Rico Toxic Substances Control Act (TSCA) Inventory Yes

16. Other information, including date of preparation or last revision

Issue date 27-May-2015

Revision date -

Version # 01

Health: 2

Flammability: 3

Physical hazard: 0

HMIS® ratings

NFPA ratings

0

The information in the sheet was written based on the best knowledge and experience currently available.

Disclaimer

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***10.) Injectaflex Resin (For Active Water
Leaks)***

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AV-333 INJECTAFLEX

SAFETY DATA SHEET

Date Issued: 06/01/2015

GHS Product Identifier: AV-333 Injectaflex

Classification: Hydrophilic Foam

Product Use: Industrial Use Only

Supplier 24 HR. EMERGENCY TELEPHONE NUMBER

Avanti International Chemtrec: 800.424.9300

1100 Hercules Ave., Suite 320

Houston, TX 77058

Phone: 800.877.2570

Fax: 281.486.7300

GHS Classification

Classification Category

Flam. Liquids 2 Flammable liquids

Skin Irrit. 2 Skin irritation

Skin Sens. 1 Skin sensitization

Eye Irrit. 2A Eye irritation

Acute Tox. 1 Acute toxicity: inhalation – dust, mist

Resp. Sens. 1A Respiratory sensitization

STOT SE 3 Specific target organ toxicity – single exposure

Carc. 2 Carcinogenicity

Aquatic Chronic 3

GHS Label Elements

Hazard pictograms:

Signal Word: Danger

Hazards Statements:

H225 Highly flammable liquid and vapor.

H315 Causes skin irritation.

H317 May cause an allergic skin reaction.

H319 Causes serious eye irritation.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H335 May cause respiratory irritation.

H412 Harmful to aquatic life with long lasting effects.

Precautionary Statements: General:

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P210 Keep away from heat, hot surfaces, open flames, sparks. - No smoking.

P233 Keep container tightly closed.

P240 Ground/bond container and receiving equipment.

P241 Use explosion-proof electrical, lighting, ventilating equipment.

P242 Use only non-sparking tools.

P243 Take precautionary measures against static discharge.

P260 Do not breathe fume, mist, spray, vapors.

P261 Avoid breathing vapors, spray or mist.

Section 1: Identification

Section 2: Hazards Identification

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P264 Wash thoroughly after handling.

P272 Contaminated work clothing must not be allowed out of the workplace.

P280 Wear protective gloves/protective clothing/eye protection/face.

P284

In case of inadequate ventilation wear respiratory protection. The type of respiratory protection selected must comply with the requirements set forth in OSHA's Respiratory Protection Standard (29CFR1910.134) or regional standards. For additional details, see Section 8 of the SDS.

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

P303 + P361 + P353

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IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water.

P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P305 + P351 + P338

IF in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308 + P313 IF exposed or concerned: Get medical advice/attention.

P314 Get medical advice and attention if you feel unwell.

P321 Specific treatment (see Section 4).

P332 + P313 If skin irritation occurs: Get medical advice/attention.

P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.

P337 + P313 If eye irritation persists: Get medical advice/attention.

P342 + P311 If experiencing respiratory symptoms: Call a poison center or doctor.

P361 Remove/Take off immediately all contaminated clothing.

P362 + P364 Take off contaminated clothing and wash it before reuse.

P363 Wash contaminated clothing before reuse.

P370 + P378 In case of fire: Use media for extinction.

P403 + P235 Store in a well-ventilated place. Keep cool.

P405 Store locked up.

P501

Dispose of contents/container according to local, regional, national, and international regulations.

Other hazards not contributing to the classification:

Exposure may aggravate those with pre-existing eye, skin, or respiratory conditions.

Unknown Acute Toxicity (GHS-US):

No data available.

Weight % Components CAS # / EINCS Classification

85-95% Urethane Prepolymer (CAS #) 57516-88-8 Not Classified

0.5-1.5% Toluene-2,4-diisocyanate (CAS #) 584-84-9

(EINECS) 209-544-5

Acute Tox. 1 (Inhalation: dust, mist),

H330

Skin Irrit. 2, H315

Eye Irrit. 2A, H319

Resp. Sens. 1A, H334

Skin Sens. 1, H317

Carc. 2, H351

STOT SE 3, H335

Aquatic Chronic 3, H412

<0.4% Toluene 2,6-diisocyanate

(CAS #) 91-08-7

(EINECS) 202-039-0

Acute Tox. 2 (Inhalation), H330

Skin Irrit. 2, H315

Eye Irrit. 2A, H319

Resp. Sens. 1, H334

Skin Sens. 1, H317

Carc. 2, H351

STOT SE 3, H335

10-15% Acetone

(CAS #) 67-64-1

(EINECS) 200-662-2

Flammable Liquids 2, H225

Skin Irrit. 2, H315

Eye Irrit 2B, H320

STOT SE 3, H335

Section 3: Composition/Information on Ingredients

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Description of First-Aid Measures**First-aid Measures General**

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Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label if possible).

First-aid Measures After Inhalation

Remove to fresh air and keep at rest in a position comfortable for breathing. Obtain medical attention if breathing difficulty persists.

First-aid Measures After Skin Contact

Rinse immediately with plenty of water. Obtain medical attention if irritation develops or persists.

First-aid Measures After Eye Contact

Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention.

First-aid Measures After Ingestion

Do NOT induce vomiting. Rinse mouth. Immediately call a Poison Center or doctor/physician.

Most Important Symptoms and Effects, Both Acute and Delayed

Symptoms/Injuries: May cause an allergic skin reaction. Inhalation may cause allergic respiratory reaction with asthma-like symptoms and difficulty breathing.

Symptoms/Injuries After Inhalation: May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Symptoms/Injuries After Skin Contact: May cause an allergic skin reaction.

Symptoms/Injuries After Eye Contact: May cause eye irritation.

Symptoms/Injuries After ingestion: Ingestion is likely to be harmful or have adverse effects.

Chronic Symptoms:

Exposure may produce an allergic reaction.

Indication of Any Immediate Medical Attention and Special Treatment Needed. If exposed or concerned, get medical advice and attention.

Suitable Extinguishing Media: Use dry chemical, water spray or other extinguishing media appropriate for surrounding fire.

Unsuitable Extinguishing Media: Do not use heavy water stream. Use of heavy stream of water may spread fire.

Special Hazards Arising from**Substance or Mixture**

Fire Hazard: Not considered flammable but may burn at high temperatures.

Reactivity: Hazardous reactions will not occur under normal conditions.

Explosion Hazard: Product is not explosive. DO NOT weld, burn, or cut empty containers.

Fire-fighting Procedure Exercise caution when fighting any chemical fire. Fire fighters should wear self-contained breathing apparatus to protect against inhalation of cyanates vapors and other decomposition/combustion products. Do not release runoff from fire control methods to sewers or waterways. Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full face piece operated in pressuredemand or positive-pressure mode.

Other information Refer to Section 9 for flammability properties.

Personal Precautions, Protective Equipment and Emergency Procedures**Section 4: First-Aid Measures****Section 5: Fire-Fighting Measures****Section 6: Accidental Release Measures**

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General Measures

Do not get in eyes, on skin, or on clothing. Do not breathe vapor or mist.

For Non-emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

For Emergency Responders

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Stop leak if safe to do so. Eliminate ignition sources. Ventilate area.

Environmental Precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

Methods and Material for Containment and Cleaning-Up

For Containment: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or

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streams.

For Cleaning Up: Clear up spills immediately and dispose of waste safely. Spills should be contained with mechanical barriers. Transfer spilled material to a suitable container for disposal. Contact competent authorities after a spill.

Reference to Other Sections

See Section 8: Exposure Controls and Personal Protection

Precautions for Safe Handling

Keep away from sources of ignition - No smoking. Keep away from heat & open flame. Avoid all eye & skin contact & do not breathe vapor or mist. Always wash hands after handling. Do not eat, drink or smoke when using this product. Ensure there is adequate ventilation. Wear recommended personal protective equipment. Take precautionary measures against static discharge. Use grounded electrical/mechanical equipment.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

Conditions for Safe Storage (Including Any Incompatibilities)

Technical Measures: Comply with applicable regulations.

Storage Conditions: Store in a dry, cool and well-ventilated place. Keep container closed when not in use.

Keep/Store away from direct sunlight, extremely high or low temperatures and incompatible materials.

Incompatible Products: Isocyanates react slowly with water, alcohols, amines, acids and bases.

Specific End Use(s): Rubber mold making material.

Storage Temperatures: 45-95 F

Control Parameters

For substances listed in Section 3 that are not listed here, there are no established exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), NIOSH (REL), or OSHA (PEL).

Exposure Controls

Appropriate Engineering Controls: Ensure adequate ventilation, especially in confined areas. Emergency eye wash fountains and safety showers should be available in immediate vicinity of any potential exposure. Ensure all national/local regulations are observed.

Personal Protective Equipment: Protective goggles, gloves, protective clothing. If insufficient ventilation: wear respiratory protection.

Personal Protective Equipment**Section 7: Handling and Storage****Section 8: Exposure Controls/Personal Protection**

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Respiratory Protection:

Follow OSHA respirator regulation 29CFR1910.134 and European Standards EN 141, 143 and 371; wear a MSHA/NIOSH or European Standards EN 141, 143 and 371 approved respirators when needed.

Skin and Body Protection:

Wear suitable protective clothing. Wear chemically resistant protective gloves.

Eye Protection:

Chemical goggles or safety glasses.

Environmental Exposure Controls:

Do not allow the product to be released into the environment.

Consumer Exposure Controls:

Do not eat, drink or smoke during use.

Appearance: Clear to opaque liquid

Odor: No data available

Odor Threshold: No data available

pH: No data available

Freezing Point: No data available

Boiling Point: 500°F (> 260°C)

Flashpoint: 518°F (> 270°C) CC

Evaporation Rate: No data available (butylacetate=1)

Flammability: No data available

Lower Explosion Limits: Not determined

Upper explosion limits: Not determined

Vapor Pressure: No data available

AV-333 Injectaflex**Relative Vapor Density at 20°C:** No data available**Relative Density:** No data available.**Solubility in Water:** Reacts very slowly with water**Partition Coefficient n-octanol/water:** No data available**Auto-ignition Temperature:** No data available**Decomposition Temperature:** No data available**Viscosity:** No data available**Oxidizing Properties:** No data available**Specific Gravity:** 1.04 (water = 1)**Explosive Properties:** Product is not explosive; however, formation of explosive air vapor mixture is possible.**Section 9: Physical and Chemical Properties****Section 10: Stability and Reactivity**

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Reactivity

Hazardous reactions will not occur under normal conditions.

Chemical stability

Stable under recommended handling and storage conditions (see Section 7).

Possibility of hazardous reactions

Hazardous polymerization will not occur.

Conditions to avoid

Direct sunlight. Extremely high or low temperatures. Ignition sources. Incompatible materials.

Incompatible materials

Water (moisture), metal compounds, acids, bases, and surface-active materials.

Hazardous decomposition products

Toxic fumes are released in fire situations, including isocyanate vapor and mist, carbon dioxide, carbon monoxide, nitrogen oxides, and traces of hydrogen cyanide.

Acute Toxicity/Effects

Not Classified

Dibutyl Maleate (105-76-0)LC50 Inhalation Rat (ppm) > 5,000 mg/m³

LD50 Oral Rat (mg/kg) > 3,730 mg/kg

LD50 Dermal Rabbit > 2,000 mg/kg

Polyoxyalkylene Polyol (9082-00-2)

LD50 Oral Rat >10,000 mg/kg

LD50 Dermal Rabbit >5,000 ml/kg

Skin Corrosion/Irritation May cause minor skin irritation

Serious Eye Damage/Irritation May cause mild eye irritation

Respiratory or Skin Sensitization May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.

Germ Cell Mutagenicity Not classified

Carcinogenicity Not classified

Reproductive Toxicity Not classified

STOT (Single Exposure) Not classified

STOT (Repeated Exposure) Not classified

Aspiration Hazard Not classified

Toxicity**Dibutyl Maleate (105-76-0)**LC50 fishes 1 1.2 mg/l (Exposure time: 96 h - Species: *Oncorhynchus mykiss* [flow-through])EC50 *Daphnia magna* 1 21 mg/l (Exposure time: 18 h - Species: *Daphnia magna* [Static])EC50 other aquatic organisms 1 6.2 mg/l (Exposure time: 72 h - Species: *Scenedesmus subspicatus* [algae])**Persistence and Degradability:****Section 11: Toxicological Information****Section 12: Ecological Information**

AV-333 Injectaflex Page 7 of 8

No additional information available.

Bioaccumulative Potential:

AV-333 Injectaflex

No additional information available.

Mobility in Soil:

No additional information available.

Other Adverse Effects:

Avoid release to the environment.

Waste Disposal Recommendations:

Dispose of waste material in accordance with all local, regional, national, & international regulations.

Sewage Waste Recommendations:

Do not dispose of waste into sewer.

DOT (Department of Transportation)

Proper Shipping Name: Flammable Liquid, N.O.S. (contains Acetone)

Hazard Class: 3

UN Number: UN1993

Packing Group: II

Label: Flammable Liquid 3

Placard: Flammable Liquid 3

NMFC (National Motor Freight Carriers)

Freight Class: 55

US Federal Regulations

SARA Section 311/312 Hazard Classes: Acute Health Hazard

US State Regulations**Dibutyl Maleate (105-76-0)**

U.S. - New Jersey - Right to Know Hazardous Substance List

U.S. - Pennsylvania - RTK (Right to Know) List

Polyoxyalkylene Polyol (9082-00-2)

U.S. - New Jersey - Right to Know Hazardous Substance List

U.S. - Pennsylvania - RTK (Right to Know) List

Skin Sens. A H317 Skin sensitization Category 1

Resp. Sens. 1 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

STOT RE 2

H373 May cause damage to organs through prolonged or repeated exposure.

NFPA 704M**ratings:**

Health

2

Flammability

1

Reactivity

1

Other

Section 13: Disposal Considerations**Section 14: Transport Information****Section 15: Regulatory Information****Section 16: Other Information**

AV-333 Injectaflex Page 8 of 8

HMIS ratings:

0-Insignificant

1-Slight

2-Moderate

3-High

4-Extreme

Health

2

Flammability

1

Physical

Hazard

1

Personal Protection

G

The information provided in this Safety Data Sheet is correct to the best of Avanti International's knowledge, information and belief at the date of this publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any other process, unless specified in the text. AVANTI INTERNATIONAL MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE. Given the variety of factors that can affect the use and application of this product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the product to determine whether it is fit for a particular purpose and suitable for user's method of use or application. Each user is also responsible for evaluating the conditions of use and designing the appropriate protective mechanisms to prevent employee exposures, property damage, or release to the environment. Avanti International assumes no responsibility for injury to the recipient or third persons or for any damage to any property resulting from misuse of the product.

11.) Marking Paint

Safety Data Sheet (SDS)

Date Prepared/Revised: 5/2/2016 Version no.: 04 Supersedes: (7/27/2015)

Product identifier: **Aervoe Survey Marking Paint - Aerosol**

Product name: **Survey Marking Paint**

Non-Fluorescent

Colors

Fluorescent

Colors

High Delivery Metallic

201 Red

202 Yellow

203 Blue

204 Green

205 Orange

206 Black

207 White

208 Hi Visibility

Yellow

209 Light Blue

212 Purple

280 Concrete Gray

220 Red

222 Orange

224 Green

226 Yellow

227 Blue

229 Pink

230 Red/Orange

281 Red

288 Fluorescent

Orange

210 Silver

Relevant identified uses of the substance: Designed to adhere to most surfaces, including pavement, gravel, and soil.

Uses advised against: This aerosol product is designed to spray at an angle not greater than 30° from

vertical. Do not use on turf surfaces.

CAS No: **Not Applicable (mixture)**

EC No: **Not Applicable (mixture)**

Index No: **Not Applicable (mixture)**

Manufacturer/Supplier: **Aervoe Industries Incorporated**

Street address/P.O. Box: **1100 Mark Circle**

Country ID/Postcode/Place **Gardnerville, Nevada 89410**

Telephone number: **001 (0) 1-775-782-0100**

e-mail: **mailbox@aervoe.com**

National contact: **Aervoe industries Incorporated**

For Product Information: **001 (0) 1-800-227-0196**

Emergency telephone number: **001 (0) 1-800-424-9300 (CHEMTREC – 24 hrs)**

English Language Service

Classifications

Physical Hazards: Aerosol - Category 1

Flam. Gas. 1
Press. Gas
Flam. Liq. 2
Flam. Liq. 3 * 210 Silver

1.) Identification of the Mixture and of the Company

2. Hazards identification

Safety Data Sheet (SDS)

Date Prepared/Revised: 5/2/2016 Version no.: 04 Supersedes: (7/27/2015)

Health Hazards: Car 1B

Muta 1B

Asp Tox. 1

Eye Irrit. - 2

Rep. 2

Skin Irr. 2

STOT SE3

STOT RE 2

Acute Tox. 4 * 280 Concrete Gray

Environmental Hazards: Aquatic Chronic 2

Labeling

Signal Word: Danger

Hazard Statements: H220 – Extremely flammable gas

H222 – Extremely flammable aerosol

H225 – Highly flammable liquid and vapour.

H226 – Flammable liquid and vapour.

H229 - Pressurized container: may burst if heated

H304 – May be fatal if swallowed and enters airways.

H312 – Harmful in contact with skin. *280 Concrete Gray

H315 – Causes skin irritation.

H319 – Causes serious eye irritation.

H332 – Harmful if inhaled. * 280 Concrete Gray

H336 – May cause drowsiness or dizziness.

H340 – May cause genetic defects

H350 – May cause cancer

H361 – Suspected of damaging fertility or the unborn child .

H373 – May cause damage to nervous system through prolonged or repeated exposure(Inhalation)

H411 – Toxic to aquatic life with long lasting effects.

Precautionary Statements: P101 - If medical advice is needed, have product container or label at hand

P102 - Keep out of reach of children

P103 - Read label before use

P210 - Keep away from heat/sparks/open flames/hot surfaces - no smoking

P211 - Do not spray on an open flame or other ignition source

P251 - Pressurized container: Do not pierce or burn, even after use

P261 - Avoid breathing dust/fume/gas/mist/vapours/spray

P262 - Do not get in eyes, on skin, or on clothing

P264 - Wash ... thoroughly after handling

P280 - Wear protective gloves/eye protection/face protection

Safety Data Sheet (SDS)

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P303+P361+P353 - If on skin or hair, remove/takeoff immediately all contaminated clothing. Rinse skin with water/shower.

P410+P412 - Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F

P501 - Dispose of contents/container in accordance with local/regional/national/international regulation

Symbols/Pictograms:

Composition

Chemical Synonyms CAS Number EINECS

Number

Weight

Percent

Hazard Category H-Code

Hydrocarbon

Propellant

LPG 68476-86-8 270-705-8 10-30% Press. Gas

Flam. Gas 1

Carc. 1B

Muta. 1B

H220

H350

H340

Hexane n-Hexane 110-54-3 203-777-6 5-10% Flam. Liq. 2

Repr. 2

Asp. Tox. 1

STOT RE 2 *

Skin Irrit. 2

STOT SE 3

Aquatic Chronic 2

H225

H361f ***

H304

H373 **

H315

H336

H411

Aliphatic

Petroleum

Distillates

Solvent

Naphtha

64742-89-8 265-192-2 5-10% Carc. 1B

Muta. 1B

Asp. Tox. 1

H350

H340

H304

Aliphatic

Petroleum

Distillates

Solvent
Naphtha
64742-88-7 265-191-7 1-5% Asp. Tox. 1 H304

Aliphatic
Petroleum
Distillates

Solvent
Naphtha
8032-32-4 232-453-7 1-5% Carc. 1B

Muta. 1B
Asp. Tox. 1
H350

H340
H304

**Nonfluorescent
colors also
contain:**

Acetone Propanone 67-64-1 200-662-2 1-5% Flam. Liq. 2
Eye Irrit. 2

H225,
H319,

3. Composition / Information on Ingredients

Safety Data Sheet (SDS)

Date Prepared/Revised: 5/2/2016 Version no.: 04 Supersedes: (7/27/2015)

STOT SE 3 H336

Aliphatic
Petroleum
Distillates

Solvent
Naphtha
8052-41-3 232-489-3 1-5% Carc. 1B

Muta. 1B
Asp. Tox. 1
H350

H340
H304

**210 silver
contains:**

Hydrocarbon
Propellant
LPG 68476-86-8 270-705-8 10-30% Press. Gas

Flam. Gas 1
Carc. 1B
Muta. 1B

H220
H350

H340
Acetone Propanone 67-64-1 200-662-2 30-60% Flam. Liq. 2

Eye Irrit. 2
STOT SE 3

H225,
H319,
H336

Aliphatic
Petroleum
Distillates

Solvent
Naphtha
8052-41-3 232-489-3 1-5% Carc. 1B
Muta. 1B
Asp. Tox. 1
H350
H340
H304
n-Butyl
Acetate
n-Butyl
Ester
123-86-4 204-658-1 1-5% Flam. Liq. 3
STOT SE 3
H226
H336
Aliphatic
Petroleum
Distillates
Solvent
Naphtha
64742-89-8 265-192-2 10-30% Carc. 1B
Muta. 1B
Asp. Tox. 1
H350
H340
H304
Aliphatic
Petroleum
Distillates
Solvent
Naphtha
64742-88-7 265-191-7 7-13% Asp. Tox. 1 H304
280 Concrete
Gray
contains:
Hydrocarbon
Propellant
LPG 68476-86-8 270-705-8 10-30% Press. Gas
Flam. Gas 1
Carc. 1B
Muta. 1B
H220
H350
H340
Hexane n-Hexane 110-54-3 203-777-6 5-10% Flam. Liq. 2
Repr. 2
Asp. Tox. 1
STOT RE 2 *
Skin Irrit. 2
STOT SE 3
Aquatic Chronic 2
H225
H361f ***
H304
H373 **
H315
H336

H411
Aliphatic
Petroleum
Distillates
Solvent
Naphtha
64742-89-8 265-192-2 5-10% Carc. 1B
Muta. 1B
Asp. Tox. 1
H350
H340
H304
n-Butyl
Acetate
n-Butyl
Ester
123-86-4 204-658-1 1-5% Flam. Liq. 3
STOT SE 3
H226
H336
Acetone Propanone 67-64-1 200-662-2 1-5% Flam. Liq. 2
Eye Irrit. 2
STOT SE 3
H225,
H319,
H336
Ethyl Acetate Ethanoate 141-78-6 205-500-4 1-5% Flam. Liq. 2
Eye Irrit. 2
STOT SE 3
H225
H319
H336
2-Butoxyethyl
Acetate
Butyl Glycol
Acetate
112-07-2 203-933-3 1-5% Acute Tox. 4 *
Acute Tox. 4 *
H332
H312

Other Product Information

Chemical Identity: Mixture

Safety Data Sheet (SDS)

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General Advice: If symptoms persist, always call a doctor.

Inhalation First Aid: Remove victim to fresh air and provide oxygen if breathing is difficult. If not breathing, give artificial respiration, preferably mouth to mouth. Get medical attention immediately.

Skin Contact First Aid: Wash with soap and water. Remove contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse.

Eye Contact First Aid: If contact with eyes, immediately flush eyes with plenty of water for at least 15 minutes, while holding eyelids open. Get medical attention immediately.

Ingestion First Aid: If swallowed, wash out mouth with water provided the person is conscious. Do not induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Most Important

Symptoms/Effects: Exposure may cause slight irritation to the skin, eyes, and respiratory tract. Excessive exposure may cause central nervous system effects.

Flammable Properties: Aerosol

Auto Ignition Temperature: Not Available

Suitable extinguishing media: Carbon dioxide, dry chemical, water spray.

Unsuitable extinguishing media: None known

Special hazards arising from the substance or mixture: None known

Hazardous combustion products: Carbon dioxide, Carbon monoxide

Fire & Explosion Hazards: Closed Containers may rupture due to the buildup of pressure from extreme temperatures.

Precautions for fire-fighters: Use water spray to cool containers exposed to heat or fire to prevent

pressure build up. In the event of a fire, wear full protective clothing and NIOSH- approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.

PERSONAL PRECAUTIONARY MEASURES:

- 1) Follow personal protective equipment recommendations found in section 8.
- 2) Maintain adequate ventilation.

SPILL CLEAN-UP PROCEDURES:

- 1.) Evacuate unprotected personnel from the area.

4.) First Aid Measures

5. Fire Fighting Measures

6. Accidental Release Measures

Safety Data Sheet (SDS)

Date Prepared/Revised: 5/2/2016 Version no.: 04 Supersedes: (7/27/2015)

- 2.) Remove sources of ignition if safe to do so.
- 3.) Pickup spilled materials using non-sparking tools and place in an appropriate container for disposal.
- 4.) Contain spill to prevent material from entering sewage or ground water systems.
- 5.) Always dispose of waste materials in accordance with all EU, National and Local Regulations.

Handling:

Flammable Aerosol, use in a well ventilated area.

Do not use near sources of ignition.

Do not to eat, drink and smoke while working with this material.

Wash hands after use.

Conditions for safe storage, including any incompatibilities:

Store out of direct sunlight.

Storage Temperature: 32° to 120°F (0° to 49°C).

No known incompatibilities.

Appropriate engineering controls:

Ensure adequate ventilation. A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits.

Keep away from sources of ignition.

Take precautionary measures against static discharge.

Personal Protection:

Eye & face protection devices such as safety glasses, safety goggles or face shield are recommended.

Skin protection

Wear the appropriate protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Respiratory protection:

Use only in an adequately ventilated area. For unknown vapor concentrations use a positive-pressure, pressure-demand, self-contained breathing apparatus (SCBA).

Hazardous Ingredient CAS

Number

ACGIH TLV

(TWA)

ACGIH TLV

(STEL)

OSHA

PEL

(TWA)

OSHA PEL

(STEL)

Aliphatic Petroleum Distillates 64742-88-7 N/AV N/AV N/AV N/AV

Aliphatic Petroleum Distillates 64742-89-8 N/AV N/AV N/AV N/AV

Hydrocarbon Propellant 68476-86-8 N/AV N/AV N/AV N/AV

Aliphatic Petroleum Distillates 8032-32-4 200ppm 300ppm 200ppm N/AV

Hexane 110-54-3 50ppm N/AV 500ppm N/AV

Acetone 67-64-1 500ppm 750ppm 1000ppm N/AV

Aliphatic Hydrocarbon 8052-41-3 100ppm N/AV 500ppm N/AV

7. Handling and Storage

8. Exposure Controls / Personal Protection

Safety Data Sheet (SDS)

Date Prepared/Revised: 5/2/2016 Version no.: 04 Supersedes: (7/27/2015)

n-Butyl Acetate 123-86-4 150ppm 200ppm 150ppm N/AV

Aliphatic Petroleum Distillates 64742-47-8 N/AV N/AV N/AV N/AV

Ethyl Acetate 141-78-6 400ppm N/AV 400ppm N/AV

2-Butoxyethyl Acetate 112-07-2 20ppm N/AV N/AV N/AV

***Values are based on the 2014 Guide to Occupational Exposure Values by ACGIH**

Appearance: Color varies by product. Odor: Hydrocarbon Odor

Odor Threshold: N/AV pH: Not Applicable (solvent Base)

Melting Point: N/AV Freezing Point: N/AV

Initial Boiling Point: N/AV Boiling Point Range: N/AV

Flash Point: <0° F (-18° C) Evaporation Rate: Faster than n-Butyl Acetate

Flammability Solid/Gas: Flammable gas Upper LEL: 1% Lower LEL: 13%

Vapor Pressure: N/AV Vapor Density: Heavier Than Air

Relative Density: N/AV Solubility: Negligible

Partition Coefficient:

n-octanol/ water: N/AV

Auto-ignition Temperature: N/AV

Decomposition Temperature: N/AV Viscosity: N/AV

Explosive Properties: N/AV Oxidizing Properties: N/AV

Possibility of hazardous reactions: Hazardous polymerization will not occur under normal conditions

Chemical stability: Stable under normal conditions

Conditions to avoid: Heat and ignition sources

Incompatible materials: Strong Oxidizing Agents

Hazardous decomposition products: Will not occur

Reports have associated repeated and prolonged overexposure to solvents with permanent brain and

nervous system damage. Repeated overexposure can also damage kidneys, lungs, liver, heart and blood

Routes of exposure: Eyes, skin, ingestion, and/or inhalation

Acute toxicological data: (Acetone) Acute oral LD50: 5800mg/kg(rat)

(Acetone) LC50: 21000 ppm / 8 hr (rat)

(Hexane) LD50: 2870 mg/kg (Rat-Oral)

Eye irritation data: N/AV

Skin irritation/sensitization/absorption data: N/AV

9. Information on Basic Physical and Chemical Properties

10. Stability & Reactivity

11. Toxicological Information

Safety Data Sheet (SDS)

Date Prepared/Revised: 5/2/2016 Version no.: 04 Supersedes: (7/27/2015)

Reproductive toxicity data: N/AV

Mutagenicity data: Muta 1B

Symptoms associated with physical contact: N/AV

Acute/chronic effects from short/long

term exposure: Irritating to skin. Prolonged/repeated contact may

cause defatting of the skin which can lead to

dermatitis. Not expected to be a skin sensitizer.

Known reportable carcinogens via the

following agencies:

NTP: N/AV

IARC: IARC3:Classification not possible from current data

OSHA: TLV-A4

* Petroleum distillates may contain chemical carcinogens in limited quantities (< 0.01%). These quantities are determined by

the supplier/fraction/purity of the distillate during the manufacturing process. Chemicals that may be present within distillates

are listed on California's prop 65 list such as ETHYLBENZENE, BENZENE, and TOLUENE.

Ecotoxicity: **No Data Available**

Persistence and degradability: **No Data Available**

Bioaccumulative potential: **No Data Available**

Mobility in soil: **No Data Available**

Results of PBT and vPvB assessment: **No Data Available**

Other adverse effects: **No Data Available**

Waste Disposal: Dispose of material in accordance with EU, national and local requirements.

For proper disposal of used material, an assessment must be completed to determine the proper and permissible waste management options permitted under applicable rules, regulations and/or laws governing your location.

Product / Packaging disposal: Dispose of packaging in accordance with federal, state and local requirements, regulations and/or laws governing your location.

US DOT

UN

Number

Proper Shipping Name Hazard

Class

Packing

Group

Marine

Pollutant

Special

Provisions

12. Ecological Information

13. Disposal Considerations

14. Transportation Information

Safety Data Sheet (SDS)

Date Prepared/Revised: 5/2/2016 Version no.: 04 Supersedes: (7/27/2015)

UN1950 Aerosols 2.1 Not

Applicable

Not

Applicable

Reference 49

CFR 172.101

IMDG

UN

Number

Proper Shipping Name Hazard

Class

Packing

Group

Marine

Pollutant

Special

Provisions

UN1950 Aerosols 2.1 Not

Applicable

Not

Applicable

Reference

IMDG code

part 3

IATA:

UN

Number

Proper Shipping Name Hazard

Class

Packing

Group

Marine

Pollutant

Special

Provisions

UN1950 Aerosols, Flammable 2.1 Not

Applicable

Not

Applicable

Reference

IATA

Dangerous

Goods

Regulation

Workplace classification:

This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200). The Occupational Safety and Health Administration's interpretation of the product's hazard to workers.

SARA Title 3:

Section 311/312 Categorizations (40 CFR 372): This product is a hazardous chemical under 29 CFR

1910.1200, and is categorized as an immediate and delayed health, and flammability physical hazard.

Superfund Amendment and Reauthorization Act (SARA) category. SARA requires reporting any spill of any hazardous substance.

TSCA status: All chemicals in this product are listed, or are exempt from listing, on the TSCA Inventory.

WHMIS: This product has been classified in accordance with the hazard criteria of the Controlled

Products Regulations (CPR) and the (M)SDS contains all of the information required by the CPR.

PROP 65 (CA): WARNING: This product may contain chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.

This SDS has been completed in accordance with GHS Rev04 (2011): U.S OSHA, CMA, ANSI, Canadian WHMIS standards, and European Directives.

Date of Preparation/Revision: 5/2/2016

Supersedes: (7/27/2015)

To the best of our knowledge, the information contained herein is believed to be accurate.

However, the

above data does not imply any guarantee or warranty of any kind, expressed or implied. The final

15. Regulatory Information**16. Other Information**

12.) Pipe Lube

Material Safety Data Sheet

Fastite 27-A Pipe Joint Lubricant

Date of Preparation: August 1998/Revised 4/2006

Section 1 - Chemical Product and Company Identification

Product/Chemical Name: Fastite 27-A Pipe Joint Lubricant

Chemical Formula: 88-6

Manufacturer: JTM Products, Inc., 31025 Carter Street, Solon, OH 44139, Phone (440) 287-2302, FAX (440) 287-3095
(CHEM-TEL 24-hour emergency: (800) 255-3924)

Section 2 - Composition/ Information on Ingredients

Proprietary blend of soap [CAS#61790-44-1], glycol [CAS#57-55-6] and filler [CAS#12001-26-2].

revised February 2005 - John Cahoon

Section 3 - Hazards Identification

II

Emergency Overview

11

HMIS

H 1

F 0

R 0

PPet

tsec.8

Potential Health Effects

Primary Entry Routes: Not Hazardous

Carcinogenicity: IARC, NTP, and OSHA do not list the ingredients in Fastite 27-A Pipe Joint Lubricant as carcinogens.

Section 4 - First Aid Measures

Eye Contact: Flush with copious volumes of water for 15 minutes while holding eyelids open.

Skin Contact: Wash with water.

If irritation persists, call a physician.

Section 5 - Fire-Fighting Measures

Flash Point: >220 °F (>104 °C)

LEL:NA

NFPA

Flash Point Method: NA, contains water

UEL:NA

Autoignition Temperature: NA

Flammability Classification: 0

Extinguishing Media: Water, water fog, alcohol foam, carbon dioxide or dry chemical are all suitable.

Unusual Fire or Explosion Hazards: None

Hazardous Combustion Products: None

Fire-Fighting Instructions: Do not release runoff from fire control methods to sewers or waterways.

Fire-Fighting Equipment: Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure demand or positive pressure mode.

Section 6 - Accidental Release Measures

Spill/Leak Procedures: This product is a biodegradable soap.

Containment: For large spills, dike far ahead of spill for later disposal.

Cleanup: Place the bulk of any spilled material into drums, then rinse any remaining material to sewage treatment facility, in accordance with any applicable regulations.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: No special precautions are required.

Storage Requirements: No special precautions are required.

Regulatory Requirements: No known regulatory requirement for handling and storage.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls:

Ventilation: Provide general or local exhaust ventilation systems.

Administrative Controls:

Respiratory Protection: If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

Fastite 27-A Pipe Joint Lubricant

Protective Clothing/Equipment: Wear chemically protective gloves to prevent prolonged or repeated skin contact. Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

Safety Stations: Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

Contaminated Equipment: Launder before reuse. Remove this material from your shoes and clean personal protective equipment.

Comments: Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before

Section 9 - Physical and Chemical Properties

Physical State: Paste

Appearance and Odor: amber paste, bland odor

Odor Threshold: NA

Vapor Pressure: NA

Vapor Density (Air=1): NA

Formula Weight: NA (blend)

Density: 8.3 lbs./gal.

Specific Gravity (H₂O=1, at 4 °C): 1.0

pH: 11

Water Solubility: complete solubility in water

Boiling Point: >220 °F

Freezing/Melting Point: <32 °F

Viscosity: viscous paste

Refractive Index: unknown

Surface Tension: unknown

% Volatile: 28 [Revised April 2006]

Evaporation Rate: NA

Section 10 - Stability and Reactivity

Stability: Fastite 27-A Pipe Joint Lubricant is stable at room temperature in closed containers under normal storage and handling conditions.

Polymerization: Hazardous polymerization will not occur.

Chemical Incompatibilities:

Conditions to Avoid: Avoid contact with strong oxidizing agents. [Revised April 2006]

Hazardous Decomposition Products: Thermal oxidative decomposition of Fastite 27-A Pipe Joint Lubricant can produce oxides of carbon and nitrogen.

Section 11- Toxicological Information

Toxicity Data:

Eye Effects: Eye irritant [based on blended ingredients].

Skin Effects: Slight skin irritant if allowed to remain in contact.

Section 12 - Ecological Information

Ecotoxicity: Environmental Fate

Environmental Transport: Unknown. **Environmental Degradation:** Soaps are well known to be biodegradable.

Soil Absorption/Mobility: Unknown.

Section 13 - Disposal Considerations

Disposal: Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.

Section 14 - Transport Information

Not hazardous under DOT regulations.

Section 15 - Regulatory Information

EPA Regulations: None apply.

Section 16 - Other Information

Prepared By: B. Noragon

Approved By: B. Roll

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Reviewed/Section 2 revised February 2005 by John Cahoon; Reviewed/Section 9 & 10 revised April 2006 by John Cahoon

13.) Polyethylene Vapor Barrier

MATERIAL SAFETY DATA SHEET

POLY-AMERICA LP 2000
 WEST MARSHALL DRIVE GRAND
 PRAIRIE, TEXAS 75051

PRODUCT **POLYETHYLENE SHEETING-NATURAL**

Poly-America LP urges each customer or recipient of this Material Safety Data Sheet to study it carefully to become aware of and understand the hazards associated with the product. The reader should consider consulting reference works or individuals who are experts in ventilation, toxicology or fire prevention, as necessary or appropriate to use and understand the data contained in this MSDS.

NOTICE:

This product is not FDA, CPSC or NSF compliant. It is unsuitable for use in applications such as direct or indirect food contact, toys, medical device or pharmaceutical applications or for potable water application .

SECTION I **Identification**

	CAS No.	% bywt.
Polyethylene Copolymer	26221-73-8	95-100
Polyethylene	9002-88-4	95-100
Calcium Carbonate	1317-65-3	0-5

SECTION II **Hazards Identification**

Primary routes of entry are skin contact and inhalation of dust. Inhalation is a low health risk because any potentially hazardous components are encapsulated. Inhalation of dust is a possibility in a regrind area. If adequate ventilation is not available in grinding areas respiratory protection is recommended for hazardous and/or nuisance dust. The PEL for nuisance dust is 5mg/cu.m.

SECTION III **First Aid Measures**

If regrind dust should get into the eyes use available eye wash and get medical attention. If excess dust is present, use proper respiratory protection.

SECTION IV **Fire Fighting Measures** **NFPA: Health 0; Fire!: Reactivity 0; Others:**

The flash point of this material is over 600° F. If a fire should occur, Carbon Monoxide (CO) and irritating smoke may be produced. Wear NIOSH approved self-contained breathing apparatus when fighting fires in enclosed areas . Fight fire with water, CO₂, or dry chemicals. Use flooding quantities of water until well after the fire is out.

SECTION VI **Handling and Storage**

This product is normally shipped on pallets in boxes. These pallets should not be stored more than (3) high. The boxes and plastic film will burn in the presence of open flame. Do not weld or use open flame where product is stored without proper fire fighting prevention procedures.

SECTION VI Physical and Chemical Properties

This products is film sheeting with A VOC content of less than 5 parts per million. Density will vary depending on color and components from 0.85 to 1.5. Therefore, the product can sink or float in water depending on the properties. The product is not soluble in water and is odorless at ambient temperature. During heating a characteristic plastic odor will be present.

SECTION VII Stability and Reactivity

This product is stable and non-reactive. Hazardous decomposition of products can occur if overheated or ignited.

SECTION VIII Toxicological Information

The following chemicals are listed as known or suspected carcinogens per the National Toxicology Program (NTP), International Agency for Cancer Research (IARC), or California Proposition 65;

Antimony Trioxide	Arsenic (Inorganic)	Cadmium Compounds
Chromium Compounds	Di (ethylhexyl) Phthalate	Lead Compounds
Nickel Compounds	Crystalline silica	

If any of these chemicals are present in reportable weights within this product, they will be listed on Page 1 Section 1.

SECTION IX Disposal Measures

This product is non-hazardous as shipped. If grinding occurs in recycling some of the encapsulated components may present an environmental disposal problem. Refer to applicable federal, state and local regulations.

SECTION X Transportation

This product is not a regulated substance under the Department of Transportation (DOT) regulations. All hazardous components, if any, are encapsulated.

SECTION XI Regulatory Information

Notice: The information herein is presented in good faith and believed to be accurate as of the effective date shown. However, no warranty, express or implied is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyers' responsibility to ensure that its activities comply with federal, state, and local laws. The following specific information is made for purpose of complying with numerous federal, state and local law regulations. See other sections for health and safety information.

Sara 313 Information: To the best of our knowledge, this product contains no chemical subject to SARA Title III Section 313 supplier notification requirements.

SARA Hazard Category: This product has been reviewed according to the EPA "Hazard Categories" (SARA Title III) and is considered, under applicable conditions to meet the following categories: Not to have met any hazard category.

Toxic Substances Control Act (TSCA): All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

State Right-to-Know: This product is not known to contain any substances subject to disclosure requirements of New Jersey, Pennsylvania and California.

OSHA Hazard Communication Standard: This product is not a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

14.) *Purple Primer*

SAFETY DATA SHEET

1. Identification

Product identifier Oatey Purple Primer- NSF Listed for PVC and CPVC

Other means of identification

Product code 1402E

Synonyms Part Numbers: 30755(TV), 30756(TV), 30757(TV), 30758, 30759, 30927

Recommended use Joining PVC Pipes

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Company Name Oatey Co.

Address 4700 West 160th St.

Cleveland, OH 44135

Telephone 216-267-7100

E-mail info@oatey.com

Transport Emergency Chemtrec 1-800-424-9300 (Outside the US 1-703-527-3887)

Emergency First Aid 1-877-740-5015

Contact person MSDS Coordinator

2. Hazard(s) identification

Physical hazards Flammable liquids Category 2

Health hazards Acute toxicity, oral Category 4

Skin corrosion/irritation Category 2

Serious eye damage/eye irritation Category 2A

Specific target organ toxicity, single exposure Category 3 respiratory tract irritation

Specific target organ toxicity, single exposure Category 3 narcotic effects

Aspiration hazard Category 1

OSHA defined hazards Not classified.

Label elements

Signal word Danger

Hazard statement Highly flammable liquid and vapor. Harmful if swallowed. May be fatal if swallowed and enters airways. Causes skin irritation. Causes serious eye irritation. May cause respiratory irritation. May cause drowsiness or dizziness.

Precautionary statement

Prevention Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Avoid breathing mist or vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.

Response If swallowed: Immediately call a poison center/doctor. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing. Call a poison center/doctor if you feel unwell. Rinse mouth. Do NOT induce vomiting. If skin irritation occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. Take off contaminated clothing and wash before reuse. In case of fire: Use appropriate media to extinguish.

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Storage Store in a well-ventilated place. Keep container tightly closed. Keep cool. Store locked up.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC)

Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.

May form explosive peroxides. Contains a chemical classified by the US EPA as a suspected possible carcinogen.

Supplemental information

Not applicable.

3. Composition/information on ingredients

Mixtures

Acetone 67-64-1 25-40

Chemical name CAS number %

Cyclohexanone 108-94-1 25-40

Furan, Tetrahydro- 109-99-9 15-30

Methyl ethyl ketone 78-93-3 15-30

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

Inhalation

Take off immediately all contaminated clothing. Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention.

Skin contact

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Eye contact

Call a physician or poison control center immediately. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Aspiration may cause pulmonary edema and pneumonitis.

Ingestion

Irritation of nose and throat. Aspiration may cause pulmonary edema and pneumonitis. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation. Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea. Skin irritation. May cause redness and pain.

Most important

symptoms/effects, acute and delayed

Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

Indication of immediate

medical attention and special treatment needed

Take off all contaminated clothing immediately. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

General information

5. Fire-fighting measures

Suitable extinguishing media Alcohol resistant foam. Water fog. Dry chemical powder. Carbon dioxide (CO₂).

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

Vapors may form explosive mixtures with air. Vapors may travel considerable distance to a source of ignition and flash back. During fire, gases hazardous to health may be formed.

Specific hazards arising from the chemical

Special protective equipment and precautions for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk.

Fire fighting

equipment/instructions

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials. Highly flammable liquid and vapor. This product contains tetrahydrofuran that may form explosive organic peroxide when exposed to air or light or with age.

General fire hazards

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6. Accidental release measures

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area).

Wear appropriate protective equipment and clothing during clean-up. Avoid breathing mist or

vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

**Personal precautions,
protective equipment and
emergency procedures**

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Take precautionary measures against static discharge. Use only non-sparking tools. Keep combustibles (wood, paper, oil, etc.) away from spilled material. This product is miscible in water.

Large Spills: Stop the flow of material, if this is without risk. Use water spray to reduce vapors or divert vapor cloud drift. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water.

Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

**Methods and materials for
containment and cleaning up**

Environmental precautions Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Vapors may form explosive mixtures with air. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Explosion-proof general and local exhaust ventilation. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. Avoid breathing mist or vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Do not taste or swallow. When using, do not eat, drink or smoke. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices.

Precautions for safe handling

Store locked up. Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in a cool, dry place out of direct sunlight. Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

**Conditions for safe storage,
including any incompatibilities**

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components Type Value

Acetone (CAS 67-64-1) PEL 2400 mg/m³

1000 ppm

Cyclohexanone (CAS PEL 200 mg/m³

108-94-1)

50 ppm

Furan, Tetrahydro- (CAS PEL 590 mg/m³

109-99-9)

200 ppm

Methyl ethyl ketone (CAS PEL 590 mg/m³

78-93-3)

200 ppm

US. ACGIH Threshold Limit Values

Components Type Value

Acetone (CAS 67-64-1) STEL 750 ppm

TWA 500 ppm

Cyclohexanone (CAS STEL 50 ppm

108-94-1)

TWA 20 ppm

Furan, Tetrahydro- (CAS STEL 100 ppm

109-99-9)

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US. ACGIH Threshold Limit Values

Components Type Value

TWA 50 ppm
Methyl ethyl ketone (CAS STEL 300 ppm
78-93-3)
TWA 200 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components Type Value

Acetone (CAS 67-64-1) TWA 590 mg/m³
250 ppm
Cyclohexanone (CAS TWA 100 mg/m³
108-94-1)
25 ppm
Furan, Tetrahydro- (CAS STEL 735 mg/m³
109-99-9)
250 ppm
TWA 590 mg/m³
200 ppm
Methyl ethyl ketone (CAS STEL 885 mg/m³
78-93-3)
300 ppm
TWA 590 mg/m³
200 ppm

Biological limit values

ACGIH Biological Exposure Indices

Components Value Determinant Specimen Sampling Time

Acetone (CAS 67-64-1) 50 mg/l Acetone Urine *
80 mg/l 1,2-Cyclohexanediol, with hydrolysis
Cyclohexanone (CAS Urine *
108-94-1)
8 mg/l Cyclohexanol, with hydrolysis
Urine *
2 mg/l Tetrahydrofuran

Furan, Tetrahydro- (CAS Urine *
109-99-9)

Methyl ethyl ketone (CAS 2 mg/l MEK Urine *
78-93-3)

* - For sampling details, please see the source document.

Exposure guidelines

US - California OELs: Skin designation

Cyclohexanone (CAS 108-94-1) Can be absorbed through the skin.

US - Minnesota Haz Subs: Skin designation applies

Cyclohexanone (CAS 108-94-1) Skin designation applies.

US - Tennessee OELs: Skin designation

Cyclohexanone (CAS 108-94-1) Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

Cyclohexanone (CAS 108-94-1) Can be absorbed through the skin.

Furan, Tetrahydro- (CAS 109-99-9) Can be absorbed through the skin.

US. NIOSH: Pocket Guide to Chemical Hazards

Cyclohexanone (CAS 108-94-1) Can be absorbed through the skin.

Explosion-proof general and local exhaust ventilation. Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Appropriate engineering controls

Individual protection measures, such as personal protective equipment

Eye/face protection Face shield is recommended. Wear safety glasses with side shields (or goggles).

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Skin protection

Hand protection Wear appropriate chemical resistant gloves.

Other Wear appropriate chemical resistant clothing.

If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.

Respiratory protection

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

General hygiene considerations

9. Physical and chemical properties

Appearance

Physical state Liquid.

Form Translucent liquid.

Color Purple

Odor Solvent.

Odor threshold Not available.

pH Not available.

Melting point/freezing point Not available.

Initial boiling point and boiling range

151 °F (66.11 °C)

Flash point 14.0 - 23.0 °F (-10.0 - -5.0 °C)

Evaporation rate 5.5 - 8

Flammability (solid, gas) Not available.

Upper/lower flammability or explosive limits

Flammability limit - lower

(%)

1.8

Flammability limit - upper

(%)

11.8

Explosive limit - lower (%) Not available.

Explosive limit - upper (%) Not available.

Vapor pressure 145 mm Hg @ 20 C

Vapor density 2.5

Relative density 0.84 +/- 0.02 @20°C

Solubility(ies)

Solubility (water) Negligible

Partition coefficient

(n-octanol/water)

Not available.

Auto-ignition temperature Not available.

Decomposition temperature Not available.

Viscosity Not available.

Other information

Bulk density 7 lb/gal

VOC (Weight %) 505 g/l SQACMD Method 24

10. Stability and reactivity

Reactivity The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability Material is stable under normal conditions.

Possibility of hazardous No dangerous reaction known under conditions of normal use.

reactions

Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.

Conditions to avoid

Incompatible materials Acids. Strong oxidizing agents. Ammonia. Amines. Isocyanates. Caustics.

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Hazardous decomposition No hazardous decomposition products are known.

products

11. Toxicological information

Information on likely routes of exposure

Inhalation May be fatal if swallowed and enters airways. Headache. Nausea, vomiting. May cause irritation to the respiratory system. Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea. Prolonged inhalation may be harmful.

Skin contact Causes skin irritation.

Eye contact Causes serious eye irritation.

Ingestion May be fatal if swallowed and enters airways. Harmful if swallowed. Harmful if swallowed. Droplets of the product aspirated into the lungs through ingestion or vomiting may cause a serious chemical pneumonia.

Symptoms related to the

physical, chemical and toxicological characteristics

Irritation of nose and throat. Aspiration may cause pulmonary edema and pneumonitis. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation. Skin irritation. May cause redness and pain. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

Information on toxicological effects

Acute toxicity May be fatal if swallowed and enters airways. Narcotic effects. May cause respiratory irritation.

Components Species Test Results

Acetone (CAS 67-64-1)

LD50 Rabbit

Dermal

Acute

20 ml/kg

LC50 Rat

Inhalation

50 mg/l, 8 Hours

LD50 Rat

Oral

5800 mg/kg

Cyclohexanone (CAS 108-94-1)

LD50 Rabbit

Dermal

Acute

948 mg/kg

LC50 Rat

Inhalation

8000 ppm, 4 hours

LD50 Rat

Oral

1540 mg/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation Causes skin irritation.

Serious eye damage/eye irritation Causes serious eye irritation.

irritation

Respiratory or skin sensitization

Respiratory sensitization Not available.

Skin sensitization This product is not expected to cause skin sensitization.

No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Germ cell mutagenicity

Carcinogenicity In 2012 USEPA Integrated Risk Information System (IRIS) reviewed a two species inhalation lifetime study on THF conducted by NTP (1998). Male rats developed renal tumors and female mice developed liver tumors while neither the female rats nor the male mice showed similar results. Because the carcinogenic mechanisms could not be identified clearly in either species for either tumor, the EPA determined that the male rat and female mouse findings are relevant to the assessment of carcinogenic potential in humans. Therefore, the IRIS review concludes that these data in aggregate indicate that there is "suggestive evidence of carcinogenic potential" following exposure to THF by all routes of exposure.

IARC Monographs. Overall Evaluation of Carcinogenicity

Cyclohexanone (CAS 108-94-1) 3 Not classifiable as to carcinogenicity to humans.

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OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity -

single exposure

Narcotic effects. May cause drowsiness and dizziness. Respiratory tract irritation.

Specific target organ toxicity -

repeated exposure

Not classified.

Aspiration hazard May be fatal if swallowed and enters airways.

Chronic effects Prolonged inhalation may be harmful.

12. Ecological information

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Ecotoxicity

Components Species Test Results

Acetone (CAS 67-64-1)

Aquatic

Fish LC50 Fathead minnow (*Pimephales promelas*) > 100 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Cyclohexanone (CAS 108-94-1)

Aquatic

Fish LC50 Fathead minnow (*Pimephales promelas*) 481 - 578 mg/l, 96 hours

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential No data available.

Partition coefficient n-octanol / water (log Kow)

Acetone (CAS 67-64-1) -0.24

Cyclohexanone (CAS 108-94-1) 0.81

Furan, Tetrahydro- (CAS 109-99-9) 0.46

Methyl ethyl ketone (CAS 78-93-3) 0.29

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Disposal instructions

Local disposal regulations Dispose in accordance with all applicable regulations.

The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Hazardous waste code

Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Waste from residues / unused products

Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

Contaminated packaging**14. Transport information****DOT**

UN number UN1993

UN proper shipping name Flammable liquids, n.o.s. (Methyl ethyl ketone RQ = 26274 LBS, Acetone RQ = 13130 LBS)

Class 3

Transport hazard class(es)

Subsidiary risk -

Label(s) 3

Packing group II

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Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

Special provisions IB2, T7, TP1, TP8, TP28

Packaging exceptions 150

Packaging non bulk 202

Packaging bulk 242

IATA

UN number UN1993

UN proper shipping name Flammable liquid, n.o.s. (Methyl ethyl ketone, Acetone)

Class 3

Transport hazard class(es)

Subsidiary risk -

Packing group II

Environmental hazards No.

ERG Code 3H

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number UN1993

UN proper shipping name FLAMMABLE LIQUID, N.O.S. (Methyl ethyl ketone, Acetone)

Class 3

Transport hazard class(es)

Subsidiary risk -

Packing group II

Marine pollutant No.

Environmental hazards

EmS F-E, S-E

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Not available.

Annex II of MARPOL 73/78 and

the IBC Code

15. Regulatory information

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

All components are on the U.S. EPA TSCA Inventory List.

US federal regulations**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Acetone (CAS 67-64-1) LISTED

Cyclohexanone (CAS 108-94-1) LISTED

Furan, Tetrahydro- (CAS 109-99-9) LISTED

Methyl ethyl ketone (CAS 78-93-3) LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Immediate Hazard - Yes

Delayed Hazard - No

Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

Hazard categories

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous No

chemical

SARA 313 (TRI reporting)

Not regulated.

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Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act Not regulated.

(SDWA)

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and

Chemical Code Number

Acetone (CAS 67-64-1) 6532

Methyl ethyl ketone (CAS 78-93-3) 6714

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Acetone (CAS 67-64-1) 35 %WV

Methyl ethyl ketone (CAS 78-93-3) 35 %WV

DEA Exempt Chemical Mixtures Code Number

Acetone (CAS 67-64-1) 6532

Methyl ethyl ketone (CAS 78-93-3) 6714

US state regulations

US. Massachusetts RTK - Substance List

Acetone (CAS 67-64-1)

Cyclohexanone (CAS 108-94-1)

Furan, Tetrahydro- (CAS 109-99-9)

Methyl ethyl ketone (CAS 78-93-3)

US. New Jersey Worker and Community Right-to-Know Act

Acetone (CAS 67-64-1)

Cyclohexanone (CAS 108-94-1)

Furan, Tetrahydro- (CAS 109-99-9)

Methyl ethyl ketone (CAS 78-93-3)

US. Pennsylvania Worker and Community Right-to-Know Law

Acetone (CAS 67-64-1)

Cyclohexanone (CAS 108-94-1)

Furan, Tetrahydro- (CAS 109-99-9)

Methyl ethyl ketone (CAS 78-93-3)

US. Rhode Island RTK

Acetone (CAS 67-64-1)

Cyclohexanone (CAS 108-94-1)

Furan, Tetrahydro- (CAS 109-99-9)

Methyl ethyl ketone (CAS 78-93-3)

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region Inventory name On inventory (yes/no)*

Canada Domestic Substances List (DSL) Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

United States & Puerto Rico Toxic Substances Control Act (TSCA) Inventory Yes

16. Other information, including date of preparation or last revision

Issue date 27-May-2015

Revision date -

Version # 01

Health: 2

Flammability: 3

Physical hazard: 0

HMIS® ratings

Oatey Purple Primer- NSF Listed for PVC and CPVC SDS US

926733 Version #: 01 Revision date: - Issue date: 27-May-2015 9 / 10

NFPA ratings

0

The information in the sheet was written based on the best knowledge and experience currently available. Oatey Co. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use.

Disclaimer

Oatey Purple Primer- NSF Listed for PVC and CPVC SDS US

926733 Version #: 01 Revision date: - Issue date: 27-May-2015 10 / 10

15.) Rock Splitting Grout



NON-EXPLOSIVE DEMOLITION AGENT

MSDS

Material, Safety Data Sheet May be used to comply with OSHA Hazard Communication Standard, 29 CFR 1910 1200. Standard must be consulted for specific requirements.		US Department of Labor Occupational Safety and Health Administration (Non-mandatory Form) Form Approved OMB No.1218-0072	
IDENTITY (as Used on Label and List CRAS -NON- EXPLOSIVE DEMOLITION GROUT		Note: Blank spaces are not permitted. If any item is not applicable or no information is available, the space must be marked to indicate that.	
Section I			
Manufactures' name KAYAT! SL.		Emergency Telephone Number. 334-382-1000	
Address(Number, Street, City, State and ZIP Code) Calle A, no. 5-poligono Indus . San Jose de los Llanos. 01230 NANCLARES DE LA OCA-ALAVA (Spain)		Telephone Number for Information (34) 945 135626 (Spain)	
		Date Prepared October 20, 2004	
		Signature of Preparer (optional)	
Section II-Hazardous Ingredients/ Identity Information			
Hazardous Components (Specific Chemical Identity, Common Name(S)		Other Limits Recommended % (optional)	
1.-HAZARDOUS COMPONENTS: NONE 2.-NON-HAZARDOUS CHEMICAL COMPOUNDS: (% BY Weight)			
2.1 Limestone and Dolomite		95/97%	
2.2 Regulatory additives of the reaction		3/5%	
		TOTAL 100%	
Section III-Physical/Chemical Characteristics			
Boiling Point	Not Applicable	Specific Gravity (H20=1)	2.20
Vapor Pressure (mm Hg)	Not Applicable	Melting Point	1000C
Vapor Density (AIR=1)	Not Applicable	Evaporation Rate (Butyl Acetate=1)	Not Applicable
Solubility in Water		Slight	
Appearance and Odor			
Gray Powder, No Odor			
Section IV-Fire and Explosion Hazard Data			
Flash Point (Method Used)	Flammable Limits	LEL	UEL
Not Applicable	Not Applicable		
Extinguishing Media			
Not Applicable			
Special fire Fighting Procedures			
In the event of fire near product, use foam only. Do not use water.			
Unusual Fire and Explosion hazards			
When used incorrectly, such as incorrect hole-diameter, improper temperature range, or warm water, blow outs of material may occur.			

Demolition Technologies, Inc
 107 Mildred Street
 PO Box 427
 Greenville, AL 36037
 800.282.4384
 334.382.7548
 demt@demtec.com n.219 gles.com



NON-EXPLOSIVE DEMOLITION AGENT

MSDS

Section V-Reactivity Data				
Stability	Unstable		Conditions to Avoid	
	Stable	Yes	Not Aoolicable	
Incompatibility (Materials to Avoid) Water (Storage Only)				
Hazardous Decomposition or By products None				
Hazardous Polymerization	May Occur		Conditions to Avoid	
	Will Not Occur	Yes	Not Aoolicable	
Section VI Health Hazard Data				
Route(s) of Entry	Inhalation?	Skin	Ingestion?	Eye Contact?
	Avoid	Avoid	Avoid	Avoid
Health Hazards (Acute and Chronic)				
1. -Skin and eye contact: Irritation, Burn				
2. Inhalation and Ingestion: The same symptoms as cement or quicklime will appear.				
Carcinogenicity	NTP?	IARC Monographs?	OSHA Regulated?	
	Not Applicable	Not Applicable	Not Applicable	
Signs and Symptoms of Exposure				
Since the product is an alkali material, skin etc. may be irritated				
Medical Conditions				
Generally aggravated by exposure . Skin, eyes, nose, and throat may be irritated and burned unless immediately rinsed off completely				
Emergency and First-Aid Procedures				
If skin comes in contact with the product, rinse thoroughly with water; wash with soap and rise with water. If eyes come in contact with the product, rinse thoroughly water and consult with a doctor as soon as possible . Remove the dirty clothes.				
Section VII-Precautions for Safe Handline: and Use				
Gather the released or soilled product with broom or shovel.				
Waste Disposal Method: Gather the released or spilled powder with broom or shovel. Dilute the remaining powder by hosing area thoroughly with water. After product has activated and become hard, it can be safely removed with debris.				
Precautions to be taken in Handling and Storing: Store the product under dry conditions . Avoid dust while handling the product. For safe handling follow precautions for safety and hygiene, like washing hands before and after handling. Do not drink, eat or smoke during handling . Always wear safety goggles, dust-proof mask and rubber gloves when handling the product.				
Other Precautions When mixed with water, the product expands under high temperature development. Stay away from holes filled with the mixture of the product and water to avoid any accident to be caused by blow out. Avoid any heat source near holes and product.				
Section VIII Control Measures				
Respiratory protection (Specify Type) It is recommended to wear ordinary dust-proof mask				
Ventilation Good ventilation	Local Exhaust	Special		
	Not Aoolicable	Not Applicable		
	Mechanical (General)	Other		
	Not Ap Jlicable	Not Applicable		
Protective gloves Ordinary Rubber gloves	Eye Protection Safety Goggles			
Other Protective Clothing or Equipment Dust Proof Mask				
Work/Hygienic Practices Not Applicable				

Demolition Technologies, Inc
107 Mildred Street
PO Box 427
Greenville, AL 36037
800.282.4384
334.382.7548
demolitiontech21@79ies.com

16.) *Thread Paste*

MATERIAL SAFETY DATA SHEET

MSDS 0094

Section 1 -- PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME		HMIS CODES	
RectorSeal Tru-Blu		Health	1
		Flammability	2
		Reactivity	0
		PP!	B
PRODUCT CODES			
31300, 31431, 31551, 31552, 31631, 31780, 31782, 31785			
CHEMICAL FAMILY:			
Organic			
USE			
Pipe Thread Sealant			
MANUFACTURER'S NAME		EMERGENCY TELEPHONE NO.	
The RectorSeal Corporation 2601		Chemtrec 24 Hours	
Spenwick Drive Houston, Texas		(800)424-9300 USA	
77055 USA		(703)527-3887 International	
DATE OF VALIDATION July		TECHNICAL SERVICE TELEPHONE NO.	
9, 2012		(800)231-3345 or (713)263-8001	
DATE OF PREPARATION July			
9, 2012			

Section 2 -- HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

OSHA Hazards

Combustible TARGET

ORGANS

Not Classified

GHS CLASSIFICATION

PHYSICAL HAZARDS

Combustible liquid (Category 4) HEALTH HAZARDS

Acute Toxicity:

Oral: Not Classified

Dermal: Not Classified Inhalation: Not
Classified

Skin Corrosion/Irritation: Not Classified Serious Eye Damage/Eye

Irritation: Not Classified Skin Sensitization: Not Classified

Respiratory Sensitization: Not Classified Germ

Cell Mutagenicity: Not Classified Carcinogenicity: See Section

11 Reproductive Toxicology: Not Classified

Target Organ Systemic Toxicity - Single Exposure: Not Classified Target Organ Systemic Toxicity -

Repeated Exposure: Not Classified Aspiration Toxicity: Not Classified

GHS Label elements, including precautionary statements Pictogram: Harmful/
Irritant

Signal Word: Warning Hazard

Statements

H303 - May be harmful if swallowed.

H313 - May be harmful in contact with skin.

H335 + H336 - May cause respiratory irritation, and drowsiness or dizziness. Precautionary Statements

PI02 - Keep out of reach of children.

P210-Keep away from heat/sparks/open flames/hot surfaces.-No smoking P240-Ground/Bond container and receiving equipment

P261-Avoid breathing dust/fume/gas/mist/vapors/spray P262 - Do not get in eyes, on skin, or on clothing.

P264-Wash hands thoroughly after handling.

P280-Wear protective gloves/protective clothing/eye protection/face protection. P301+P310-IF SWALLOWED:

Immediately call a POISON CENTER or doctor/physician. P305+ P351+ P338-IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P362-Take off contaminated clothing and wash before reuse. EUH066-Repeated exposure may cause skin dryness or cracking Precautionary Statements-EU No. 1272/2008

SUMMARY OF ACUTE HAZARDS

Irritation to eyes, nose and throat; drowsiness, narcosis, tremors and other CNS effects at high concentration.

ROUTE OF EXPOSURE, SIGNS AND SYMPTOMS

INHALATION

Nasal and respiratory irritation, dizziness, narcosis, headache, nausea, CNS depression and unconsciousness.

EYE CONTACT

Watering, blurred vision, inflammation and irritation which can result in corneal injury.

SKIN CONTACT

Irritation, dermatitis.

INGESTION

Nausea, vomiting; CNS depression; irritation of gastrointestinal tract, liver and peritoneal wall; lung congestion.

SUMMARY OF CHRONIC HAZARDS

Skin irritation and dermatitis. Possible liver and kidney damage.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Individuals with pre-existing or chronic diseases of the eyes, skin, respiratory system, cardiovascular system, gastrointestinal system, liver or kidneys may have increased susceptibility to excessive exposures.

Section 3--COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT: Diacetone Alcohol

PERCENTAGE BY WEIGHT: 20-30 CAS

NUMBER: 123-42-2

EC# :204-626-7

Section 4 -- FIRST AID MEASURES

If INHALED:	If overcome by exposure, remove victim to fresh air immediately. Give oxygen or artificial respiration as needed. Obtain emergency medical attention. Prompt action is essential.
If on SKIN: If in	Wash with soap and water. If irritation occurs, seek medical attention.
EYES:	Flush eyes with large amounts of water for 15 minutes. Get medical attention.

If SWALLOWED:	If swallowed, call a physician immediately. vomiting at the instruction of a physician. anything by mouth to an unconscious person.	Only induce Never give
---------------	---	------------------------

Section 5-- FIRE FIGHTING MEASURES

FLASHPOINT

LEL

UEL

<http://ows.rectorseal.com/product-data/tru-blu/RectorSeal%20Tru-Blu.html>

11/8/2013

150 F(65 C) SETA CC
EXTINGUISHING MEDIA

N/D N/D

Foam, dry chemical, carbon dioxide or water fog.
SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus (SCBA) and other protective clothing. Hazardous decomposition products possible (see Section 10).
UNUSUAL FIRE AND EXPLOSION HAZARDS: Combustible-moderate flashpoint.
Vapors heavier than air and may travel along the ground or to low spots at considerable distance to a source of ignition resulting in potential flashback. Burning liquid may float on water.
Heat may build up pressure and rupture containers.

Section 6--ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Remove all sources of ignition. Use absorbent material to prevent footing hazard and to contain. Ventilate area with natural or explosion-proof, forced air ventilation. Avoid flushing into sewers, drains, waterways, and soil. Wear protective clothing and respiratory protection during cleanup.

Section 7-- HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Keep container closed and upright when not in use. Do not store near heat, sparks, or open flames.
OTHER PRECAUTIONS: Avoid prolonged or repeated contact with skin or clothing. Empty containers may contain residues; treat as if full and observe all products precautions. Do not reuse empty containers.
KEEP OUT OF REACH OF CHILDREN.

Section 8--EXPOSURE CONTROLS/PERSONAL PROTECTION

INGREDIENT	UNITS
Diacetone Alcohol	
ACGIH TLV OSHA	50 ppm
PEL	50 ppm

RESPIRATORY PROTECTION (SPECIFY TYPE): In confined poorly ventilated areas, use NIOSH/MSHA approved air purifying or supplied air purifying or supplied air respirators.
VENTILATION-LOCAL EXHAUST: Acceptable
SPECIAL: Explosion-proof equipment.
MECHANICAL (GENERAL): Preferable
OTHER: N/A
PROTECTIVE GLOVES: Wear rubber gloves.
EYE PROTECTION: Chemical splash goggles (ANSI Z-87.1 or equivalent) OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Coveralls recommended.
WORK/HYGIENIC PRACTICES: Where use can result in skin contact, wash exposed area thoroughly before eating, drinking, smoking, or leaving work area. Launder contaminated clothing before reuse.

Section 9--PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT:		322 F (161 C) @ 760 mm Hg
SPECIFIC GRAVITY (H ₂ O = 1):		1.38
VAPOR PRESSURE (mm Hg):		0.3 @ 68 F (20 C)
MELTING POINT:		N/A
VAPOR DENSITY (AIR = 1):		1.1
EVAPORATION RATE (ETHYL ACETATE	1):	0.14
APPEARANCE/ODOR:		Blue Paste/Mild Odor
SOLUBILITY IN WATER:		23%

VOLATILE ORGANIC COMPOUNDS(VOC)Content
(Theoretical Percentage By Weight): 23% or (230 g/L)

Section 10 -- STABILITY AND REACTIVITY

STABILITY: Stable
 CONDITIONS TO AVOID: Heat, sparks, open flames, and strong oxidizing.
 Temperatures above 500 F (260 C).
 INCOMPATIBILITY (MATERIALS TO AVOID): Gaseous oxygen, strong oxidizing materials,
 molten alkali metals.
 HAZARDOUS DECOMPOSITION PRODUCTS: CO, CO2 and fragmented hydrocarbons. HAZARDOUS
 POLYMERIZATION: Will not occur.

Section 11 -- TOXICOLOGY INFORMATION

CHRONIC HEALTH HAZARDS

No ingredients in this product is an IARC, NTP or OSHA Lister carcinogen.

TOXICOLOGY DATA

Ingredient Name

Diacetone Alcohol	Oral-Rat	LD50:4000 mg/kg
	Inhalation-Human	TCLo: 100 ppm

Section 12 -- Ecological Information ECOLOGICAL

DATA

Ingredient Name

Diacetone Alcohol	Food Chain Concentration Potential	N/A
	WATERFOWL TOXICITY	N/A
	BOD	N/A
	AQUATIC TOXICITY	N/A

Section 13 -- DISPOSAL CONSIDERATIONS

Waste Classification: Non-regulated solid waste Disposal
 Method: Approved landfill
 Waste from this product is not considered hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Dispose of in accordance with Federal, State, and Local regulation regarding pollution.

Section 14 -- TRANSPORTATION INFORMATION

DOT:	Non-Regulated
OCEAN (IMDG): AIR	Non-Regulated
(IATA): WHMIS	Non-Regulated
(CANADA):	Non-Regulated

Section 15 -- REGULATORY INFORMATION

REGULATORY DATA

Ingredient Name

Diacetone Alcohol	SARA 313	N/A
-------------------	----------	-----

TSCA Inventory	Yes
CERCLA RQ	N/A

RCRA Code

N/A

Section 16--OTHER INFORMATION

This document *is* prepared pursuant to the OSHA Hazard Communication Standard (29CFR1910.1200).
The information herein *is* given in good faith, but no warranty, expressed or implied *is* made.
Consult RectorSeal for further information: (713) 263-8001

17.) WD-40



Material Safety Data Sheet

1 - Chemical Product and Company Identification

Manufacturer: WD-40 Company

Address: 1061 Cudahy Place (92110)
P.O. Box 80607
San Diego, California, USA
92138-0607

Chemical Name: Organic Mixture

Trade Name: WD-40 Aerosol

Telephone:

Emergency only: 1-888-324-7596 (PROSAR)

Information: 1-888-324-7596

Chemical Spills: 1-800-424-9300 (Chemtrec)
1-703-527-3887 (International Calls)

Product Use: Lubricant, Penetrant, Drives Out
Moisture, Removes and Protects Surfaces
From Corrosion

MSDS Date Of Preparation: 6/8/12

2 - Hazards Identification

Emergency Overview:

DANGER! Flammable aerosol. Contents under pressure. Harmful or fatal if swallowed. If swallowed, may be aspirated and cause lung damage. May cause eye irritation. Avoid eye contact. Use with adequate ventilation. Keep away from heat, sparks and all other sources of ignition.

Symptoms of Overexposure:

Inhalation: High concentrations may cause nasal and respiratory irritation and central nervous system effects such as headache, dizziness and nausea. Intentional abuse may be harmful or fatal.

Skin Contact: Prolonged and/or repeated contact may produce mild irritation and defatting with possible dermatitis.

Eye Contact: Contact may be irritating to eyes. May cause redness and tearing.

Ingestion: This product has low oral toxicity. Swallowing may cause gastrointestinal irritation, nausea, vomiting and diarrhea. This product is an aspiration hazard. If swallowed, can enter the lungs and may cause chemical pneumonitis, severe lung damage and death.

Chronic Effects: None expected.

Medical Conditions Aggravated by Exposure: Preexisting eye, skin and respiratory conditions may be aggravated by exposure.

Suspected Cancer Agent:

Yes No X

3 - Composition/Information on Ingredients

Ingredient	CAS#	Weight Percent
Aliphatic Hydrocarbon	64742-47-8	45-50
Petroleum Base Oil	64742-58-1 64742-53-6 64742-56-9 64742-65-0	<25
LVP Aliphatic Hydrocarbon	64742-47-8	12-18
Carbon Dioxide	124-38-9	2-3
Non-Hazardous Ingredients	Mixture	<10

4 - First Aid Measures

Ingestion (Swallowed): Aspiration Hazard. DO NOT induce vomiting. Call physician, poison control center or the WD-40 Safety Hotline at 1-888-324-7596 immediately.

Eye Contact: Flush thoroughly with water. Remove contact lenses if present after the first 5 minutes and continue flushing for several more minutes. Get medical attention if irritation persists.

Skin Contact: Wash with soap and water. If irritation develops and persists, get medical attention.

Inhalation (Breathing): If irritation is experienced, move to fresh air. Get medical attention if irritation or other symptoms develop and persist.

5 - Fire Fighting Measures

Extinguishing Media: Use water fog, dry chemical, carbon dioxide or foam. Do not use water jet or flooding amounts of water. Burning product will float on the surface and spread fire.

Special Fire Fighting Procedures: Firefighters should always wear positive pressure self-contained breathing apparatus and full protective clothing. Cool fire-exposed containers with water. Use shielding to protect against bursting containers.

Unusual Fire and Explosion Hazards: Contents under pressure. Keep away from ignition sources and open flames. Exposure of containers to extreme heat and flames can cause them to rupture often with violent force. Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back.

6 - Accidental Release Measures

Wear appropriate protective clothing (see Section 8). Eliminate all sources of ignition and ventilate area. Leaking cans should be placed in a plastic bag or open pail until the pressure has dissipated. Contain and collect liquid with an inert absorbent and place in a container for disposal. Clean spill area thoroughly. Report spills to authorities as required.

7 - Handling and Storage

Handling: Avoid contact with eyes. Avoid prolonged contact with skin. Avoid breathing vapors or aerosols. Use only with adequate ventilation. Keep away from heat, sparks, pilot lights, hot surfaces and open flames. Unplug electrical tools, motors and appliances before spraying or bringing the can near any source of electricity. Electricity can burn a hole in the can and cause contents to burst into flames. To avoid serious burn injury, do not let the can touch battery terminals, electrical connections on motors or appliances or any other source of electricity. Wash thoroughly with soap and water after handling. Keep containers closed when not in use. Keep out of the reach of children. Do not puncture, crush or incinerate containers, even when empty.

Storage: Store in a cool, well-ventilated area, away from incompatible materials. Do not store above 120°F or in direct sunlight. U.F.C (NFPA 30B) Level 3 Aerosol.

8 - Exposure Controls/Personal Protection

Chemical	Occupational Exposure Limits
Aliphatic Hydrocarbon	1200 mg/m ³ TWA (manufacturer recommended)
Petroleum Base Oil	5 mg/m ³ TWA, 10 mg/m ³ STEL ACGIH TLV 5 mg/m ³ TWA OSHA PEL
LVP Aliphatic Hydrocarbon	1200 mg/m ³ TWA (manufacturer recommended)
Carbon Dioxide	5000 ppm TWA (OSHA/ACGIH), 30,000 ppm STEL (ACGIH)
Non-Hazardous Ingredients	None Established

The Following Controls are Recommended for Normal Consumer Use of this Product Engineering Controls:

Use in a well-ventilated area.

Personal Protection:

Eye Protection: Avoid eye contact. Always spray away from your face.

Skin Protection: Avoid prolonged skin contact. Chemical resistant gloves recommended for operations where skin contact is likely.

Respiratory Protection: None needed for normal use with adequate ventilation.

For Bulk Processing or Workplace Use the Following Controls are Recommended

Engineering Controls: Use adequate general and local exhaust ventilation to maintain exposure levels below that occupational exposure limits.

Personal Protection:

Skin Protection: Wear chemical resistant gloves.

Respiratory Protection: None required if ventilation is adequate. If the occupational exposure limits are exceeded, wear a NIOSH approved respirator. Respirator selection and use should be based on contaminant type, form and concentration. Follow OSHA 1910.134, ANSI Z88.2 and good Industrial Hygiene practice

Work/Hygiene Practices: Wash with soap and water after handling.

9 - Physical and Chemical Properties

Boiling Point:	361 - 369°F (183 - 187°C)	Specific Gravity:	0.8 - 0.82 @ 60°F
Solubility in Water:	Insoluble	pH:	Not Applicable
Vapor Pressure:	95-115 PSI @ 70°F	Vapor Density:	Greater than 1
Percent Volatile:	70-75%	VOE:	412 grams/liter (49.5%)
Coefficient of Water/Oil Distribution:	Not Determined	Appearance/Odor	Light amber liquid/mild odor
Flash Point:	122°F (49°C) Tag Open Cup (concentrate)	Flammable Limits: (Solvent Portion)	LEL: 0.6% UEL: 8.0%
Pour Point:	-63°C (-81.4°F) ASTM D-97	Kinematic Viscosity:	2.79-2.96cSt@ 100°F

10 - Stability and Reactivity

Stability: Stable

Hazardous Polymerization: Will not occur.

Conditions to Avoid: Avoid heat, sparks, flames and other sources of ignition. Do not puncture or incinerate containers.

Incompatibilities: Strong oxidizing agents.

Hazardous Decomposition Products: Carbon monoxide and carbon dioxide.

11 - Toxicological Information

The oral toxicity of this product is estimated to be greater than 5,000 mg/kg based on an assessment of the ingredients. This product is not classified as toxic by established criteria. It is an aspiration hazard.

None of the components of this product is listed as a carcinogen or suspected carcinogen or is considered a reproductive hazard.

12- Ecological Information

No data is currently available.

13 - Disposal Considerations

If this product becomes a waste, it would be expected to meet the criteria of a RCRA ignitable hazardous waste (D001). However, it is the responsibility of the generator to determine at the time of disposal the proper classification and method of disposal. Dispose in accordance with federal, state, and local regulations.

14 - Transportation Information

DOT Surface Shipping Description: Consumer Commodity, ORM-D

After 1/1/2014 UN1950, Aerosols, 2.1 Ltd. Qty (Note: Shipping Papers are not required for Limited Quantities unless transported by air or vessel - each package must be marked with the Limited Quantity Mark)

IMDG Shipping Description: UN1950, Aerosols, 2.1, LTD QTY

ICAO Shipping Description UN1950, Aerosols, flammable, 2.1 NOTE: WD-40 does not test aerosol cans to assure that they meet the pressure and other requirements for transport by air. We do not recommend that our aerosol products be transported by air.

D. Office Supplies

1.) *Air Duster*

STAPLES

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product Name

Synonym(s)

OfficeMax® Compressed Gas Duster

Model # OM96090

Model #: OM96091

Model #: OM96092

Model #: OM04736, OM04737

75-37-6

Dust control

Falcon Safety Products, Inc.

25 Imclone Drive Branchburg, NJ 08876 US Phone: 1-908-707-4900

OfficeMax

263 Shuman Blvd Naperville, IL 60563 US Phone 1-630-438-7800

CAS #

Product use

Manufacturer

Supplier

2. Hazards Identification

Emergency overview DANGER

FLAMMABLE GAS. MAY CAUSE FLASH FIRE.

Contents under pressure.

Containers may explode when heated.

Potential short term health effects

Routes of exposure

Eyes

Skin

Inhalation

Eye, Skin contact, Inhalation.

Contact with liquid may cause frostbite.

Contact with liquid may cause frostbite.

Excessive intentional inhalation may cause respiratory tract irritation and central nervous system effects (headache, dizziness). Vapors may cause dizziness or suffocation.

Not a normal route of exposure.

Eyes. Skin. Respiratory system.

Prolonged or repeated exposure can cause drying, defatting and dermatitis.

Symptoms may include redness, edema, drying, defatting and cracking of the skin.

This product is a "Hazardous Chemical" as defined by the OSHA Hazard

Communication Standard, 29 CFR 1910.1200.

Not available

Ingestion

Target organs

Chronic effects

Signs and symptoms

OSHA Regulatory Status

Potential environmental effects

3. Composition / Information on Ingredients

Ingredient(s) CAS # Percent

1,1-Difluoroethane

75-37-6 60 - 100

4. First Aid Measures

First aid procedures

Eye contact Immediately flush with cool water. Remove contact lenses, if applicable, and continue flushing for 15 minutes. Obtain medical attention immediately.

Flush with cool water. Wash with soap and water. Obtain medical attention if irritation persists.

If symptoms develop, move victim to fresh air. If symptoms persist, obtain medical attention. If breathing has stopped, trained personnel should administer CPR immediately.

Do not induce vomiting. Never give anything by mouth if victim is unconscious, or is convulsing. Obtain medical attention.

Do not puncture or incinerate container. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Avoid contact with eyes and skin. Keep out of reach of children.

Skin contact

Inhalation

Ingestion

General advice

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5. Fire Fighting Measures

Flammable by WHMIS/OSHA criteria. Containers **Flammable properties** may explode when heated.

Extinguishing media

Suitable extinguishing media Do not extinguish burning gas if flow cannot be shut off immediately. Use water spray or fog nozzle to keep cylinder cool

Small Fires: Dry chemical. Carbon dioxide.

Large Fires: Water spray. Fog.

Not available

Unsuitable extinguishing media

Protection of firefighters

Specific hazards arising from the chemical

Contents under pressure.

Pressurized container may explode when exposed to heat or flame.

Vapors are heavier than air and may travel along the ground to some distant source of ignition and flash back.

Cool containers with flooding quantities of water until well after fire is out.

Firefighters should wear full protective clothing including self contained breathing apparatus.

May include and are not limited to: Oxides of carbon. Fluoride gases.

Protective equipment for firefighters

Hazardous combustion products

Explosion data

Sensitivity to mechanical

impact

Not available

Sensitivity to static discharge Not available

6. Accidental Release Measures

Personal precautions Keep unnecessary personnel away. Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep people away from and upwind of spill/leak.

Prevent further leakage or spillage if safe to do so.

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area).

Stop leak if you can do so without risk. Prevent entry into waterways, sewers, basements or confined areas.

Before attempting clean up, refer to hazard data given above. Remove sources of ignition. Although the chance of a significant spill or leak is unlikely in aerosol containers, in the event of such an occurrence, absorb spilled material with a

non-flammable absorbent such as sand or vermiculite.

Environmental precautions

Methods for containment

Methods for cleaning up

7. Handling and Storage

Handling Use good industrial hygiene practices in handling this material.

Avoid contact with eyes and skin.

Avoid breathing mists or aerosols of this product.

Use only with adequate ventilation.

Keep away from heat, open flames or other sources of ignition.

Do not store at temperatures above 49 °C (120.2°F).

Keep out of reach of children.

Storage

8. Exposure Controls / Personal Protection

Exposure limits

Ingredient(s) Exposure Limits

1,1-Difluoroethane ACGIH-TLV

Not established

OSHA-PEL

Not established

Use only under good ventilation conditions or with respiratory protection.

Engineering controls

Personal protective equipment

Eye / face protection Wear safety glasses with side shields.

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If there is constant skin contact, rubber gloves are recommended.

As required by employer code.

Where exposure guideline levels may be exceeded, use an approved NIOSH respirator.

Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink. Wash hands and face before breaks and immediately after handling the product.

Hand protection

Skin and body protection

Respiratory protection

General hygiene considerations

9. Physical and Chemical Properties

Clear

Colorless

Liquefied gas

Slight ethereal.

Not available

Gas

Not applicable

Not available

Not available

-13.00 °F (-25 °C)

Not available

Not available

-58.00 °F (-50 °C)

849.20 °F (454 °C)

3.9

Appearance

Color

Form

Odor

Odor threshold

Physical state

pH

Melting point

Freezing point

Boiling point

Pour point

Evaporation rate

Flash point

Auto-ignition temperature

Flammability limits in air, lower, %
by volume

Flammability limits in air, upper, %
by volume

Vapor pressure

Vapor density

Specific gravity

16.9

599.43 KPa @25°C

2.4 @25°C (air=1)

0.91

0.9 g/cc @25°C

Not available

Slightly

Not available

100

Relative density

Octanol/water coefficient

Solubility (H2O)

Viscosity

Percent volatile

10. Stability and Reactivity

Reactivity

Possibility of hazardous reactions

Chemical stability

Conditions to avoid

Incompatible materials

Hazardous decomposition products

None known.

Hazardous polymerization does not occur.

Stable under recommended storage conditions.

Aerosol containers are unstable at temperatures above 49°C

Alkaline materials. Alkaline earth metals.

(120.2°F).

May include and are not limited to: Oxides of carbon. Fluoride gases.

11. Toxicological Information

Component analysis - LC50

Ingredient(s) LC50

1,1-Difluoroethane

Component analysis - Oral LD50

Ingredient(s)

> 64000 ppm rat

LD50

1,1-Difluoroethane

Effects of acute exposure

Eye

1500 mg/kg rat

Contact with liquid may cause frostbite.

Contact with liquid may cause frostbite.

Excessive intentional inhalation may cause respiratory tract irritation and central nervous system effects (headache, dizziness). Vapors may cause dizziness or suffocation.

Not a normal route of exposure.

Non-hazardous by WHMIS/OSHA criteria.

Non-hazardous by WHMIS/OSHA criteria.

Non-hazardous by WHMIS/OSHA criteria.

Non-hazardous by WHMIS/OSHA criteria.

Non-hazardous by WHMIS/OSHA criteria.

Non-hazardous by WHMIS/OSHA criteria.

Not available

Skin

Inhalation

Ingestion

Sensitization

Chronic effects

Carcinogenicity

Mutagenicity

Reproductive effects

Teratogenicity

Name of Toxicologically Synergistic

Products

12. Ecological Information

Not available

Not available

Not available

Not available

Not available

Not available

Not available

Not available

Not available

Ecotoxicity

Persistence / degradability

Bioaccumulation / accumulation

Mobility in environmental media

Environmental effects

Aquatic toxicity

Partition coefficient

Chemical fate information

Other adverse effects

13. Disposal Considerations

Disposal instructions Review federal, state/provincial, and local government requirements prior to disposal.

Do not puncture or incinerate container.

Not available

Waste from residues / unused products

Contaminated packaging

Not available

14. Transport Information

U.S. Department of Transportation (DOT)

Basic shipping requirements:

1,1-Difluoroethane

2.1

1030

Proper shipping name

Hazard class

UN number

Additional information:

Packaging exceptions *NOTE: Falcon Safety Products has been granted a DOT exemption that allows this product to be shipped similar to a Consumer Commodity (ORM-D). A copy of the DOT exemption can be obtained by calling Falcon Safety Products, Inc at 908-707-4900.*

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Transportation of Dangerous Goods (TDG - Canada)

Basic shipping requirements:

1,1-Difluoroethane

2.1

1030

Proper shipping name

Hazard class

UN number

Additional information:

Packaging exceptions Limited quantity (containers up to 125mL)

IATA/ICAO (Air)

Basic shipping requirements:

Proper shipping name

Hazard class

UN number

Additional information:

Maximum net quantity

packaging

Maximum net quantity

packaging cargo only

1,1-Difluoroethane

2.1

1030

Cargo aircraft only – 150 kg maximum

(Forbidden on passenger aircraft)

150 kg

IMDG (Marine Transport)

Basic shipping requirements:

Proper shipping name

Hazard class

UN number

1,1-DIFLUOROETHANE

2.1

1030

15. Regulatory Information

Canadian federal regulations This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Controlled

Class A - Compressed Gas, Class B - Division 1 - Flammable Gas

WHMIS status

WHMIS classification

WHMIS labeling

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous Yes

chemical

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NOTE: Falcon Safety Products has been granted Equivalency Certificate SU 9211 (Ren.1) by the TCSS, TDGD to offer for transport by road, rail, and marine.

US Federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

CERCLA (Superfund) reportable quantity

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes

Delayed Hazard - No

Fire Hazard - Yes

Pressure Hazard - Yes

Reactivity Hazard - No

No

Section 302 extremely hazardous substance

Section 311 hazardous chemical Yes

Not available

Not available

This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

Clean Air Act (CAA)

Clean Water Act (CWA)

State regulations

U.S. - Massachusetts - Right To Know List

1,1-Difluoroethane 75-37-6 Present

U.S. - New Jersey - Right to Know Hazardous Substance List

1,1-Difluoroethane 75-37-6 sn 0715

Inventory name

Country(s) or region

Canada

Canada

United States & Puerto Rico

Inventory name

Domestic Substances List (DSL)

Non-Domestic Substances List (NDSL)

Toxic Substances Control Act (TSCA) Inventory

On inventory (yes/no)*

Yes

No

Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. Other Information

/ 1

4

1 Physical Hazard 1

Personal Protection X

Information contained herein was obtained from sources considered technically accurate and reliable. While every effort has been made to ensure full disclosure of product hazards, in some cases data is not available and is so stated. Since conditions of actual product use are beyond control of the supplier, it is assumed that users of this material have been fully trained according to the requirements of all applicable legislation and regulatory instruments. No warranty, expressed or implied, is made and supplier will not be liable for any losses, injuries or consequential damages which may result from the use of or reliance on any information contained in this document.

05-Apr-2013

05-Apr-2013

05-Apr-2016

Falcon Safety Products, Inc.

For an updated MSDS, please contact the supplier/manufacturer listed on the first page of the document.

Disclaimer

Issue date

Effective date

Expiry date

Prepared by

Other information

2.) *Clorox Cleaner*

SAFETY DATA SHEET

Issuing Date 02-Aug-2016 Revision Date 02-Aug-2016 Revision Number 1

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name Clorox® Cleaning Bleach with the Scent of Lemon Fresh Pine-Sol®

Other means of identification

Synonyms None

Recommended use of the chemical and restrictions on use

Recommended Use Bleach

Uses advised against No information available

Details of the supplier of the safety data sheet

Supplier Name The Clorox Company

Supplier Address 1221 Broadway

Oakland

CA

94612

US

Supplier Phone Number Phone:510-271-7000

Emergency telephone number

Company Emergency Phone

Number

For Medical Emergencies call: (800) 446-1014

Transportation Emergencies, call Chemtrec: (800) 424-9300

Emergency Telephone Number 1-800-446-1014

2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Serious eye damage/eye irritation Category 2A

GHS Label elements, including precautionary statements

Emergency Overview

Precautionary Statements - Prevention

Wash face, hands and any exposed skin thoroughly after handling

Wear eye/face protection

Signal word Warning

Hazard Statements

Causes serious eye irritation

Appearance Clear, pale yellow **Physical state** Liquid

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Odor Lemon

Clorox® Cleaning Bleach with the Scent of Lemon Fresh Pine-Sol® Revision Date 02-Aug-2016

Precautionary Statements - Response

Eyes

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

Immediately call a POISON CENTER or doctor/physician

Precautionary Statements - Storage

None

Precautionary Statements - Disposal

None

Hazards not otherwise classified (HNOC)

Not applicable

Unknown Toxicity

0.06 % of the mixture consists of ingredient(s) of unknown toxicity

Other information

Very toxic to aquatic life with long lasting effects

Interactions with Other Chemicals

No information available.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name CAS No Weight-% Trade Secret

Sodium hypochlorite 7681-52-9 1-5 *

Sodium hydroxide 1310-73-2 0.1 - 1 *

*The exact percentage (concentration) of composition has been withheld as a trade secret

4. FIRST AID MEASURES

First aid measures

General Advice Show this safety data sheet to the doctor in attendance.

Eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Seek immediate medical attention/advice. Remove contact lenses, if present and easy to do. Continue rinsing.

Skin contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. If skin irritation persists, call a physician.

Inhalation Remove to fresh air. If breathing is difficult, (trained personnel should) give oxygen. Call a physician or Poison Control Center immediately.

Ingestion Drink 1 or 2 glasses of water. Do not induce vomiting without medical advice. Call a physician or Poison Control Center immediately.

Self-protection of the first aider Avoid contact with skin, eyes or clothing. Use personal protective equipment as required.

Wear personal protective clothing (see section 8).

Most important symptoms and effects, both acute and delayed

Most Important Symptoms and

Effects

Burning sensation. Irritating.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

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Suitable Extinguishing Media

Clorox® Cleaning Bleach with the Scent of Lemon Fresh Pine-Sol® Revision Date 02-Aug-2016

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media

CAUTION: Use of water spray when fighting fire may be inefficient.

Specific hazards arising from the chemical

No information available.

Explosion Data

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge None.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Avoid contact with skin, eyes or clothing. Use personal protective equipment as required.

Other Information Refer to protective measures listed in Sections 7 and 8.

Environmental precautions

Environmental precautions See Section 12 for additional Ecological Information.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Pick up and transfer to properly labeled containers.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product.

Conditions for safe storage, including any incompatibilities

Storage Keep containers tightly closed in a dry, cool and well-ventilated place.

Incompatible Products Acids. Bases. Oxidizing agent. Ammonia.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Control parameters**

Exposure Guidelines This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

Chemical Name ACGIH TLV OSHA PEL NIOSH IDLH

Sodium hypochlorite

7681-52-9

None None None

Sodium hydroxide

1310-73-2

Ceiling: 2 mg/m³TWA: 2 mg/m³IDLH: 10 mg/m³Ceiling: 2 mg/m³

Appropriate engineering controls**Engineering Measures** Showers

Eyewash stations

Ventilation systems

Individual protection measures, such as personal protective equipment

Eye/face protection If splashes are likely to occur, wear safety glasses with side-shields.

Skin and body protection Rubber gloves. Neoprene gloves.

Respiratory protection If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be

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Clorox® Cleaning Bleach with the Scent of Lemon Fresh Pine-Sol® Revision Date 02-Aug-2016

provided in accordance with current local regulations.

Hygiene Measures Take off contaminated clothing and wash before reuse. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product.

9. PHYSICAL AND CHEMICAL PROPERTIES**Physical and Chemical Properties**

Physical state Liquid

Explosive properties No data available

Oxidizing properties No data available

Other Information

Softening Point No data available

VOC Content (%) No data available

Particle Size No data available

Particle Size Distribution No data available

10. STABILITY AND REACTIVITY**Reactivity****Chemical stability**

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

None under normal processing.

Conditions to avoid

None known based on information supplied.

Incompatible materials

Acids. Bases. Oxidizing agent. Ammonia.

Hazardous Decomposition Products

None known based on information supplied.

Appearance Clear, pale yellow **Odor** Lemon

Color No information available **Odor Threshold** No information available

Property Values Remarks Method

pH ~12.5 None known

Melting / freezing point No data available None known

Boiling point / boiling range No data available None known

Flash Point Not flammable None known

Evaporation Rate No data available None known
Flammability (solid, gas) No data available None known
Flammability Limit in Air
Upper flammability limit No data available
Lower flammability limit No data available
Vapor pressure No data available None known
Vapor density No data available None known
Specific Gravity ~1.05 None known
Water Solubility Soluble in water None known
Solubility in other solvents No data available None known
Partition coefficient: n-octanol/water No data available None known
Autoignition temperature No data available None known
Decomposition temperature No data available None known
Kinematic viscosity No data available None known
Dynamic viscosity No data available None known
 No data available.

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Clorox® Cleaning Bleach with the Scent of Lemon Fresh Pine-Sol® Revision Date 02-Aug-2016

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Inhalation May cause irritation of respiratory tract.

Eye contact May cause slight irritation.

Skin contact Prolonged contact may cause redness and irritation.

Ingestion Ingestion may cause irritation to mucous membranes. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Component Information

Chemical Name Oral LD50 Dermal LD50 Inhalation LC50

Sodium hypochlorite

7681-52-9

= 8200 mg/kg (Rat) >10000 mg/kg (Rabbit) _

Sodium hydroxide

1310-73-2

_ 1350 mg/kg (Rabbit) _

Information on toxicological effects

Symptoms May cause redness and tearing of the eyes.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization No information available.

Mutagenic Effects No information available.

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name ACGIH IARC NTP OSHA

Sodium hypochlorite

7681-52-9

- Group 3 - -

IARC (International Agency for Research on Cancer)

Group 3 - Not Classifiable as to Carcinogenicity in Humans

Reproductive toxicity No information available.

STOT - single exposure No information available.

STOT - repeated exposure No information available.

Chronic Toxicity Carcinogenic potential is unknown.

Target Organ Effects Respiratory system. Eyes. Skin. Gastrointestinal tract (GI).

Aspiration Hazard No information available.

Numerical measures of toxicity **Product Information**

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (inhalation-dust/mist)

117.20 mg/L ATEmix (4 hr)

12. ECOLOGICAL INFORMATION

Ecotoxicity

Very toxic to aquatic life with long lasting effects.

Persistence and Degradability

No information available.

Bioaccumulation

No information available

Other adverse effects

No information available.

Page 5 / 7**13. DISPOSAL CONSIDERATIONS**

Clorox® Cleaning Bleach with the Scent of Lemon Fresh Pine-Sol® Revision Date 02-Aug-2016**Waste treatment methods****Disposal methods** Dispose of in accordance with federal, state and local regulations.**Contaminated Packaging** Do not reuse empty containers. Dispose of in accordance with federal, state and local regulations.**Chemical Name California Hazardous Waste**

Sodium hypochlorite

7681-52-9

Toxic Ignitable Reactive

14. TRANSPORT INFORMATION**DOT** NOT REGULATED**TDG** NOT REGULATED**MEX** NOT REGULATED**ICAO** NOT REGULATED**IATA** NOT REGULATED**IMDG/IMO** NOT REGULATED**RID** NOT REGULATED**ADR** NOT REGULATED**ADN** NOT REGULATED**15. REGULATORY INFORMATION****International Inventories**

TSCA All components are listed on the TSCA Inventory

DSL All components are listed either on the DSL or NDSL.

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

US Federal Regulations**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories**Acute Health Hazard** Yes**Chronic Health Hazard** No**Fire Hazard** No**Sudden release of pressure hazard** No**Reactive Hazard** No**CWA (Clean Water Act)**

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical Name CWA - Reportable**Quantities****CWA - Toxic Pollutants CWA - Priority Pollutants CWA - Hazardous****Substances**

Sodium hypochlorite

7681-52-9

100 lb X

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Clorox® Cleaning Bleach with the Scent of Lemon Fresh Pine-Sol® Revision Date 02-Aug-2016

Sodium hydroxide

1310-73-2

1000 lb X

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical Name Hazardous Substances RQs Extremely Hazardous Substances**RQs****RQ**

Sodium hypochlorite

7681-52-9

100 lb - RQ 100 lb final RQRQ 45.4 kg final

RQ

Sodium hydroxide

1310-73-2

1000 lb - RQ 1000 lb final RQRQ 454 kg final

RQ**US State Regulations****California Proposition 65**

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations**Chemical Name New Jersey Massachusetts Pennsylvania Rhode Island Illinois**

Sodium hypochlorite

7681-52-9

X X X X -

Sodium hydroxide

1310-73-2

X X X X

International Regulations**Canada****WHMIS Hazard Class**

D2B - Toxic materials

16. OTHER INFORMATION**Prepared By** Product Stewardship

23 British American Blvd.

Latham, NY 12110

1-800-572-6501

Issuing Date 02-Aug-2016**Revision Date** 02-Aug-2016**Revision Note** No information available**Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of Safety Data Sheet**NFPA Health Hazards** 2 **Flammability** 0 **Instability** 0 **Physical and****Chemical Hazards** -**HMIS Health Hazards** 2 **Flammability** 0 **Physical Hazard** 0 **Personal Protection**

B

3.) *Dial Liquid Soap*

MATERIAL SAFETY DATA SHEET MSDS
L-108 **REVISION 18**

THE DIAL CORPORATION
TECHNICAL AND ADMINISTRATIVE CENTER 15101
NORTH SCOTTSDALE ROAD SCOTTSDALE, ARIZONA
85254-9934

MEDICAL EMERGENCIES: 1-888-689-9082
CHEMTREC: 1-800-424-9300 (24 Hours Daily)
OTHER INFORMATION: 1-888-468-6673

SUBSTANCE IDENTIFICATION

SUBSTANCE: LIQUID ANTIBACTERIAL SOAP

TRADE NAMES/SYNONYMS: **DIAL ANTIBACTERIAL LIQUID HAND SOAP (GOLD); MOISTURIZING DIAL ANTIBACTERIAL LIQUID SOAP; DIAL MOISTURIZING ALOE ANTIBACTERIAL LIQUID HAND SOAP**

CHEMICAL FAMILY: Mixture

I.D. NUMBERS: 901726, 901761, 901785, 901788 (Liquid Dial); 901727, 901751, 906466, 906469 (Moisturizing Liquid Dial); 99100787 (Dial Moisturizing Aloe)

NFPA RATINGS (Scale 0-4, where 4=high degree of hazard): HEALTH=1 FLAMMABILITY=0 REACTIVITY=0
HMIS RATINGS (Scale 0-4, where 4=severe hazard): HEALTH=1 FLAMMABILITY=0 REACTIVITY=0

This product is labeled in accordance with guidelines set forth in the Food, Drug, and Cosmetic Act. The use pattern and exposure in the workplace are generally not consistent with those experienced by consumers. The requirements of the Occupational Safety and Health Administration applicable to this Material Safety Data Sheet may differ from the requirements of the FD & C Act and as a result, this MSDS may contain additional health hazard information not pertinent to consumer use and not found on the product label.

HAZARDOUS INGREDIENTS INFORMATION

COMPONENT: AMMONIUM LAURYL SULFATE	CAS# 2235-54-3
COMPONENT: COCAMIDOPROPYL BETAINE	CAS# 61789-40-0
COMPONENT: Ca-10&c10-16POLYGLYCOSIDES (DECYL POLYGLUCOSE)	CAS# 66515-73-1 & 110615-47-9 (mixture)
COMPONENT: GLYCERIN (as mist): 5 mg/m ³ OSHA TWA (respirable fraction); 10 mg/m ³ OSHA TWA (total mist) 10 mg/m ³ ACGIH TWA (total mist)	CAS# 56-81-5
COMPONENT: LAURAMIDE DEA COMPONENT:	CAS# 120-40-1
SODIUM LAURETH SULFATE	CAS# 9004-82-4

Carcinogen status of components: Not listed as carcinogenic by NTP, IARC, or OSHA.

PHYSICAL AND CHEMICAL DATA

DESCRIPTION: Clear gold, beige or peach liquid with a pleasant fragrance.

BOILING POINT: >200°F(>93°C) pH

SPECIFIC GRAVITY: 1.017-1.026 @ 25°C

(as is): 5.8-6.9@ 25°C

VISCOSITY: 3000-13,000 cps@ 25°C
(Brookfield LVF, Spindle #3, 12 rpm)

SOLUBILITY IN WATER: Complete.

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD - Negligible fire hazard when exposed to heat or flame. FIRE FIGHTING

MEDIA - Dry chemical, carbon dioxide, water spray or regular foam.

FIRE FIGHTING - Move container from fire area if you can do it without risk. Apply cooling water to sides of containers that are exposed to flames until well after fire is out. Avoid breathing vapors, keep upwind.

HEALTH HAZARD DATA

NOTE: The acute health effects described below are those which could potentially occur for the finished product. They are based on the toxicology information available for the finished product and/or each hazardous ingredient, and are consistent with the product type and the likelihood of a specific route of exposure. Known chronic health effects related to exposure to a specific ingredient are indicated.

ACUTE HEALTH EFFECTS:

- | | |
|-------------------------|--|
| INHALATION: SKIN | Unlikely to occur due to the physical properties of the product. |
| CONTACT: EYE | Repeated or prolonged excessive exposure may cause irritation or dermatitis. May |
| CONTACT: | cause moderate to severe irritation, with possibility of corneal injury. |
| INGESTION: | May cause gastrointestinal irritation with nausea, vomiting and diarrhea. |

CHRONIC HEALTH EFFECTS: None known.

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: Pre-existing skin conditions.

EMERGENCY AND FIRST AID PROCEDURES

INHALATION: Immediately remove from exposure area to fresh air. Keep affected person warm and at rest. Treat symptomatically and supportively. Contact physician or local poison control center. If breathing has stopped, give artificial respiration, and get medical attention immediately.

SKIN CONTACT: Rinse affected area with plenty of water until no evidence of product remains. Get medical attention if irritation persists.

EYE CONTACT: Immediately rinse eyes with plenty of water, occasionally lifting upper and lower lids, until no evidence of product remains. Get medical attention if pain or irritation persist.

INGESTION: Treat symptomatically and supportively. Maintain airway and respiration. If vomiting occurs, keep head below hips to prevent aspiration. Dilution by rinsing the mouth and giving water or milk to drink is generally recommended. If unconscious,

the victim should not be given anything to drink. Contact physician or localpoison control center.

REACTIVITY

REACTIVITY - Stable under normal temperatures and pressures. INCOMPATIBILITIES: Strong

oxidizers, acids, peroxides.

DECOMPOSITION - Thermal decomposition may release toxic and/or hazardous gases, including oxides of carbon, sulfur and nitrogen, ammonia.

POLYMERIZATION - Hazardous polymerization has not been reported to occur under normal temperatures and pressures.

STORAGE AND DISPOSAL

Store away from incompatible substances. Observe all federal, state and local regulations when storing or disposing of this substance.

CONDITIONS TO AVOID

Avoid contact with excessive heat and incompatible substances.

SPILL AND LEAK PROCEDURES

OCCUPATIONAL SPILL - Stop leak if you can do it without risk. For small spills, take up with sand or other absorbent material and place into containers for later disposal. For larger spills, dike far ahead of spill for later disposal. Keep unnecessary people away; isolate hazard area and restrict entry.

OCCUPATIONAL PROTECTIVE EQUIPMENT

VENTILATION - Provide local exhaust or general dilution ventilation to keep exposure to airborne contaminants below the permissible exposure limits where mists or vapors may be generated.

RESPIRATOR - Air contamination monitoring should be carried out where mists or vapors are likely to be generated, to assure that the employees are not exposed to airborne contaminants above the permissible exposure limits. If respiratory protection is required, it must be based on the contamination levels found in the workplace, must not exceed the working limits of the respirator and be jointly approved by the National Institute for Occupational Safety and Health and the Mine Safety and Health Administration (NIOSH-MSHA).

FOR FIRE FIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS -

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode. Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

CLOTHING - Protective clothing is required where repeated or prolonged skin contact may occur. GLOVES -

Chemical-resistant gloves are required where repeated or prolonged skin contact may occur.

EYE PROTECTION - Safety glasses are required to prevent eye contact where splashing of product may occur.

REGULATORY INFORMATION

DOT FLAMMABILITY CLASSIFICATION: EPA-

SARA TITLE III SECTION 313:

Not applicable.

Not applicable - Consumer product.

TSCA:

All components of this product are listed or are exempted or excluded from listing on the U.S. Toxic Substances Control Act (TSCA) chemical substance inventory.

The information contained herein is provided in good faith and is believed to be correct as of the date hereof. However, The Dial Corporation makes no representation as to the comprehensiveness or accuracy of the information. It is expected that individuals receiving the information will exercise their independent judgment in determining its appropriateness for a particular purpose. Accordingly, The Dial Corporation will not be responsible for damages of any kind resulting from the use of or reliance upon such information. No representations, or warranties, either expressed or implied of merchantability, fitness for a particular purpose or of any other nature are made hereunder with respect to the information set forth herein or to the product to which the information refers.

MSDS CREATION DATE: 04/24/92 SUPERSEDES:

10/11/01 Rev. 17 REVISION DATE: 07/12/02

REVISION: Updated Substance Identification, Health Hazard Data and Fire & Explosion Data Sections.

4.) *Glass Plus*

1. Product and Company Identification

Product Name UPC	GLASS PLUS® - Cleaner Refer
CODES CAS#	to Section 16 Mixture
Product use	Cleaner
Manufacturer	Reckitt Benckiser Morris Corporate Center IV 399 Interpace Parkway P.O. Box 225 Parsippany, NJ 07054-0225 In Case of Emergency: 1-800-228-4722 Transportati on Emergencies: 24 Hour Number: North America: CHEMTREC: 1-800-424-9300 Outside North America : 1-703-527-3887

**LEGEND
HMIS/NFPA**

Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0

Health
Personal Protection
Physical Hazard
Action

2. Hazards Identification

Emergency overview	KEEP OUT OF REACH OF CHILDREN.
Potential short term health effects	
Routes of exposure	Eye, Skin contact, Ingestion. No
Eyes	adverse effects expected. Not a
Skin	skin irritant.
Inhalation	Inhalation toxicity not determined. Not
Ingestion Target	orally toxic.
organs	Eyes. Respiratory system. Skin.
Chronic effects Signs and symptoms	The finished product is not expected to have chronic health effects. Not applicable.

3. Composition/ Information on Ingredients

Composition comments	This product is considered not hazardous under 29 CFR 1910.1200 (Hazard Communication) .
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4. First Aid Measures

First aid procedures Eye contact	In case of eye contact, hold eyes open and IMMEDIATELY rinse eyes thoroughly with plenty of water. Remove any contact lenses and continue rinsing for at least 15 minutes . If irritation occurs or persists, get medical attention.
Skin contact	None expected under normal use conditions . Wash with soap and water after handling . Remove to fresh air.
Inhalation Ingestion	Rinse mouth with water. Contact a physician or poison control center if symptoms develop. NEVER give an unconscious person anything to ingest.
Notes to physician	Contains glycol ethers and surfactants.

General advice

If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Avoid contact with eyes and skin.

5. Fire Fighting Measures

Flammable properties Not flammable by OSHA criteria.

Extinguishing media

Suitable extinguishing media Treat for surrounding material.

Unsuitable extinguishing media Not available

Protection of firefighters

Specific hazards arising from the chemical Not available

Protective equipment for firefighters Firefighters should wear full protective clothing including self contained breathing apparatus. May include and are not limited to: Oxides of carbon. Not

Hazardous combustion products

Explosion data available

Sensitivity to mechanical impact Not available

Sensitivity to static discharge

6. Accidental Release Measures

Personal precautions ~~Keep unnecessary personnel away. Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep people away from and upwind of spill/leak.~~

Prevent entry into waterways, sewers, basements or confined areas.

Methods for containment Methods for cleaning up Before attempting clean up, refer to hazard data given above. Small spills may be absorbed with non-reactive absorbent and placed in suitable, covered, labelled containers. Prevent large spills from entering sewers or waterways. Contact emergency services and supplier for advice.

7. Handling and Storage

Use good industrial hygiene practices in handling this material.

Handling

Keep out of reach of children. Store in original container in a cool, secure area inaccessible to children and pets.

Storage

Keep from freezing.

8. Exposure Controls/ Personal Protection

Engineering controls No special ventilation requirements.

Personal protective equipment Eye

/ face protection Not normally required under normal use conditions.

When handling in large quantities or responding to emergency situations, the use of appropriate eye protection is recommended.

Hand protection Not required.

Skin and body protection As required by employer code. Not

Respiratory protection required.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink. Wash hands before breaks and immediately after handling the product.

9. Physical and Chemical Properties

Appearance Color

~~Odor~~

Form

Odor threshold

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Physical state pH	Liquid
Freezing point Pour	10.5 (Basic) Not
point Boiling point	available Not
Flash point	available Not
Evaporation rate	available
Flammability limits in air, lower, % by volume	> 93.3 °C (> 199.94 °F) Tagliabue Not available
Flammability limits in air, upper, % by volume Vapor	Not available
pressure Vapor	Not available
density Specific	
gravity	17.5 mm of Hg@ 20°C Not
Octanol/water coefficient	available
Solubility (H2O)	0.995 (Water=1)
Auto-ignition temperature	Not available
	Complete Not
	available

Chemical stability Conditions to
avoid

10. Stability and Reactivity

Stable under recommended storage conditions. Do
not mix with other chemicals.

Incompatible materials

Acids. Caustics.

Hazardous decomposition products May include and are not limited to: Oxides of carbon.

Possibility of hazardous reactions

Hazardous polymerization does not occur.

11. Toxicological Information

Effects of acute exposure Eye

Skin

No adverse effects expected.

Inhalation

Not a skin irritant.

Ingestion

Inhalation toxicity not determined. Not

Sensitization Chronic

orally toxic.

effects Carcinogenicity

The finished product is not expected to have chronic health effects. The

Mutagenicity

finished product is not expected to have chronic health effects. The finished

Reproductive effects

product is not expected to have chronic health effects. The finished product

Teratogenicity

is not expected to have chronic health effects. The finished product is not

Synergistic Materials

expected to have chronic health effects. The finished product is not

expected to have chronic health effects. Not available

12. Ecological Information

Ecotoxicity Environmental

effects Aquatic toxicity

Not available

Persistence / degradability

Not available

Bioaccumulation / accumulation

Not available

Partition coefficient

Not available

Mobility in environmental media

Not available

Chemical fate information

Not available

Not available

Not available

13. Disposal Considerations

Waste codes

Not available

Disposal instructions	Dispose in accordance with all applicable regulations. Not available
Waste from residues / unused products	Not available
Contaminated packaging	Not available

14. Transport Information

UN/ID N.o. Not applicable

U.S. Department of Transportation (DOT): Classification: Not regulated

Proper shipping name	Not applicable
U.S. DOT Hazard Class	Not applicable
Subsidiary Risk Packing group	Not applicable
DOT RQ (lbs)	Not applicable
ERG NO	Not applicable

Transportation of Dangerous Goods (TOG - Canada): Classification: Not regulated

Proper shipping name	Not applicable
Status	Not applicable
Packing group	Not applicable

IMDG (Marine Transport): Classification: Not regulated

Proper shipping name	Not applicable
Class	Not applicable
Subsidiary Risk	Not applicable
Packing group	Not applicable
IMDG Page	Not applicable
Marine pollutant	Not applicable
EMS	Not applicable
MFAG	Not applicable
Maximum Quantity	Not applicable

IATA/ICAO (Air): Classification: Not regulated

Proper shipping name	Packing group	Maximum Quantity
Class		
Subsidiary Risk:		

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plicable Not
applicable

5.) Lysol Disinfectant Spray

MATERIAL SAFETY DATA SHEET



1. Product and Company Identification

Product Name LYSOL® Brand III (Kills 99.9% of Viruses & Bacteria) Disinfectant Spray - All Scents

CAS# Mixture

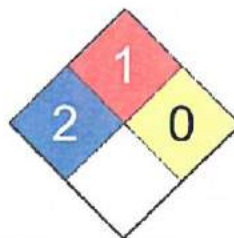
This MSDS is designed for workplace employees, emergency personnel and for other conditions and situations where there is a greater potential for large-scale or prolonged exposure, in accordance with requirements of the U.S. Government's Occupational Safety and Health Administration (OSHA). This MSDS is not applicable for consumer use of our products. For consumer use, all precautionary and first aid language is provided on the product label in accordance with the applicable government regulation.

Product Use Disinfectant

Distributed by Reckitt Benckiser
Morris Corporate Center IV
399 Interpace Parkway
P.O. Box 225
Parsippany, NJ 07054-0225
In Case of Emergency: 1-800-338-6167 Transportation
Emergencies: 24 Hour Number: North America:
CHEMTREC: 1-800-424-9300
Outside North America: 1-703-527-3887

LEGEND HMIS/NFPA	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0

Health	* 2
Flammability	3
Physical Hazard	0
Personal Protection	B



2. Hazards Identification

Emergency overview This product is regulated by the US EPA as a disinfectant.
PRECAUTIONARY STATEMENTS: HAZARDS TO HUMANS AND DOMESTIC ANIMALS CAUTION Causes moderate eye irritation. Do not spray in eyes on skin or on clothing Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum or using tobacco.
PHYSICAL HAZARDS: FLAMMABLE
Contents under pressure. Keep away from heat, sparks and open flame. Do not puncture or incinerate container. Exposure to temperatures above 130°F may cause bursting.
KEEP OUT OF REACH OF CHILDREN.

Potential short term health effects Eye, Skin contact, Inhalation, Ingestion. Moderately irritating to the eyes.

Routes of exposure Slightly irritating to the skin.

Eyes None expected during normal conditions of use.

Skin However intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

Inhalation May be harmful if swallowed.

Ingestion Blood. Liver. Respiratory system. Central nervous system. Heart. Prolonged or repeated exposure can cause drying, defatting and dermatitis.

Target organs Symptoms may include redness, edema, drying, defatting and cracking of the skin. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

Chronic effects

Signs and symptoms This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200 .

OSHA Regulatory Status

3. Composition/ Information on Ingredients

Ingredient(s)	CAS#	Percent
Ethanol	64-17-5	40- 60
Butane	106-97-8	2.5 -10
Propane	74-98-6	1 -2.5
Alkyl (40% C12, 50% C14, 10% C16) dimethyl benzyl ammonium saccharinate	Not Applicable	0 - 0.1

4. First Aid Measures

Firstaid procedures

Eye contact

If in eyes, hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Skin contact

Get medical attention immediately. In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Inhalation

Move exposed person to fresh air. Get medical attention immediately.

Ingestion

Call medical doctor or poison control center immediately. Wash out mouth with water. Treat patient symptomatically.

Notes to physician

General advice

Do not puncture or incinerate container. Keep away from sources of ignition. No smoking. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Avoid contact with eyes and skin. Keep out of reach of children.

NOTE TO PARENTS: Intentional misuse by deliberately concentrating and inhaling aerosol products may be harmful or fatal. Help stop inhalation abuse; for information visit www.inhalant.org.

5. Fire Fighting Measures

Flammable properties

Flammable aerosol by flame projection test.
Aerosol flame extension less than 18 inches (45 cm). Containers may explode when heated.

NFPA AEROSOL LEVEL: Flammability Rating 1, per NFPA 308

Extinguishing media

Suitable extinguishing media

Water spray. Dry chemical. Carbon dioxide.

Unsuitable extinguishing media

Not available

Protection of firefighters

Specific hazards arising from the chemical

Contents under pressure. Pressurized container may explode when exposed to heat or flame. Cool containers with flooding quantities of water until well after fire is out.

Protective equipment for firefighters

Firefighters should wear full protective clothing including self contained breathing apparatus. May include and are not limited to: Oxides of carbon.

Hazardous combustion products

Explosion data

Sensitivity to mechanical impact Not available

Sensitivity to static discharge Not available.

6. Accidental Release Measures

Personal precautions

Environmental precautions

Keep unnecessary personnel away.

Do not touch or walk through spilled material.

Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Keep people away from and upwind of spill/leak.

Do not discharge into lakes, streams, ponds or public waters.

Advise authorities if product has penetrated drains, sewers or water pipes.

Methods for containment	Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop leak if you can do so without risk. Prevent entry into waterways, sewers, basements or confined areas.
Methods for cleaning up	Before attempting clean up, refer to hazard data given above. Remove sources of ignition. Although the chance of a significant spill or leak is unlikely in aerosol containers in the event of such an occurrence, absorb spilled material with a non-flammable absorbent such as sand or vermiculite. Use spark-proof tools and explosion-proof equipment.

7. Handling and Storage

Handling	<p>Ensure adequate ventilation.</p> <p>Wear appropriate personal protective equipment when handling this product. Wash hands after handling and before eating.</p> <p>Take prudent precautions to avoid contact with skin, eyes, and clothing. Do not contaminate water, food, or feedstuffs by storage, handling, or by disposal. Read and observe all precautions and instructions on the label.</p> <p>Do not ingest.</p> <p>Avoid breathing vapors or mists of this product.</p> <p>CONTENTS UNDER PRESSURE. DO NOT use in presence of open flame or spark. DO NOT puncture or incinerate container or store at temperatures over 50°C.</p> <p>FLAMMABLE</p> <p>Contents under pressure.</p> <p>Do not puncture or incinerate container.</p>
Storage	<p>Store in original container in areas inaccessible to small children. STORE IN A COOL PLACE AND AWAY FROM DIRECT SUNLIGHT.</p> <p>Keep away from heat, open flames or other sources of ignition. Do not reuse empty container.</p> <p>Do not puncture or incinerate container.</p> <p>NOTE TO PARENTS: Intentional misuse by deliberately concentrating and inhaling aerosol products may be harmful or fatal. Help stop inhalation abuse; for information visit www.inhalant.org.</p> <p>It is a violation of Federal law to use this product in a manner inconsistent with its labeling.</p>

8. Exposure Controls / Personal Protection

Exposure limits

Ingredient(s)	Exposure Limits
Alkyl (40% C12, 50% C14, 10% C16) dimethyl benzyl ammonium saccharinate	ACGIH-TLV Not established OSHA-PEL Not established
Butane	ACGIH-TLV TWA: 1000 ppm OSHA-PEL Not established
Ethanol	ACGIH-TLV TWA: 1000 ppm STEL: 1000 ppm OSHA-PEL TWA: 1000 ppm
Propane	ACGIH-TLV TWA: 1000 ppm OSHA-PEL TWA: 1000 ppm

Engineering controls

Provide adequate ventilation.

Personal protective equipment

Consult the product label for special protection or precautions that have been identified for using this product under directed consumer use conditions. The following recommendations are given for workplace employees, emergency personnel and for other conditions and situations where there is a greater potential for large-scale or prolonged exposure.

Eye/ face protection	Avoid contact with eyes. Tightly fitting safety goggles Emergency responders should wear full eye and face protection.
Hand protection	Not normally required when used as directed. Avoid contact with the skin. Emergency responders should wear impermeable gloves.
Skin and body protection	As required by employer code.
Respiratory protection	Not normally required if good ventilation is maintained. Where exposure guideline levels may be exceeded, use an approved NIOSH respirator. Respirator should be selected by and used under the direction of a trained health and safety professional following requirements found in OSHA's respirator standard (29 CFR 1910.134), CAN/CSA-Z94.4 and ANSI's standard for respiratory protection (Z88.2). Emergency responders should wear self-contained breathing apparatus (SCBA) to avoid inhalation of vapours generated by this product during a spill or other clean-up operations.
General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink. Washing with soap and water after use is recommended as good hygienic practice to prevent possible eye irritation from hand contact.

9. Physical and Chemical Properties

Appearance	Misty spray
Color	Clear
Form	Aerosol
Odor	Characteristic
Odor threshold	Not available
Physical state pH	Gas
Freezing point	10.8 - 11.8
Boiling point Pour	Not available
point Evaporation	Not available
rate Flash point	Not available
Auto-ignition temperature	Not available
Flammability limits in air, lower, % by volume	78.08 °F (25.6 °C) Not available
Flammability limits in air, upper, % by volume Vapor	Not available
pressure Vapor	Not available
density Specific	Not available
gravity	Not available
Octanol/water coefficient Solubility (H2O)	Not available
VOE (Weight%)	Not available
Viscosity Bulk	Complete Not
density	available Not
Percent volatile	available
	7.1 - 7.5 lbs/gal Not available

Reactivity

Possibility of hazardous reactions

Chemical stability

10. Stability and Reactivity

This product may react with strong oxidizing agents. Hazardous polymerization does not occur.

Stable under recommended storage conditions.

Conditions to avoid

Heat, open flames, static discharge, sparks and other ignition sources.
 Aerosol containers are unstable at temperatures above 49°C (120.2°F). Do not freeze.
 Exposure to moisture.
 Do not mix with other products.

Incompatible materials

Oxidizers.

Hazardous decomposition products May include and are not limited to: Oxides of carbon.

11. Toxicological Information

Component analysis - LC50

Ingredient(s)	LC50
Alkyl (40% C12, 50% C14, 10% C16) dimethyl benzyl ammonium saccharinate	Not available
Butane	658 mg/l/4h rat
Ethanol	31623 ppm rat
Propane	Not available

Component analysis - Oral LD50 Ingredient(s)

Ingredient(s)	LD50
Alkyl (40% C12, 50% C14, 10% C16) dimethyl benzyl ammonium saccharinate	Not available
Butane	Not available
Ethanol	3450 mg/kg mouse; 7060 mg/kg rat
Propane	Not available

Effects of acute exposure Eye

Skin	Moderately irritating to the eyes.
Inhalation	Slightly irritating to the skin. None expected during normal conditions of use. However intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.
Ingestion	May be harmful if swallowed.
Sensitization	
Chronic effects	The finished product is not expected to have chronic health effects. The
Carcinogenicity	finished product is not expected to have chronic health effects. The
Mutagenicity Reproductive effects	finished product is not expected to have chronic health effects. The finished product is not expected to have chronic health effects. The finished product is not expected to have chronic health effects.
Teratogenicity	The finished product is not expected to have chronic health effects.

Name of Toxicologically Synergistic Products Not available

12. Ecological Information

Ecotoxicity	Components of this product have been identified as having potential environmental concerns.	
Ecotoxicity - Freshwater Fish - Acute Toxicity Data		
Ethanol	64-17-5	96 Hr LC50 Oncorhynchus mykiss: 12.0- 16.0mUL [static]; 96 Hr LC50 Pimephales promelas: >100 mg/L [static]; 96 Hr LC50 Pimephalespromelas: 13400- 15100 mg/L [flow-through]
Ecotoxicity - Water Flea - Acute Toxicity Data		
Ethanol	64-17-5	48 Hr LC50 Daphnia magna: 9268 - 14221 mg/L; 24 Hr EC50 Daphnia magna: 10800 mg/L; 48 Hr EC50 Daphnia magna: 2 mg/L [Static]
Persistence/ degradability	Not available	

Bioaccumulation / accumulation	Not available
Mobility in environmental media	Not available
Environmental effects	Not available
Aquatic toxicity	Not available
Partition coefficient	Not available
Chemical fate information	Not available

13. Disposal Considerations

Disposal instructions	Dispose in accordance with all applicable regulations. Discard in trash or offer for recycling if available.
Waste from residues / unused products	Not available
Contaminated packaging	Not available

14. Transport Information

U.S. Department of Transportation (DOT)

UN1950, Aerosols, flammable, Class 2.1, Limited Quantity

Transportation of Dangerous Goods (TOG - Canada)

UN1950, Aerosols, flammable, Class 2.1, Limited Quantity

IMDG (Marine Transport)

UN1950, Aerosols, flammable, Class 2.1, Limited Quantity

15. Regulatory Information

Occupational Safety and Health Administration (OSHA) 29 CFR

1910.1200 hazardous chemical Yes

US Federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Product Registration : Registered with EPA, EPA Reg. No. 777-99

U.S. - CAA (Clean Air Act) - Accidental Release Prevention - Flammable Substances

Butane 106-97-8 10000 lb threshold quantity

Propane 74-98-6 10000 lb threshold quantity

U.S. - CAA (Clean Air Act) - Reactivity Factors for voes in Aerosol Coatings

Butane 106-97-8 1.33GOzone/gVOEReactivityFactor

Ethanol 64-17-5 1.69GOzone/gVOEReactivityFactor

Propane 74-98-6 0.56GOzone/gVOEReactivityFactor

U.S. - CAA (Clean Air Act) - SNAP Program Listing of Substitutes for ODSs

Butane 106-97-8 Acceptable substitute for: 6

Propane 74-98-6 Acceptable substitute for: 6, 7

U.S. - CAA (Clean Air Act) - Volatile Organic Compounds (VOCs) in SOCM1

Ethanol 64-17-5 Present

CERCLA (Superfund) reportable quantity

Ammonium hydroxide: 1000.0000

Superfund Amendments and Reauthorization Act of 1986 (SARA) Hazard

categories Immediate Hazard - Yes
 Delayed Hazard - Yes
 Fire Hazard - Yes
 Pressure Hazard - Yes
 Reactivity Hazard - No

Section 302 extremely hazardous substance No

Section 311 hazardous chemical Yes

Clean Water Act (CWA) Not available

State regulations

This product is not subject to warning labeling under the California Proposition 65 regulation.

U.S. - California - 8 CCR Section 339 - Director's List of Hazardous Substances

Butane	106-97-8	Present
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U.S. - Massachusetts - Right To Know List

Butane	106-97-8	Present Teratogen
Ethanol	64-17-5	Present
Propane	74-98-6	

U.S. - Minnesota - Hazardous Substance List

Butane	106-97-8	Present
Ethanol	64-17-5	Present
Propane	74-98-6	Simple asphyxiant

U.S. - New Jersey - Right to Know Hazardous Substance List

Butane	106-97-8	sn 0273
Ethanol	64-17-5	sn 0844
Propane	74-98-6	sn1594

U.S. - Pennsylvania - RTK (Right to Know) List

Butane	106-97-8	Present
Ethanol	64-17-5	Present
Propane	74-98-6	Present

U.S. - Rhode Island - Hazardous Substance List

Butane	106-97-8	Toxic; Flammable
Ethanol	64-17-5	Toxic; Flammable
Propane	74-98-6	Toxic; Flammable

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. Other Information

Disclaimer

This product should only be used as directed on the label and for the purpose intended. To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Further information

LYSOL® Brand III (Kills 99.9% of Viruses & Bacteria) Disinfectant Spray - Citrus Meadows, 12.5 oz/19 oz - 0175926v1.0

LYSOL® Brand III (Kills 99.9% of Viruses & Bacteria) Disinfectant Spray - Crisp Linen, 12.5 oz/19 oz - 0175917v1.0

LYSOL® Brand III (Kills 99.9% of Viruses & Bacteria) Disinfectant Spray - Crisp Mountain Air, 12.5 oz/19 oz - 0346500v1.0

LYSOL® Brand III (Kills 99.9% of Viruses & Bacteria) Disinfectant Spray - Early Morning Breeze, 12.5 oz/19 oz - 0175929v1.0

LYSOL® Brand III (Kills 99.9% of Viruses & Bacteria) Disinfectant Spray - for Baby's Room, 12.5 oz/19 oz - 0175932v1.0

LYSOL® Brand III (Kills 99.9% of Viruses & Bacteria) Disinfectant Spray - Jasmine & Rain, 12.5 oz/19 oz - 0175920v1.0

LYSOL® Brand III (Kills 99.9% of Viruses & Bacteria) Disinfectant Spray - Lemon Breeze, 12.5 oz/19 oz - 0175927v1.0

LYSOL® Brand III (Kills 99.9% of Viruses & Bacteria) Disinfectant Spray- Spring Waterfall, 12.5 oz/ 19 oz - 0175918v1.0

LYSOL® Brand III (Kills 99.9% of Viruses & Bacteria) Disinfectant Spray - Summer Breeze, 12.5 oz/ 19 oz - 0175935v1.0

LYSOL® Brand III (Kills 99.9% of Viruses & Bacteria) Disinfectant Spray - Vanilla Blossoms, 12.5 oz/19 oz - 0175943v2.0

LYSOL® Brand III (Kills 99.9% of Viruses & Bacteria) Disinfectant Spray - "To Go" Crisp Linen, 1 oz - 0242193v1.0

26-Sept-2013

Issue date Effective

01-Nov-2012

date Prepared by

Reckitt Benckiser Regulatory Department 800-333-3899

Other information

For an updated MSDS, please contact the supplier/manufacturer listed on the first page of the document.

6.) *Lysol Wipes*

MATERIAL SAFETY DATA SHEET

**Reckitt
Benckiser**

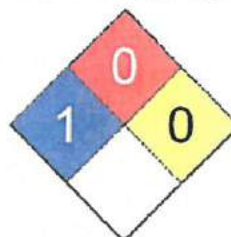
1. Product and Company Identification

Product Name CAS# LYSOL® Disinfecting Wipes (all sizes, all scents)
Product Use Mixture
Distributed by Disinfectant
Reckitt Benckiser (Canada) Inc. 1680
Tech Avenue Unit #2 Mississauga, ON
L4W 5S9
**In Case of Emergency: 1-800-338-6167 Transportation
Emergencies 24 Hour Number**

North America: CHEMTREC: 1-800-424-9300
Outside North America: 1-703-527-3887

LEGEND HMIS/NFPA	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0

Health	/ 1
Flammability	0
Physical Hazard	0
Personal Protection	A



2. Hazards Identification

Emergency Overview

This product is regulated by Health Canada as a disinfectant. Extensive testing has been completed to show that it is safe and effective when used as directed.

PRECAUTION:

CAUTION

MAY CAUSE EYE IRRITATION. Avoid contact with eyes. Wash hands after use.

Keep out of reach of children.

Potential short term health effects

Routes of exposure

Eyes

Skin

Inhalation

Ingestion Target

organs

Chronic effects Signs

and symptoms

Potential environmental effects

Eye, Skin contact, Inhalation, Ingestion. May cause eye irritation.

None expected during normal conditions of use. Not expected to be a skin sensitizer.

None expected during normal conditions of use.

Health injuries are not known or expected under normal use. Blood.

Eyes. Liver. Respiratory system. Skin.

The finished product is not expected to have chronic health effects.

Symptoms may include redness, oedema, drying, defatting and cracking of the skin. See section 12.

3. Composition/Information on Ingredients

Ingredient(s)	CAS#	Percent
Alkyl (50%C14, 40%C12, 10%C16) dimethyl benzyl ammonium chlorides	Not Applicable	0.1 - 1
Ethanol	64-17-5	1 - 5

4. First Aid Measures

First aid procedures

Eye contact

Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Skin contact

Wash hands thoroughly after handling. If skin irritation persists, call a physician. Move to fresh air.

Inhalation

Ingestion Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a physician or Poison Control Center IMMEDIATELY

Notes to physician Wipes are saturated with a solution containing less than 3% denatured ethyl alcohol.

General advice Keep away from sources of ignition. No smoking. If you feel unwell, seek medical advice (show the label where possible.) Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Avoid contact with eyes and skin. Keep out of reach of children.

Follow label directions carefully.
Take container, label or product name and DIN Number with you when seeking medical attention.

5. Fire-fighting Measures

The flashpoint of the liquid within this product is > 93.3°C (200°F) (Tagliabue).

Flammable properties

Extinguishing media

Suitable extinguishing media Treat for surrounding material.
Unsuitable extinguishing media Not available

Protection of firefighters

Specific hazards arising from the chemical Not available

Protective equipment for firefighters Firefighters should wear full protective clothing including self contained breathing apparatus. May include and are not limited to: Oxides of carbon. Oxides of nitrogen.

Hazardous combustion products

Explosion data

Sensitivity to mechanical impact Not available
Sensitivity to static discharge Not available

6. Accidental Release Measures

Personal precautions

Avoid contact with eyes. Keep unnecessary personnel away. Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep people away from and upwind of spill/leak.

Environmental precautions

Do not discharge into lakes, streams, ponds or public waters. Do not

Methods for containment

allow product to enter sewer or waterways.

Methods for cleaning up Other

Remove sources of ignition. Never return spills in original containers for re-use. Pick up and discard towel.

Information

7. Handling and Storage

Handling

Avoid contact with eyes.
 Wash hands after handling and before eating.
 Use good industrial hygiene practices in handling this material. Food contact surfaces must be rinsed with potable water.
 Not recommended for polished or bare wood floors. Not intended for personal hygiene.

Storage

Store in original container out of reach of small children. Keep securely closed in a cool, well ventilated area. Do not reuse empty container. Rinse and discard or recycle.
 Do not store at temperatures above 120°F (49°C).

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

8. Exposure Controls/ Personal Protection

Exposure limit values

Ingredient(s)	Exposure limit values
Alkyl (50%C14, 40%C12, 10%C16) dimethyl benzyl ammonium chlorides	ACGIH-TLV Not established
Ethanol	ACGIH-TLV TWA: 1000 ppm STEL: 1000 ppm

Engineering controls	General ventilation normally adequate.
Personal protective equipment	
Eye/Face protection	Avoid contact with eyes. Emergency responders should wear full eye and face protection.
Hand protection	Wash hands after use. Emergency responders should wear impermeable gloves.
Skin and body protection	As required by employer code. Emergency responders should wear impermeable clothing and footwear when responding to a situation where contact with the liquid is possible.
Respiratory protection	Not normally required under normal use conditions. Emergency responders should wear self-contained breathing apparatus (SCBA) to avoid inhalation of vapours generated by this product during a spill or other clean-up operations.
General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink. Washing with soap and water after use is recommended as good hygienic practice to prevent possible eye irritation from hand contact.

9. Physical and Chemical Properties

Appearance	Liquid saturated on wipe clear
Colour Form	liquid
Odour	Pre-moistened towelette
Odour threshold	Various
Physical state pH	Not available
Freezing point	Not available
Boiling point Pour	10.5 (liquid) Not
point Evaporation	available Not
Rate Flash point	available Not
Auto-ignition temperature	available Not available > 93.33 °C (> 200 °F) (liquid) Tagliabue Not available
Flammability limits in air, lower, % by volume	Not available

Flammability Limits in Air, Upper, % by Volume Not available

Vapour pressure

	Reactivity
Vapour density	Possibility of hazardous reactions
Specific gravity	Chemical stability
Octanol/water coefficient Solubility (H2O)	

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10. Stability and Reactivity

This product may react with strong oxidizing agents.

Hazardous polymerisation does not occur.

Stable under recommended storage conditions.

Conditions to avoid DONOTMIXWITHBLEACHoruseinconjunctionwithotherhouseholdproducts.
Heat, open flames, static discharge, sparks and other ignition sources.

Incompatible materials Oxidizers.

Hazardous decomposition products May include and are not limited to: Oxides of carbon. Oxides of nitrogen.

11. Toxicological Information

Component analysis - LCSO

Ingredient(s)	LCSO
Alkyl (50%C14, 40%C12, 10%C16) dimethyl benzyl ammonium chlorides	Not available
Ethanol	31623 ppm rat

Component analysis - Oral LOSO

Ingredient(s)	LOSO
Alkyl (50%C14, 40%C12, 10%C16) dimethyl benzyl ammonium chlorides	426 mg/kg rat
Ethanol	3450 mg/kg mouse; 7060 mg/kg rat

Effects of acute exposure

Eye	May cause eye irritation.
Skin	None expected during normal conditions of use. Not expected to be a skin sensitizer.
Inhalation	None expected during normal conditions of use.
Ingestion	Health injuries are not known or expected under normal use.
Sensitisation	The finished product is not expected to have chronic health effects. The
Chronic effects	finished product is not expected to have chronic health effects. The
Carcinogenicity	finished product is not expected to have chronic health effects.

ACGIH - Threshold Limit Values - Carcinogens

Ethanol 64-17-5 A3 - Confirmed animal carcinogen with unknown relevance to humans.

Mutagenicity	The finished product is not expected to have chronic health effects.
Reproductive effects	The finished product is not expected to have chronic health effects. The
Teratogenicity	finished product is not expected to have chronic health effects.

Name of Toxicologically Synergistic Products Not available

12. Ecological Information

Ecotoxicity Components of this product have been identified as having potential environmental concerns.

Ecotoxicity - Freshwater Fish - Acute Toxicity Data

Ethanol 64-17-5 96 Hr LC50 Oncorhynchus mykiss: 12.0 - 16.0 mUL [static]; 96 Hr LC50 Pimephales promelas: >100 mg/L [static]; 96 Hr LC50 Pimephales promelas: 13400 - 15100 mg/L [flow-through]

Ecotoxicity - Water Flea - Acute Toxicity Data

Ethanol 64-17-5 48 Hr LC50 Daphnia magna: 9268 - 14221 mg/L; 24 Hr EC50 Daphnia magna: 10800 mg/L; 48 Hr EC50 Daphnia magna: 2 mg/L [Static]

Persistence and degradability	Not available
Bioaccumulation/accumulation	Not available
Mobility in environmental media	Not available
Environmental effects	Not available
Aquatic toxicity	Not available
Partition coefficient	Not available
Chemical fate information	Not available
Other adverse effects	Not available

13. Disposal Considerations

Disposal instructions	Dispose of wipe in trash after use. Throw used towelette in the trash. Do not re-use empty container. Rinse and dispose. Recycle where facilities exist. Dispose in accordance with all applicable regulations. Not available
Waste from residues / unused products	Not available
Contaminated packaging	Not available

14. Transport Information

U.S. Department of Transportation (DOT) UN/ID N.o.
Not applicable

U.S. Department of Transportation (DOT): Classification: Not regulated

Proper shipping name	Not applicable
U.S. DOT Hazard Class	Not applicable
Subsidiary Risk Packing group	Not applicable
DOT RQ (lbs) ERG NO	Not applicable

Transportation of Dangerous Goods (TDG - Canada): Classification: Not regulated

Proper shipping name	Not applicable
Status	Not applicable
Packing group	Not applicable

IMDG (Marine Transport): Classification: Not regulated

Proper shipping name	Not applicable
Class	Not applicable
Subsidiary Risk	Not applicable
Packing group	Not applicable
IMDG Page	Not applicable
Marine pollutant	Not applicable
EMS	Not applicable
MFAG	Not applicable
Maximum Quantity	Not applicable

7.) Pledge

Material Safety Data Sheet

according to ANSI Z400.1- 2004 and 29 CFR 1910.1200



PLEDGE® CLEAN & DUST FURNITURE POLISH

Version 1.0

Print Date 11/21/2011

Revision Date 05/26/2009

MSDS Number 350000003639

1. PRODUCT AND COMPANY IDENTIFICATION Product

information

Trade name PLEDGE® CLEAN & DUST FURNITURE POLISH

Use of the Substance/Preparation Furniture Polish/Cleaner

Company S.C. Johnson & Son, Inc.
1525 Howe Street
Racine WI 53403-2236

Emergency telephone 24 Hour Transport Emergency Phone (800) 424-9300
24 Hour Medical Emergency Phone (866) 231-5406
24 Hour International Emergency Phone (703) 527-3887

2. HAZARDS IDENTIFICATION Emergency

Overview

Appearance / Odor white / aerosol / pleasant

Immediate Concerns

Caution
CONTENTS UNDER PRESSURE. Do not puncture or incinerate. Keep away from heat, sparks and flame. Do not store at temperatures above 120 Deg. F (50 Deg C), as container may burst.

Potential Health Effects

Routes of exposure Eye, Skin, Inhalation, Ingestion.

Eyes No adverse effects expected when used as directed.

Skin No adverse effects expected when used as directed.

Inhalation No adverse effects expected when used as directed.

Ingestion No adverse effects expected when used as directed.

Aggravated Medical Condition None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	WeiQht%
Water	7732-18-5	60.00 - 100.00
Naphtha, petroleum, light alkylate	64741-66-8	5.00 - 10.00
Dimethicone	63148-62-9	5.00 - 10.00

Material Safety Data Sheet

according to ANSI Z400.1- 2004 and 29 CFR 1910.1200



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Butane	106-97-8	1.00 - 5.00
Isobutane	75-28-5	1.00 - 5.00
Propane	74-98-6	1.00 - 5.00

4. FIRST AID MEASURES

Eye contact	Rinse with plenty of water.
Skin contact	Wash off with soap and water.
Inhalation	Remove to fresh air. If breathing is affected, get medical attention.
Ingestion	If swallowed, DO NOT induce vomiting unless directed to do so by medical personnel. Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician or Poison Control Centre immediately.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	Alcohol foam, carbon dioxide, dry chemical, water fog,
Specific hazards during fire fighting	Aerosol Product - Containers may rocket or explode in heat of fire.
Further information	Cool and use caution when approaching or handling fire-exposed containers. Fight fire from maximum distance or protected area. Wear full protective clothing and positive pressure self-contained breathing apparatus.
Flash point	< 20 °F Method: Tag Closed Cup (TCC)
Flash point	< -7 °C Method: Tag Closed Cup (TCC)
Lower explosion limit	Note: no data available
Upper explosion limit	Note: no data available
NEPA Classification	NEPA Level 1 Aerosol

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	Remove all sources of ignition. Methods
for cleaning up	Soak up with inert absorbent material.

Material Safety Data Sheet

according to ANSI Z400.1- 2004 and 29 CFR 1910.1200

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Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water.

7. HANDLING AND STORAGE

Handling

Advice on safe handling

Use only as directed.
KEEP OUT OF REACH OF CHILDREN AND PETS.
Do not puncture or incinerate.
Do not spray or use on floors as it could leave them slippery.

Advice on protection against fire and explosion

Keep away from heat and sources of ignition.

Storage

Requirements for storage areas and containers

Keep in a dry, cool and well-ventilated place.
Do not freeze.
Do not store at temperatures above 120 Deg. F (50 Deg C), as container may burst.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

Components	CAS-No.	mg/m3	ppm	Basis
Butane	106-97-8	-	1,000 ppm	ACGIHTWA
Isobutane	75-28-5	-	1,000 ppm	ACGIHTWA
Propane	74-98-6	-	1,000 ppm	ACGIHTWA
Propane	74-98-6	1,800 mg/m3	1,000 ppm	OSHA TWA

Personal protective equipment

Respiratory protection

Industrial setting No personal respiratory protective equipment normally required.

Household setting No personal respiratory protective equipment normally required.

Hand protection

Industrial setting not required under normal use

Material Safety Data Sheet

according to ANSI Z400.1- 2004 and 29 CFR 1910.1200

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Household setting not required under normal use

Eye protection

Industrial setting No special requirements.

~~Household setting No special requirements.~~**Hygiene measures**

Use only with adequate ventilation. Wash thoroughly after handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form	aerosol
Color	white
Odor	pleasant
pH	not applicable
Melting point	no data available
Boiling point	no data available
Freezing point	no data available
Flash point	< 20 °F Method: Tag Closed Cup (TCC)
Flash point	< -7 °C Method: Tag Closed Cup (TCC)
Evaporation rate	no data available
Autoignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Vapour pressure	no data available

Water solubility

dispersible

Partition coefficient: n-
octanol/water

no data available

Material Safety Data Sheet

according to ANSI 2400.1- 2004 and 29 CFR 1910.1200



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Version 1.0

Print Date 11/21/2011

Revision Date 05/26/2009

MSDS Number 350000003639

Specific Gravity 0.91 - 0.92

10. STABILITY AND REACTIVITY

Conditions to avoid	Heat, flames and sparks.
Materials to avoid	None.
Hazardous decomposition products	When exposed to fire, produces normal products of combustion.
Hazardous reactions	Stable

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	LD50 Dose: estimated > 20,000 mg/kg
Acute inhalation toxicity	LC50 rat Dose > 208 mg/l
Acute dermal toxicity	no data available
Chronic effects	
Carcinogenicity	no data available
Mutagenicity	no data available
Reproductive effects	no data available
Teratogenicity	no data available
Sensitisation	no data available

12. ECOLOGICAL INFORMATION

Ecotoxicity effects Not Available

13. DISPOSAL CONSIDERATIONS

Industrial setting Observe all applicable Federal, Provincial and State regulations and Local/Municipal ordinances regarding

Material Safety Data Sheet

according to ANSI Z400.1- 2004 and 29 CFR 1910.1200

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disposal.

Household setting

Consumer may discard empty container in trash, or recycle where facilities exist.

14. TRANSPORT INFORMATION

Land transport

• **U.S. DOT and Canadian TDG Surface Transportation:**

UN-Number 1950
Proper shipping name Aerosols, Flammable
Class: 2.1
Packaging group: None.

Note: SC Johnson ships this product as Consumer Commodity ORM-D (non-bulk packages)

Sea transport

• **IMDG:**

Class: 2.1
Packaging group: None.
Proper shipping name Aerosols, Flammable
UN-Number: 1950

Note: SC Johnson ships this product as "Limited Quantity" when the container quantity value is 1 Liter or less.

Air transport

• **ICAO/ATA:**

Class: 2.1
Packaging group: None.
Proper shipping name Aerosols, Flammable
UN/ID No.: UN 1950

Note: SC Johnson typically does not ship products via air, therefore it has not been determined if the product container meets current IATA/ICAO package criteria. Refer to IATA/ICAO Dangerous Goods Regulations for detailed instructions when shipping this item by air.

15. REGULATORY INFORMATION

Global Chemical Inventories

Material Safety Data Sheet

according to ANSI Z400.1- 2004 and 29 CFR 1910.1200

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Version 1.0

Print Date 11/21/2011

Revision Date 05/26/2009

MSDS Number 350000003639

Notification status

All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

All ingredients of this product comply with the New Substances Notification requirements under the Canadian Environmental Protection Act (CEPA).

California Prop. 65

This product is not subject to the reporting requirements under California's Proposition 65. This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations .

16. OTHER INFORMATION

HMIS Ratings

Health

Flammability

4

Reactivity

0

NFPA Ratings

Health

Fire

4

Reactivity

0

Special

Further information

This document has been prepared using data from sources considered to be technically reliable. It does not constitute a warranty, expressed or implied, as to the accuracy of the information contained herein. Actual conditions of use are beyond the seller's control. User is responsible to evaluate all available information when using product for any particular use and to comply with all Federal, State, Provincial

8.) Toner (Kyocera)

MATERIAL SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name **Black Toner For CS 4550ci, 5550ci**

Manufacturer **Kyocera Mita Corporation**

Address **COPYSTAR, A DIVISION OF
Kyocera Mita America, Inc. 225
Sand Road
Fairfield, NJ 07004**

Telephone Number **(973)-808-8444**

Date **May 16, 2011**

Section 2. Composition/Information on Ingredients

Hazardous Components (Chemical Identity, Common Name/s)	OSHA PEL Subpart Z	ACGIH TLV	IARC	NTP	Weight/o
(CAS No. 1333-86-4) Carbon Black	3.5mg/m ³ (TWA)	3.5mg/m ³ (TWA)	Group 2B	Not Listed	5-10
(CAS No. 66402-68-4) Ferrite (Ferrite including manganese)	5mg/m ³ (Ceiling) (Manganese compounds as Mn)	0.2mg/m ³ (TWA) (Manganese and inorganic compounds as Mn)	Not Listed	Not Listed	1-10 (as Mn: <2)
(CAS No. 7631-86-9) Amorphous silica	80mg/m ³ %SiO ₂ (TWA)	Not Listed	Group 3	Not Listed	1-5
(CAS No. 13463-67-7) Titanium dioxide	15mg/m ³ (Total Dust) (TWA)	10mg/m ³ (TWA)	Group 2B	Not Listed	<1
(Non Hazardous Ingredients)					
Polyester resin					65-75

Section 3. Hazards Identification

Most Important Hazards **None**

Specific Hazards **None Other**

Information on Hazards:

Potential Health Effects:

Ingestion **Ingestion is not applicable route of entry for intended use.**

Inhalation **Prolonged inhalation of excessive dusts may cause lung damage.
Use of this product, as intended, does not result in inhalation of excessive dusts. May cause**

Eye Contact **transient eye irritation.**

Skin Contact **Unlikely to cause skin irritation.**

Section 4. First Aid Measures

Inhalation	Remove from exposure to fresh air and gargle with plenty of water. Seek medical treatment in case of such a symptom as coughing.
Skin Contact	Wash with soap and water. If irritation does occur, seek medical treatment. Flush
Eye Contact	thoroughly with water and seek medical treatment if irritating.
Ingestion	Ingestion is not applicable route of entry for intended use. Rinse out mouth. Drink one or two glasses of water to dilute. Seek medical treatment if necessary.

Section 5. Fire Fighting Measures

Extinguishing Media	Water (Sprinkle with water), Foam, Powder, CO ₂ or Dry Chemical Extinguisher.
Fire Fighting Procedure	Pay attention not to blow away toner powder. Drain water off around and decrease the atmosphere temperature to extinguish the fire.

Section 6. Accidental Release Measures

Personal Precautions	Avoid inhalation, ingestion, eye and skin contact in case of accidental toner release. Do not
Environmental Precautions	release into drains and surface water.
Method for Cleaning Up	Gather the released toner, not blowing away, and wipe up with a wet cloth.

Section 7. Handling and Storage

Handling	Keep the container tightly closed. Keep away from children.
Storage	Keep the container tightly closed and store in a cool, dry and dark place keeping away from fire. Keep away from children.

Section 8. Exposure Controls/Personal Protection

Control Parameters<Reference Data>

ACGIH TLV ₂ † A	Inhalable fraction 10mg/m ³ , Respirable fraction 3mg/m ³
OSHA PEL(3)-TWA	Total dust 15mg/m ³ , Respirable fraction 5mg/m ³

Protective Equipment

Respiratory Protection	Eye/Face Protection Skin/Hand/Body Protection
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MATERIAL SAFETY DATA SHEET

Ventilation

None required under normal use.

None required under normal use.

None required under normal use.

Ventilator is not required under normal use.

MATERIAL SAFETY DATA SHEET

Section 9. Physical and Chemical Properties

Appearance	
Physical state	Solid
Form	Fine powder
Color	Black Odorless
Odor	Not applicable
pH	100-120°C[Toner]
Melting Point	
Explosion Properties	Dust explosion is improbable under normal use. Experimental explosiveness of toner is classified into the same rank such kind of powder as flour, dry milk and resin powder according to the pressure rising speed.
	1.2-1.4g/cm ³ [Toner]
Density Solubility	Almost insoluble in water.

Section 10. Stability and Reactivity

Stability/Reactivity	Stable under normal use.
Hazardous Decomposition Products	None

Section 11. Toxicological Information

Acute oral toxicity	(rat)LD ₅₀ >2,000mg/kg(Estimated from other products containing same materials.)(Toner) (rat)LD ₅₀ >2,500mg/kg(Estimated from the data of constituent materials.)(Carrier)
Acute dermal toxicity	(rat)LD ₅₀ >2,000mg/kg(Estimated from Acute oral toxicity for same product.)(Toner) (rat)LD ₅₀ >2,000mg/kg(Estimated from the data of constituent materials.)(Carrier)
Acute inhalation toxicity	(rat)LC ₅₀ (4hr)>50mg/l(Estimated from other products containing same materials.)(Toner) Acute
eye irritation	(rabbit) Minimal irritant (Estimated from other products containing same materials.)(Toner)
Acute skin irritation	(rabbit) Non-irritant (Estimated from other products containing same materials.)(Toner) (rabbit) Non-irritant (Estimated from the data of constituent materials.)(Carrier)
Skin sensitization	(mouse)Non-Sensitizer (Estimated from other products containing same materials.)(Toner) (guinea pig)Non-Sensitizer (Estimated from the data of constituent materials.)(Carrier)
Mutagenicity	Ames Test is Negative.(Toner) Ames Test is Negative. (Estimated from the data of constituent materials.)(Carrier)

Information of Ingredients: No mutagen, according to MAK, TRGS905 and (EC)No 1272/2008 AnnexVI Table3.2.

Reproductive Toxicity

Information of Ingredients: No reproductive toxicant, according to MAK, California Proposition 65, TRGS905 and (EC)No 1272/2008 AnnexVI Table3.2.

Carcinogenicity

Information of Ingredients: No carcinogen or potential carcinogen (except carbon black and titanium dioxide) according to IARC, Japan Association on Industrial Health, ACGIH, EPA, OSHA, NTP, MAK, California Proposition 65, TRGS 905, and (EC)No 1272/2008 AnnexVI Table3.2.

The IARC reevaluated carbon black and titanium dioxide as a Group 2B carcinogen (possibly carcinogenic to humans) as the result of inhalation exposure test in rats. But, oral/skin test does not show carcinogenicity. The evaluation of carbon black is based upon

the development of lung tumors in rat receiving chronic inhalation exposures to free carbon black at level that induce particle overload of the lung. The studies performed in animal models other than rats have not demonstrated an association between carbon black and lung tumors.

Moreover, a two-years cancer bioassay using a typical toner preparation containing carbon black demonstrated no association between toner exposure and tumor development in rats.

In the animal chronic inhalation studies for titanium dioxide, the lung tumor was observed in only rats. It is estimated that this is attributed to the overload of rat's lung clearance mechanism (overload phenomenon). The inhalation of excessive titanium dioxide does not occur in normal use of this product. Also, epidemiological studies to date have not revealed any evidence of the relation between occupational exposure to titanium dioxide and respiratory tract diseases.

Chronic effects:

In a study in rats by chronic inhalation exposure to a typical toner, a mild to moderate degree of lung fibrosis was observed in 92% of the rats in the high concentration (16mg/m³) exposure group, and a minimal to mild degree of fibrosis was noted in 22% of the animal in the middle

MATERIAL SAFETY DATA SHEET

(4mg/m³) exposure group
potential human exposures.

But no pulmonary change was reported in the lowest (1mg/m³) exposure group, the most relevant level to

Other information:

None

Section 12. Ecological Information

No data available.

Section 13. Disposal Considerations

Do not incinerate toner and toner containers. Dangerous sparks may cause burn.
Any disposal practice should be done under conditions which meet local, state and federal laws and regulations relating to waste (contact local or state environmental agency for specific rules).

Section 14. Transport Information

UN No.	None
UN Shipping Name	None
UN Classification UN	None
Packing Group Special	None
Precautions	None

Section 15. Regulatory Information

US Information

All components in this product comply with order under TSCA.

EU Information

Label information according to the Directives 67/548/EEC and 1999/45/EC Not

Symbol & Indication	required
R-Phrase	Not required
S-Phrase Special	Not required
markings	Not required
Hazardous ingredients for labeling	None

Canada Information

This product is not a WHMIS-controlled product, since we consider it as a Manufactured article.

Section 16. Other Information

To the best of our knowledge, the information contained herein is accurate. However, we cannot assume any liability whatsoever for the accuracy or completeness of the information contained herein.

<Reference>

- (1) Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats H. Muhle et. al Fundamental and Applied Toxicology 17.280-299(1991)
Lung Clearance and Retention of Toner. Utilizing a Tracer Technique, during Chronic Inhalation Exposure in Rats B Bellmann Fundamental and Applied Toxicology 17.300-313(1991)
- (2) ACGIH TLV (Threshold Limit Values)
- (3) OSHA PEL (Permissible Exposure Limits)
- (4) IARC Monograph on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Vol.93.
- (5) NIOSH CURRENT INTELLIGENCE BULLETIN "Evaluation of Health Hazard and Recommendation for Occupational Exposure to titanium Dioxide DRAFT".
*ISO 11014-1 Safety data sheet for chemical products.

<Abbreviation>

ACGIH	American Conference of Governmental Industrial Hygienists
OSHA	Occupational Safety and Health Administration
TWA	Time Weighted Average
IARC	International Agency for Research on Cancer
EPA	Environmental Protection Agency (USA)
NTP	National Toxicology Program
MAK	Maximale Arbeitsplatzkonzentrationen unter Deutsche Forschungsgemeinschaft
Proposition 65: California	Safe Drinking Water and Toxic Enforcement Act of 1986.
TRGS905	Technische Regeln für Gefahrstoffe (Deutsche)
UN	United Nations
TSCA	Toxic Substances Control Act (USA)
WHMIS	Workplace Hazardous Materials Information System (Canada)

MATERIAL SAFETY DATA SHEET

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MATERIAL SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name **Cyan Toner For CS 4550ci, 5550ci**
 Manufacturer **Kyocera Mita Corporation**
 Address **COPYSTAR, A DIVISION OF
 Kyocera Mita America, Inc. 225
 Sand Road
 Fairfield, NJ 07004**
 Telephone Number **(973)-808-8444**
 Date **May 16, 2011**

Section 2. Composition/Information on Ingredients

Hazardous Components (Chemical Identity, Common Name/s)	OSHA PEL Subpart Z	ACGIH TLV TWA	IARC	NTP	Weight %
(CAS No. 66402-68-4) Ferrite (Ferrite including manganese)	5mg/m ³ (Ceiling) (Manganese compounds as Mn)	0.1 mg/m ³ TWA/ (Manganese and inorganic compounds as Mn)	Not Listed	Not Listed	1-10 (as Mn <2)
(CAS No. 7631-86-9) Amorphous silica	80mg/m ³ /%SiO ₂ (TWA)	Not Listed	Group 3	Not Listed	1-5
(CAS No. 13463-67-7) Titanium dioxide	15mg/m ³ (Total Dust) (TWA)	10mg/m ³ (TWA)	Group 2B	Not Listed	<1
(Non Hazardous Ingredients)					
Polyester resin 1					65-75
Polyester resin 2					5-10

Section 3. Hazards Identification

Most Important Hazards None

Specific Hazards None

Other Information on Hazards:

Potential Health Effects:

Ingestion Ingestion is not applicable route of entry for intended use.

Inhalation Prolonged inhalation of excessive dusts may cause lung damage.
Use of this product, as intended, does not result in inhalation of excessive dusts. May cause

Eye Contact transient eye irritation.

Skin Contact Unlikely to cause skin irritation.

Section 4. First Aid Measures

Inhalation	Remove from exposure to fresh air and gargle with plenty of water. Seek medical treatment in case of such a symptom as coughing.
Skin Contact	Wash with soap and water. If irritation does occur, seek medical treatment. Flush
Eye Contact	thoroughly with water and seek medical treatment if irritating.
Ingestion	Ingestion is not applicable route of entry for intended use. Rinse out mouth. Drink one or two glasses of water to dilute. Seek medical treatment if necessary.

Section 5. Fire Fighting Measures

Extinguishing Media	Water (Sprinkle with water), Foam, Powder, CO ₂ or Dry Chemical Extinguisher.
Fire Fighting Procedure	Pay attention not to blow away toner powder. Drain water off around and decrease the atmosphere temperature to extinguish the fire.

Section 6. Accidental Release Measures

Personal Precautions	Avoid inhalation, ingestion, eye and skin contact in case of accidental toner release. Do not
Environmental Precautions	release into drains and surface water.
Method for Cleaning Up	Gather the released toner, not blowing away, and wipe up with a wet cloth.

Section 7. Handling and Storage

Handling	Keep the container tightly closed. Keep away from children.
Storage	Keep the container tightly closed and store in a cool, dry and dark place keeping away from fire. Keep away from children.

Section 8. Exposure Controls/Personal Protection

Control Parameters<Reference Data>	
ACGIH TLV TWA	Inhalable fraction 10mg/m ³ , Respirable fraction 3mg/m ³
OSHA PEL TWA	Total dust 15mg/m ³ , Respirable fraction 5mg/m ³
Protective Equipment	Eye/Face Protection Skin/Hand/Body Protection
Respiratory Protection	Ventilation

MATERIAL SAFETY DATA SHEET

ne required under normal use. None

required under normal use.

Ventilator is not required under normal use.

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Section 9. Physical and Chemical Properties

Appearance	
Physical state	Solid
Form	Fine powder
Color	Cyan
Odor	Odorless
pH	Not applicable
Melting Point	100-120°C[Toner]
Explosion Properties	Dust explosion is improbable under normal use. Experimental explosiveness of toner is classified into the same rank such kind of powder as flour, dry milk and resin powder according to the pressure rising speed.
Density	1.2-1.4g/cm ³ [Toner] Almost
Solubility	insoluble in water.

Section 10. Stability and Reactivity

Stability/Reactivity	Stable under normal use. None
Hazardous Decomposition Products	

Section 11. Toxicological Information

Acute oral toxicity	(rat)LD ₅₀ >2,000mg/kg(Estimated from other products containing same materials)[Toner] (rat)LD ₅₀ >2,500mg/kg(Estimated from the data of constituent materials.)(Carrier)
Acute dermal toxicity	(rat)LD ₅₀ >2,000mg/kg(Estimated from Acute oral toxicity for same product.)(Toner) (rat)LD ₅₀ >2,000mg/kg(Estimated from the data of constituent materials.)(Carrier)
Acute inhalation toxicity	(rat)LC ₅₀ (4hr)>50mg/l(Estimated from other products containing same materials.)(Toner) Acute
eye irritation	(rabbit) Minimal irritant (Estimated from other products containing same materials.)(Toner)
Acute skin irritation	(rabbit) Non-irritant (Estimated from other products containing same materials.)(Toner) (rabbit) Non-irritant (Estimated from the data of constituent materials.)(Carrier)
Skin sensitization	(mouse)Non-Sensitiser(Estimated from other products containing same materials.)(Toner) (guinea pig)Non-Sensitiser (Estimated from the data of constituent materials.)(Carrier)
Mutagenicity	Ames Test is Negative. [Toner] Ames Test is Negative. (Estimated from the data of constituent materials.)(Carrier)

Information of Ingredients: No reproductive toxicant, according to MAK, TRGS905 and (EC) No 1272/2008 Annex VI Table 3.2.

Reproductive Toxicity

Information of Ingredients: No reproductive toxicant, according to MAK, California Proposition 65, TRGS905 and (EC) No 1272/2008 Annex VI Table 3.2.

Carcinogenicity

Information of Ingredients: No carcinogen or potential carcinogen (except titanium dioxide) according to IARC, Japan Association on Industrial Health, ACGIH, EPA, OSHA, NTP, MAK, California Proposition 65, TRGS905, and (EC) No 1272/2008 Annex VI Table 3.2.

The IARC reevaluated titanium dioxide as a Group 2B carcinogen (possibly carcinogenic to humans) as the result of inhalation exposure test in rats. But, oral/skin test does not show carcinogenicity. In the animal chronic inhalation studies for titanium dioxide, the lung tumor was observed in only rats. It is estimated that this is attributed to the overload of the rat's lung clearance mechanism (overload phenomenon).⁵¹

The inhalation of excessive titanium dioxide does not occur in normal use of this product. Also, epidemiological studies to date have not revealed any evidence of the relation between occupational exposure to titanium dioxide and respiratory tract diseases.

Chronic effects:

In a study in rats by chronic inhalation exposure to a typical toner, a mild to moderate degree of lung fibrosis was observed in 92% of the rats in the high concentration (16mg/m³) exposure group, and a minimal to mild degree of fibrosis was noted in 22% of the animal in the middle (4mg/m³) exposure group.¹¹ But no pulmonary change was reported in the lowest (1mg/m³) exposure group, the most relevant level to potential human exposures.

MATERIAL SAFETY DATA SHEET

other information:

None

Section 12. Ecological Information

No data available.

Section 13. Disposal Considerations

Do not incinerate toner and toner containers. Dangerous sparks may cause burn.
Any disposal practice should be done under conditions which meet local, state and federal laws and regulations relating to waste (contact local or state environmental agency for specific rules).

Section 14. Transport Information

UN No.	None
UN Shipping Name	None
UN Classification UN	None
Packing Group Special	None
Precautions	None

Section 15. Regulatory Information

US Information

All components in this product comply with order under TSCA.

EU Information

Symbol & Indication	required
R-Phrase	Not required
S-Phrase Special markings	Not required
Hazardous ingredients for labeling	None

Label information according to the Directives 67/548/EEC and 1999/45/EC) Not

Canada Information

This product is not a WHMIS-controlled product, since we consider it as a Manufactured article.

Section 16. Other Information

To the best of our knowledge, the information contained herein is accurate. However, we cannot assume any liability whatsoever for the accuracy or completeness of the information contained herein.

<Reference>

- (1) Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats H. Muhle et. al Fundamental and Applied Toxicology 17:280-299(1991)
Lung Clearance and Retention of Toner, Utilizing a Tracer Technique, during Chronic Inhalation Exposure in Rats B Bellmann Fundamental and Applied Toxicology 17:300-313(1991)
 - (2) ACGIH TLV(Threshold Limit Values)
 - (3) OSHA PEL (Permissible Exposure Limits)
 - (4) IARC Monograph on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Vol.93.
 - (5) NIOSH CURRENT INTELLIGENCE BULLETIN "Evaluation of Health Hazard and Recommendation for Occupational Exposure to Titanium Dioxide DRAFT".
- *ISO 11014-1 Safety data sheet for chemical products.

<Abbreviation>

ACGIH	American Conference of Governmental Industrial Hygienists
OSHA	Occupational Safety and Health Administration
TWA	Time Weighted Average
IARC	International Agency for Research on Cancer
EPA	Environmental Protection Agency (USA)
NTP	National Toxicology Program
MAK	Maximale Arbeitsplatzkonzentrationen unter Deutsche Forschungsgemeinschaft
PEL	Permissible Exposure Limit
Proposition 65:California	Safe Drinking Water and Toxic Enforcement Act of 1986.
TRGS905	Technische Regeln für Gefahrstoffe (Deutsche)
UN	United Nations

TSCA
WHMIS

Toxic Substances Control Act (USA)
Workplace Hazardous Materials Information System(Canada)

MATERIAL SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name **Magenta Toner For CS 4550ci, 5550ci**
Manufacturer **Kyocera Mita Corporation**
Address **COPYSTAR, A DIVISION OF**
 Kyocera Mita America, Inc. 225
 Sand Road
 Fairfield, NJ 07004
Telephone Number **(973)-808-8444**
Date **May 16, 2011**

Section 2. Composition/Information on Ingredients

Hazardous Components (Chemical Identity, Common Name/s)	OSHA PEL Subpart Z	ACGIH TLV u. mg.m ⁻³ (100%) (Manganese and inorganic compounds as Mn)	IARC	NTP	WeiQht%
(CAS No. 66402-68-4) Ferrite (Ferrite including manganese)	5mg/m ³ (Ceiling) (Manganese compounds as Mn)	(Manganese and inorganic compounds as Mn)	Not Listed	Not Listed	1-10 (as Mn<2)
(CAS No. 7631-86-9) Amorphous silica	80mg/m ³ /%SiO ₂ (TWA 15mg/m ³ (TotalDust) (TWA)	Not Listed	Group 3	Not Listed	1-5
(CAS No. 13463-67-7) Titanium dioxide		10mg/m ³ (TWA)	Group 2B	Not Listed	<1
(Non Hazardous Ingredients)					
Polyester resin 1					65-75
Polyester resin 2					5-10

Section 3. Hazards Identification

Most Important Hazards **None**
Specific Hazards **None Other**
Information on Hazards:

Potential Health Effects:

Ingestion **Ingestion is not applicable route of entry for intended use.**
Inhalation **Prolonged inhalation of excessive dusts may cause lung damage.**
 Use of this product, as intended, does not result in inhalation of excessive dusts. May cause
Eye Contact **transient eye irritation.**
Skin Contact **Unlikely to cause skin irritation.**

Section 4. First Aid Measures

Inhalation	Remove from exposure to fresh air and gargle with plenty of water. Seek medical treatment in case of such a symptom as coughing.
Skin Contact	Wash with soap and water. If irritation does occur, seek medical treatment. Flush
Eye Contact	thoroughly with water and seek medical treatment if irritating.
Ingestion	Ingestion is not applicable route of entry for intended use. Rinse out mouth. Drink one or two glasses of water to dilute. Seek medical treatment if necessary.

Section 5. Fire Fighting Measures

Extinguishing Media	Water (Sprinkle with water), Foam, Powder, CO ₂ or Dry Chemical Extinguisher.
Fire Fighting Procedure	Pay attention not to blow away toner powder. Drain water off around and decrease the atmosphere temperature to extinguish the fire.

Section 6. Accidental Release Measures

Personal Precautions	Avoid inhalation, ingestion, eye and skin contact in case of accidental toner release. Do not
Environmental Precautions	release into drains and surface water.
Method for Cleaning Up	Gather the released toner, not blowing away, and wipe up with a wet cloth.

Section 7. Handling and Storage

Handling	Keep the container tightly closed. Keep away from children.
Storage	Keep the container tightly closed and store in a cool, dry and dark place keeping away from fire. Keep away from children.

Section 8. Exposure Controls/Personal Protection

Control Parameters <Reference Data>	
ACGIH TLV _{TWA}	Inhalable fraction 10mg/m ³ , Respirable fraction 3mg/m ³
OSHA PEL _{TA}	Total dust 15mg/m ³ , Respirable fraction 5mg/m ³

Protective Equipment	
Respiratory Protection	Eye/Face Protection Skin/Hand/Body Protection

MATERIAL SAFETY DATA SHEET

Ventilation

None required under normal use.

None required under normal use.

Nonrequired under normal use.

Ventilator is not required under normal use.

Section 9. Physical and Chemical Properties

Appearance	
Physical state	Solid
Form	Fine powder
Color	Magenta
Odor	Odorless
pH	Not applicable
Melting Point	100-120°C[Toner]
Explosion Properties	Dust explosion is improbable under normal use. Experimental explosiveness of toner is classified into the same rank such kind of powder as flour, dry milk and resin powder according to the pressure rising speed.
Density	1.2-14g/cm ³ [Toner] Almost
Solubility	insoluble in water.

Section 10. Stability and Reactivity

Stability/Reactivity	Stable under normal use. None
Hazardous Decomposition Products	

Section 11. Toxicological Information

Acute oral toxicity	(rat)LD ₅₀ >2,000mg/kg(Estimated from other products containing same materials)[Toner] (rat)LD ₅₀ >2,500mg/kg(Estimated from the data of constituent materials)[Carrier]
Acute dermal toxicity	(rat)LD ₅₀ >2,000mg/kg(Estimated from Acute oral toxicity for same product.)(Toner) (rat)LD ₅₀ >2,000mg/kg(Estimated from the data of constituent materials.)(Carrier)
Acute inhalation toxicity	(rat)LC ₅₀ (4hr)>5.0mg/l(Estimated from other products containing same materials.)(Toner) Acute
eye irritation	(rabbit) Minimal irritant (Estimated from other products containing same materials.)(Toner)
Acute skin irritation	(rabbit) Non-irritant (Estimated from other products containing same materials.)(Toner) (rabbit) Non-irritant (Estimated from the data of constituent materials.)(Carrier)
Skin sensitization	(mouse)Non-Sensitizer (Estimated from other products containing same materials.)(Toner) (guinea pig)Non-Sensitizer (Estimated from the data of constituent materials.)(Carrier)
Mutagenicity	Ames Test is Negative. [Toner] Ames Test is Negative. (Estimated from the data of constituent materials.)(Carrier)

Information of Ingredients: No reproductive toxicant, according to MAK, TRGS905 and (EC) No 1272/2008 Annex VI Table 3.2.

Reproductive Toxicity

Information of Ingredients: No reproductive toxicant, according to MAK, California Proposition 65, TRGS905 and (EC) No 1272/2008 Annex VI Table 3.2.

Carcinogenicity

Information of Ingredients: No carcinogen or potential carcinogen (except titanium dioxide) according to IARC, Japan Association on Industrial Health, ACGIH, EPA, OSHA, NTP, MAK, California Proposition 65, TRGS905, and (EC) No 1272/2008 Annex VI Table 3.2.

The IARC reevaluated titanium dioxide as a Group 2B carcinogen (possibly carcinogenic to humans) as the result of inhalation exposure test in rats. But, oral/skin test does not show carcinogenicity. In the animal chronic inhalation studies for titanium dioxide, the lung tumor was observed in only rats. It is estimated that this is attributed to the overload of the rat's lung clearance mechanism (overload phenomenon).

The inhalation of excessive titanium dioxide does not occur in normal use of this product. Also, epidemiological studies to date have not revealed any evidence of the relation between occupational exposure to titanium dioxide and respiratory tract diseases.

Chronic effects:

In a study in rats by chronic inhalation exposure to a typical toner, a mild to moderate degree of lung fibrosis was observed in 92% of the rats in the high concentration (16mg/m³ exposure group, and a minimal to mild degree of fibrosis was noted in 22% of the animal in the middle (4mg/m³) exposure group. But no pulmonary change was reported in the lowest (1mg/m³) exposure group, the most relevant level to potential human exposures.

Other Information: None

Section 12. Ecological Information

No data available.

Section 13. Disposal Considerations

Do not incinerate toner and toner containers. Dangerous sparks may cause burn.
Any disposal practice should be done under conditions which meet local, state and federal laws and regulations relating to waste (contact local or state environmental agency for specific rules).

Section 14. Transport Information

UN No.	None
UN Shipping Name	None
UN Classification UN	None
Packing Group Special	None
Precautions	None

Section 15. Regulatory Information

US Information

All components in this product comply with order under TSCA.

EU Information

Label information according to the Directives 67/548/EEC and 1999/45/EC) Not

Symbol & Indication	required
R-Phrase	Not required
S-Phrase Special	Not required
markings	Not required
Hazardous ingredients for labeling	None

Canada Information

This product is not a WHMIS-controlled product, since we consider it as a Manufactured article.

Section 16. Other Information

To the best of our knowledge, the information contained herein is accurate. However, we cannot assume any liability whatsoever for the accuracy or completeness of the information contained herein.

<Reference>

- (1) Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats H. Muhle et. al Fundamental and Applied Toxicology 17:280-299(1991)
Lung Clearance and Retention of Toner. Utilizing a Tracer Technique, during Chronic Inhalation Exposure in Rats B Bellmann Fundamental and Applied Toxicology 17:300-313(1991)
 - (2) ACGIH TLV (Threshold Limit Values)
 - (3) OSHA PEL (Permissible Exposure Limits)
 - (4) IARC Monograph on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Vol.93.
 - (5) NIOSH CURRENT INTELLIGENCE BULLETIN "Evaluation of Health Hazard and Recommendation for Occupational Exposure to Titanium Dioxide DR
- *ISO 11014-1 Safety data sheet for chemical products.

<Abbreviation>

ACGIH	American Conference of Governmental Industrial Hygienists
OSHA	Occupational Safety and Health Administration
TWA	Time Weighted Average
IARC	International Agency for Research on Cancer
EPA	Environmental Protection Agency (USA)
NTP	National Toxicology Program
MAK	Maximale Arbeitsplatzkonzentrationen unter Deutsche Forschungsgemeinschaft
Proposition 65: California	Safe Drinking Water and Toxic Enforcement Act of 1986.
TRGS 905	Technische Regeln für Gefahrstoffe (Deutsche)
UN	United Nations
TSCA	Toxic Substances Control Act (USA)

MATERIAL SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name **Yellow Toner For CS 4550ci, 5550ci**

Manufacturer **Kyocera Mita Corporation**

Address **COPYSTAR, A DIVISION OF
Kyocera Mita America, Inc.
225 Sand Road
Fairfield, NJ 07004**

Telephone Number **(973)-808-8444**

Date **May 16, 2011**

Section 2. Composition/Information on Ingredients

Hazardous Components (Chemical Identity, Common Name/s)	OSHA PEL Subpart Z	ACGIH TLV TLV-C (Ceiling) TLV-T (Total Dust) (TWA)	IARC	NTP	Weight%
(CAS No. 66402-68-4) Ferrite (Ferrite including manganese)	5mg/m ³ (Ceiling) (Manganese compounds as Mn)	0.1mg/m ³ (Manganese and inorganic compounds as Mn)	Not Listed	Not Listed	1-10 (as Mn:<2)
(CAS No. 7631-86-9) Amorphous silica	80mg/m ³ /%SiO ₂ (TWA)	15mg/m ³ (Total Dust) (TWA)	Group 3	Not Listed	1-5
(CAS No. 13463-67-7) Titanium dioxide		10mg/m ³ (TWA)	Group 2B	Not Listed	<1
(Non Hazardous Ingredients)					
Polyester resin 1					65-75
Polyester resin 2					5-10

Section 3. Hazards Identification

Most Important Hazards None

Specific Hazards None

Other Information on Hazards:

Potential Health Effects:

Ingestion Ingestion is not applicable route of entry for intended use. Prolonged

Inhalation inhalation of excessive dusts may cause lung damage.
Use of this product, as intended, does not result in inhalation of excessive dusts. May

Eye Contact cause transient eye irritation.

Skin Contact Unlikely to cause skin irritation.

Section 4. First Aid Measures

Inhalation	Remove from exposure to fresh air and gargle with plenty of water. Seek medical treatment in case of such a symptom as coughing.
Skin Contact	Wash with soap and water. If irritation does occur, seek medical treatment. Flush
Eye Contact	thoroughly with water and seek medical treatment if irritating.
Ingestion	Ingestion is not applicable route of entry for intended use. Rinse out mouth. Drink one or two glasses of water to dilute. Seek medical treatment if necessary.

Section 5. Fire Fighting Measures

Extinguishing Media	Water (Sprinkle with water), Foam, Powder, CO ₂ or Dry Chemical Extinguisher.
Fire Fighting Procedure	Pay attention not to blow away toner powder. Drain water off around and decrease the atmosphere temperature to extinguish the fire.

Section 6. Accidental Release Measures

Personal Precautions	Avoid inhalation, ingestion, eye and skin contact in case of accidental toner release. Do not
Environmental Precautions	release into drains and surface water.
Method for Cleaning Up	Gather the released toner, not blowing away, and wipe up with a wet cloth.

Section 7. Handling and Storage

Handling	Keep the container tightly closed. Keep away from children.
Storage	Keep the container tightly closed and store in a cool, dry and dark place keeping away from fire. Keep away from children.

Section 8. Exposure Controls/Personal Protection

Control Parameters<Reference Data>

ACGIHTLV(2)-TWA	Inhalable fraction 10mg/m ³ , Respirable fraction 3mg/m ³
OSHA PEL> TWA	Total dust 15mg/m ³ Respirable fraction 5mg/m ³

Protective Equipment Respiratory	Protection Skin/Hand/Body Protection
Protection Eye/Face	Ventilation

MATERIAL SAFETY DATA SHEET

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Section 9. Physical and Chemical Properties

Appearance	
Physical state	Solid
Form	Fine powder
Color	Yellow Odorless
Odor	
pH	Not applicable
Melting Point	100-120°C[Toner]
Explosion Properties	Dust explosion is improbable under normal use. Experimental explosiveness of toner is classified into the same rank such kind of powder as flour, dry milk and resin powder according to the pressure rising speed.
Density	1.2-1.4g/cm ³ [Toner] Almost
Solubility	insoluble in water.

Section 10. Stability and Reactivity

Stability/Reactivity	Stable under normal use. None
Hazardous Decomposition Products	

Section 11. Toxicological Information

Acute oral toxicity	(rat)LD ₅₀ >2,000mg/kg(Estimated from other products containing same materials.)[Toner] (rat)LD ₅₀ >2,500mg/kg(Estimated from the data of constituent materials.)[Carrier]
Acute dermal toxicity	(rat)LD ₅₀ >2,000mg/kg(Estimated from Acute oral toxicity for same product.)[Toner] (rat)LD ₅₀ >2,000mg/kg(Estimated from the data of constituent materials.)[Carrier]
Acute inhalation toxicity	(rat)LC ₅₀ (4hr)>5.0mg/l(Estimated from other products containing same materials.)[Toner] Acute
eye irritation	(rabbit) Minimal irritant (Estimated from other products containing same materials.)[Toner]
Acute skin irritation	(rabbit) Non-irritant (Estimated from other products containing same materials.)[Toner] (rabbit) Non-irritant (Estimated from the data of constituent materials.)[Carrier]
Skin sensitization	(mouse)Non-Sensitizer (Estimated from other products containing same materials.)[Toner] (guinea pig)Non-Sensitizer(Estimated from the data of constituent materials.)[Carrier]
Mutagenicity	Ames Test is Negative.[Toner] Ames Test is Negative. (Estimated from the data of constituent materials.)[Carrier]

Information of Ingredients: No reproductive toxicant, according to MAK, TRGS905 and (EC)No 1272/2008 AnnexVI Table3.2.

Reproductive Toxicity

Information of Ingredients: No reproductive toxicant, according to MAK, California Proposition 65, TRGS905 and (EC)No 1272/2008 AnnexVI Table3.2.

Carcinogenicity

Information of Ingredients: Nocarcinogen or potential carcinogen (except titanium dioxide) according to IARC, Japan Association on Industrial Health, ACGIH, EPA, OSHA, NTP, MAK, California Proposition 65, TRGS905, and (EC) No 1272/2008 AnnexVI Table3.2.

The IARC reevaluated titanium dioxide as a Group 2B carcinogen (possibly carcinogenic to humans) as the result of inhalation exposure test in rats. But, oral/skin test does not show carcinogenicity. ¹⁴ In the animal chronic inhalation studies for titanium dioxide, the lung tumor was observed in only rats. It is estimated that this is attributed to the overload of the rat's lung clearance mechanism (overload phenomenon) .,s.

The inhalation of excessive titanium dioxide does not occur in normal use of this product. Also, epidemiological studies to date have not revealed any evidence of the relation between occupational exposure to titanium dioxide and respiratory tract diseases.

Chronic effects:

In a study in rats by chronic inhalation exposure to a typical toner, a mild to moderate degree of lung fibrosis was observed in 92% of the rats in the high concentration (16mg/m³ exposure group, and a minimal to mild degree of fibrosis was noted in 22% of the animal in the middle (4mg/m³) exposure group. But no pulmonary change was reported in the lowest (1mg/m³ exposure group, the most relevant level to potential human exposures.

MATERIAL SAFETY DATA SHEET

Other Information:

None

Section 12. Ecological Information

No data available.

Section 13. Disposal Considerations

Do not incinerate toner and toner containers. Dangerous sparks may cause burn.
Any disposal practice should be done under conditions which meet local, state and federal laws and regulations relating to waste (contact local or state environmental agency for specific rules).

Section 14. Transport Information

UN No.	None
UN Shipping Name	None
UN Classification UN	None
Packing Group	None
Special Precautions	None

Section 15. Regulatory Information

US Information

All components in this product comply with order under TSCA.

EU Information

Symbol & Indication	required
R-Phrase	Not required
S-Phrase Special markings	Not required
Hazardous ingredients for labeling	None

Label information according to the Directives 67/548/EEC and 1999/45/EC) Not

Canada Information

This product is not a WHMIS-controlled product, since we consider it as a Manufactured article.

Section 16. Other Information

To the best of our knowledge, the information contained herein is accurate. However, we cannot assume any liability whatsoever for the accuracy or completeness of the information contained herein.

<Reference>

- (1) Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats H. Muhle et. al Fundamental and Applied Toxicology 17:280-299(1991)
Lung Clearance and Retention of Toner, Utilizing a Tracer Technique, during Chronic Inhalation Exposure in Rats B Bellmann Fundamental and Applied Toxicology 17:300-313(1991)
- (2) ACGIH TLV (Threshold Limit Values)
- (3) OSHA PEL (Permissible Exposure Limits)
- (4) IARC Monograph on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Vol.93.
- (5) NIOSH CURRENT INTELLIGENCE BULLETIN "Evaluation of Health Hazard and Recommendation for Occupational Exposure to Titanium Dioxide DRAFT".
*ISO11014-1 Safety data sheet for chemical products.

<Abbreviation>

ACGIH	American Conference of Governmental Industrial Hygienists
OSHA	Occupational Safety and Health Administration
TWA	Time Weighted Average
IARC	International Agency for Research on Cancer
EPA	Environmental Protection Agency (USA)
NTP	National Toxicology Program
MAK	Maximale Arbeitsplatzkonzentrationen unter Deutsche Forschungsgemeinschaft
Proposition 65: California	Safe Drinking Water and Toxic Enforcement Act of 1986.
TRGS905	Technische Regeln für Gefahrstoffe (Deutsche)
UN	United Nations
TSCA	Toxic Substances Control Act (USA)

MATERIAL SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name **Black Developer For CS 4550ci, 5550ci**

Manufacturer **Kyocera Mita Corporation**

Address **COPYSTAR, A DIVISION OF
Kyocera Mita America, Inc. 225
Sand Road
Fairfield, NJ 07004**

Telephone Number **(973)-808-8444**

Date **May 16, 2011**

Section 2. Composition/Information on Ingredients

Hazardous Components (Chemical Identity, Common Name/s)	OSHA PEL Subpart Z	ACGIH TLV	IARC	NTP	WeiQht%
(CAS No. 66402-68-4) Ferrite (Ferrite including manganese)	5mg/m ³ (Ceiling) (Manganese compounds asMn)	0.2mg/m ³ (TWA) (Manganese and inorganic compounds asMn)	Not Listed	Not Listed	85-95 (as Mn:15-20)
(CAS No. 1333-86-4) Carbon Black	3.5ml/m ³ (TWA)	3.5mg/m ³ (TWA)	Group2B	Not Listed	<1
(Non Hazardous Ingredients)					
Polyester resin					5-10

Section 3. Hazards Identification

Most Important Hazards **None**

Specific Hazards **None Other**

Information on Hazards:

Potential Health Effects:

Ingestion **Ingestion is not applicable route of entry for intended use.**

Inhalation **Prolonged inhalation of excessive dusts may cause lung damage.
Use of this product, as intended, does not result in inhalation of excessive dusts. May cause**

Eye Contact **transient eye irritation.**

Skin Contact **Unlikely to cause skin irritation.**

Section 4. First Aid Measures

Inhalation	Remove from exposure to fresh air and gargle with plenty of water. Seek medical treatment in case of such a symptom as coughing.
Skin Contact	Wash with soap and water. If irritation does occur, seek medical treatment.
Eye Contact	Do not rub eyes. Flush thoroughly with water and seek medical treatment if irritating.
Ingestion	Ingestion is not applicable route of entry for intended use. Rinse out mouth. Drink one or two glasses of water to dilute. Seek medical treatment if necessary.

Section 5. Fire Fighting Measures

Extinguishing Media	Water (Sprinkle with Water), Foam, Powder, CO ₂ or Dry Chemical Extinguisher.
Fire Fighting Procedures	Pay attention not to blow away developer powder. Drain water off around and decrease atmosphere temperature to extinguish the fire.

Section 6. Accidental Release Measures

Personal Precautions	Avoid inhalation, ingestion, eye and skin contact in case of accidental developer release. Do not
Environmental Precautions	release into drains and surface water.
Method for Cleaning Up	Gather the released developer, not blowing away, and wipe up with a wet cloth.

Section 7. Handling and Storage

Handling	Keep the container tightly closed. Keep away from children.
Storage	Keep the container tightly closed and store in a cool, dry and dark place keeping away from fire. Keep away from children.

Section 8. Exposure Controls/Personal Protection

Control Parameters<Reference Data>

ACGIH TLV_{TW} A

OSHA PEL_{TW} A

Ventilation

Protective Equipment Respiratory

Protection Eye/Face

Protection Skin/Hand/Body

Protection

MATERIAL SAFETY DATA SHEET

Inhalable fraction 10mg/m³, Respirable fraction 3mg/m³

Total dust 15mg/m³, Respirable fraction 5mg/m³

None required under normal use. None

required under normal use.

Ventilator is not required under normal use.

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Section 9. Physical and Chemical Properties

Appearance

Physical state	Solid
Form	Fine powder
Color	Black
Odor	Odorless
pH	Not applicable No
Melting Point	data available
Explosion Properties	Dust explosion is improbable under normal use. Experimental explosiveness of toner is classified into the same rank such kind of powder as flour, dry milk and resin powder according to the pressure rising speed.
Density	3.5-5.0 g/cm ³
Solubility	Almost insoluble in water.

Section 10. Stability and Reactivity

Stability/Reactivity	Stable under normal use.
Hazardous Decomposition Products	None

Section 11. Toxicological Information

Acute oral toxicity	(rat)LD ₅₀ >2,000mg/kg(Estimated from other products containing same materials.)(Toner) (rat)LD ₅₀ >2,500mg/kg(Estimated from the data of constituent materials.)(Carrier)
Acute dermal toxicity	(rat)LD ₅₀ >2,000mg/kg (Estimated from Acute oral toxicity for same product.)(Toner) (rat)LD ₅₀ >2,000mg/kg(Estimated from the data of constituent materials.)(Carrier)
Acute inhalation toxicity	(rat)LC ₅₀ (4hr)>50mg/l(Estimated from other products containing same materials.)(Toner)
Acute eye irritation Acute skin irritation	(rabbit) Minimal irritant (Estimated from other products containing same materials.)(Toner)
skin irritation	(rabbit) Non-irritant (Estimated from other products containing same materials.)(Toner) (rabbit) Non-irritant (Estimated from the data of constituent materials.)(Carrier)
Skin sensitization	(mouse)Non-Sensitizer (Estimated from other products containing same materials.)(Toner) (guinea pig)Non-Sensitizer (Estimated from the data of constituent materials.)(Carrier)
Mutagenicity	Ames Test is Negative.(Toner) Ames Test is Negative. (Estimated from the data of constituent materials.)(Carrier)
Information of Ingredients	No mutagen, according to MAK, TRGS905 and (EC)No 1272/2008; AnnexVI Table 3.2.
Reproductive Toxicity	
Information of Ingredients	No reproductive toxicant, according to MAK, California Proposition 65, TRGS905 and (EC)No 1272/2008 AnnexVI Table3.2.
Carcinogenicity	
Information of Ingredients	No carcinogen or potential carcinogen (except carbon black) according to IARC, Japan Association on Industrial Health, ACGIH, EPA, OSHA, NTP, MAK, California Proposition 65, TRGS905 and (EC)No 1272/2008 AnnexVI Table3.2.

The IARC reevaluated carbon black as a Group 2B carcinogen (possibly carcinogenic to humans) as the result of inhalation exposure test in rats. But, oral/skin test does not show carcinogenicity.(4) The evaluation of carbon black is based upon the development of lung tumors in rat receiving chronic inhalation exposures to free carbon black at level that induce particle overload of the lung.

The studies performed in animal models other than rats have not demonstrated an association between carbon black and lung tumors. Moreover, a two-year's cancer bioassay using a typical toner preparation containing carbon black demonstrated no association between toner exposure and tumor development in rats₁₁₁

Chronic effects

In a study in rats by chronic inhalation exposure to a typical toner, a mild to moderate degree of lung fibrosis was observed in 92%

MATERIAL SAFETY DATA SHEET

of the rats in the high concentration (16mg/m³ exposure group, and a minimal to mild degree of fibrosis was noted in 22% of the animal in the middle (4mg/m³) exposure group.¹¹ But no pulmonary change was reported in the lowest (1mg/m³ exposure group, the most relevant level to potential human exposures.

Other Information

None



MATERIAL SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name **Cyan Developer For CS 4550ci, 5550ci**
Manufacturer **Kyocera Mita Corporation**
Address **COPYSTAR, A DIVISION OF**
 Kyocera Mita America, Inc. 225
 Sand Road
 Fairfield, NJ 07004
Telephone Number **(973)-808-8444**
Date **May 16, 2011**

Section 2. Composition/Information on Ingredients

Hazardous Components (Chemical Identity, Common Name/s)	OSHA PEL Subpart Z	ACGIH TLV	IARC	NTP	Weight%
(GAS No. 66402-68-4) Ferrite (Ferrite including Manganese)	5mg/m ³ (Ceiling) (Manganese compounds (as Mn))	0.2mg/m ³ (TWA) (Manganese and inorganic compounds as Mn)	Not Listed	Not Listed	85-95 (as Mn: 15-20)
(Non Hazardous Ingredients)					
Polyester resin					5-10

Section 3. Hazards Identification

Most Important Hazards **None**
Specific Hazards **None Other**
Information on Hazards:
Potential Health Effects:
Ingestion **Skin Contact**
Inhalation
Eye Contact

MATERIAL SAFETY DATA SHEET

Ingestion is not applicable route of entry for intended use.

ed, does not result in inhalation of excessive dusts. May cause transient eye irritation.

Unlikely to cause skin irritation.

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Prolonged inhalation of excessive dusts may cause lung damage.

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Section 4. First Aid Measures

Inhalation	Remove from exposure to fresh air and gargle with plenty of water. Seek medical treatment in case of such a symptom as coughing.
Skin Contact	Wash with soap and water. If irritation does occur, seek medical treatment.
Eye Contact	Do not rub eyes. Flush thoroughly with water and seek medical treatment if irritating. Ingestion is
Ingestion	not applicable route of entry for intended use. Rinse out mouth. Drink one or two glasses of water to dilute. Seek medical treatment if necessary.

Section 5. Fire Fighting Measures

Extinguishing Media	Water (Sprinkle with Water), Foam, Powder, CO ₂ or Dry Chemical Extinguisher.
Fire Fighting Procedures	Pay attention not to blow away developer powder. Drain water off around and decrease atmosphere temperature to extinguish the fire.

Section 6. Accidental Release Measures

Personal Precautions	Avoid inhalation, ingestion, eye and skin contact in case of accidental developer release. Do not release into drains and surface water.
Environmental Precautions	Gather the released developer, not blowing away, and wipe up with a wet cloth.
Method for Cleaning Up	

Section 7. Handling and Storage

Handling	Keep the container tightly closed. Keep away from children.
Storage	Keep the container tightly closed and store in a cool, dry and dark place keeping away from fire. Keep away from children.

Section 8. Exposure Controls/Personal Protection

Control Parameters<Reference Data>

ACGIHTLV(2)-TWA Inhalable fraction 10mg/m³, Respirable fraction 3mg/m³

OSHA PEL 3,-TWA Total dust 15mg/m³, Respirable fraction 5mg/m³

Protective Equipment Skin/Hand/Body Protection

Respiratory Protection Ventilation

Eye/Face Protection

MATERIAL SAFETY DATA SHEET

ired under normal use. None

required under normal use.

None required under normal use.

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Section 9. Physical and Chemical Properties

Appearance

Physical state Form	Solid
Color	Fine powder
Odor	Cyan
	Odorless
pH	Not applicable
Melting Point	No
Explosion Properties	data available
	Dust explosion is improbable under normal use. Experimental explosiveness of toner is classified into the same rank such kind of powder as flour, dry milk and resin powder according to the pressure rising speed.
Density	
Solubility	3.5-5.0 g/cm ³
	Almost insoluble in water.

Section 10. Stability and Reactivity

Stability/Reactivity	Stable under normal use.
Hazardous Decomposition Products	None

Section 11. Toxicological Information

Acute oral toxicity	(rat)LD ₅₀ >2,000mg/kg(Estimatedfrom other products containing same materials.)(Toner) (rat)LD ₅₀ >2,500mg/kg(Estimatedfrom the data of constituent materials.)(Carrier)
Acute dermal toxicity	(rat)LD ₅₀ >2,000mg/kg(Estimatedfrom Acute oral toxicity for same product.)(Toner) (rat)LD ₅₀ >2,000mg/kg(Estimatedfrom the data of constituent materials.)(Carrier)
Acute inhalation toxicity	(rat)LC ₅₀ (4 hr)>5.0mg/l(Estimatedfrom other products containing same materials.)(Toner)
Acute eye irritation Acute	(rabbit) Minimal irritant(Estimated from other products containing same materials.)(Toner)
skin irritation	(rabbit) Non irritant(Estimated from other products containing same materials.)(Toner) (rabbit) Non irritant(Estimatedfrom the data of constituent materials.)(Carrier)
Skin sensitization Mutagenicity	(mouse)Non-Sensitizer(Estimated from other products containing same materials.)(Toner) (guinea pig)Non-Sensitizer(Estimated from the data of constituent materials.)(Carrier)
Information of Ingredients	Ames Test is Negative. (Toner) Ames Test is Negative. (Estimated from the data of constituent materials.)(Carrier)
Reproductive Toxicity	No mutagen, according to MAK, TRGS905 and (EC)No 1272/2008; AnnexVI Table 3.2.
Information of Ingredients	
Carcinogenicity	No reproductive toxicant, according to MAK, California Proposition 65, TRGS905 and (EC)No 1272/2008 AnnexVI Table3.2.
Information of Ingredients	No carcinogen or potential carcinogen according to IARC, Japan Association on Industrial Health, ACGIH, EPA, OSHA, NTP, MAK, California Proposition 65, TRGS905 and (EC)No 1272/2008 AnnexVI Table3.2.

Chronic effects

In a study in rats by chronic inhalation exposure to a typical toner, a mild to moderate degree of lung fibrosis was observed in 92% of the rats in the high concentration (16mg/m³ exposure group, and a minimal to mild degree of fibrosis was noted in 22% of the animal in the middle (4mg/m³) exposure group. But no pulmonary change was reported in the lowest (1mg/m³) exposure group, the most relevant level to potential human exposures.



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Other Information

None



MATERIAL SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name **Magenta Developer For CS 4550ci, 5550ci**

Manufacturer Kyocera Mita Corporation

Address COPISTAR, A DIVISION OF
Kyocera Mita America, Inc.
225 Sand Road
Fairfield, NJ 07004

Telephone Number (973)-808-8444

Date May 16, 2011

Section 2. Composition/Information on Ingredients

Hazardous Components (Chemical Identity, Common Name/s)	OSHA PEL Subpart Z	ACGIH TLV	IARC	NTP	Weight%
(CAS No. 66402-68-4) Ferrite (Ferrite including manganese)	5mg/m ³ (Ceiling) (Manganese compounds (asMn))	0.2mg/m ³ (TWA) (Manganese and inorganic compounds asMn)	Not Listed	Not Listed	85-95 (as Mn:15-20)
(Non Hazardous Ingredients)					
Polvester resin					5-10

Section 3. Hazards Identification

Most Important Hazards None

Specific Hazards None

Other Information on Hazards:

Potential Health Effects:

Ingestion Ingestion is not applicable route of entry for intended use.

Inhalation Prolonged inhalation of excessive dusts may cause lung damage.
Use of this product, as intended, does not result in inhalation of excessive dusts. May cause

Eye Contact transient eye irritation.

Skin Contact Unlikely to cause skin irritation.

MATERIAL SAFETY DATA SHEET

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Section 4. First Aid Measures

Inhalation	Remove from exposure to fresh air and gargle with plenty of water. Seek medical treatment in case of such a symptom as coughing.
Skin Contact	Wash with soap and water. If irritation does occur, seek medical treatment.
Eye Contact	Do not rub eyes. Flush thoroughly with water and seek medical treatment if irritating. Ingestion is
Ingestion	not applicable route of entry for intended use. Rinse out mouth. Drink one or two glasses of water to dilute. Seek medical treatment if necessary.

Section 5. Fire Fighting Measures

Extinguishing Media	Water (Sprinkle with Water), Foam, Powder, CO ₂ or Dry Chemical Extinguisher.
Fire Fighting Procedures	Pay attention not to blow away developer powder. Drain water off around and decrease atmosphere temperature to extinguish the fire.

Section 6. Accidental Release Measures

Personal Precautions	Avoid inhalation, ingestion, eye and skin contact in case of accidental developer release. Do not release into drains and surface water.
Environmental Precautions	Gather the released developer, not blowing away, and wipe up with a wet cloth.
Method for Cleaning Up	

Section 7. Handling and Storage

Handling	Keep the container tightly closed. Keep away from children.
Storage	Keep the container tightly closed and store in a cool, dry and dark place keeping away from fire. Keep away from children.

Section 8. Exposure Controls/Personal Protection

Control Parameters<Reference Data>

ACGIH TLV₂-TWA OSHA

PEL₂-TWA

Skin/Hand/Body Protection

Ventilation

Protective Equipment

Respiratory Protection

Eye/Face Protection

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tal dust 15mg/m³, Respirable fraction 5mg/m³

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None required under normal use.

None required under normal use.

None required under normal use.

None required under normal use.

Section 9. Physical and Chemical Properties

Appearance

Physical state Form	Solid
Color	Fine powder
Odor	Magenta
pH	Odorless
Melting Point	Not applicable
Explosion Properties	No data available
Density	Dust explosion is improbable under normal use. Experimental explosiveness of toner is classified into the same rank such kind of powder as flour, dry milk and resin powder according to the pressure rising speed.
Solubility	3.5-5.0 g/cm ³ Almost insoluble in water.

Section 10. Stability and Reactivity

Stability/Reactivity	Stable under normal use.
Hazardous Decomposition Products	None

Section 11. Toxicological Information

Acute oral toxicity	(rat)LD ₅₀ >2,000mg/kg(Estimatedfrom other products containing same materials.)(Toner) (rat)LD ₅₀ >2,500mg/kg(Estimatedfrom the data of constituent materials.)(Carrier)
Acute dermal toxicity	(rat)LD ₅₀ >2,000mg/kg(Estimatedfrom Acute oral toxicity for same product.)(Toner) (rat)LD ₅₀ >2,000mg/kg(Estimatedfrom the data of constituent materials.)(Carrier)
Acute inhalation toxicity	(rat)LC ₅₀ (4 hr)>5.0mg/l(Estimated from other products containing same materials.)(Toner)
Acute eye irritation	(rabbit) Minimal irritant(Estimated from other products containing same materials.)(Toner)
Acute skin irritation	(rabbit) Non irritant(Estimated from other products containing same materials.)(Toner) (rabbit) Non irritant(Estimated from the data of constituent materials.) (Carrier)
Skin sensitization	(mouse)Non-Sensitizer(Estimated from other products containing same materials.)(Toner) (guinea pig)Non-Sensitizer(Estimated from the data of constituent materials.)(Carrier)
Mutagenicity	Ames Test is Negative. (Toner) Ames Test is Negative. (Estimated from the data of constituent materials.)(Carrier)
Information of Ingredients	
Reproductive Toxicity	No mutagen, according to MAK, TRGS905 and (EC)No 1272/2008; AnnexVI Table 3.2.
Information of Ingredients	
Carcinogenicity	No reproductive toxicant, according to MAK, California Proposition 65, TRGS905 and (EC)No 1272/2008 AnnexVI Table3.2.
Information of Ingredients	
Chronic effects	No carcinogen or potential carcinogen according to IARC, Japan Association on Industrial Health, ACGIH, EPA, OSHA, NTP, MAK, California Proposition 65, TRGS905 and (EC)No 1272/2008 AnnexVI Table3.2.
Chronic effects	In a study in rats by chronic inhalation exposure to a typical toner, a mild to moderate degree of lung fibrosis was observed in 92% of the rats in the high concentration (16mg/m ³ exposure group, and a minimal to mild degree of fibrosis was noted in 22% of the animal in the middle (4mg/m ³ exposure group. But no pulmonary change was reported in the lowest (1mg/m ³) exposure group, the most relevant level to potential human exposures.
Other Information	None



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Section 12. Ecological Information

No data available.

Section 13. Disposal Considerations

Do not incinerate developer and developer containers. Dangerous sparks may cause burn. Any disposal practice should be done under conditions which meet local, state and federal laws and regulations relating to waste (contact local or state environmental agency for specific rules).

Section 14. Transport Information

UN No.	None
UN Shipping Name	None
UN Classification UN	None
Packing Group	None
Special Precautions	None

Section 15. Regulatory Information

US Information

All components in this product comply with order under TSCA.

Canada Information

This product is not a WHMIS-controlled product, since we consider it as a Manufactured article.

EU Information_Symbol

& Indication R-Phrase

S-Phrase Special

markings

Hazardous ingredients for labeling

Label information according to the Directives 67/548/EEC and 1999/45/EC) Not required

Not required

Not required

Not required

None

Section 16. Other Information

To the best of our knowledge, the information contained herein is accurate. However, we cannot assume any liability whatsoever for the accuracy or completeness of the information contained herein.

<Reference>

- (1) Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats H. Muhle et. al Fundamental and Applied Toxicology 17:280-299(1991)
Lung Clearance and Retention of Toner, Utilizing a Tracer Technique, during Chronic Inhalation Exposure in Rats B Bellmann Fundamental and Applied Toxicology 17:300-313(1991)
 - (2) ACGIHTLV(Threshold Limit Values)
 - (3) OSHA PEL (Permissible Exposure Limits)
- *ISO 11014-1 Safety data sheet for chemical products.

<Abbreviation>

ACGIH	American Conference of Governmental Industrial Hygienists
OSHA	Occupational Safety and Health Administration
TWA	Time Weighted Average
IARC	International Agency for Research on Cancer
EPA	Environmental Protection Agency (USA)
NTP	National Toxicology Program
MAK	Maximale Arbeitsplatzkonzentrationen unter Deutsche Forschungsgemeinschaft
Proposition 65: California	Safe Drinking Water and Toxic Enforcement Act of 1986.
TRGS905	Technische Regeln fOr Gefahrstoffe (Deutsche)
UN	United Nations
TSCA	Toxic Substances Control Act (USA)
WHMIS	Workplace Hazardous Materials Information System (Canada)



MATERIAL SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Product Name **Yellow Developer For CS 4550ci, 5550ci**

Manufacturer Kyocera Mita Corporation

Address COPISTAR, A DIVISION OF
Kyocera Mita America, Inc.
225 Sand Road
Fairfield, NJ 07004

Telephone Number (973)-808-8444

Date May 16, 2011

Section 2. Composition/Information on Ingredients

Hazardous Components (Chemical Identity, Common Name/s)	OSHA PEL Subpart Z	ACGIH TLV	IARC	NTP	Weight%
(CAS No. 66402-68-4) Ferrite (Ferrite including manganese)	5mg/m ³ (Ceiling) (Manganese compounds as Mn)	0.2mg/m ³ (TWA) (Manganese and inorganic compounds as Mn)	Not Listed	Not Listed	85-95 (as Mn:15-20)
(Non Hazardous Ingredients)					
Polyester resin					5-10

Section 3. Hazards Identification

Most Important Hazards None

Specific Hazards None

Other Information on Hazards:

Potential Health Effects:

- Ingestion Ingestion is not applicable route of entry for intended use. Prolonged
- Inhalation inhalation of excessive dusts may cause lung damage.
Use of this product, as intended, does not result in inhalation of excessive dusts.
- Eye Contact May cause transient eye irritation.
- Skin Contact Unlikely to cause skin irritation.

Section 4. First Aid Measures

Inhalation	Remove from exposure to fresh air and gargle with plenty of water. Seek medical treatment in case of such a symptom as coughing.
Skin Contact	Wash with soap and water. If irritation does occur, seek medical treatment.
Eye Contact	Do not rub eyes. Flush thoroughly with water and seek medical treatment if irritating. Ingestion is
Ingestion	not applicable route of entry for intended use. Rinse out mouth. Drink one or two glasses of water to dilute. Seek medical treatment if necessary.

Section 5. Fire Fighting Measures

Extinguishing Media Fire	Water (Sprinkle with Water), Foam, Powder, CO ₂ or Dry Chemical Extinguisher.
Fighting Procedure	Pay attention not to blow away developer powder. Drain water off around and decrease atmosphere temperature to extinguish the fire.

Section 6. Accidental Release Measures

Personal Precautions	Avoid inhalation, ingestion, eye and skin contact in case of accidental developer release. Do not release into drains and surface water.
Environmental Precautions	Gather the released developer, not blowing away, and wipe up with a wet cloth.
Method for Cleaning Up	

Section 7. Handling and Storage

Handling	Keep the container tightly closed. Keep away from children.
Storage	Keep the container tightly closed and store in a cool, dry and dark place keeping away from fire. Keep away from children.

Section 8. Exposure Controls/Personal Protection

Control Parameters<Reference Data>

ACGIH TLV;TWA OSHA PEL
TWA

Protection
Ventilation

Protective Equipment Respiratory

Protection Eye/Face

Protection Skin/Hand/Body

MATERIAL SAFETY DATA SHEET

al dust 15mg/m³, Respirable fraction 5mg/m³

None required under normal use.

None required under normal use.

None required under normal use.

None required under normal use.

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Section 9. Physical and Chemical Properties

Appearance

Physical state Solid
 Form Fine powder
 Color Yellow Odorless
 Odor Not applicable
 pH data available

Melting Point

Explosion Properties

Dust explosion is improbable under normal use. Experimental explosiveness of toner is classified into the same rank such kind of powder as flour, dry milk and resin powder according to the pressure rising speed.

Density

3.5-5.0g/cm³

Solubility

Almost insoluble in water.

Section 10. Stability and Reactivity

Stability/Reactivity Stable under normal use.

Hazardous Decomposition Products None

Section 11. Toxicological Information

Acute oral toxicity (rat)LD₅₀>2,000mg/kg(Estimated from other products containing same materials.)(Toner)
 (rat)LD₅₀>2,500mg/kg(Estimated from the data of constituent materials.)(Carrier)

Acute dermal toxicity (rat)LD₅₀>2,000mg/kg(Estimated from Acute oral toxicity for same product.)(Toner)
 (rat)LD₅₀>2,000mg/kg(Estimated from the data of constituent materials.)(Carrier)

Acute inhalation toxicity (rat)LC₅₀(4 hr)>5.0mg/l(Estimated from other products containing same materials.)(Toner) (rabbit)

Acute eye irritation Acute Minimal irritant(Estimated from other products containing same materials.)(Toner)

skin irritation (rabbit) Non irritant(Estimated from other products containing same materials.)(Toner) (rabbit) Non irritant(Estimated from the data of constituent materials.) [Carrier]

Skin sensitization (mouse)Non-Sensitizer(Estimated from other products containing same materials.)(Toner) (guinea pig)Non-Sensitizer(Estimated from the data of constituent materials.)(Carrier)

Mutagenicity Ames Test is Negative. [Toner] Ames Test is Negative.
 (Estimated from the data of constituent materials.)(Carrier)

Information of Ingredients No mutagen, according to MAK, TRGS905 and (EC)No 1272/2008; AnnexVI Table 3.2.

Reproductive Toxicity

Information of Ingredients No reproductive toxicant, according to MAK, California Proposition 65, TRGS905 and (EC)No 1272/2008 AnnexVI Table3.2.

Carcinogenicity

Information of Ingredients No carcinogen or potential carcinogen according to IARC, Japan Association on Industrial Health, ACGIH, EPA, OSHA, NTP, MAK, California Proposition 65, TRGS905 and (EC)No 1272/2008 AnnexVI Table3.2.

Chronic effects

In a study in rats by chronic inhalation exposure to a typical toner, a mild to moderate degree of lung fibrosis was observed in 92% of the rats in the high concentration (16mg/m³ exposure group, and a minimal to mild degree

MATERIAL SAFETY DATA SHEET

of fibrosis was noted in 22% of the animal in the middle (4mg/m³ exposure group).¹¹ But no pulmonary change was reported in the lowest (1mg/m³ exposure group, the most relevant level to potential human exposures.

Other Information

None

E. Pipe Materials

1.) Aluminized Steel Drain Pipe

1. Identification

Product identifier ALUMINUM COATED STEEL PRODUCTS, Type 2, all grades "Aluminized Steel" 6
21,29,47,50,51,61,71,87,88,110, 112,114,115,120,121,129,161, 151,159,164,167, etc.

Other means of identification Industrial use.

SDS number None known.

Product code

Recommended use

Recommended restrictions

Manufacturer/ Importer/ Supplier/ Distributor information Company

name Contech Engineered Solutions, LLC
Address 9025 Centre Pointe Drive West Chester, Ohio 45069, United States
Contact person Dan Moody
Telephone number 513-645-7055
E-mail dmoody@conteches.com
Emergency telephone number 1-800-255-3924

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards Not classified.

OSHA defined hazards Not classified.

Label elements Hazard

symbol Signal word None.

Hazard statement None.

Precautionary statement None.

Prevention Response

Storage Observe good industrial hygiene practices. Wash hands after handling.

Disposal

Hazard(s) not otherwise classified (HNOC) Store away from incompatible materials.
Dispose of waste and residues in accordance with local authority requirements. Not classified.

Supplemental information Not applicable.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Iron	7439-89-6	70-99
Aluminum	7429-90-5	1-30

Eye contact

Composition comments

4. First-aid measures

Inhalation Skin

contact

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

If dust from the material is inhaled, remove the affected person immediately to fresh air. Call a physician if symptoms develop or persist.

Contact with dust: Wash off with soap and water. Get medical attention if irritation develops and persists. Cuts or abrasions should be treated promptly with thorough cleansing of the affected area.

Dust in the eyes: Do not rub eyes. Rinse with water. Remove contact lenses, if present and easy to do. Get medical attention if irritation develops and persists.

Ingestion Not likely, due to the form of the product.
 Dust: Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed Contact with dust: Irritation of eyes and mucous membranes. Irritation of nose and throat.

Indication of immediate medical attention and special treatment needed Treat symptomatically.

General information Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media Special powder against metal fires. Dry sand. In case of aluminum fires, use a class D dry-powder extinguisher (Lith-X).

Unsuitable extinguishing media Do not use halogenated extinguishing agents or foam.

Specific hazards arising from the chemical Not a fire hazard unless in particle form. Suspensions of aluminum dust in air may pose a severe explosion hazard. A potential for explosion exists for a mixture of fine and coarse particles if at least 15% to 20% of the material is finer than 44 microns (325 mesh). Buffing and polishing generate finer material than grinding, sawing and cutting. Fire or high temperatures create: Metal oxides.

Special protective equipment and precautions for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Use standard firefighting procedures and consider the hazards of other involved materials.

Fire-fighting equipment/instructions

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Avoid generation and spreading of dust. Ensure adequate ventilation. Avoid inhalation of dust and contact with skin and eyes. Wear protective clothing as described in Section 8 of this safety data sheet.

Methods and materials for containment and cleaning up The product is immiscible with water and will sediment in water systems. Allow spilled material to solidify and scrape up with shovels into a suitable container for recycle or disposal. Collect dust or particulates using a vacuum cleaner with a HEPA filter.

Environmental precautions Not relevant, due to the form of the product.

7. Handling and storage

Precautions for safe handling Welding, burning, sawing, brazing, grinding or machining operations may generate fumes and dusts of metal oxides. Provide adequate ventilation. Avoid contact with sharp edges and hot surfaces. Avoid generation and spreading of dust. Avoid inhalation of dust and contact with skin and eyes. Avoid contact with molten material. Avoid inhalation of fumes from molten product. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities Store away from incompatible materials (See Section 10).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Aluminum (CAS 7429-90-5)	PEL	5 mg/m3	Respirable dust.
		15 mg/m3	Total dust.

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Aluminum (CAS 7429-90-5)	TWA	1 mg/m3	Respirable fraction.

US NIOSH Pocket Guide to Chemical Hazards: Recommended exposure limit (REL)

Components	Alumi	num (CAS	7429-90-5)
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Type TWA

Value
5
mg/
m3
5
mg/
m3
10
mg/
m3

Form
Respirable
.
W
e
l
d
i
n
g
f
u
m
e
o
r
p
y
r
o
p
h
o
r
i
c
p
o
w
d
e
r
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T
o
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Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls	Special ventilation should be used to convey finely divided metallic dust generated by grinding , sawing etc., in order to eliminate explosion hazards. Observe occupational exposure limits and minimize the risk of inhalation of dust.
Individual protection measures, such as personal protective equipment	
Eye/face protection	If contact is likely, safety glasses with side shields are recommended. In addition to safety glasses or goggles, a welding helmet with appropriate shaded shield is required during welding, burning , or brazing. A face shield is recommended, in addition to safety glasses or goggles, during sawing , grinding, or machining. Eye wash fountain is recommended .
Skin protection Hand protection	Wear suitable protective gloves to prevent cuts and abrasions. When material is heated, wear gloves to protect against thermal burns. Suitable gloves can be recommended by the glove supplier.
Other Respiratory protection	Wear suitable protective clothing. Use an approved respirator designed for the hazard, where concentrations exceed exposure limits. The use of both primary and secondary protective equipment is necessary when handling molten metal. Refer to "Aluminum Association" guidelines. Use a NIOSH-approved respirator if there is a potential for exposure to dust exceeding exposure limits (See 29 CFR 1910.134, respiratory protection standard). Seek advice from local supervisor.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state Form	Solid.
Color	Pipe. Sheets. Strips. Metallic.
Odor	Odorless.
Odor threshold pH	Not applicable.
Melting point/freezing point	Not applicable.
Initial boiling point and boiling range	Not available.
Flash point Evaporation rate	Not applicable.
Flammability (solid, gas)	Fine particles may form explosive mixtures with air.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)	Not applicable.
Flammability limit - upper (%)	Not applicable.
Explosive limit - lower (%)	Not applicable.
Explosive limit - upper (%)	Not applicable.
Vapor pressure	Not applicable.
Vapor density	Not applicable.
Relative density	8
Solubility(ies)	Insoluble in water.
Partition coefficient (n-octanol/water)	Not applicable.
Auto-ignition temperature	Not applicable.
Decomposition temperature	Not applicable.
Viscosity	Not applicable.

10. Stability and reactivity

Reactivity Chemical	stability
---------------------	-----------

Appropriate engineering

Special ventilation should be used to convey finely divided metallic dust generated by grinding .

The product is stable and non reactive under normal conditions of use, storage and transport. Massive metal is stable under normal conditions of use, storage and transport.

Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Contact with acids. Contact with incompatible materials. Strong oxidizing agents. Strong mineral acids.
Incompatible materials	
Hazardous decomposition products	Welding, burning, sawing, brazing, grinding or machining operations may generate dusts and fumes of metal oxides.

11. Toxicological information

Information on likely routes of exposure

Ingestion	Not relevant, due to the form of the product in its manufactured and shipped state.
Inhalation	Dust and fumes generated from the material can enter the body by inhalation. Dust may irritate respiratory system. Inhalation of powder or fumes may cause metal fume fever.
Skin contact	Under normal conditions of intended use, this material does not pose a risk to health. Dust may irritate skin.
Eye contact	Dust may irritate the eyes.
Symptoms related to the physical, chemical and toxicological characteristics	Dust: Irritation of eyes and mucous membranes. Irritation of nose and throat.

Information on toxicological effects

Acute toxicity Inhalation of powder or fumes may cause metal fume fever.

Components	Species	Test Results
Iron (CAS 7439-89-6)		
Acute		
Oral		
LD50	Rat	30 g/kg
Skin corrosion/irritation	May cause irritation through mechanical abrasion.	
Serious eye damage/eye irritation	May cause irritation through mechanical abrasion.	
Respiratory sensitization	Not classified.	
Skin sensitization	Not a skin sensitizer.	
Germ cell mutagenicity	Based on available data, the classification criteria are not met.	
Carcinogenicity	Based on available data, the classification criteria are not met.	
Reproductive toxicity	Based on available data, the classification criteria are not met.	
Specific target organ toxicity - single exposure	Based on available data, the classification criteria are not met.	
Specific target organ toxicity - repeated exposure	Based on available data, the classification criteria are not met.	
Aspiration hazard	Not classified.	
Chronic effects	Chronic inhalation of high concentrations of iron oxide fumes or dust may lead to benign pneumoconiosis (siderosis). May cause damage to the liver.	
Further information	Heating above the melting point releases metallic oxides which may cause metal fume fever by inhalation. The symptoms are shivering, fever, malaise and muscular pain. Aluminum fumes generated during welding or melting present low health risks. Welding or plasma arc cutting of aluminum alloys can generate ozone, nitric oxides and ultraviolet radiation. Ozone overexposure may result in mucous membrane irritation or pulmonary discomfort.	

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Components	Species	Test Results
Iron (CAS 7439-89-6)		
Aquatic		
Fish	LC50 Channel catfish (<i>Ictalurus punctatus</i>)	> 500 mg/l, 96 hours

Possibility of hazardous Hazardous polymerization does not occur.

Persistence and degradability The product is not biodegradable.
Bioaccumulative potential The product is not bioaccumulating.
Mobility in soil No data available.
Mobility in general Other No data available.
adverse effects No data available.

ALUMINUM COATED STEEL PRODUCTS, Type 2, all grades "Aluminized Steel"

SDS US

13. Disposal considerations

Disposal instructions	Dispose of waste and residues in accordance with local authority requirements.
Hazardous waste code	Not regulated.
Waste from residues/ unused products	Dispose of in accordance with local regulations.
Contaminated packaging	No special precautions.

14. Transport information

DOT

Not regulated as a hazardous material by DOT.

IATA

Not regulated as a dangerous good.

IMDG

Not regulated as a dangerous good.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory information

US federal regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA) Hazard categories

Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - No Pressure
Hazard - No Reactivity
Hazard - No

SARA 302 Extremely hazardous substance

No

SARA 311/312 Hazardous chemical

No

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130) Not regulated.

Clean Water Act (CWA) Section 112(r) (40 CFR 68.130) Priority pollutant Toxic pollutant

Safe Drinking Water Act (SOWA) Not regulated.

Food and Drug Administration (FDA) Not regulated.

US state regulations

This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

US. Massachusetts RTK - Substance List

Aluminum (CAS 7429-90-5)

US. New Jersey Worker and Community Right-to-Know Act

Aluminum (CAS 7429-90-5)

500 lbs

US. Pennsylvania RTK - Hazardous Substances

Aluminum (CAS 7429-90-5)

US. Rhode Island RTK

Aluminum (CAS 7429-90-5)

US. California Proposition 65

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Not listed.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS) Domestic	Yes
Canada	Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS) Inventory	No
Japan	of Existing and New Chemical Substances (ENCS) Existing Chemicals	Yes
Korea	List (ECL)	Yes
New Zealand Philippines	New Zealand Inventory	Yes
United States & Puerto Rico	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
	Toxic Substances Control Act (TSCA) Inventory	No

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

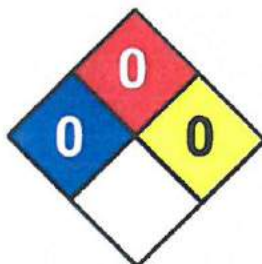
Issue date Revision 08-August-2013

date Version#

Further information 01

NFPA Ratings: Health: 0. Flammability: 0. Physical hazard: 0.

NFPA Ratings Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe



List of abbreviations

NFPA: National Fire Protection Association.

Disclaimer

This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.

2.) Asphalt Coated Steel Drain Pipe

1. Identification

Product identifier ASPHALT COATED STEEL PRODUCTS

Other means of identification 7

SDS number Various.

Product code Industrial use.

Recommended use

Recommended restrictions None known.

Manufacturer/ Importer / Supplier/ Distributor information

Company name Contech Engineered Solutions, LLC

Address Contact 9025 Centre Pointe Drive West Chester, Ohio 45069, United States Dan

person Moody

Telephone number E- 513-645-7055

mail dmoody@conteches.com

Emergency telephone 1-800-255-3924

number

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards Not classified.

OSHA defined hazards Not classified.

Label elements Hazard

symbol None.

Signal word Hazard None.

statement None.

Precautionary statement

Prevention Response Observe good industrial hygiene practices. Wash

Storage hands after handling.

Disposal Store away from incompatible materials.

Hazard(s) not otherwise classified Dispose of waste and residues in accordance with local authority requirements. Not

(HNOC) classified.

Supplemental information Not

applicable.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Iron	7439-89-6	75-95
Asphalt	8052-42-4	5 -20
Aluminum	7429-90-5	4
Zinc	7440-66-6	4

Composition comments Inhalation Skin contact

4. First-aid measures

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

If dust from the material is inhaled, remove the affected person immediately to fresh air. Call a physician if symptoms develop or persist.

Contact with dust: Wash off with soap and water. Get medical attention if irritation develops and persists. Cuts or abrasions should be treated promptly with thorough cleansing of the affected area.

Eye contact	Dust in the eyes: Do not rub eyes. Rinse with water. Remove contact lenses, if present and easy to do. Get medical attention if irritation develops and persists.
Ingestion	Not likely, due to the form of the product. Dust: Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Contact with dust: Irritation of eyes and mucous membranes. Irritation of nose and throat.
Indication of immediate medical attention and special treatment needed	Treat symptomatically.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media

Special powder against metal fires. Dry sand. In case of aluminum fires, use a class D dry-powder extinguisher (Lith-X).

Unsuitable extinguishing media

Do not use halogenated extinguishing agents or foam.

Specific hazards arising from the chemical

Not a fire hazard unless in particle form. Suspensions of aluminum dust in air may pose a severe explosion hazard. A potential for explosion exists for a mixture of fine and coarse particles if at least 15% to 20% of the material is finer than 44 microns (325 mesh). Buffing and polishing generate finer material than grinding, sawing and cutting. Fire or high temperatures create: Metal oxides.

Special protective equipment and precautions for firefighters

Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Use

Fire-fighting equipment/instructions

standard firefighting procedures and consider the hazards of other involved materials.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Avoid generation and spreading of dust. Ensure adequate ventilation. Avoid inhalation of dust and contact with skin and eyes. Wear protective clothing as described in Section 8 of this safety data sheet.

Methods and materials for containment and cleaning up

The product is immiscible with water and will sediment in water systems. Allow spilled material to solidify and scrape up with shovels into a suitable container for recycle or disposal. Collect dust or particulates using a vacuum cleaner with a HEPA filter.

Environmental precautions

Not relevant, due to the form of the product.

7. Handling and storage

Precautions for safe handling

Welding, burning, sawing, brazing, grinding or machining operations may generate fumes and dusts of metal oxides. Provide adequate ventilation. Avoid contact with sharp edges and hot surfaces. Avoid generation and spreading of dust. Avoid inhalation of dust and contact with skin and eyes. Avoid contact with molten material. Avoid inhalation of fumes from molten product. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store away from incompatible materials (See Section 10).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Aluminum (CAS 7429-90-5)	PEL	5 mg/m ³	Respirable dust.
		15 mg/m ³	Total dust.

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Aluminum (CAS 7429-90-5)	TWA	1 mg/m ³	Respirable fraction.
Asphalt (CAS 8052-42-4)	TWA	0.5 mg/m ³	Inhalable fraction.

US NIOSH Pocket Guide to Chemical Hazards: Ceiling Limit Value and Time Period (if specified)

Comp	onent	s
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Type	Value	Form	
Asphalt (CAS 8052-42-4)	Ceiling	5 mg/m3	Fume.

Components	Type	Value	Form
Aluminum (CAS 7429-90-5)	TWA	5 mg/m3	Welding fume or pyrophoric powder.
		5 mg/m3	Respirable.
		10mg/m3	Total

Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Special ventilation should be used to convey finely divided metallic dust generated by grinding, sawing etc., in order to eliminate explosion hazards. Observe occupational exposure limits and minimize the risk of inhalation of dust.
Individual protection measures, such as personal protective equipment	
Eye/face protection	If contact is likely, safety glasses with side shields are recommended. In addition to safety glasses or goggles, a welding helmet with appropriate shaded shield is required during welding, burning, or brazing. A face shield is recommended, in addition to safety glasses or goggles, during sawing, grinding, or machining. Eye wash fountain is recommended.
Skin protection Hand protection	Wear suitable protective gloves to prevent cuts and abrasions. When material is heated, wear gloves to protect against thermal burns. Suitable gloves can be recommended by the glove supplier. Wear suitable protective clothing.
Other Respiratory protection	Use an approved respirator designed for the hazard, where concentrations exceed exposure limits. The use of both primary and secondary protective equipment is necessary when handling molten metal. Refer to "Aluminum Association" guidelines. Use a NIOSH-approved respirator if there is a potential for exposure to dust exceeding exposure limits (See 29 CFR 1910.134, respiratory protection standard). Seek advice from local supervisor.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state Form	Solid.
Color	Pipe. Plate. Sheets. Strips.
Odor	Black.
Odor threshold pH	Odorless.
Melting point/freezing point	Not applicable. Not applicable.
Initial boiling point and boiling range Flash	200 °F (93.33 °C)
point	Not applicable.
Evaporation rate	Not applicable. Not applicable.
Flammability (solid, gas)	Fine particles may form explosive mixtures with air.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)	Not applicable.
Flammability limit - upper (%)	Not applicable.
Explosive limit - lower(%)	Not applicable.
Explosive limit - upper (%)	Not applicable.
Vapor pressure	Not applicable.
Vapor density	Not applicable.

Relative density	8
Solubility(ies)	Insoluble in water.
Partition coefficient (n-octanol/water)	Not applicable.

Auto-ignition temperature 905 °F (485 °C)
 Decomposition temperature Not applicable . Not
 Viscosity applicable .

10. Stability and reactivity

Reactivity Chemical stability The product is stable and non reactive under normal conditions of use, storage and transport. Massive metal is stable under normal conditions of use, storage and transport.

Possibility of hazardous reactions Hazardous polymerization does not occur.

Conditions to avoid Contact with acids. Contact with incompatible materials. Strong oxidizing agents. Strong mineral acids.

Incompatible materials

Hazardous decomposition products Welding, burning, sawing, brazing, grinding or machining operations may generate dusts and fumes of metal oxides.

11. Toxicological information

Information on likely routes of exposure

Ingestion Not relevant, due to the form of the product in its manufactured and shipped state.

Inhalation Dust and fumes generated from the material can enter the body by inhalation. Dust may irritate respiratory system. Inhalation of powder or fumes may cause metal fume fever.

Skin contact Under normal conditions of intended use, this material does not pose a risk to health. Dust may irritate skin.

Eye contact Dust may irritate the eyes.
 Dust: Irritation of eyes and mucous membranes. Irritation of nose and throat.

Symptoms related to the physical, chemical and toxicological characteristics

Information on toxicological effects

Acute toxicity Inhalation of powder or fumes may cause metal fume fever.

Components	Species	Test Results
------------	---------	--------------

Iron (CAS 7439-89-6)

Acute

Oral

LOS0

Rat

30 g/kg

Skin corrosion/irritation May cause irritation through mechanical abrasion.

Serious eye damage/eye irritation May cause irritation through mechanical abrasion.

Respiratory sensitization Not classified.
 Not a skin sensitizer.

Germ cell mutagenicity Based on available data, the classification criteria are not met.

Carcinogenicity Based on available data, the classification criteria are not met.

IARC Monographs. Overall Evaluation of Carcinogenicity

Asphalt (CAS 8052-42-4)

28 Possibly carcinogenic to humans.

3 Not classifiable as to carcinogenicity to humans.

Reproductive toxicity Based on available data, the classification criteria are not met.

Specific target organ toxicity - single exposure Based on available data, the classification criteria are not met.

Specific target organ toxicity - repeated exposure Based on available data, the classification criteria are not met.

Aspiration hazard Not classified.

Chronic effects Chronic inhalation of high concentrations of iron oxide fumes or dust may lead to benign pneumoconiosis (siderosis). May cause damage to the liver.

Further information Heating above the melting point releases metallic oxides which may cause metal fume fever by inhalation. The symptoms are shivering, fever, malaise and muscular pain. Aluminum fumes generated during welding or melting present low health risks. Welding or plasma arc cutting of aluminum alloys can generate ozone, nitric oxides and ultraviolet radiation. Ozone overexposure may result in mucous membrane irritation or pulmonary discomfort.

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Components		Species	Test Results
Iron (CAS 7439-89-6)			
Aquatic			
Fish	LC50	Channel catfish (Ictalurus punctatus)	> 500 mg/l, 96 hours
Zinc (CAS 7440-66-6)			
Aquatic			
Fish	LC50	Rainbow trout, donaldson trout (Oncorhynchus mykiss)	0.24 mg/l, 96 hours

Persistence and degradability The product is not biodegradable.

Bioaccumulative potential The product is not bioaccumulating.

Mobility in soil Nodata available.

Mobility in general No data available.

Other adverse effects No data available.

13. Disposal considerations

Disposal instructions Dispose of waste and residues in accordance with local authority requirements.

Hazardous waste code Not regulated.

Waste from residues/ unused products Dispose of in accordance with local regulations.

Contaminated packaging No special precautions.

14. Transport information

DOT

Not regulated as a hazardous material by DOT.

IATA

Not regulated as a dangerous good.

IMDG

Not regulated as a dangerous good.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory information

US federal regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D) Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Asphalt (CAS 8052-42-4) LISTED

Zinc (CAS 7440-66-6) LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - No Pressure
Hazard - No Reactivity
Hazard - No

SARA 302 Extremely hazardous substance No

SARA 311/312 Hazardous chemical No

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130) Not regulated.

ASPHALT COATED STEEL PRODUCTS

SDSUS

Clean Water Act (CWA) Section 112(r) (40 CFR 68.130)	Priority pollutant Toxic pollutant
Safe Drinking Water Act (SDWA)	Not regulated. Not
Food and Drug Administration (FDA)	regulated.
US state regulations	WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

US. Massachusetts RTK - Substance List Aluminum

(CAS 7429-90-5)
Asphalt (CAS 8052-42-4)
Zinc (CAS 7440-66-6)

US. New Jersey Worker and Community Right-to-Know Act

Aluminum (CAS 7429-90-5) 500 lbs
Zinc (CAS 7440-66-6) 500 lbs

US. Pennsylvania RTK - Hazardous Substances

Aluminum (CAS 7429-90-5)
Asphalt (CAS 8052-42-4)
Zinc (CAS 7440-66-6)

US. Rhode Island RTK Aluminum

(CAS 7429-90-5)
Zinc (CAS 7440-66-6)

US. California Proposition 65

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance Asphalt (CAS 8052-42-4)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS) Domestic	Yes
Canada	Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS) Inventory	No
Japan	of Existing and New Chemical Substances (ENCS) Existing	Yes
Korea	Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	No

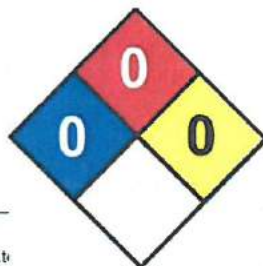
*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 08-August-2013
Revision date
Version# 01
Further information NFPA Ratings: Health: 0. Flammability: 0. Physical hazard: 0.
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

NFPA Ratings



List of abbreviations

NFPA: National Fire Protection Association.

ASPHALT COATED STEEL PRODUCTS

SOS US

Disclaimer

This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.

3.) Concrete Pipe

MATERIAL SAFETY DATA SHEET

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name:	PRECAST CONCRETE PRODUCTS AND PIPES
Other Names:	None
Use:	Variety of applications in buildings and civil engineering projects.
Supplier Name:	Reinforced Concrete Pipes (Vic) ABN 69 094 212 790 Reinforced Concrete Pipes (Qld) ABN 71 099 076 061 Reinforced Concrete Pipes (WA) ABN 66 054 592 442
Address:	Reinforced Concrete Pipes (Vic) 69-99 Ferris Road, Melton South Vic 3338 115 Reinforced Concrete Pipes (Qld) Pearson Road Yatala Queensland 4207 Lot 90, Cocos Reinforced Concrete Pipes (WA) Drive, Bibra Lake WA 6163
Telephone:	Reinforced Concrete Pipes (Vic) (03) 9746 0600 Reinforced Concrete Pipes (Qld) (07) 3804 6266 Reinforced Concrete Pipes (WA) (08) 9434 4055
Facsimile:	Reinforced Concrete Pipes (Vic) ((03) 9746 9952 Reinforced Concrete Pipes (Qld) (07) 3804 6226 Reinforced Concrete Pipes (WA) (08) 9434 4196
Website:	www.rcpa.com.au
Emergency Phone Number:	000 Fire Brigade and Police (available in Australia only)
Poisons Information Centre:	13 11 26 (available in Australia only)

This Material Safety Data Sheet (MSDS) is issued by the Supplier in accordance with National standards and guidelines from Safe Work Australia (SWA – formerly ASCC/NOHSC). The information in it must not be altered, deleted or added to. The Supplier will not accept any responsibility for any changes made to its MSDS by any other person or organization. The Supplier will issue a new MSDS when there is a change in product specifications and/or Standards, Codes, Guidelines, or Regulations.

2. HAZARDS IDENTIFICATION

Precast Concrete Pipes and Products as supplied are **non-Hazardous**.

Precast Concrete Pipes and Products are classified as **non-Dangerous** Goods according to the Australian Code for the Transport of Dangerous Goods by Road and Rail.

UN No.	None Allocated
Packing Group	None Allocated
DG Class	None Allocated
Hazchem Code	None Allocated
Subsidiary Risk(s)	None Allocated

Dust from this product is classified as **Hazardous** according to the Approved Criteria For Classifying Hazardous Substances [NOHSC:1008] 3rd Edition.

When concrete products are cut, sawn, abraded or crushed, dust is created which contains crystalline silica, some of which may be respirable (particles small enough to go into the deep parts of the lung when breathed in), and which is **Hazardous**.

The following risk and safety phrases refer **ONLY** to the dust of these products:

Risk Phrases	S22: Do not breathe dust.
Safety Phrases	R48/20: Danger of serious damage to health by prolonged exposure through inhalation.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

INGREDIENT:	CONTENT:	CAS NUMBER:
Portland cement	10-20%	65997-15-1
Aggregate containing crystalline silica (quartz)	20-85%	14808-60-7
Water	<20%	7732-18-5
OTHER INGREDIENTS MAY BE ADDED:		
Steel rod and bar	<10%	----
Supplementary cementitious materials such as fly ash, blast furnace slag, silica fume (amorphous silica)	<20%	----
Admixtures such as water reducers, set retarders, set accelerators, plasticisers, and waterproofing agents (refer AS 1478)	<1%	----

4. FIRST AID MEASURES

Eye:	If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes. If symptoms such as irritation or redness persist, seek medical attention.
Inhalation:	If inhaled, remove from contaminated area to fresh air. If symptoms persist, seek medical attention. <u>Apply artificial respiration if not breathing.</u>
Skin:	If skin or hair contact occurs, remove contaminated clothing and flush skin and hair thoroughly with running water. Use a mild soap if available. Shower if necessary. <u>Seek medical attention for persistent irritation or burning of the skin.</u>
Ingestion:	Rinse mouth and lips with water. If swallowed, do not induce vomiting. For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once).
Advice to Doctor:	Treat symptomatically.

5. FIRE FIGHTING MEASURES

Flammability: Non flammable. May evolve toxic gases if strongly heated.

Fire and Explosion: No fire or explosion hazard exists.

Extinguishing: Use carbon dioxide, foam, dry chemical or water spray as required for fire in surrounding materials.

Hazchem Code: None Allocated.

6. ACCIDENTAL RELEASE MEASURES

Methods and materials for containment and clean up: Dust is best cleaned up by vacuum device to avoid making dust airborne. Wetting down before sweeping up dust may be a useful control measure. Recommendations on Exposure Controls / Personal Protection (see Section 8 below) should be followed during spill clean-up if conditions are dusty.

7. STORAGE AND HANDLING

Storage: No special requirements. Safety aspects of stockpiles and storage areas require risk assessment and control.

Handling: Manual handling should be in accordance with Manual Handling Regulations and Codes. Use of safe work practices are recommended to avoid eye or excessive skin contact and inhalation. Observe good personal hygiene, including washing hands before eating.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

National Exposure Standards: National Occupational Exposure Standard (NES), Safe Work Australia (formerly ASCC/NOHSC) Crystalline silica (quartz): TWA – 0.1 mg/m³ respirable dust. (≤ 7 microns particle equivalent aerodynamic diameter). Total dust (of any type, or particle size): TWA – 10 mg/m³

Notes on Exposure Standards: All occupational exposures to atmospheric contaminants should be kept to as low a level as is workable (practicable) and in all cases to below the National Standard.
TWA (Time Weighted Average): the time-weighted average airborne concentration over an eight-hour working day, for a five-day working week over an entire working life. According to current knowledge this concentration should neither impair the health of, nor cause undue discomfort to, nearly all workers.

Biological Limits No biological limit allocated.

Engineering Controls

Ventilation:	When dry concrete dust is present, ensure exposures to respirable crystalline silica (quartz) are maintained below NES. Work in the open air, and the opening of external openings (such as doors and windows in buildings) generally provides adequate ventilation. Local mechanical ventilation or extraction may be required in areas where dust could escape into the working environment. Local dust extraction and collection may be used, if necessary, to control airborne dust levels. If generated dust cannot be avoided, follow personal protection recommendations.
Special Consideration for Repair &/or Maintenance of Contaminated Equipment:	Recommendations on Exposure Control and Personal Protection should be followed. When dry concrete dust is present, ensure exposures to respirable crystalline silica (quartz) are maintained below NES. Where possible vacuum or wash down all gear, equipment or mobile plant prior to maintenance and repair work. If compressed air cleaning cannot be avoided, wear eye and respiratory protection, and clothing as listed below.
Personal Protection	
PPE:	Wear dust-proof goggles and/or safety glasses with side shields (AS/NZ 1336) Wear loose comfortable clothing and gloves (standard duty leather, PVC or rubber gloves or equivalent AS 2161). When using large quantities or where heavy contamination is likely, wear: coveralls. At high dust levels, wear: a Powered Air Purifying Respirator (PAPR) with Class P3 (Particulate) filter or a Class P3 (Particulate) respirator. Where an inhalation risk exists, wear: a Class P1 or P2 (Particulate) respirator in accordance with AS/NZS 1715 and AS/NZS 1716.
Personal Hygiene:	Wash hands before eating, drinking, using the toilet, or smoking. Wash work clothes regularly.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Solid concrete – grey colour
Odour:	Cement odour
pH, at stated concentration:	> 7.0
Vapour Pressure:	Not applicable
Vapour Density (air = 1):	Not applicable
Boiling Point/Range (°C):	Not applicable
Melting Point (°C):	>1200
Solubility in water:	Not soluble, or slightly soluble. Reacts on mixing with water forming an alkaline (caustic) solution (pH >11).
Specific Gravity (H₂O=1):	2.5
Flash Point:	Not applicable
Flammable (Explosive) Limits:	Not applicable
Autoignition Temperature:	Not applicable

10. STABILITY AND REACTIVITY

Chemical Stability: Stable under normal conditions

Conditions to avoid: None

Incompatible Materials: None

Hazardous Decomposition Products: None

Hazardous Reactions: None

11. TOXICOLOGICAL INFORMATION

The following advice refers mainly to exposure to concrete dust following cutting or crushing of product.

No specific toxicology data available, but toxicity of this product is anticipated to be very low with LD50 >5,000mg/kg. Health effects information is based on reported effects in use from overseas and Australian reports.

Health Effects: Acute (short term)

Swallowed: Unlikely in normal use in the industrial situation. Abrasive and irritant to mouth and throat.

Eyes: Irritating and may cause redness and watering.

Skin: Irritating, abrasive and drying to the skin.

Inhaled: Irritating to the nose, throat and respiratory tract causing coughing and sneezing. Pre-existing upper respiratory and lung diseases including asthma and bronchitis may be aggravated.

Health Effects: Chronic (long term)

Eyes: May cause inflammation of the cornea.

Skin: Repeated contact causes irritation and drying of the skin and can result in skin reddening and skin rash (dermatitis) which may become persistent. Persons who are allergic to chromium may develop an allergic dermatitis. Where dermatitis becomes established, secondary infection of the skin may occur.

Inhaled: May cause inflammation of lining tissue of the respiratory system, and pre-existing diseases including asthma and bronchitis may be aggravated. Repeated inhalation of dust containing crystalline silica can cause bronchitis, silicosis (scarring of the lung), and may increase the risk of other serious disorders including scleroderma (a disease affecting the connective tissue of the skin, joints, blood vessels and internalorgans).

Additional Notes

Long Term Effects: Long term occupational over-exposure or prolonged breathing-in (or inhalation) of crystalline silica dust at levels above the NES carries the risk of causing serious and irreversible lung disease, including bronchitis, and silicosis (scarring of the lung). It may also increase the risk of other irreversible and serious disorders including scleroderma (a disease affecting the skin, joints, blood vessels and internal organs) and other auto-immune disorders. SWA has not classified crystalline silica as a carcinogen.

Special Toxic Effects: Inhalation of dust, including crystalline silica dust, is considered by medical authorities to increase the risk of lung disease due to tobacco smoking.

12. ECOLOGICAL INFORMATION

Eco-toxicity: Products as delivered are not biodegradable, have low ecotoxicity and are not regarded as posing any ecological risk. Crushed product and dust may form a mildly alkaline or neutral slurry when mixed with water.

Persistence and Degradability: Product is persistent and would have a low degradability.

Mobility: A low mobility would be expected in a landfill situation.

13. DISPOSAL CONSIDERATIONS

Disposal: Precast concrete can be treated as a common waste for disposal in accordance with local authority guidelines. Crushed product and dust should be kept out of storm water and sewer drains. Measures should be taken to prevent dust generation during disposal, and exposure and personal precautions should be observed (see above).

Special precautions for landfill or incineration: Precast concrete can be dumped into a landfill site in accordance with local authority guidelines.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

UN number:	None allocated
UN Proper Shipping Name:	None allocated
Class and Subsidiary Risk :	None allocated
Packaging Group:	None allocated
Special Precautions for User:	None
HAZCHEM code:	None allocated

4.) HDPE Pipe

MATERIAL SAFETY DATA SHEET- HOPE

SECTION 1.

Company Information and Product

Date Generated: 1-27-11

Date Reviewed: 1-27-11

COMPANY NAME: National Pipe & Plastics, Inc.

3421 Vestal Road, Vestal, NY 13850
Ph: 800-836-4350 Fax: 607-729-6310

9609 West Market Street, Colfax, NC 27235 Ph:
800-866-0149 Fax: 336-996-1755

PRODUCT: Polyethylene Plastic Pipe

SYNONYM: HOPE Pipe

SECTION 2.

Components/Composition

	<u>CAS#</u>	<u>% by Weight</u>
Polyethylene Homopolymer	9002-88-4	- 100

SECTION 3.

Physical and Chemical Properties

Physical State: Solid
Melting Point: 125°C
Flash Point: 341°C
Specific Gravity: 0.92
Volatility: Negligible

SECTION 4.

Health Hazard Data

Potential Acute Health Effects:

Eyes - Dust may cause irritation to eye.

Skin - No known acute effect resulting from skin contact.

Inhalation - Nuisance dust can be irritating to the upper respiratory tract.

Ingestion - No effect for ingestion of small amounts. May be a choking hazard.

SECTIONS.

First Aid Measures

Eyes - Rinse with water for a few minutes. Seek medical attention if necessary.

Skin - Rinse with water for a few minutes.

Inhalation - Allow the victim to rest in well ventilated area.

Ingestion - No first aid procedures are needed.

Chronic Effects on Humans - Polyethylene is not a known carcinogen. Not listed as a carcinogen by OSHA, NTP or IARC. There is no known effect from chronic exposure to this product. Repeated or prolonged exposure is not known to aggravate medical conditions.

SECTION 6.

Stability and Reactivity

Stability and Reactivity-The product is stable. Avoid temperatures above 300°C

Incompatibility- May react or be incompatible with oxidizing materials. Organic solvents, gasoline, and lubricants may react with and degrade polyethylene.

SECTION 7. Fire Fighting Measures

Flammability - May be combustible at high temperature.

Auto-ignition

Temperature - 349°C (660°F)

Product of Combustion - Carbon Oxides (CO, CO₂), dense smoke and various hydrocarbons .

Fire Fighting Media - Small Fire - Dry chemical extinguisher (ABC or AB), water spray or fog.
Large Fire - Water spray or fog.

Protective Clothing - Wear MSHA/NIOSH approved self-contained breathing apparatus or equivalent and full protective gear.

Special Remarks - Generated dust of sufficiently small particle size, that when suspended in air, may be explosive in the presence of static discharge.

SECTION 8. Disposal Considerations

Waste Information - Transfer to an approved disposal area in accordance with Federal, State and Local Regulations. Consult your local or regional authorities.

SECTION 9. Regulatory Information

HCS Classification -This product is not " Hazardous" as defined by the OSHA Hazardous Communications Standard, 29 CFR 1910.1200.

U.S. Federal Regulations -

SARA 301/302/303

No chemicals in this product are listed as extremely hazardous substances in 40 CFR 355, Emergency Planning and Notification (Appendix A to Part 355).

SARA304

No chemicals in this product require reporting under the requirement of 40 CFR 355, (SARA extremely hazardous substances listed in Appendix A to Part 355 or CERCLA " Hazardous Substances " listed in Table 302.4 of 40 CFR Part 302).

SARS313

This product contains no chemicals in excess of the applicable de minimis concentration that are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 (Table 372.62).

SARA 311/312

This product is not "Hazardous " as defined by the OSHA Hazardous Communication Standard, 29 CFR 1910.1200, and as such does not require reporting under the requirements of 40 CFR 370, Hazardous Chemical Reporting: Community Right-to Know.

Notice to Reader:

To the best of our knowledge, the information contained herein is accurate. However, we make no warranty with respect thereto and disclaim all liability from reliance thereon. Final determination of suitability of any material is the sole responsibility of the user . All materials may present unknown hazards and should be used with caution.

5.) PVC Pipe

Section 1: PRODUCT AND COMPANY INFORMATION			
COMMON NAME:	PVC Pipe and Fittings		
CHEMICAL NAME:	Not Applicable. Formulation. See Section 3.		
FORMULA:	Mixture		
PRODUCT CAS NO.:	Mixture. See Section 3		
RECOMMENDED USE:	PVC Pipe		
SUPPLIER:	Sanderson Pipe Corporation	Sanderson Pipe Corporation	
ADDRESS:	One Enterprise West	875 International Blvd.	
CITY, STATE, ZIP:	Sanderson, Florida 32087	Clarksville, Tennessee 37040	
PHONE:	(904) 275-3289 (regular and emergency phone)	(931) 221-4800 (regular and emergency phone)	
Section 2: HAZARDS IDENTIFICATION			
<p>All ingredients are bound in the manufacturing process and are not expected to create any hazard in handling or in use under normal conditions.</p> <p>Hazard Statement May emit fumes/vapors during extreme heating conditions such as fire. When burned, decomposition occurs and fumes may cause irritation to eyes and respiratory system.</p> <p>Classification of Mixture Eye and respiratory system irritation.</p> <p>Signal Word Warning</p> <p>Precautionary Statement Avoiding breathing fumes during high heating and decomposition conditions.</p>			
Section 3: COMPOSITION / INFORMATION ON INGREDIENTS			
Boiling Point	N/A	Appearance & Odor	Rigid / No Odor



PVC Pipe Safety Data Sheet

Date Revised: 05/21/15

Melting Point	N/A	% Volatile by Weight	N/A
Specific Gravity (H ₂ O=1)	1.35-1.55	pH	N/A
Solubility in Water	Insoluble	Particle Size	N/A
Vapor Pressure	N/A	Vapor Density (Air + 1)	N/A

Section 4: FIRST AID MEASURES	
If irritation persists from exposure to decomposition products, remove the affected individual from the area. Provide protection before re-entry.	
Section 5: FIRE FIGHTING MEASURES	
Flash Point	Not applicable to solid products
Ignition Temperature	>730°F (>388°C)
Flammable Limits in Air (% by volume)	Lower: N/A Upper: N/A
Extinguishing Media	Water ABC dry chemical Protein-type air foams Carbon dioxide may be ineffective on larger fires due to a lack of cooling capacity which may result in re-ignition.
Special Fire Fighting Procedures	Wear positive pressure self-contained breathing apparatus (SCBA). Personnel not having suitable respiratory protection must leave the area to prevent significant exposure to toxic combustible gases from any source. In enclosed or poorly-ventilated areas, wear SCBA during cleanup immediately after a fire as well as during the attack phase of fire-fighting operation.
Unusual Fire and Explosion Hazards	None known.
Section 6: ACCIDENTAL RELEASE MEASURES	
Threshold Limit Value	None established.
Efforts of Overexposure	There are no significant health hazards from vinyl compound at ambient temperatures. Inhalation of decomposition or combustion products, especially hydrogen chloride, will cause irritation of the respiratory tract, eyes, and skin. Depending on the severity of exposure, physiological response will be coughing, pain, and inflammation. Individuals with bronchial asthma and other types of chronic obstruction respiratory diseases may develop bronchial spasms if exposure is prolonged.

Section 7: HANDLING AND STORAGE	
Environmental Precautions	
Steps to be taken in case material is released or spilled.	Material is inert. Place into container for reuse or disposal.
Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION	
Special Protection Information	
Ventilation	Provide efficient exhaust at all operations creating fumes or vapor (cutting, or sawing, machining, heat welding, thermofolding, and other operations involving heat sufficient to result in degradation should be examined to ensure adequate ventilation.
Respiratory Protection	Not normally required. If overheating results in decomposition resulting in smoke or fumes, NIOSH/MSHA approved combination high efficiency particulate filter with organic vapor cartridge can be used. Gross decomposition may require the use of a positive pressure self-contained breathing apparatus.
Protective Equipment	Wear safety glasses.
Section 9: PHYSICAL AND CHEMICAL PROPERTIES	
Special Precautions	Certain operations, such as the installation of piping systems, may require the use of solvent cements. The user must obtain and comply with all safety precautions recommended by solvent cement manufacturers. Avoid continued or prolonged breathing vapors produced by overheating.
Section 10: STABILITY AND REACTIVITY	
Stability	Stable
Hazardous Decomposition Products	CO, CO ₂ , Hydrogen chloride, and small amounts of benzene, and aromatic and aliphatic hydrocarbons.



Hazardous Polymerization	Will not occur
Section 11: TOXICOLOGICAL INFORMATION	
No toxicological data is available for the finished product.	
Section 12: ECOLOGICAL INFORMATION	
Material is inert. No known significant or critical hazards.	
Section 13: DISPOSAL CONSIDERATIONS	
For waste disposal, dispose of in accordance with federal, state, and local regulations. For waste disposal purposes, these products are not defined or designated as hazardous by current provision of the Federal Conservation and Recovery Act (RCRA) 40CFR261.	
Section 14: TRANSPORT INFORMATION	
Proper Shipping Name	N/A
Hazard Class	Non-hazardous
Shipping Label	None required
UN/NA Hazard Number	Not required
Section 15: REGULATORY INFORMATION	
In compliance with TSCA 8(b) that all ingredients are listed on the US Toxic Substances Control Act inventory.	
Section 16: OTHER INFORMATION	
Users Responsibility	

F. Shop & Mechanic Supplies

1.) Antifreeze



NFPA	HMIS (U.S.A.)	Rating	Protective Clothing	DOT (pictograms)
	Health Hazard 2* Fire Hazard 1 Reactivity 0 Personal Protection H	0 Insignificant 1 Slight 2 Moderate 3 High 4 Extreme		

Section I. Chemical Product and Company Identification	
Product Name	ANTIFREEZE
Synonym	Universal Antifreeze, Radiator Antifreeze, Diesel Antifreeze, Petro-Canada Antifreeze-Coolant, Petro-Canada Heavy Duty Antifreeze-Coolant, Pre-Mix Antifreeze, Petro-Canada Premium Radiator Antifreeze.
Manufacturer	PETRO-CANADA P.O. Box 2844 Calgary, Alberta T2P 3E3
Material Uses	Used as an engine antifreeze coolant.
Code	W269
DSL	On the DSL.
TSCA	On TSCA list.
In case of Emergency	Petro-Canada: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).

Section II. Composition and Information on Ingredients					
			Exposure Limits (ACGIH)		
Name	CAS #	% (V/V)	TLV-TWA(8 h)	STEL	CEILING
1) Ethylene glycol	107-21-1	≥55	Not established	Not established	100 mg/m ³ (aerosol)
2) Sodium tetraborate pentahydrate	1330-43-4	≤5	1 mg/m ³	Not established	Not established
Manufacturer	Not applicable				
Recommendation					
Other Exposure Limits	Consult local, state, provincial or territory authorities for acceptable exposure limits.				

Section III. Hazards Identification.			
Potential Health Effects	Contact can cause slight irritation of skin, eyes and respiratory tract. information, refer to Section 11.	Extremely dangerous in case of ingestion.	For more

Section IV. First Aid Measures	
Eye Contact	IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek medical attention.
Skin Contact	Remove contaminated clothing - launder before reuse. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Seek medical attention.
Inhalation	Evacuate the victim to a safe area as soon as possible. If the victim is not breathing, perform artificial respiration. Allow the victim to rest in a well ventilated area. Seek medical attention.
Ingestion	DO NOT induce vomiting because of danger of aspirating liquid into lungs. Seek medical attention.
Note to Physician	Not available

Section V. Fire-fighting Measures			
Flammability	May be combustible at high temperature.	Flammable Limits	Lower: 3.2%, Upper: 15.3%
Flash Points	Closed Cup: 116°C (Tagliabue) Open Cup: 116°C (Cleveland)	Auto-Ignition Temperature	413°C
Fire Hazards in Presence of Various Substances	Combustible in presence of open flames and sparks.	Explosion Hazards in Presence of Various Substances	Not a product presenting risks of explosion.
Products of Combustion	Carbon oxides (CO, CO ₂), smoke and irritating vapours as products of incomplete combustion.		
Fire Fighting Media and Instructions	SMALL FIRE: Use DRY chemicals, CO ₂ , water spray or foam. LARGE FIRE: Use water spray, fog or foam. DO NOT use water jet.		

Section VI. Accidental Release Measures

Material Release or Spill	Small spill or leak: Dilute with water and mop up or absorb with an inert DRY material and place in an appropriate waste disposal container. Large spill or leak: Absorb with an inert material and put the spilled material in an appropriate waste disposal. Dispose of in accordance with regional regulations.
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Section VII. Handling and Storage

Handling	Avoid contamination with reactive substances. After handling, always wash hands thoroughly with soap and water.
Storage	Keep container dry. Keep container tightly closed. Keep in a cool, well-ventilated place.

Section VIII. Exposure Controls/Personal Protection

Engineering Controls	For normal application, special ventilation is not necessary. If user's operations generate vapours or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. Make-up air should always be supplied to balance air removed by exhaust ventilation. Ensure that eyewash station and safety shower are close to work-station.
Personal Protection - <i>The selection of personal protective equipment varies, depending upon conditions of use.</i>	
Eyes	Eye protection (i.e., safety glasses, safety goggles and/or face shield) should be determined based on conditions of use. If product is used in an application where splashing may occur, the use of safety goggles and/or a face shield should be considered.
Body	Wear appropriate clothing to prevent skin contact. As a minimum long sleeves and trousers should be worn.
Respiratory	Where concentrations in air may exceed the occupational exposure limits given in Section 2 (and those applicable to your area) and where engineering, work practices or other means of exposure reduction are not adequate, NIOSH approved respirators may be necessary to prevent overexposure by inhalation.
Hands	Wear appropriate chemically protective gloves. When handling hot product ensure gloves are heat resistant and insulated.
Feet	Wear appropriate footwear to prevent product from coming in contact with feet and skin.

Section IX. Physical and Chemical Properties

Physical State and Appearance	Clear viscous liquid.	Viscosity	Not available
Colour	Green.	Pour Point	Not available
Odour	Odourless.	Softening Point	Not applicable.
Odour Threshold	Not available	Dropping Point	Not applicable.
Boiling Point	129 to 197°C (264 to 387°F)	Penetration	Not applicable.
Density	1.115 to 1.145 (Water = 1)	Oil / Water Dist. Coeff.	Not available
Vapour Density	2.1 (Air=1).	Ionicity (in water)	Not available
Vapour Pressure	0.06 mmHg @ 20°C (68°F).	Dispersion Properties	Not available
Volatility	0% (w/w)	Solubility	Soluble in water, methanol and diethyl ether.

Section X. Stability and Reactivity

Corrosivity	Not available		
Stability	The product is stable.		Hazardous Polymerization Will not occur under normal working conditions.
Incompatible Substances / Conditions to Avoid	Reactive with oxidizing agents, acids and alkalis.		Decomposition Products May release COx, smoke and irritating vapours when heated to decomposition.

Section XI. Toxicological Information

Routes of Entry	Eye contact and ingestion.
Acute Lethality	LD50: 4700 mg/kg (oral/rat). [Ethylene Glycol] LD50: 9530 mg/kg (dermal/rabbit). [Ethylene Glycol]
Chronic or Other Toxic Effects	
Dermal Route:	Slightly hazardous in case of skin contact (irritant).
Inhalation Route:	Slightly hazardous in case of inhalation (lung irritant). Can cause nausea, headaches and vomiting.
Oral Route:	Extremely dangerous in case of ingestion.
Eye Irritation/Inflammation:	Slightly hazardous in case of eye contact (irritant).
Immunotoxicity:	Not available
Skin Sensitization:	Not available
Respiratory Tract Sensitization:	Not available
Mutagenic:	Not available

Reproductive Toxicity:	Not available
Teratogenicity/Embryotoxicity:	Fetotoxic and teratogenic in mice at levels below maternal toxicity.
Carcinogenicity (ACGIH):	ACGIH A4: not classifiable as a human carcinogen.
Carcinogenicity (IARC):	Not available
Carcinogenicity (NTP):	Not available
Carcinogenicity (IRIS):	Not available
Carcinogenicity (OSHA):	Not available
Other Considerations	The substance may be toxic to kidneys and liver. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section XII. Ecological Information

Environmental Fate	Not available	Persistence/ Bioaccumulation Potential	Not available
BOD5 and COD	Not available	Products of Biodegradation	Not available
Additional Remarks	No additional remark.		


Section XIII. Disposal Considerations

Waste Disposal	Preferred waste management priorities are: (1) recycle or reprocess; (2) incineration with energy recovery; (3) disposal at licensed waste disposal facility. Ensure that disposal or reprocessing is in compliance with government requirements and local disposal regulations. Consult your local or regional authorities.
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Section XIV. Transport Information

DOT Classification	Not a DOT controlled material (United States).	Special Provisions for Transport	Not applicable.
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Section XV. Regulatory Information

Other Regulations	This product is acceptable for use under the provisions of WHMIS-CPR. All components of this formulation are listed on the CEPA-DSL (Domestic Substances List).		
	All components of this formulation are listed on the US EPA-TSCA Inventory.		
	This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.		
DSD/DPD (EEC)	Not evaluated.	WHMIS (Canada)	D-2A
ADR (Europe) (Pictograms)	NOT EVALUATED FOR EUROPEAN TRANSPORT NON ÉVALUÉ POUR LE TRANSPORT EUROPÉEN.	TDG (Canada) (Pictograms)	

Section XVI. Other Information

References	Available upon request. * Marque de commerce de Petro-Canada - Trademark
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Glossary

ACGIH - American Conference of Governmental Industrial Hygienists	IRIS - Integrated Risk Information System
ADR - Agreement on Dangerous goods by Road (Europe)	LD50/LC50 - Lethal Dose/Concentration kill 50%
ASTM - American Society for Testing and Materials (LDLo/LCLo - Lowest Published Lethal Dose/Concentration
BOD5 - Biological Oxygen Demand in 5 days	NAERG'96 - North American Emergency Response Guide Book (1996)
CAN/CGA B149.2 Propane Installation Code	NFPA - National Fire Prevention Association
CAS - Chemical Abstract Services	NIOSH - National Institute for Occupational Safety & Health
CEPA - Canadian Environmental Protection Act	NPRI - National Pollutant Release Inventory
CERCLA - Comprehensive Environmental Response, Compensation and NSNR - New	Substances Notification Regulations (Canada) Liability Act
CFR - Code of Federal Regulations	NTP - National Toxicology Program
- Chemicals Hazard Information and Packaging Approved Supply List	OSHA - Occupational Safety & Health Administration CHIP
COD5 - Chemical Oxygen Demand in 5 days	PEL - Permissible Exposure Limit
CPR - Controlled Products Regulations	RCRA - Resource Conservation and Recovery Act
DOT - Department of Transport	SARA - Superfund Amendments and Reorganization Act
DSCL - Dangerous Substances Classification and Labeling (Europe)	SD - Single Dose
Dangerous Substances or Dangerous Preparations Directives	STEL - Short Term Exposure Limit (15 minutes) DSD/DPD -
Published Toxic Dose/Concentration	TDG - Transportation Dangerous Goods (Canada) (Europe) TDLo/TCLo - Lowest
DSL - Domestic Substance List	TLm - Median Tolerance Limit
EEC/EU - European Economic Community/European Union	TLV-TWA - Threshold Limit Value-Time Weighted Average
EINECS - European Inventory of Existing Commercial Chemical Substances	TSCA - Toxic Substances Control Act

FDA - Food and Drug Administration
FIFRA - Federal Insecticide, Fungicide and Rodenticide Act
Hazardous Communication System
HMIS - Hazardous Material Information System IARC -
International Agency for Research on Cancer

USP - United States Pharmacopoeia
WHMIS - Workplace Hazardous Material Information System HCS -

For Copy of MSDS

Western Canada, telephone: 403-296-4158; fax: 403-296-6551
Ontario & Central Canada, telephone: 1-800-668-0220; fax: 1-800-837-1228 Quebec
& Eastern Canada, telephone: 514-640-8308; fax: 514-640-8385

For Product Safety Information: (905) 804-4752

Prepared by Product Safety - TAR on 7/3/2001.

Data entry by Product Safety - JDW.

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

2.) 4-N-1

Product Name **LEMON 4 N 1 – DISINFECTANT DEODORANT CLEANER**

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Supplier Name **COMPLIANT CLEANING SUPPLIES & SYSTEMS PTY LTD**
 Address 5/150 Edmondstone St Wilston QLD 4051
 Telephone 1300 314 491 Fax 1300 926 422 Emergency 1800 201 700
 Email info@compliantcs.com.au Web Site www.compliantcs.com.au

Synonym(s) DISINFECTANT LEMON • PRODUCT CODE – L4N1

Use(s) DISINFECTANT AND GENERAL PURPOSE CLEANER

MSDS Date 01 June 2015 v1

2. HAZARDS IDENTIFICATION

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO NOHSC/ASCC CRITERIA

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

UN No.	None Allocated	DG Class	None Allocated	Subsidiary Risk(s)	None Allocated
Packing Group	None Allocated	Hazchem Code	None Allocated	EPG	None Allocated

3. COMPOSITION/ INFORMATION ON INGREDIENTS

Ingredient	Formula	CAS No.	Content
WATER	H2O	7732-18-5	>60%
ALKYL DIMETHYL BENZYL AMMONIUM CHLORIDE	Not Available	68424-85-1	1-10%
NON HAZARDOUS INGREDIENTS	Not Available	Not Available	Remainder

4. FIRST AID MEASURES

Eye If in eyes, hold eyelids apart and flush the eye continuously with running water. Continue flushing until advised to stop by the Poison Information Centre or a doctor, or for at least 15 minutes.

Skin If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre or a doctor.

Inhalation If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.

Ingestion For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not

induce vomiting.

Advice to Doctor Treat symptomatically

5. FIRE FIGHTING MEASURES

Flammability Non flammable. May evolve toxic gases if strongly heated.

Fire and Explosion Non flammable. No fire or explosion hazard exists. **Extinguishing**

Non flammable. Prevent contamination of drains or waterways.

Hazchem Code None Allocated

6. ACCIDENTAL RELEASE MEASURES

Spillage If spilt (bulk), wear splash-proof goggles and PVC/rubber gloves. Absorb spill with sand or similar and place in sealed containers for disposal. Wash spill site down with water. For small amounts, dilute with water and flush to sewer.
Caution: surfaces may be slippery.

7. STORAGE AND HANDLING

Storage Store in cool, dry, well ventilated area, removed from acids, combustible materials and foodstuffs. Ensure containers are adequately labeled, protected from physical damage and sealed when not in use. Check regularly for leaks or spills.

Handling Before use carefully read the product label. Use of safe practices is recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

Exposure Stds No exposure standard(s) allocated.

Biological Limits No biological limit allocated.

Engineering Controls Ensure adequate natural ventilation.

PPE Wear splash-proof goggles and PVC or rubber gloves. When using large quantities or where heavy contamination is likely, wear: coveralls.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	YELLOW THIN LIQUID	Solubility (Water)	SOLUBLE
Odour	SHARP LEMON FRAGRANCE	Specific Gravity	0.98 - 1.02
Ph	8.5 – 9.5	Volatiles	>60% (Water)
Vapour Pressure	18mg Hg@ 20°C (Water)	Flammability	NON FLAMMABLE
Vapour Density	NOT AVAILABLE	Flash Point	NOT RELEVANT
Boiling Point	100°C (Approximately)	Upper Explosion Limit	NOT RELEVANT
Melting Point	NOT AVAILABLE	Lower Explosion Limit	NOT RELEVANT
Evaporation Rate	AS FOR WATER		

10. STABILITY AND REACTIVITY

Chemical Stability Stable under recommended conditions of storage.

Conditions to Avoid Avoid heat, sparks, open flames and other ignition sources.

Material to Avoid	Compatible with most commonly used materials. Incompatible with acids (eg. Hydrochloric acid) and combustible/flammable materials.
Decomposition	May evolve toxic gas if heated to decomposition.
Hazardous Reactions	Polymerization is not expected to occur.

11. TOXICOLOGICAL INFORMATION

Health Hazard	Low irritant - low toxicity. No adverse health effects are anticipated with normal use of this product.
Eye	Irritant. Contact may result in irritation, lacrimation, pain and redness.
Inhalation	Low irritant. Over exposure to vapours/mists may result in respiratory irritation, nausea and headache. Occupational exposure to quaternary ammonium compounds has been reported to cause asthma, although rare. Due to the low vapour pressure an inhalation hazard is not anticipated, unless sprayed.
Skin	Low irritant. Prolonged or repeated contact may result in mild irritation.
Ingestion	Low toxicity. Ingestion of large quantities may result in nausea, vomiting and gastrointestinal irritation.
Toxicity Data	ALKYL DIMETHYL BENZYL AMMONIUM CHLORIDE (68424-85-1) LD50 (Ingestion):426mg /kg (rat) LD50 (Intraperitoneal):100mg/kg (rat)

12. ECOLOGICAL INFORMATION

Environment	Benzalkonium chloride derivatives/quaternary ammonium compounds are commonly used as disinfectants, indicating toxicity to microorganisms. Benzalkonium chloride is toxic to trout above 2ppm.
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13. DISPOSAL CONSIDERATIONS

Waste Disposal	For small amounts, absorb with sand, vermiculite or similar and dispose of to an approved landfill site. For larger amounts contact the manufacturer for additional information. Prevent contamination of drains or waterways as aquatic life may be threatened and environmental damage may result.
Legislation	Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

Shipping Name	None Allocated	DG Class	None Allocated	Subsidiary Risk(s)	None Allocated
UN No.	None allocated	Hazchem Code	None Allocated	EPG	None Allocated
Packing Group	None Allocated				

15. REGULATORY INFORMATION

Poison Schedule	A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP).
AICS	All chemicals listed on the Australian Inventory of Chemical Substances (AICS).

16. OTHER INFORMATION

Additional Information:

BENZALKONIUM CHLORIDE: Benzalkonium Chloride can be a severe eye & skin irritant and corrosive. Contact with concentrated solutions can cause deep injury and ulceration. A 0.1% concentration will cause mild discomfort to the eye. Ingestion may cause a burning pain in the mouth, throat and abdomen, salivation, low blood pressure, excitement, confusion and weakness, labored breathing and cyanosis (blue skin due to the lack of oxygen in the blood) or circulatory shock. When used in low concentrations there is local or systematic toxicity.

ABBREVIATIONS:

ADB - Air-Dry Basis.

BEI - Biological Exposure Indices

CAS# - Chemical Abstract Service number - used to uniquely identify chemical compounds. CNS - Central Nervous System.

EINECS - European Inventory of Existing Commercial chemical Substances. IARC - International Agency for Research on Cancer.

M - moles per litre, a unit of concentration. mg/m³ - Milligrams per cubic metre.

NOS - Not Otherwise Specified. NTP - National Toxicology Program.

OSHA - Occupational Safety and Health Administration.

pH - relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline). ppm - Parts Per Million.

RTECS - Registry of Toxic Effects of Chemical Substances. TWA/ES - Time Weighted Average or Exposure Standard.

3.) *Battery Saver*

PRO CHEM, INC.
 1475 BLUEGRASS LAKES PKWY
 ALPHARETTA, GA 30004
 EMERGENCY INFO # (800) 241-8180
 ADDITIONAL EMERGENCY INFO TRAC 1-800-535-5030

MATERIAL SAFETY DATA SHEET

BATTERY SAVER/ 1252

OCTOBER 2009

PAGE 1

HEALTH _____
 FIRE _____
 REACTIVITY _____
 P.P.E. _____ A

Complies With USDL Safety and Health Regulations, (29 CFR 1910.200)

SECTION 1 – Chemical and Company Identification

PRODUCT TYPE: Aerosol
 FORMULA: Proprietary

SECTION 2 – Composition on Ingredients

CHEMICAL NAME	CAS#	%WT	3131 CHEM	SKIN	CARCINOGEN	PEL	TWA/ TLV
Ethylene Glycol							
Monobutyl Ether Liquefied	111-76-2	01-10	YES	NO	NO	50ppm	50ppm
Petroleum Gas	68476-86-8	01-10	NO	NO	NO	1000ppm	1000ppm

SECTION 3 - Hazards Information

PRIMARY ROUTES OF ENTRY & EFFECTS OF OVER EXPOSURE:

EYES: May cause irritation. May aggravate existing conditions.
SKIN: Frequent or prolonged contact may cause irritation. May aggravate existing conditions.
INHALATION: Inhalation of mist can cause irritation of nasal and respiratory passages. Abusive or excessive inhalation may cause irritation to the upper respiratory tract, dizziness, nausea and other central nervous system effects.
INGESTION: Can cause gastrointestinal irritation, nausea, vomiting and diarrhea. Aspiration of material into the lungs can cause pulmonary injury.

SECTION 4 - First Aid Measures

EYES: Flush with large amounts of cool running water for at least 15 minutes while holding upper and lower lids open. If irritation persists get medical attention immediately.
SKIN: Wash with soap and water. If irritation persists seek medical attention.
INHALATION: Remove to fresh air. Seek medical attention immediately. If breathing stops give artificial respiration.
INGESTION: Do not induce vomiting. Seek medical attention immediately.

SECTION 5 - Fire Fighting Measures

FLASH POINT (of Concentrate Only): None to Boiling
 FLAMMABILITY (as per USA Flame Projection Test): Non-Flammable Spray EXTINGUISHING MEDIA: Foam, Carbon Dioxide, Dry Media
 SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus and protective clothing. Cool fire exposed containers to prevent rupturing.
 UNUSUAL FIRE & EXPLOSION HAZARDS: Exposure to temperature above 120°F may cause bursting.

SECTION 6 – Accidental Release Measures

STEPS TO BE TAKEN IN CASE OF SPILL OR LEAK: Allow propellant to evaporate. Maintain local exhaust and adequate ventilation. No smoking. Keep sparks, heat sources and open flame far away from spill or leak. Cover with absorbent material and sweep up. Wash area to prevent slipping. Dispose of soaked absorbent material in accordance with Federal, State, and local laws.

SECTION 7 - Handling and Storage

KEEP OUT OF REACH OF CHILDREN. For Industrial and Institutional use only. Store in a cool, dry area away from heat or open flame. Do not store at temperatures above 120°F.
 NFPA CODE 308 RATING: Level 1 Aerosol

SECTION 8 – Exposure Controls/Personal Protection

RESPIRATORY PROTECTION: None needed for proper use in accordance with label directions. **VENTILATION:** Provide local exhaust to keep air concentrations of Section 2 ingredients below acceptable limits.
PROTECTIVE GLOVES: None needed for proper use in accordance with label directions. Use chemical resistant gloves if hand contact will be made.
EYE PROTECTION: Always wear safety glasses or chemical proof goggles when working with chemicals.

SECTION 9 - Physical and Chemical Properties

DATA BELOW BASED ON AEROSOL CONCENTRATE ONLY:
 BOILING POINT: -212 F VAPOR DENSITY (AIR=1): >1
 pH: 9.72 SPECIFIC GRAVITY (H₂O=1)@70°F: 1.046
 SOLUBILITY IN WATER: Complete APPEARANCE/ODOR: Yellow liquid/ Ammonia odor
 DATA BELOW BASED ON TOTAL CONTENTS:
 VAPOR PRESSURE OF CAN (psig@70°F): 55 TOTAL VOE%: 6.33%

SECTION 10 – Stability and Reactivity

STABILITY: Stable
HAZARDOUS POLYMERIZATION: Will not occur.
INCOMPATIBILITY: Avoid contact with strong oxidizing agent and nitrous compound.
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon Dioxide, Carbon Monoxide.

SECTION 11 – Toxicological Information

No Data Available

SECTION 12 – Ecological Information

No Data Available

SECTION 13 – Disposal Consideration

WASTE DISPOSAL METHOD: Aerosol cans, when emptied and depressurized through normal use, pose no disposal hazard and should be recycled. Consult Federal, State and local authorities for approved procedures.

SECTION 14 – Transport Information

D.O.T. HAZARD CLASS: Consumer Commodity: ORM-D

SECTION 15 – Regulatory Information

HMIS RATING (Based on Aerosol Concentration):
 0 – Minimal 1 – Slight 2 – Moderate 3 – Serious
 N/A = Not Applicable N/E = Not Established N/D = Not Determined 4 – Extreme

SECTION 16 – Other Information

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NOTICE: The information contained on this Material Safety Data Sheet is considered accurate as of the date of publication. It is not necessarily all inclusive nor fully adequate in every circumstance. The suggestions should not be confused with, nor followed in violation of applicable laws, regulations, rules or insurance requirements. No warranty, express or implied, of merchantability, fitness, accuracy of data, or the results to be obtained from the use thereof is made. The vendor assumes no responsibility for injury or damages resulting from the inappropriate use of this product.

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 VENDEE/USER ASSUMES ALL RISKS ASSOCIATED WITH USE.

4.) *Big Blast*

PRO CHEM, INC.
1475 BLUEGRASS LAKES PKWY
ALPHARETTA, GA 30004
EMERGENCY INFO (800) 241-8180
ADDITIONAL EMERGENCY # INFO TRAC 1-800-535-5053

MATERIAL SAFETY DATA SHEET

BIG BLAST/ 1515

MARCH 2010

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HEALTH _____
FIRE _____
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P.P.E. A

Complies With USDL Safety and Health Regulations, (29 CFR 1910.200)

SECTION 1 – Chemical and Company Identification

IDENTITY: Wasp and Homet Killer

SECTION 2 – Composition on Ingredients

COMPONENTS (Chemical Identity, Common Name(s))	CAS No.	OSHA PEL	ACGIH-TLV	OTHER LIMITS RECOMMENDED	% (Opt.)
Aliphatic hydrocarbon	64742-47-8	Not estab.	Not estab.	100 ppm Manu.	60-100%
Carbon dioxide	124-38-9	5000 ppm	5000 ppm	30000 ppm STEL	3-7%

Any substance listed as hazardous by the States of California, Florida, Illinois, Michigan, New Jersey, Ohio, Pennsylvania or Texas described above, if known present, in regulated concentrations.

SECTION 3 – Hazards Information

ROUTE(S) OF ENTRY: EYES, INHALATION, SKIN, INGESTION

ACUTE HEALTH HAZARDS: Caution. Causes moderate eye irritation. May cause skin irritation. Unlikely to be swallowed, but contains petroleum distillates which may present an aspiration hazard if swallowed. May be harmful if inhaled.

CHRONIC HEALTH HAZARDS: Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Follow label instructions and good chemical hygiene practices to avoid these hazards. CARCINOGENICITY:

OSHA: NO CHEMICAL: None NTP: NO IARC: NO
SIGNS AND SYMPTOMS OF EXPOSURE: Redness, dryness, scaling or itching skin. Excessive inhalation of vapors may cause headaches, stupor, or irritation of throat and eyes. Swallowing may cause irritation of stomach and intestines resulting in nausea and vomiting.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Pre-existing skin and kidney conditions may be adversely affected. Follow good chemical hygiene practices to avoid this hazard.

SECTION 4 – First Aid Measures

EYES:	Flush with plenty of water (for at least 15 minutes lifting eyelids to ensure complete removal.) Call a physician if irritation persists.
SKIN:	Wash thoroughly with soap and water. Remove contaminated clothing and shoes. Launder contaminated clothing before reuse. Call a physician if irritation arises and persists. Note to physician: Contains petroleum distillates (>80%).
INHALATION:	Get to fresh air. If breathing has stopped, qualified personnel should administer artificial respiration.
INGESTION:	Unlikely from aerosol can. If large quantities are swallowed, call a physician or poison control center immediately. Get immediate medical attention.

SECTION 5 – Fire Fighting Measures

USA FLAME PROJECTION TEST (ASTM D-3065):	0, no flashback
FLAMMABLE LIMITS:	No data LEL: No data UEL: No data
EXTINGUISHING MEDIA:	Treat as an oil fire. Water may cause fire to float and spread. Use carbon dioxide, dry chemical or foam.
SPECIAL FIRE FIGHTING PROCEDURES:	Use water spray to keep containers cool and vapors down. Do not allow runoff to enter sewers or public water courses. Wear self-contained breathing apparatus in chemical fires.
HAZARDOUS PRODUCTS OF COMBUSTION:	Carbon dioxide, carbon monoxide, oxygen, smoke, soot and various organic oxidation by-products.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Aerosol container (pressurized) may burst if heated over 130°F. Combustible contents.

SECTION 6 – Accidental Release Measures

Thoroughly clean any residues

SMALL SPILL: Caution, slip hazard. Wipe up small spills promptly, with an effective cleaning compound.
LARGE SPILL: Isolate traffic and ventilate area. Eliminate all ignition sources. Wear protective gear as necessary. Dike to prevent spread. Prevent from entering drains, sewers or any watercourse or waterway. Pick up with an absorbent material. Put in a suitable container for proper disposal. This product is toxic to fish and aquatic invertebrates.

SECTION 7 – Handling and Storage

HANDLING: Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling. Do not swallow. Avoid inhaling mist or vapors. Do not deliberately concentrate and inhale vapors. Use with adequate ventilation. Keep away from heat, sparks and open flame. Do not use around ignition sources such as heat, sparks, open flame, static electricity, electric motors, welding arcs, etc. Do not smoke while using. Exposure to temperatures above 130°F may cause bursting. Direct spray away from face. Replace cap when not in use. Do not puncture or incinerate container. Do not apply directly to water.

STORAGE: Store in a cool (under 130°F) dry location away from heat, sparks, open flame, and direct sunlight. Keep out of reach of children. Follow label directions carefully.

SECTION 8 – Exposure Controls/Personal Protection

EYE PROTECTION: Yes, goggles or approved safety glasses (ANSI Z87).
SKIN PROTECTION: Not usually needed. If direct contact is possible, wear chemical resistant gloves or PPE.
RESPIRATORY PROTECTIONS: Not usually necessary. Use with adequate ventilation. If PELs or TLVs are exceeded (see Section 2), follow NIOSH/MSHA recommendations.

ENGINEERING CONTROLS: Ventilation not usually necessary but should be provided in the event of overexposure.

SECTION 9 – Physical and Chemical Properties

APPEARANCE/ODOR: Clear colorless liquid in an aerosol can with a slight petroleum odor. pH:
N/A SPECIFIC GRAVITY (70°F): 0.789 BOILING POINT
(Conoenate): 430°F MELTING POINT: No data
EVAPORATION RATE (Butyl Acetate=1): No data VAPOR DENSITY (AIR=1): Greater than one (1)
PRESSURE (psig @ 7. Fl): 90:5

SOLUBILITY IN WATER: Negligible
VOLATILE ORGANIC COMPOUNDS (VOCs): 0 grams per liter or 0% by weight VOC's.

SECTION 10 – Stability and Reactivity

HAZARDOUS POLYMERIZATION: This product will not undergo hazardous polymerization.
HAZARDOUS DECOMPOSITION/BY-PRODUCTS: Carbon dioxide, carbon monoxide, oxygen, smoke, soot and various organic oxidation by-products.
CHEMICAL STABILITY: Stable
INCOMPATIBILITY (Materials to Avoid): Strong oxidizing agents, alkali metals, alkaline earth metals, metal acetylhalides and chromium.

THIS INFORMATION MUST BE OBTAINED FROM THE ORIGINAL SOURCE AND IS NOT TO BE REPRODUCED OR DISTRIBUTED FOR THIS MATERIAL.
NO WARRANTY IS EXPRESSED/IMPLIED REGARDING THE ACCURACY OF THIS DATA OR RESULTS OBTAINED FROM USE. PRO-CHEM ASSUMES NO RESPONSIBILITY FOR PERSONAL INJURY OR PROPERTY DAMAGE TO USER. VENDEE/USER ASSUMES ALL RISKS ASSOCIATED WITH USE.

PRO CHEM, INC.
1475 BLUEGRASS LAKES PLYWAY
ALPHARETTA, GA 30004
EMERGENCY/INFO# (800) 241-8180
ADDITIONAL EMERGENCY INFO TRAC 1-800-535-5063

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SECTION 11 - Toxicological Information

This product is toxic to fish and aquatic invertebrates.

SECTION 12 - Ecological Information

No data.

SECTION 13 - Disposal Consideration

DISPOSAL METHOD: Dispose of in accordance with all applicable local, state, and federal regulations.

RCRA WASTE INFORMATION: If this product becomes a waste, it would not be a hazardous waste as defined by RCRA (40 CFR 261). However the waste should be properly characterized to evaluate whether its composition has been modified prior to disposal.

SECTION 14 - Transport Information

DOT INFORMATION: 49 CFR 172.101
PROPER SHIPPING DESCRIPTION: Consumer Commodity
HAZARD CLASS: ORM-D
IDENTIFICATION NUMBER: None
PACKING GROUP: None

AIR TRANSPORTATION:
PROPER SHIPPING DESCRIPTION: Aerosols, non-flammable
HAZARD CLASS: 2.2
IDENTIFICATION NUMBER: UN 1950
PACKING GROUP: None

MARINE POLLUTANTS: None

SECTION 15 - Regulatory Information

US Federal Regulations:

EPA REG#: 11694-109-11861

TSCA (Toxic Substances Control Act) Status: All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

CERCLA RQ - 40 CFR 302.4 (a): None Listed

SARA 313 Components - 40 CFR 372.65

Name	CAS	Percentage
Tetramethrin	7695-12-0	0.1%
Permethrin	52645-53-1	0.26%
Piperonyl butoxide	51-03-6	0.52%

State and Local Regulations:

California Proposition 65

None

SECTION 16 - Other Information

WARNING! The use of this product is beyond the control of the manufacturer. therefore, no guarantee, expressed or implied, is made as to the effects of such or the results to be obtained if not used in accordance with directions or established safe practice. The user must assume all responsibility, including injury or damage, resulting from its misuse as such, or in combination with other materials. The manufacturer warrants only that this product meets the manufacturer's specifications for such product. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, AS TO DESCRIPTION, QUALITY, MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, PRODUCTIVENESS, OR ANY OTHER MATTER, OF THIS PRODUCT. THE MANUFACTURER SHALL BE IN NO WAY RESPONSIBLE FOR THE IMPROPER USE OF THIS PRODUCT. The sole and exclusive remedy against the manufacturer for breach of warranty shall be reimbursement of the purchase price of the product in the event that a defective condition of the product shall be found to exist. NO OTHER REMEDY (INCLUDING BUT NOT LIMITED TO INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR INJURY TO PERSON OR PROPERTY OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL LOSS) SHALL BE AVAILABLE.

THIS INFORMATION MUST BE ON ALL MSDS COPIED AND DISTRIBUTED FOR THIS MATERIAL.

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5.) Brake Away

Section 1 – Identification of the Material and Supplier

E.D. Oates Pty Ltd
Trading as Research Products
13-21 Maygar Boulevard
Broadmeadows, Vic, 3047

Phone: 1300 669 686 (business hours)
Fax: (03) 9359 9509
Email: customerservice@oates.com.au
Website: www.oateslaboratories.com.au

Chemical nature: Water solution of ingredients.
Trade Name: **BREAKAWAY**
Product Use: Food, fat and residue dispersant.
Creation Date: **August, 2013**
This version issued: **September, 2016** and is valid for 5 years from this date.

Section 2 – Hazards Identification

GHS Pictogram

GHS05: Corrosion.



GHS Signal word: DANGER

HAZARD CLASSIFICATION

Skin corrosion.

HAZARD STATEMENT

H314: Causes severe skin burns and eye damage.
AUH066: Repeated exposure may cause skin dryness or cracking.

PREVENTION

P102: Keep out of reach of children.
P264: Wash contacted areas thoroughly after handling.
P280: Wear protective gloves, protective clothing and eye or face protection.

RESPONSE

P310: Immediately call a POISON CENTER or doctor/physician. P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P305+P351+P338: F IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P363: Wash contaminated clothing before reuse. P332+P313: If skin irritation occurs: Get medical advice. P337+P313: If eye irritation persists: Get medical advice.
P370+P378: Not combustible. Use extinguishing media suited to burning materials.

STORAGE

P405: Store locked up.

DISPOSAL

SAFETY DATA SHEET

Poisons Information Centre: 13 11 26 from anywhere in Australia, (0800 764 766 in New Zealand)



Product Name: BREAKAWAY

Page: 2 of 5

This version issued September, 2016

Emergency Contact: 13 11 26 (Australia wide)

P501: Dispose of small quantities and empty containers by wrapping with paper and putting in garbage. For larger quantities, if recycling or reclaiming is not possible, use a commercial waste disposal service.

Emergency Overview

Physical Description & Colour: Colourless – pale yellow liquid.

Odour: Characteristic odour.

Major Health Hazards: Causes severe skin burns and eye damage. Repeated exposure may cause skin dryness or cracking.

SAFETY DATA SHEET

Poisons Information Centre: 13 11 26 from anywhere in Australia, (0800 764 766 in New Zealand)



E.D. Oates Pty Ltd

ABN 61 004 329 462

13-21 Maygar Boulevard, Broadmeadows Vic 3047

Customer Service: 1300 669 686 | Website: www.oateslaboratories.com.au

Oates is a division of GUD Holdings Ltd ABN 99 004 400 891

Potential Health Effects

Inhalation:

Short Term Exposure: Available data indicates that this product is not harmful. However product may be mildly irritating, although unlikely to cause anything more than mild transient discomfort.

Long Term Exposure: No data for health effects associated with long term inhalation.

Skin Contact:

Short Term Exposure: Available data indicates that this product is corrosive to the skin. Corrosion will continue until product is removed or neutralised. Severity depends on concentration and duration of exposure.

Long Term Exposure: No data for health effects associated with long term skin exposure.

Eye Contact:

Short Term Exposure: This product is corrosive to eyes. It will quickly cause severe pain, and corrosion of the eye and surrounding facial tissues. Unless exposure is immediately treated, permanent blindness and facial scarring will occur.

Long Term Exposure: No data for health effects associated with long term eye exposure.

Ingestion:

Short Term Exposure: Significant oral exposure is considered to be unlikely. However, this product is an oral irritant. Symptoms may include burning sensation and reddening of skin in mouth and throat. Other symptoms may also become evident, but all should disappear once exposure has ceased.

Long Term Exposure: No data for health effects associated with long term ingestion.

Carcinogen Status:

SWA: No significant ingredient is classified as carcinogenic by SWA. **NTP:**

No significant ingredient is classified as carcinogenic by NTP. **IARC:** No

significant ingredient is classified as carcinogenic by IARC.

Section 3 – Composition/Information on Ingredients

Ingredients	CAS No	Conc., %	TWA (mg/m ³)	STEL (mg/m ³)
Sodium Metasilicate Pentahydrate	10213-79-3	4 – 6	not set	not set
Alkaline salts	various	<10	not set	not set
Oleyl alcohol, ethoxylate, phosphate	39464-69-2	3 – 5	not set	not set
Other non-hazardous ingredients	various	<10	not set	not set
Water	7732-18-5	to 100	not set	not set

This is a commercial product whose exact ratio of components may vary slightly. Minor quantities of other non hazardous ingredients are also possible.

The SWA TWA exposure value is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. The STEL (Short Term Exposure Limit) is an exposure value that may be equalled (but should not be exceeded) for no longer than 15 minutes and should not be repeated more than 4 times per day. There should be at least 60 minutes between successive exposures at the STEL. The term "peak" is used when the TWA limit, because of the rapid action of the substance, should never be exceeded, even briefly.

Section 4 – First Aid Measures

General Information:

You should call The Poisons Information Centre if you feel that you may have been poisoned, burned or irritated by this product. The number is 13 11 26 from anywhere in Australia (0800 764 766 in New Zealand) and is available at all times. Have this SDS with you when you call.

Inhalation: First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

Skin Contact: Flush contaminated area with lukewarm, gently flowing water 10-20 minutes or until product is removed. Under running water, remove contaminated clothing, shoes and leather goods (e.g. watchbands and belts) and completely decontaminate them before reuse or discard. If irritation persists, repeat flushing and seek medical attention.

Eye Contact: Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 15-20 minutes, by the clock, while holding the eyelid(s) open. Neutral saline solution may be used as soon as it is available.

SAFETY DATA SHEET

Poisons Information Centre: 13 11 26 from anywhere in Australia, (0800 764 766 in New Zealand)



DO NOT INTERRUPT FLUSHING. Take care not to rinse contaminated water into the unaffected eye or onto face. Call a Poisons Information Centre or a doctor urgently. Take special care if exposed person is wearing contact lenses. **Ingestion:** If product is swallowed or gets in mouth, do NOT induce vomiting; wash mouth with water and give some water to drink. If symptoms

develop, or if in doubt contact a Poisons Information Centre or a doctor.

Section 5 – Fire Fighting Measures

Fire and Explosion Hazards: The major hazard in fires is usually inhalation of heated and toxic or oxygen deficient (or both), fire gases. There is no risk of an explosion from this product under normal circumstances if it is involved in a fire. Only small quantities of decomposition products are expected from this product at temperatures normally achieved in a fire. This will only occur after heating to dryness.

Fire decomposition products from this product are likely to be irritating if inhaled. **Extinguishing**

Media: Not combustible. Use extinguishing media suited to burning materials. **Fire Fighting:** If a significant quantity of this product is involved in a fire, call the fire brigade. **Flash point:** Does not burn.

Upper Flammability Limit: Does not burn.

Lower Flammability Limit: Does not burn.

Autoignition temperature: Not applicable - does not burn.

Flammability Class: Does not burn.

Section 6 – Accidental Release Measures

Accidental release: This product is sold in small packages, and the accidental release from one of these is not usually a cause for concern. For minor spills, clean up, rinsing to sewer and put empty container in garbage. Although no special protective clothing is normally necessary because of occasional minor contact with this product, it is good practice to wear impermeable gloves when handling chemical products. In the event of a major spill, prevent spillage from entering drains or water courses

and call emergency services.

Section 7 – Handling and Storage

Handling: Keep exposure to this product to a minimum, and minimise the quantities kept in work areas. Check Section 8 of this SDS for details of personal protective measures, and make sure that those measures are followed. The measures detailed below under "Storage" should be followed during handling in order to minimise risks to persons using the product in the workplace. Also, avoid contact or contamination of product with incompatible materials listed in Section 10.

Storage: This product is a Scheduled Poison. Observe all relevant regulations regarding sale, transport and storage of this schedule of poison. Store packages of this product in a cool place. Make sure that containers of this product are kept tightly closed. Keep containers of this product in a well ventilated area. Make sure that the product does not come into contact with substances listed under "Incompatibilities" in Section 10. Some liquid preparations settle or separate on standing and may require stirring before use. Check packaging - there may be further storage instructions on the label.

Section 8 – Exposure Controls and Personal Protection

The following Australian Standards will provide general advice regarding safety clothing and equipment:

Respiratory equipment: **AS/NZS 1715**, Protective Gloves: **AS 2161**, Occupational Protective Clothing: AS/NZS 4501 set 2008, Industrial Eye Protection: **AS1336** and **AS/NZS 1337**, Occupational Protective Footwear: **AS/NZS2210**.

SWA Exposure Limits

TWA (mg/m³)

STEL (mg/m³)

Exposure limits have not been established by SWA for any of the significant ingredients in this product.

No special equipment is usually needed when occasionally handling small quantities. The following instructions are for bulk handling or where regular exposure in an occupational setting occurs without proper containment systems. **Ventilation:** This product should only be used in a well ventilated area. If natural ventilation is inadequate, use of a fan is suggested.

Eye Protection: Eye protection such as protective glasses or goggles is recommended when this product is being used.

SAFETY DATA SHEET

Poisons Information Centre: 13 11 26 from anywhere in Australia, (0800 764 766 in New Zealand)



E.D. Oates Pty Ltd

ABN 61 004 329 462

13-21 Maygar Boulevard, Broadmeadows Vic 3047

Customer Service: 1300 669 686 | Website: www.oateslaboratories.com.au

Oates is a division of GUD Holdings Ltd ABN 99 004 400 891

Skin Protection: Prevent skin contact by wearing impervious gloves, clothes and, preferably, apron. Make sure that all skin areas are covered. See below for suitable material types.

Protective Material Types: We suggest that protective clothing be made from the following materials: rubber, Viton, nitrile, butyl rubber, Barricade, neoprene, Teflon, polyethylene, PE/EVAL, Saranex, Responder.

Respirator: Usually, no respirator is necessary when using this product. However, if you have any doubts consult the Australian Standard mentioned above.

Section 9 – Physical and Chemical Properties

Physical Description & colour:	Colourless – pale yellow liquid.
Odour:	Characteristic odour.
Boiling Point:	Approximately 100°C at 100kPa.
Freezing/Melting Point:	Below 0°C.
Volatiles:	Water component.
Vapour Pressure:	2.37 kPa at 20°C (water vapour pressure).
Vapour Density:	As for water.
Specific Gravity:	1.08
Water Solubility:	Completely soluble in water.
pH:	12.50-13.50 (as supplied)
Volatility:	No data.
Odour Threshold:	No data.
Evaporation Rate:	As for water.
Coeff Oil/water Distribution:	No data
Autoignition temp:	Not applicable - does not burn.

Section 10 – Stability and Reactivity

Reactivity: This product is unlikely to react or decompose under normal storage conditions. However, if you have any doubts, contact the supplier for advice on shelf life properties.

Conditions to Avoid: This product should be kept in a cool place, preferably below 30°C. Keep containers tightly closed. Keep containers and surrounding areas well ventilated.

Incompatibilities: acids, zinc, tin, aluminium and their alloys.

Fire Decomposition: Only small quantities of decomposition products are expected from this product at temperatures normally achieved in a fire. This will only occur after heating to dryness. Combustion forms carbon dioxide, and if incomplete, carbon monoxide. Water is also formed. Carbon monoxide poisoning produces headache, weakness, nausea, dizziness, confusion, dimness of vision, disturbance of judgment, and unconsciousness followed by coma and death.

Polymerisation: This product will not undergo polymerisation reactions.

Section 11 – Toxicological Information

Local Effects:

Target Organs: There is no data to hand indicating any particular target organs.

Classification of Hazardous Ingredients

Ingredient	Hazard Statements
Sodium Metasilicate Pentahydrate	H290: May be corrosive to metals. H314: Causes severe skin burns and eye damage. H335: May cause respiratory irritation.
Oleyl alcohol, ethoxylate, phosphate	H314: Causes severe skin burns and eye damage. H318: Causes serious eye damage.

Health Effects – Acute

Swallowed: May be irritating to digestive system if swallowed.

Eye: Causes serious eye damage.

Skin: Causes sever skin burns.

SAFETY DATA SHEET

Poisons Information Centre: 13 11 26 from anywhere in Australia, (0800 764 766 in New Zealand)



Inhaled: Avoid breathing vapour, spray or fumes.

Section 12 – Ecological Information

Insufficient data to be sure of status. However, until diluted or neutralised it will kill all aquatic organisms it contacts due to high pH.

Section 13 – Disposal Considerations

Disposal: Dispose of small quantities and empty containers by wrapping with paper and putting in garbage. For larger quantities, if recycling or reclaiming is not possible, use a commercial waste disposal service.

Section 14 – Transport Information

ADG Code: This product is not classified as a Dangerous Good. No special transport conditions are necessary unless required by other regulations.

Section 15 – Regulatory Information

AICS: All of the significant ingredients in this formulation are compliant with NICNAS regulations. The following ingredient: Alkaline salts, is mentioned in the SUSMP.

Section 16 – Other Information

This SDS contains only safety-related information. For other data see product literature.

Emergency Contact: Phone 13 11 26 (Australia wide)

Acronyms:

ADG Code	Australian Code for the Transport of Dangerous Goods by Road and Rail (7 th edition)
AICS	Australian Inventory of Chemical Substances
SWA	Safe Work Australia, formerly ASCC and NOHSC
CAS number	Chemical Abstracts Service Registry Number
IARC	International Agency for Research on Cancer
NOS	Not otherwise specified
NTP	National Toxicology Program (USA)
SUSMP	Standard for the Uniform Scheduling of Medicines & Poisons
UN Number	United Nations Number

Please read all labels carefully before using product.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

This SDS is prepared in accord with the SWA document "Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals" (February 2016).

End of Safety Data Sheet

SAFETY DATA SHEET

Poisons Information Centre: **13 11 26** from anywhere in Australia, (0800 764 766 in New Zealand)



E.D. Oates Pty Ltd

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Oates is a division of GUD Holdings Ltd ABN 99 004 400 891

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6.) *Cherry Blast Soap*



1310 Seaboard Industrial Blvd.
Atlanta, GA 30318
1-877-I-BUY-ZEP (428-9937)
www.zep.com

Section 1. Chemical Product and Company Identification

Product name CHERRY BOMB
Product use Liquid Hand Cleaner
Product code 0951
Date of issue 06/05/09

9

Emergency Telephone Numbers Supersedes 03/05/08
For MSDS Information:

Compliance Services 1-877-I-BUY-ZEP (428-9937)

For Medical Emergency
(877) 541-2016 Toll Free - All Calls Recorded

For Transportation Emergency
CHEMTREC: (800) 424-9300 - All Calls Recorded In
the District of Columbia (202) 483-7616

Prepared By
Compliance Services
1420 Seaboard Industrial Blvd.
Atlanta, GA 30318

Printing date: 06/05/09

Section 2. Hazards Identification

Emergency overview

*Hazard Determination System (HDS): Health, Flammability, Reactivity

CAUTION



MAY CAUSE EYE IRRITATION. MAY BE HARMFUL IF SWALLOWED.

NOTE: MSDS data pertains to the product as delivered in the original shipping container(s). Risk of adverse effects are lessened by following all prescribed safety precautions, including the use of proper personal protective equipment.

Acute Effects

Routes of Entry

Ingestion.

Eyes Contact may cause eye irritation. Inflammation of the eye is characterized by redness, watering and itching.

Skin No known acute effects of this product resulting from skin

Inhalation contact. No known acute effects of this product resulting from

Ingestion inhalation.

May be harmful if swallowed. Can cause gastrointestinal disturbances.

Chronic effects

Prolonged or repeated contact may dry skin and cause irritation.

Carcinogenicity

Product/ingredient name

Not available.

Additional Information: See Toxicological Information (Section 11)

Section 3. Composition/Information on Ingredients

Name of Hazardous Ingredients

CAS number

% by Weight

ODORLESS ALIPHATIC NAPHTHA; heavy alkylate petroleum naphtha; odorless mineral spirits

64741-65-7

20 - 30

NONYLPHENOXY POLY(ETHYLENEOXY) ETHANOL - npe; poly(oxy-1,2-ethanediyl) alpha-(nonylphenyl)-omega-hydroxy

9016-45-9

5 - 15

Section 4. First Aid Measures

Eye Contact

Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

Skin Contact

Rinse with plenty of running water. Get medical attention if irritation develops.

Inhalation

Move exposed person to fresh air. Get medical attention if symptoms appear.

Ingestion

Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If affected person is conscious, give plenty of water to drink. Get medical attention immediately.

Section 5. Fire Fighting Measures

National Fire Protection Association (U.S.A.)



Flash Point	Closed cup: >93.3°C (200°F) (Tagliabue.) Not determined.
Flammable Limits	Structure inhibits combustibility of solvent.
Flammability	
Fire hazard	None.
Fire-Fighting Procedures	None.

Section 6. Accidental Release Measures

Spill Clean up Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. To clean the floor and all objects contaminated by this material, use detergent solution. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional

authority requirements.

Section 7. Handling and Storage

Handling	Avoid contact with eyes. Do not ingest.
Storage	Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Do not store in unlabeled containers. Store between the following temperatures: 40°F - 120°F (4.4°C - 49°C). Keep out of the reach of children.

Section 8. Exposure Controls/Personal Protection**Product name**

ODORLESS ALIPHATIC NAPHTHA; heavy alkylate petroleum naphtha; odorless mineral spirits

Exposure limits

OSHA PEL (United States). TWA: 500 ppm 8 hour(s). ACGIH TLV (United States). TWA: 100 ppm 8 hour(s).

Personal Protective Equipment (PPE)

Eyes Body	No special protection is required.
Respiratory	No special protective clothing is required. No special ventilation requirements.

Section 9. Physical and Chemical Properties

Physical State	Liquid. [Viscous liquid.]	Color	Red.
Boiling Point	7.0 - 8.0	Odor	Cherry
Specific Gravity	Not determined.	Vapor Pressure	Not determined.
Solubility	0.96 Emulsifies in water.	Vapor Density	Not determined.
		Evaporation Rate	Not determined.

VOC (Consumer) 8.34 (g/l) 0.07 lbs/gal 0.87%

Section 10. Stability and Reactivity

Stability and Reactivity	The product is stable.
Incompatibility	Reactive or incompatible with the following materials: oxidizing materials.
Hazardous Polymerization	Will not occur.

Hazardous Decomposition Products carbon oxides (CO, CO₂) May emit toxic fumes under fire conditions.

Section 11. Toxicological Information**Acute Toxicity**

Product/ingredient name	Result	Species	Dose	Exposure
Odorless Aliphatic Naphtha	LD50 Oral	Rat	>18800 mg/kg	-
	LC50 Inhalation Vapor	Rat	>5900 mg/m ³	4
hours Nonylphenoxy poly(Ethyleneoxy) Ethano	LD50 Dermal	Rabbit	2000 mg/kg	-
	LD50 Oral	Rat	3310 mg/kg	-

Section 12. Ecological Information

Environmental Effects No known significant effects or critical hazards.

Aquatic Ecotoxicity

Not available.

Section 13. Disposal Considerations

Waste Information

Waste must be disposed of in accordance with federal, state and local environmental control regulations. Consult your local or regional authorities for additional information.

Waste Stream Code: - (None.)

Classification: - (Non-hazardous waste)

Section 14. Transport Information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label
DOT Classification	Not regulated.	Not a DOT controlled material (United States).	-	-	

NOTE: DOT classification applies to most package sizes. For specific container size classifications or for size exceptions, refer to the Bill of Lading with your shipment.

PG* : Packing group

Section 15. Regulatory Information

U.S. Federal Regulations

SARA 313 toxic chemical notification and release reporting:

No products were found.

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: No products were found.

Clean Air Act (CAA) 112 regulated toxic substances: No products were found. All Components of this product are listed or exempt from listing on

TSCA Inventory.

State Regulations

California Prop 65 No products were found.

Section 16. Other Information

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

*NOTE: Hazard Determination System (HDS) ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although these ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HDS ratings are to be used with a fully implemented program to relay the meanings of this scale.

7.) *Clear Seal*

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product Form : Liquid

Product Name : ProMasonry ClearSeal

1.2 Relevant identified uses of the substance or mixture and uses advised against:

Use of Substance : A water based clear gloss sealer that protects and enhances the appearance of concrete and masonry surfaces.

1.3 Details of the supplier of the safety data sheet:

Supplier:
Conproco Corporation 17 Production Drive
Dover, NH, 03820
T- 800.258.3500

1.4 EMERGENCY TELEPHONE NUMBER:

Emergency Number : CHEMTREC 800.725.7383
: CHEMTREC International +1.703.527.3887 24 hr

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture:

Acute toxicity 4

Skin Irritation 2 Serious Eye

Damage 1 Skin Sensitization 1

2.2 Label elements:

Hazard Pictograms:



Signal word:
Danger

Hazard statement:

Harmful if swallowed. Causes skin irritation. Causes serious eye damage. Can cause allergic skin reaction. May cause cancer. May cause respiratory irritation. Causes damage to organs through prolonged exposure.

Precautionary statements:

Keep in original container. Do not eat, drink, or smoke when using these products. Wash hands thoroughly after handling. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection. Use in a well ventilated area. Absorb spillage to prevent material damage. If exposed or concerned: Get medical advice/attention. If swallowed: Immediately call a poison center/doctor. Rinse mouth. If in eyes: Rinse cautiously with water for several minutes.

Remove contact lenses, if easy to do so. Continue rinsing. Immediately call a poison center/doctor. If on skin: Wash with plenty of water. Take off contaminated clothing and wash it before reuse. If skin irritation or rash occurs. Get medical advice/attention. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell. Store locked up. Store in a well ventilated place. Keep container tightly closed/ Dispose of contents and container in accordance with all local, regional, national, and international regulations.

2.3 Other hazards: Not Available

SECTION 3. Composition/information on ingredients

3.1 Mixtures:

Conproco ProMasonry Clear Seal.

3.2 Hazardous ingredients:

Substance name	CAS No.	Concentration %	GHS-US Classification
Styrene-Acrylic Polymer	25036-16-2	*	Acute Tox. 4 (oral) H302 Skin Irrit. 2 H315 Eye Dam. 1 H318 Skin Sens. 1 H317 STOT RE 1 H372
Z-Butoxyethanol	111-76-2	8.7	Acute Tox. 4 (oral) H302 Skin Irrit. 2 H315 Eye Dam. 2A H318 Skin Sens. 2 H317 STOT SE 3 H335
Ethylene Glycol	107-21-1	< 5	Acute Tox. 4 (oral) H302
Exact percentages of concentration are withheld as a trade secret in accordance with paragraph (i) of §1910.1200			

SECTION 4: First aid measures

4.1 Description of first aid measures:

Following inhalation : If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if you feel unwell.
 Following skin contact : Remove contaminated clothing and safely dispose of.
 After contact, wash with soap immediately.

Following eye contact : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lenses, if worn. Get medical attention immediately.

Following ingestion : If swallowed, do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Immediately call a POISON CENTER or doctor/physician.

4.2 Most important symptoms and effects, both acute and delayed:

Symptoms/injury after inhalation : May cause respiratory tract irritation.

Symptoms/injury after skin contact : Causes skin irritation. Do not allow product to have prolonged contact with skin. Handling can cause dry skin. May cause sensitization by skin contact.

Symptoms/injury after eye contact : Causes serious eye damage. Symptoms may include discomfort or pain, excess blinking and tear production, with possible redness and swelling.

Symptoms/injury after ingestion : Harmful if swallowed. May cause stomach distress, nausea or vomiting.

4.3 Indication of any immediate medical attention and special treatment needed:

Symptoms may not appear immediately. In case of accident or if you feel unwell, seek medical advice immediately

SECTION 5: Firefighting measures

5.1 Extinguishing media:

Suitable extinguishing media : Alcohol-resistant foam, water spray or fog.
Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

Unsuitable extinguishing media : None

5.2 Special hazards arising from the substance or mixture

Fire Hazard : No specific fire or explosion hazard.

5.3 Advice for fire-fighters:

Firefighting instructions : Wear full protective clothing and self-contained breathing apparatus.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:

General procedure : Use personal protection recommended in Section 8. Isolate the hazard area and deny entry to unnecessary and unprotected personnel.

6.2 Methods and material for containment and cleaning up:

For Containment : Contain spill, then place in a suitable container. Do not flush to sewer or allow to enter waterways. Use appropriate personal protection.

Methods for cleaning up : Contain run-off from residue flush and dispose of properly. Soak up residue with an absorbent such as clay, sand or other suitable material.

For small liquid spills (< 1 drum), transfer by mechanical means to a

labelled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely.

Remove contaminated soil and dispose of safely.

For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water.

Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.

6.3 Reference to other sections:

No additional information

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Precautions for safe handling : Avoid contact with skin and eyes. The use of compressed air for cleaning clothing, equipment, etc., is not recommended. Handle and open container with care. When using do not eat, drink or smoke.

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate

techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

7.2 Conditions for safe storage, including any incompatibilities:

Storage Conditions : Tanks must be clean, dry and rust-free. Keep container tightly closed. Must be stored in a diked (bunded) well-ventilated area, away from sunlight, ignition sources and other sources of heat. Cleaning, inspection and maintenance of storage tanks is a specialist operation which requires the implementation of strict procedures and precautions.

7.3 Specific end uses:

No additional information

SECTION 8: Exposure controls/personal protection

8.1 Control Parameters

Styrene-Acrylic Polymer (25036-16-2)		
USA ACGIH	ACGIH TWA (mg/m ³)	N.E.
USA OSHA	OSHA PEL (TWA) (mg/m ³)	N.E.**
Z-Butoxyethanol (111-76-2)		
USA ACGIH	ACGIH TWA (mg/m ³)	25 ppm
USA OSHA	OSHA PEL (TWA) (mg/m ³)	25 ppm
Ethylene Glycol (107-21-1)		
USA ACGIH	ACGIH TWA (mg/m ³)	3 ppm
USA OSHA	OSHA PEL (TWA) (mg/m ³)	Ceiling

8.2 Exposure controls

Appropriate Engineering Controls production.	:	Use adequate ventilation. Avoid dust
Personal Protective Equipment	:	Mask, gloves, safety glasses
Hand Protection	:	Cloth gloves
Eye Protection	:	Safety glasses
Skin and Body Protection	:	Handle with good industrial hygiene and safety practice. Always wash hands after handling this product, and once again before leaving the workplace. Wear suitable protective clothing, and wash clothing before next use.
Respiratory Protection supplied air respirator.	:	Use NOISH- approved air-purifying or

SECTION 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties:

Physical State	:	Liquid
Appearance	:	Milk-Like
Color	:	White
Odor	:	Acrylate
Odor Threshold	:	N/A
pH	:	9-9.5
Relative Evaporation Rate	:	N/A
Melting Point	:	N/A
Freezing Point	:	N/A
Boiling Point	:	N/A
Flash Point	:	150F
Auto-Ignition Temperature	:	N/A
Decomposition Temperature	:	N/A
Flammability (solid/gas)	:	N/A
Vapor Pressure	:	0.88 mmHg @ 77F

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THIS DATA OR RESULTS TO BE OBTAINED FROM THE USE THEREOF.
 CONPROCO ASSUMES NO RESPONSIBILITY FOR PERSONAL INJURY OR PROPERTY DAMAGE TO VENDEES, SUCH VENDEES OR USERS ASSUME ALL RISKS ASSOCIATED WITH THE USE OF THE MATERIAL.
 17 PRODUCTION DRIVE, DOVER, NEW HAMPSHIRE 03820
 TELEPHONE 800.258.3500 FAX 603.743.5744 WEB ADDRESS www.conproco.com

Relative Vapor Density (20C)	: N/A
Relative Density	: N/A
Specific Gravity	: 1.025
Density	: N/A
Solubility	: Miscible
Log Pow	: N/A
Log Kow	: N/A
Kinematic Viscosity	: N/A
Dynamic Viscosity	: N/A
Explosive Properties	: N/A
Oxidizing Properties	: N/A
Explosive Limits	: N/A

9.2 Other information:

No Additional Information

SECTION 10: Stability and reactivity

10.1 Reactivity:

No dangerous reaction will occur under normal conditions. Can reacts with strong oxidizing agents however.

10.2 Chemical stability:

Stable under normal conditions

10.3 Possibility of hazardous reactions:

None

10.4 Conditions to avoid:

Pairing with incompatible materials

10.5 Incompatible materials:

Strong oxidizing agents, strong acids, and strong bases

SECTION 11: Toxicological information

11.1 Information of Toxicological Effects:

Styrene-Acrylic Polymer (25036-16-2)	
LD50	>5000 mg/kg
LC50	Not available

Z-Butoxyethanol (111-76-2)	
LD50	>2000 mg/kg
LC50	Not available

Ethylene Glycol (107-21-1)	
LD50	>300 mg/kg
LC50	Not available

Skin corrosion/irritation : Causes skin irritation Serious
 eye damage/irritation : Causes serious eye damage
 Respiratory of skin sensitisation ; May cause an allergic skin reaction
 Germ cell mutagenicity : Classification criteria not met
 Carcinogenicity : May cause cancer
 Reproductive Toxicity : Classification criteria not met
 Specific Target Organ Toxicity (Single Exposure) : May cause respiratory irritation
 Specific Target Organ Toxicity (Repeated Exposure) : Can cause damage to organs through prolonged or repeated exposure

Symptoms	
Symptoms/injuries after inhalation	May cause respiratory tract irritation.

Symptoms/injuries after skin contact

Causes skin irritation. Do not allow product to have prolonged contact with skin. Handling can cause dry skin. May cause sensitization by skin contact.

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CONPROCO ASSUMES NO RESPONSIBILITY FOR PERSONAL INJURY OR PROPERTY DAMAGE TO VENDEES, SUCH VENDEES OR USERS ASSUME ALL RISKS ASSOCIATED WITH THE USE OF THE MATERIAL.
17 PRODUCTION DRIVE, DOVER, NEW HAMPSHIRE 03820
TELEPHONE 800.258.3500 FAX 603.743.5744 WEB ADDRESS www.conproco.com

Symptoms/injuries after eye contact	Causes serious eye damage. Symptoms may include discomfort or pain, excess blinking and tear production, with possible redness and swelling.
Symptoms/injuries after ingestion	Harmful if swallowed. May cause stomach distress, nausea or vomiting.
Other information	Likely routes of exposure: ingestion, inhalation, skin and eye.

SECTION 12: Ecological information

12.1 Toxicity:

Ecological - general : No ecological consideration when used according to directions. Normal dilution of this product to drains, sewers, septic systems and treatment plants is not considered environmentally harmful.

12.2 Persistence and Degradability:

N/A

12.3 Bioaccumulative Potential:

N/A

12.4 Mobility in soil:

N/A

12.5 Other adverse effects:

N/A

SECTION 13: Disposal considerations

13.1 Waste treatment methods:

Waste Disposal Recommendations : Recover or recycle if possible. Waste arising from a spillage or tank cleaning should be disposed of in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand. Remove all packaging for recovery or waste disposal. Do not dispose into the environment, in drains or in water courses. Waste product

should not be allowed to contaminate soil or water.

SECTION 14: Transport information

14.1 UN Number:

Not available

14.2 UN Proper Shipping Name:

Not available

14.3 Additional Information:

None

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:

Styrene-Acrylic Polymer (25036-16-2)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Z-Butoxyethanol (111-76-2)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Ethylene Glycol (107-21-1)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2 US State Regulations:

Conproco ProMasonry Clear Seal

State or local Regulations

This product contains ethylene glycol, and trace amounts of chemicals known to produce acute toxicity.

Carcinogenic Classifications

IARC (I)	International Agency for Research on Cancer
	1 - Carcinogenic to humans 2A - Probably carcinogenic to humans 2B - Possibly carcinogenic to humans 3 - Not classifiable 4 - Probably not carcinogenic to humans
NTP (N)	National Toxicology Program
	1 - Evidence fo Carcinogenicity 2 - Known Human Carcinogens 3 - Reasonably anticipated to be Human Carcinogen 4 - Substances delisted from report on Carcinogens 5 - Twelfth Report - Items under consideration

SECTION 16: Other information:

Other Information : This document was made in accordance to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2015

WITH USE.

8.) *Ice Eraser*

PRO CHEM, INC.
 1475 BLUEGRASS LAKES PK-WY
 ALPHARETTA, GA 30004
 EMERGENCY INFO: (800) 241-8180
 ADDITIONAL EMERGENCY # INFO TRAC 1-800-635-5053

MATERIAL SAFETY DATA SHEET

ICE ERASER/ 1261

SEPTEMBER 2009

PAGE 1

HEALTH _____
 FIRE _____
 REACTIVITY _____
 P.P.E. B

Complies With USDL Safety and Health Regulations, (29 CFR 1910. 200)

SECTION 1 - Chemical and Company Identification

PRODUCT TYPE: Aerosol

FORMULA: Proprietary

SECTION 6 - Accidental Release Measures

STEPS TO BE TAKEN IN CASE OF SPILL OR LEAK: Allow propellant to evaporate. Maintain local exhaust and adequate ventilation. No smoking. Keep sparks, heat sources and open flame far away from spill or leak. Cover with absorbent material and sweep up. Wash area to prevent slipping. Dispose of soaked absorbent material in accordance with Federal, State and local laws.

SECTION 2 - Composition on Ingredients

CHEMICAL NAME	CAS #	%WT	CARCINOGEN	PEL	TLV-TWA
Isopropyl Alcohol	67-63-0	40-50	NO	400 ppm	400 ppm
Ethanol	64-17-5	40-50	NO	1000 ppm	1000 ppm
Propylene Glycol	57-55-6	01-10	NO	NIE	N/E
Carbon Dioxide Propellant	124-38-9	01-10	NO	10,000 ppm	10,000 ppm

SECTION 7 - Handling and Storage

NFPA CODE 30B RATING: LEVEL 3 AEROSOL
 KEEP OUT OF REACH OF CHILDREN. For Industrial and Institutional use only. Store in a cool, dry area away from heat or open flame. Do not store at temperatures above 120°F.

SECTION 3 - Hazards Information

PRIMARY ROUTES OF ENTRY AND EFFECTS OF OVEREXPOSURE:

EYE CONTACT: May cause moderate irritation. May aggravate existing conditions.
SKIN CONTACT: Frequent or prolonged contact may cause irritation. May aggravate existing skin conditions.
INHALATION: Inhalation of mist can cause irritation of nasal and respiratory passages. Abusive or excessive inhalation may cause irritation to the upper respiratory tract, dizziness, nausea and other central nervous system effects. May aggravate existing respiratory conditions.
INGESTION: Can cause gastrointestinal irritation, nausea, vomiting and diarrhea. Aspiration of material into the lungs can cause pulmonary injury. May cause mild, reversible liver effects.
CARCINOGENICITY: This product does not contain any component classified by NTP, IARC, or OSHA as a human carcinogen.

SECTION 8 - Exposure Controls/Personal Protection

VENTILATION: Provide local exhaust to keep air concentrations of ingredients listed in Section 2 below established exposure limits.
PPE - EYES: Always wear safety glasses or chemical proof goggles when working with any chemical.
PPE - GLOVES: Use chemical resistant gloves if hand contact will be made.
PPE - RESPIRATORY: None needed for proper use in accordance with label directions.

SECTION 9 - Physical and Chemical Properties

Aerosol Concentrate: VAPOR DENSITY (AIR = 1): > 1
APPEARANCE: Clear, colorless liquid ODOR: Mild Alcohol NIA
BOILING POINT (°F): 165°F PH: Complete
SPECIFIC GRAVITY (H₂O = 1) @ 70°F: 0.796 SOLUBILITY IN WATER:
Total Contents:
TOTAL VOC %:

SECTION 10 - Stability and Reactivity

VAPOR PRESSURE OF CAN @ 72°F: 85

STABILITY: Material stable
HAZARDOUS POLYMERIZATION: Will not occur
INCOMPATIBILITY: Avoid contact with strong oxidizing agents, strong acids, and strong alkalies.
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide and carbon dioxide

SECTION 11 - Toxicological Information

No specific toxicological data are available for this product. Please refer to Section 3 for information on potential health effects.

SECTION 12 - Ecological Information

No specific ecological data are available for this product. Refer to Section 6 for information regarding spills and Section 15 for regulatory information.

SECTION 13 - Disposal Consideration

WASTE DISPOSAL METHOD: Aerosol cans, when emptied and depressurized through normal use, pose no disposal hazard and should be recycled. Consult Federal, State and local authorities for approved procedures.

SECTION 14 - Transport Information

THIS INFORMATION MUST BE ON ALL MSDS'S COPIED AND DISTRIBUTED FOR THIS MATERIAL
 NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THIS DATA OR
 RESULTS OBTAINED FROM USE. PRO-CHEM ASSUMES NO RESPONSIBILITY FOR PERSONAL
 INJURY OR PROPERTY DAMAGE TO USER. VENDEE/USER ASSUMES ALL RISKS ASSOCIATED
 WITH USE.

SECTION 4 - First Aid Measures

EYE CONTACT: Flush with large amounts of cool running water for at least 15 minutes while holding upper and lower lids open. If irritation persists get medical attention immediately.
SKIN CONTACT: Wash with soap and water. If irritation persists seek medical attention.
INHALATION: Remove to fresh air. Seek medical attention immediately. If breathing stops give artificial respiration.
INGESTION: Do not induce vomiting. Seek medical attention immediately.

SECTION 5 - Fire Fighting Measures

FLASH POINT (concentrate): 45°F (TOC)
LOWER EXPLOSION LIMIT (%): N/E **UPPER EXPLOSION LIMIT (%):** N/E
FLAMMABILITY (as per CBMA Flame Projection Test): Flammable Spray
EXTINGUISHING MEDIA: Foam, Carbon Dioxide, Dry Media
SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus and protective clothing. Cool fire exposed containers to prevent rupturing.
UNUSUAL FIRE AND EXPLOSION HAZARDS: Exposure to temperature above 120°F may cause bursting.

9.) Knock Out

SAFETY DATA SHEET

State Industrial Products
5915 Landerbrook Drive
Mayfield Heights, OH 44124
To Order Call: 1-866-747-2229

6935 Davard Drive
Mississauga, Ontario L5T 1L5
To Order Call: 1-800-668-6513

Royal Industrial Park, Bldg "M"
Local #5, Carr 869, km 1.5 Palmas
Cataño, PR. 00962
To Order Call: 787-275-3185



1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Knock Out
Product Description: Graffiti remover.
EPA Registration Number: NA

24 Hour Emergency CHEMTREC Number: 800-424-9300
MSDS Number: M00373
EPA Establishment Number: NA

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

FIFRA Hazard Classification:
Not Applicable

Aerosols: Category 2
Serious eye damage/eye irritation: Category 2B
Skin corrosion/irritation: Category 2
Compressed Gas, Liquefied Gas, Dissolved Gas



Compressed
Gas

Exclamation
mark

Flame

WARNING

Hazard Statements:

H223 Flammable aerosol. H320 Causes eye irritation. H315_3 Causes skin irritation. H280 Contains gas under pressure; may explode if heated.

Precautionary Statements:

P211 Do not spray on an open flame or other ignition source. P210 Keep away from heat, sparks and open flames. No smoking. P251 Pressurized container: Do not pierce or burn, even after use. P264 Wash hands thoroughly after handling. P280 Wear protective gloves, protective clothing, and eye protection.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<u>Hazardous Ingredients</u>	<u>CAS Number</u>	<u>Weight</u>	<u>ACGIH</u>	<u>OSHA</u>
Diethylene Glycol Monobutyl Ether	111-76-2	<30%	20 ppm	50 ppm
Propane/n-butane	68476-86-8	<13%	1000 ppm	1000 ppm
Non-ionic surfactant	127087-87-0	<5%	NE	NE

Exact percentage is withheld
as a trade secret.

4. FIRST AID MEASURES

P337+P313 If eye irritation persists: Get medical advice. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P302+P352 IF ON SKIN: Wash with plenty of soap and water. P362+P364 Take off contaminated clothing and wash before reuse.

5. FIRE FIGHTING MEASURES

Flashpoint(Method): Propellant < 0°F.

Lower Explosive Limit(LEL): 1.1 Upper Explosive Limit(UEL): 14.4 Autoignition Temperature: NA

Flammable Properties: Combustible. Keep away from heat, sparks, open flames.
Extinguishing Media: Carbon Dioxide, dry chemical, foam.
Fire Fighting Instructions: Wear a self-contained breathing apparatus with full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

Use absorbent on spill, sweep to clean. Dispose in accordance with local, state and federal laws. Small releases may be wiped up with wiping materials.

7. HANDLING AND STORAGE

P410+P412 Protect from sunlight. Do not expose to temperatures exceeding 50 °C/122°F. P410+P403 Protect from sunlight. Store in a well-ventilated place.
P405 Store locked up.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls: Use general or local ventilation to keep exposure levels below exposure limits.

Personal Protective Equipment:

Respiratory: Normal room ventilation is adequate. Use a NIOSH/MHSA approved respirator if exposure limits are exceeded.

Eye: Wear approved safety glasses or goggles with unperforated eyeshields where splashing may occur.

Skin: For repeated or prolonged contact, wear chemically impervious gloves such as Nitrile.

Other: An emergency eyewash station or source of clean potable water should be available in case of accidental eye contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: White

Physical State: Liquid Aerosol

Solubility in Water: Soluble

Boiling Point: NA

Freezing Point: NA

Melting Point: NA

Odor: Ammonia odor.

pH: 9.75

Diluted pH: NA

Specific Gravity: 0.99

VOC Content: <25%

10. STABILITY AND REACTIVITY

Stability: Stable

Hazardous Polymerization: Will not occur. Conditions to Avoid:

Heat, sparks or open flame. Incompatibility: Strong acids

Hazardous Decomposition Products: None expected

11. TOXICOLOGICAL INFORMATION

This product contains no ingredient at 0.1% or greater that is listed as a human carcinogen.

<u>Hazardous Ingredients</u>	<u>CAS Number</u>	<u>LD50</u>	<u>LC50</u>
Diethylene Glycol Monobutyl Ether	111-76-2	1480 mg/kg (rat oral)	700 ppm/7 hr (mouse)
Propane/n-butane	68476-86-8	NE	NE
Non-ionic surfactant	127087-87-0	NE	NE

12. ECOLOGICAL INFORMATION

This product is toxic to fish.

13. DISPOSAL CONSIDERATIONS

P501 Dispose of container in accordance with all Federal, State and Local Regulations regarding waste disposal.

14. TRANSPORT INFORMATION

DOT Shipping Data: Limited Quantity

Canadian TDG: Shipped in accordance with 49 CFR as part of a transborder shipment authorized under Section 5.2 (1) of the Canadian Transportation of Dangerous Goods.

For International Shipments by Air: UN1950, Aerosols, Flammable, 2.1

For International Shipments by Vessel: UN1950, Aerosols, Flammable, 2.1, Limited Quantity

15. REGULATORY INFORMATION

TSCA: All ingredients in this product are listed or exempt from listing on the TSCA Chemical Inventory. CEPA: All

ingredients in this product are listed or exempt from listing on the Canadian DSL/NDSL.

Proposition 65: This product contains no listed substances known to the State of California to cause cancer, birth defects or reproductive harm, at reportable levels under the statute.

SARA 313: This product contains no toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40CFR372).

VOC: <25%

HMIS RATING: HEALTH = 2 FLAMMABILITY = 1 REACTIVITY = 0 PPE = B

WHMIS RATING: See hazards identified in Section 2 above.

16. OTHER INFORMATION

10.) Mechanics Helper

MATERIAL SAFETY DATA SHEET

COMPLIES WITH OSHA'S HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

SECTION 1 - PRODUCT IDENTIFICATION

Product Name: MECHANICS HELPER (AEROSOL)
Manufactured For: Correlated Products Inc.
5616 Progress Road, Indianapolis, IN 46241

Date Prepared: 02/18/11
Emergency Phone: (800) 424-9300
Information Phone: (800) 428-3266

HMIS Rating

0-Minimal 1-Slight 2-Moderate 3-Serious 4-Extreme

HEALTH: 2 **FIRE:** 4 **REACTIVITY:** 0 **Personal Protection:** B

SECTION II - INGREDIENTS

CHEMICAL NAME	Sara III List	OSHA PEL	TWA/TLV	Carcinogen**	%WT	CAS #
Solvent Naptha	N/A	500	100*	d	30-35	64742-88-7
Light Aromatic						64742-95-6
Liquefied Petroleum Gas	NO	1000	1000	d	5-10	68476-85-7
Petroleum Hydrocarbon	NO	N/E	5mg/m3	d	45-50	N/E
2-Butoxethanol	YES	25(skin)	25 (skin)	d	6.6	111-76-2

** (a) NTP (b) IARC Monograph (c) OSHA (d) Not Listed (e) Animal Data Only

SECTION III - PHYSICAL DATA

Boiling Point: (°F) N/A

Specific Gravity: (H₂O=1) <1

Vapor Pressure: (psig) 80° @ 130°F

Evaporation Rate: (Ether=1) <1

Vapor Density: (AIR=1) >1

Appearance and Odor: Brown/Hydrocarbon odor.

Solubility in Water: Negligible

SECTION IV - FIRE AND EXPLOSION DATA

(°F)	Flammable Limits	LEL	UEL
Flash Point: This product is considered to be flammable.		2.1	9.2

Method Used: 16 CFR 1500.45 (Propellant). **Extinguishing Media:** CO₂, foam &/or dry chemical may be used. **Special Firefighting Procedures:** Cool containers with water to prevent vapor pressure build up. Use equipment or shielding, as required, to protect personnel from bursting, rupturing or venting containers. **Unusual Fire and Explosion Hazards:** At elevated temps (>130°F) containers exposed to direct heat should be cooled with water to prevent bursting.

SECTION V - REACTIVITY DATA

Stability: Stable. Hazardous Polymerization: Will not occur. Incompatibility: Heat, flame and oxidizing agents. Hazardous Decomposition Products: CO₂, foam &/or dry chemical may be used.

SECTION VI - STORAGE AND HANDLING

Precautions to be taken in handling and storage: Avoid breathing vapor. Keep away from heat and flame. Do not expose to direct sunlight or store at temps above 130°F. Store as Level 3 Aerosol. (NFPA30B). **Other Precautions:** KEEP OUT OF REACH OF CHILDREN. Avoid contact with skin or eyes.

SECTION VII - HEALTH AND FIRST AID

Signs and Symptoms of Over Exposure: **Inhalation-** dizziness and drowsiness. **Eye-** irritant. **Skin-** irritant. **Ingestion-** vomiting which could result in aspiration pneumonitis. **Medical Conditions Aggravated by Exposure:** Preexisting skin or eye disorders may be aggravated by exposure to this product. **Primary Routes of Entry:** Inhalation, eyes, skin and ingestion.

First Aid Procedures:

Skin: Remove contaminated clothing and wash. Wash skin with soap and water, if irritation occurs, seek medical attention. **Eyes:** Flush eyes with water 15 minutes holding both lids open, get medical attention if irritation occurs. **Ingestion:** Do not induce vomiting. If vomiting occurs, keep victim's head between knees to prevent aspiration. Note to physician: Product contains approximately 80% petroleum distillate, if more than 2.0 ml per kg was ingested and vomiting has not occurred, emesis should be induced with supervision. If symptoms such as loss of gag reflex, convulsions or unconsciousness occur before emesis, gastric lavage using a cuffed endotracheal tube should be considered. **Inhalation:** If breathing difficult, remove victim to fresh air and provide oxygen. If not breathing, give artificial respiration, and get medical attention.

SECTION VIII - SPECIAL PROTECTION DATA

Respiratory Protection: None required if good ventilation is maintained. If exposure exceeds TLV, use a NIOSH approved S.C.B.A. **Ventilation:** Local exhaust: Adequate. **Protective Gloves:** Chemical resistant gloves. **Eye Protection:** Chemical safety glasses recommended.

SECTION IX - SPILL OR LEAK PROTECTION

STEPS TO BE TAKEN IN CASE OF SPILL OR LEAK: Remove all sources of ignition and ventilate area. Soak up spill with inert absorbent and place into designated disposal container. **WASTE DISPOSAL METHOD:** Do not puncture or incinerate containers. When contents are depleted, continue to depress button until all gas is expelled. Dispose of container in accordance with local, state and federal regulations.

NOTICE: The information contained on this Material Safety Data Sheet is considered accurate as of the date of publication. It is not necessarily all inclusive nor fully adequate in every circumstance. The suggestions should not be confused with, nor followed in violation of applicable laws, regulations, rules or insurance requirements. No warranty, express or implied, of merchantability, fitness, accuracy of data, or the results to be obtained from the use thereof is made. The vendor assumes no responsibility for injury or damages resulting from the inappropriate use of this product.

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NO WARRANTY IS EXPRESSED/IMPLIED REGARDING THE ACCURACY OF THIS DATA OR RESULTS
OBTAINED FROM USE. PROCH EH ASSUMES NO RESPONSIBILITY FOR PERSONAL INJURY OR PROPERTY
DAMAGE TO USER. VENDEE/USER ASSUMES ALL RISKS ASSOCIATED
WITH USE.

11.) Panel Brite

Section 1 - Identification

Product Name: K-Chem Panel Brite (DG05D5)

K-Chem, Inc.
P.O. Box 530632 Birmingham,
AL 35253-0632 205-592-0844

Emergency Phone: 800-255-3924

Product Use: Industry Standard Transportation Cleaner

Section 2 - Hazards Identification**GHS Ratings:**

Skin corrosive	1A	Destruction of dermal tissue: Exposure < 3 min. Observation < 1 hour, visible necrosis in at least one animal
Eye corrosive	1	Serious eye damage: Irreversible damage 21 days after exposure, Draize score: Corneal opacity >= 3, Iritis > 1.5
Carcinogen	2	Limited evidence of human or animal carcinogenicity

GHS Hazards

H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage
H351	Suspected of causing cancer

GHS Precautions

P201	Obtain special instructions before use
P202	Do not handle until all safety precautions have been read and understood
P260	Do not breathe dust/fume/gas/mist/vapours/spray
P264	Wash hands thoroughly after handling
P280	Wear protective gloves/protective clothing/eye protection/face protection
P281	Use personal protective equipment as required
P310	Immediately call a POISON CENTER or doctor/physician if you feel unwell after exposure of this product.
P321	Specific treatment (see First Aid below or label)
P363	Wash contaminated clothing before reuse
P301+P330+P331	IF SWALLOWED: Call a POISON CENTER or doctor/physician. Rinse mouth. Do NOT induce vomiting
P303+P361+P353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P305+P351+P338	IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing
P308+P313	IF exposed or concerned: Get medical advice/attention
P405	Store locked up
P501	Dispose of contents/container in conformance with State, Local, and Federal regulations.

Signal Word: Danger



Section 3 - Composition, Information on Ingredients

Chemical Name	CAS number	Weight Concentration %
N,N-bis(Carboxymethyl)-glycine, trisodium salt	5064-31-3	1.00% - 5.00%
Sodium Hydroxide	1310-73-2	1.00% - 5.00%
Nonylphenol, ethoxylated	127087-87-0-9	1.00% - 5.00%
Ethylenediaminetetraacetic acid, tetrasodium salt, tetrahydrate	64-02-8	1.00% - 5.00%
Hydroxycarboxylic acid and salt thereof	31138-65-5	1.00% - 5.00%

Section 4 - First Aid Measures

INHALATION: If inhalation of mists, vapors, or spray occurs and adverse effects result, remove to uncontaminated area. Evaluate ABC's (is Airway constricted, is Breathing occurring, and is blood Circulating) and treat symptomatically. GET MEDICAL ATTENTION IMMEDIATELY. There is no specific antidote, treat symptomatically.

EYE CONTACT: Immediately flush contaminated eyes with a directed stream of water for as long as possible. Remove contact lenses, if present and easy to do. Continue rinsing. GET MEDICAL ATTENTION IMMEDIATELY. Washing eyes within several seconds is essential to achieve maximum effectiveness .

SKIN CONTACT: Immediately flush contaminated areas with water. Remove contaminated clothing, jewelry, and shoes immediately. Wash contaminated areas with large amounts of water . GET MEDICAL ATTENTION IMMEDIATELY. Thoroughly clean and dry contaminated clothing before reuse. Discard contaminated leather goods.

INGESTION: If swallowed, do not induce vomiting. For definite or probable ingestion, do not administer oral fluids. If vomiting occurs spontaneously, keep airway clear . Monitor airway. Volume resuscitation (IV fluids) and circulatory support (CPR) may be required. Never give anything by mouth to an unconscious or convulsive person. GET MEDICAL ATTENTION IMMEDIATELY.

Notes to Physician: Medical observation and assessment is recommended for all ingestions, all eye exposures, and symptomatic inhalation and dermal exposures. For symptomatic ingestion, do not administer oral fluids and consider investigation by endoscopy, X-ray, or CT scan . Esophageal perforation, airway compromise, hypotension, and shock are possible. For prolonged exposures and significant exposures, consider delayed injury to exposed tissues. There is no antidote. Treatment is supportive care. Follow normal parameters for airway, breathing, and circulation. Surgical intervention may be required.

Section 5 - Fire Fighting Measures

Flash Point: N/A

LEL:

UEL:

Fire Hazard: Negligible fire hazard.

Flash point: Not flammable

Extinguishing Media: Use extinguishing agents appropriate for surrounding fire.

Sensitivity to Mechanical Impact: Not sensitive. **Sensitivity to Static Discharge:** Not sensitive. **GHS:Physical Hazards:** - Corrosive to Metals

Hazardous Decomposition:
Toxic Vapors of Sodium Oxide

SDS for: K-Chem Panel Brite (DG05D5)

Fire Fighting: Move container from fire area if it can be done without risk. Cool containers with water. Avoid contact with skin. Do not apply water directly on this product. Heat is generated when mixed with water. Wear NIOSH approved positive-pressure self-contained breathing apparatus operated in pressure demand mode.

Section 6 - Accidental Release Measures

Personal Precautions: Do not get in eyes, on skin or on clothing. Avoid breathing mist, vapor, or spray. Do not ingest. Wear appropriate personal protective equipment recommended in Section 8 of the SDS.

Methods and Materials for Containment and Cleaning Up: In case of spill or leak, stop the leak as soon as possible, if safe to do so. Completely contain spilled materials with dikes, sandbags, etc. Shovel dry material into suitable container. Liquid material may be removed with a vacuum truck. Remaining material may be diluted with water and neutralized with dilute acid, then absorbed and collected. Flush spill area with water, if appropriate.

Environmental Precautions: Keep out of water supplies and sewers. Do not flush into surface water or sanitary sewer system. This material is alkaline and may raise the pH of surface waters with low buffering capacity. Releases should be reported, if required, to appropriate agencies.

Section 7 - Handling & Storage

Handling Procedures: Avoid breathing vapor or mist. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. Do not ingest. Do not eat, drink or smoke in areas where this material is used. Wear personal protective equipment as described in Exposure Controls/Personal Protection (Section 8) of the SDS. NEVER add water to product. When mixing, slowly add to water to minimize heat generation and spattering.

Storage Conditions: Store and handle in accordance with all current regulations and standards. Keep container tightly closed and properly labeled. Do not store in aluminum container or use aluminum fittings or transfer lines, as flammable hydrogen gas may be generated. Keep separated from incompatible substances (see Section 10 of SDS).

Section 8 - Exposure Controls/Personal Protection

Chemical Name / CAS No.	OSHA Exposure Limits	ACGIH Exposure Limits	Other Exposure Limits
N,N-bis(Carboxymethyl)-glycine, trisodium salt 5064-31-3	Not Established	Not Established	Not Established
Sodium Hydroxide 1310-73-2	2 mg/m ³ (PEL)	2 mg/m ³ (ceiling)	10 mg/m ³ IDLH
Nonylphenol, ethoxylated 127087-87-0-9	Not Established	Not Established	Not Established
Ethylenediaminetetraacetic acid, tetrasodium salt, tetrahydrate 64-02-8	Not Established	Not Established	Not Established
Hydroxycarboxylic acid and salt thereof 31138-65-5	Not Established	Not Established	Not Established

ENGINEERING CONTROLS:

Provide local exhaust ventilation where dust or mist may be generated. Ensure compliance with applicable exposure limits.

Respiratory Protection: An approved respirator with N95 (dust, fume, mist) cartridges may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits, or when symptoms have been observed that are indicative of overexposure. If eye irritation occurs, a full face style mask should be

used. A respiratory protection program that meets applicable regulatory requirements must be followed whenever workplace conditions warrant use of a respirator.

PERSONAL PROTECTIVE EQUIPMENT:

Eye Protection: Wear chemical safety goggles with a faceshield to protect against eye and skin contact when appropriate.

Provide an emergency eye wash fountain and quick drench shower in the immediate work area. Skin and Body

Protection: Wear chemical resistant clothing and rubber boots when potential for contact with the material exists.

Contaminated clothing should be removed, then discarded or laundered.

Hand Protection: Wear appropriate chemical resistant gloves

Protective Material Types: Natural rubber, Neoprene, Nitrile, Polyvinyl chloride (PVC), Tyvek, Tychem .

Respiratory Protection: A NIOSH approved respirator with N95 (dust, fume, mist) cartridges may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits, or when symptoms have been observed that are indicative of overexposure. If eye irritation occurs, a full face style mask should be used. A respiratory protection program that meets 29 CFR 1910.134 must be followed whenever workplace conditions warrant use of a respirator.

HYGIENE MEASURES: Handle in accordance with good industrial hygiene and safety practices. Wash hands and affected skin immediately after handling, before breaks, and at the end of the workday . When using do not eat or drink. When using do not smoke.

Section 9 - Physical & Chemical Properties

<p>Boiling Range 100 to 144 °C</p> <p>Color Dk. Brown</p> <p>Specific Gravity 1.0815</p> <p>Freezing Point 30F</p> <p>Flash Point N/A</p> <p>Vapor Pressure N/A</p> <p>Viscosity <=10</p> <p>Upper/lower flammability N/A</p> <p>Auto-ignition temperature N/A</p>	<p>Appearance Clear Liquid</p> <p>pH 13+</p> <p>Odor Characteristic</p> <p>Boiling Range 212F</p> <p>Evaporation Rate =Water</p> <p>Solubility in Water Complete</p> <p>Flammability N/A</p> <p>Partition coefficient: n- octanol/water N/A</p> <p>Decomposition temperature N/A</p>
--	---

Section 10 - Stability & Reactivity

Reactivity/ Stability: Stable at normal temperatures and pressures.

Conditions to Avoid: Mixing with water, acid, or incompatible materials may cause splattering and release of large amounts of heat. Will react with some metals forming flammable hydrogen gas. Carbon monoxide gas may form upon contact with reducing sugars, food and beverage products in enclosed spaces.

STABLE

Incompatibilities:

None Known

Aluminum, Zinc, Copper alloys, Copper, Nickel

Acids and halogenated compounds. Prolonged contact with aluminum, brass, bronze, copper, lead, tin, zinc, or other alkali sensitive metals or alloys. Releases heat when diluted in water.

Hazardous Decomposition:

Toxic Vapors of Sodium Oxide

None Known

Carbon oxides, nitrogen oxides (NOx)

Hazardous Decomposition Products: Toxic fumes of sodium oxides

Hazardous Polymerization: Will not occur
Hazardous polymerization will not occur.

Section 11 - Toxicological Information

Mixture Toxicity

Inhalation Toxicity LC50: 337mg/L

Component Toxicity

1310-73-2	Sodium Hydroxide Oral LD50: 500 mg/kg (Rabbit) Dermal LD50: 1,350 mg/kg (Rabbit)
127087-87-0-9	Nonylphenol,ethoxylated Oral LD50: 3,314 mg/kg (Rat) Dermal LD50: 3,050 mg/kg (Rabbit)

ACUTE TOXICITY:

The severity of the tissue damage is a function of its concentration, the length of tissue contact time, and local tissue conditions. After exposure there may be a time delay before irritation and other effects occur. This material is a strong irritant and is corrosive to the skin, eyes, and mucous membranes. This material may cause severe burns and permanent damage to any tissue with which it comes into contact. Inhalation will cause severe irritation, possible burns with pulmonary edema, which may lead to pneumonitis. Skin contact with this material may cause severe irritation and corrosion of tissue. Repeated exposure may cause dermatitis. Eye contact can cause severe irritation, corrosion with possible corneal damage and blindness. Ingestion may cause irritation, corrosion/ulceration, nausea, and vomiting.

CARCINOGENICITY: This product is not classified as a carcinogen by NTP, IARC or OSHA.

<u>CAS Number</u>	<u>Description</u>	<u>% Weight</u>	<u>Carcinogen Rating</u>
5064-31-3	N,N-bis(Carboxymethyl)-glycine, trisodium salt	1 to 5%	N,N-bis(Carboxymethyl)-glycine, trisodium salt: Suspected Carcinogen

Section 12 - Ecological Information

ECOTOXICITY DATA:

Aquatic Toxicity: This material has exhibited moderate toxicity to aquatic organisms. Data provided are for sodium hydroxide.

Fish Toxicity:

LC50 Brook trout: 25 ppm/ 24 hr LC50

King salmon: 48 ppm Invertebrate

Toxicity:

LC50 Daphnia magna: 100 ppm LC50

Shrimp: 33 - 100 ppm/48 hr LC50

Cockle: 330 - 1000 ppm/48 hr **FATE AND**

TRANSPORT:

BIODEGRADATION: This material is inorganic and not subject to biodegradation.

PERSISTENCE: This material is alkaline and may raise the pH of surface waters with low buffering capacity. This material is believed to exist in the disassociated state in the environment.

BIOCONCENTRATION: This material is not expected to bioconcentrate in organisms.

ADDITIONAL ECOLOGICAL INFORMATION: This material has exhibited slight toxicity to terrestrial organisms.

Component Ecotoxicity

Section 13 - Disposal Considerations

Waste from material: Reuse or reprocess, if possible. Dispose in accordance with all applicable regulations. May be subject to disposal regulations: U.S. EPA 40 CFR 261. Hazardous Waste Number(s): D002.

12.) Peak Performance

Initial Preparation Date: 02/07/2011
 Last Revision Date: 04/30/2012
 Effective Date: 03/27/2013

MATERIAL SAFETY DATA SHEET

PRODUCT IDENTITY: PEAK PERFORMANCE® FULL SYNTHETIC MOTOR OIL 5W-30 GF-5/SN DEXOS-1® APPROVED

1. CHEMICAL PRODUCT & COMPANY INFORMATION

OLD WORLD INDUSTRIES, LLC 4065
 COMMERCIAL AVENUE
 NORTHBROOK, ILLINOIS 60062
 Phone: (847) 559-2000
 Emergency Phone: 1-800-424-9300 (CHEMTREC)

2. COMPOSITION/INFORMATION ON INGREDIENTS

Material	CAS #	% by Wt	PEL (OSHA)	TLV (ACGIH)
Petroleum distillates, hydro-treated heavy paraffinic	64742-54-7	90 - 99	No PEL	No TLV
Petroleum distillates, solvent dewaxed heavy paraffinic	64742-65-0	5 - 10	No PEL	No TLV

Components not listed are not physical or health hazards as defined in 29 CFR 1910.1200 (Hazard Communication Standard).

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Mild	Lubricating oils are generally no more than slightly toxic if swallowed	Lubricating oils are generally considered no more than minimally irritating to the
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Lowest Known LD₅₀:

Material	CAS #	Toxicity
Petroleum distillates, hydro-treated heavy paraffinic	64742-54-7	Oral LD50 Rat > 2000 mg/kg
Petroleum distillates, solvent dewaxed heavy paraffinic	64742-65-0	Oral LD50 Rat > 5000 mg/kg
Petroleum distillates, hydro-treated heavy paraffinic	64742-54-7	Dermal LD50 Rabbit > 2 g/kg
Petroleum distillates, solvent dewaxed heavy paraffinic	64742-65-0	Dermal LD50 Rabbit > 5 g/kg

HAZARD RATING SYSTEM

NFPA: HEALTH: 1
HMIS: HEALTH: 1

FLAMMABILITY: 1
FLAMMABILITY: 1

REACTIVITY: 0
REACTIVITY: 0

KEY: 0 - Minimal 1 - Slight 2 - Moderate 3 - Serious 4 - Severe

POTENTIAL HEALTH EFFECTS

Routes of Exposure: Eye contact, Ingestion, Inhalation, Skin contact

Eye: Lubricating oils are generally considered no more than minimally irritating to the eyes.

Skin: No absorption hazard in normal industrial use.

Ingestion: Although this product has a low order of acute oral toxicity, aspiration of minute amounts into the lungs during ingestion or vomiting may cause mild to severe pulmonary injury and possibly death.

Inhalation: Inhalation of vapors (generated at high temperatures only) or oil mist may cause mild irritation of the nose, throat, and respiratory tract.

Systemic (Other Target Organ) Effects: Personnel with pre-existing skin disorders should avoid contact with this product.

Cancer Information: Not a carcinogen according to NTP, IARC, or OSHA.

Reproductive Effects: No data available to indicate product or any components present at greater than 0.1% may cause birth defects.

CHRONIC, PROLONGED OR REPEATED EXPOSURE

Effects of Repeated Overexposure: Upon prolonged and/or repeated exposure, no hazard in normal industrial use.

Other Effects of Overexposure: No information available.

4. FIRST AID MEASURES Ensure physician has access to this MSDS.

TREATMENT

Eyes: Use eye wash to remove a chemical from the eye. Flush the affected eye for at least fifteen minutes. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Seek medical attention if irritation persists.

Skin: Remove contaminated clothing and shoes and wipe excess from skin. Flush skin with water then wash with soap and water. If irritation occurs, get medical attention. Do not reuse clothing until cleaned. If redness, swelling, pain, and/or blisters occur, transport to the nearest medical facility for additional treatment.

Inhalation: Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen and get medical attention immediately.

Ingestion: Minimal risk of harm if swallowed. Do not induce vomiting. Seek medical attention immediately. Provide medical care provider with this MSDS.

Notes to Physician: No additional first aid information available.

5. FIRE FIGHTING MEASURES

Flammable Properties:

Flash Point: 204 °C (399 °F)

Flash Point Method: Cleveland Open Cup

Auto-ignition Temperature: No data.

Flammability Limits: Percentage of vapor concentration at which product can ignite in presence of spark:
Upper Flammability Limit: Unknown
Lower Flammability Limit: Unknown

Hazardous Combustion Products: Carbon dioxide Carbon monoxide Smoke

Extinguishing Media: Use an alcohol resistant foam, carbon dioxide, or dry chemical when fighting fires. Water or foam may cause frothing if liquid is burning but it still may be a useful extinguishing agent if carefully applied to the surface of the fire. Do not direct a stream of water into the hot burning liquid.

Fire Fighting Instructions: Material may be ignited only if preheated to temperatures above the high flash point, for example in a fire.

Protective Equipment for Fire Fighters: Do not enter fire area without proper protection including self- contained breathing apparatus and full protective equipment. Use methods for the surrounding fire.

6. ACCIDENTAL RELEASE MEASURES

Protect People: No health affects expected from the clean up of this material if contact can be avoided. Follow personal protective equipment recommendations found in Section 8 of this MSDS.

Protect the Environment: Do not flush to sewer.

Cleanup: Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Dispose of in regular trash as product is not considered a hazardous waste. Used fluid should be disposed of at a recycling center.

7. HANDLING AND STORAGE

Steps to be Taken in Case Material is Released or Spilled: See Section 6.

Other Precautions: Store in a cool dry ventilated location. Isolate from incompatible materials and conditions. Keep container(s) closed. Do not expose to extreme temperatures or flames. Mildly irritating material. Avoid unnecessary exposure.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Respiratory Protection: No respiratory protection required under normal conditions of use.

Escape: None required where adequate ventilation is provided. If airborne concentrations are above the applicable exposure limits, use NIOSH/MSHA approved respiratory protection.

Skin Protection: Where use can result in skin contact, practice good personal hygiene and wear impervious gloves. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work.

Eye Protection: Wear safety glasses when handling this product if there is a likelihood of contact with eyes.

Engineering Controls: No exposure limits exist for the constituents of this product. No engineering controls are likely to be required to maintain operator comfort under normal conditions of use.

EXPOSURE LIMITS

<u>Component</u>	<u>Exposure Limits</u>	<u>Skin Form</u>
Petroleum distillates, hydro-treated heavy paraffinic	No TLV	Unknown
Petroleum distillates, solvent dewaxed heavy paraffinic	No TLV	Unknown
Petroleum distillates, hydro-treated heavy paraffinic	No STL	Unknown
Petroleum distillates, solvent dewaxed heavy paraffinic	No STL	Unknown
Petroleum distillates, hydro-treated heavy paraffinic	No IDLH	Unknown
Petroleum distillates, solvent dewaxed heavy paraffinic	No IDLH	Unknown

Petroleum distillates, hydro-treated heavy paraffinic	No STEL	Unknown
Petroleum distillates, solvent dewaxed heavy paraffinic	No STEL	Unknown
Petroleum distillates, hydro-treated heavy paraffinic	No WEELS STEL	Unknown
Petroleum distillates, solvent dewaxed heavy paraffinic	No WEELS STEL	Unknown

9. PHYSICAL/CHEMICAL PROPERTIES

Boiling Point:	No data.
Specific Gravity:	0.85
Density:	7.11 Lbs/Gallon
Vapor Pressure:	No data.
Water Solubility:	Negligible; 0-1%
Physical State:	Liquid
Evaporation Rate (BuAc =1):	No data.
% Volatile by Volume:	0.00
Appearance:	Amber
Odor:	Mild
Viscosity:	10.93 cSt @100°C

10. STABILITY& REACTIVITY

Stability: Stable under normal conditions.

Conditions to Avoid: Temperatures above the high flash point of this combustible material in combination with sparks, open flames, or other sources of ignition.

Incompatibility (Materials to Avoid): Strong oxidizing agents

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Skin: No data.

Ingestion: Lubricating oils are generally no more than slightly toxic if swallowed.

Mutagenicity: Not known or reported to be mutagenic.

ACUTE TOXICITY

Peroral: Oral LD50 Rat > 2000 mg/kg
Oral LD50 Rat > 5000 mg/kg

Percutaneous: Dermal LD50 Rabbit > 2 g/kg
Dermal LD50 Rabbit > 5 g/kg

Inhalation: Inhalation LC50 (4h) Rat = 2 mg/L
Inhalation LC50 (4h) Rat > 5 mg/L

IRRITATION

Skin: Upon prolonged or repeated contact, can cause minor skin irritation, defatting, and dermatitis. Lubricating oils are generally considered no more than minimally irritating to the skin.

Eyes: No data.

SENSITIZATION (ANIMAL AND HUMAN STUDIES)

No data.

REPRODUCTIVE TOXICOLOGY

Not known or reported to cause reproductive or developmental toxicity.

CHRONIC TOXICOLOGY AND CARCINOGENICITY

PEAK FULL SYNTHETIC MOTOR OIL 5W-30 DEXOS-1 GF-5/SN

There are no components that are known or reported to cause cancer.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE

Mobility & Partitioning: This material is expected to have essentially no mobility in soil. It absorbs strongly to most soil types. Bio-concentration is not expected to occur.

Degradability & Transformation: Biodegrades slowly.

Persistence: No data.

ECOTOXICITY

BOD (% Oxygen Consumption): No information available.

Toxicity to Microorganisms: No information available.

Toxicity to Aquatic Invertebrates:	CAS Number:	Results:
Petroleum distillates, hydro-treated heavy paraffinic	64742-54-7	48 Hr EC50 Daphnia magna: >1000 mg/L
Petroleum distillates, solvent dewaxed heavy paraffinic	64742-65-0	48 Hr EC50 Daphnia magna: >1000 mg/L
Phosphorodithioic acid, O,O-di-C1-14-alkyl esters, zinc salts	68649-42-3	48 Hr EC50 Daphnia magna: 1 - 1.5 mg/L
2,6-Di-tert-butyl-p-cresol	128-37-0	72 Hr EC50 Pseudokirchneriella subcapitata: 6 mg/L; 72 Hr EC50 Desmodesmus subspicatus: >0.42 mg/L

Toxicity to Fish:	CAS Number:	Results:
Petroleum distillates, hydro-treated heavy paraffinic	64742-54-7	96 Hr LC50 Oncorhynchus mykiss: >5000 mg/L
Petroleum distillates, solvent dewaxed heavy paraffinic	64742-65-0	96 Hr LC50 Oncorhynchus mykiss: >5000 mg/L
Phosphorodithioic acid, O,O-di-C1-14-alkyl esters, zinc salts	68649-42-3	96 Hr LC50 Pimephales promelas: 1.0-5.0 mg/L [static]; 96 Hr LC50 Pimephales promelas: 10.0-35.0 mg/L [semi-static]

13. DISPOSAL CONSIDERATIONS

Disposal of Packaging: Recycle containers whenever possible.

Disposal Methods: Dispose of according to Federal, State, Local, or Provincial regulations. Recycle used oil.

Waste Disposal: Spent or discarded material is non-hazardous according to environmental regulations.

14. TRANSPORTATION INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION

Non-Bulk

Not regulated by the US D.O.T.

Bulk

Not regulated by the US D.O.T.

IATA

Non-Bulk

Not regulated by IATA

IMDG

Non-Bulk
Not regulated by IMDG

15. REGULATORY INFORMATION

THIS PRODUCT CONTAINS COMPONENT (S) CITED ON THE FOLLOWING REGULATIONS:

Consumer Product Safety Improvement Act of 2008 General Conformity Certification:

This product has been evaluated and certified to be labeled and packaged in compliance with the applicable provisions of the Federal Hazardous Substance Act as stated in 16 CFR 1500 and enforced by the Consumer Product Safety Commission, and where applicable the products that require Child Resistant Closures are packaged in accordance with the Poison Prevention Packaging Act as stated in 16 CFR 1700 and enforced by the Consumer Product Safety Commission.

All closures have been tested in accordance with the latest protocols. No other testing is required to certify compliance with the above. The date of manufacture is stamped on the product container.

United States- TSCA Inventory: All components of this material are on the US TSCA Inventory or are exempt.

TSCA 12b export notification:

None Listed.

CERCLA:

None Listed.

OSHA Hazard Communication Standard:

Eyes

SARA Title III:

SARA 312-Inventory Reporting:

None Listed.

SARA 313- Emission Reporting: None

Listed.

SARA 302-Extremely Hazardous Substances: None

Listed.

State Right-To-Know:

California – Exposure Limits - Ceilings:

None Listed.

Director's List of Hazardous Substances:

None Listed.

Massachusetts Right-To-Know List:

None Listed.

Minnesota Hazardous Substance List:

None Listed.

New Jersey Right-To-Know List:

None Listed.

Pennsylvania Right-To-Know List:

None Listed.

Rhode Island Hazardous Substance List:

None Listed.

Canadian Regulations: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required.

WHMIS Classification: Uncontrolled product according to WHMIS classification criteria.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986):
None Listed.

16. OTHER INFORMATION

Contact: Thomas Cholke

Phone: (847) 559-2225

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OBTAINED FROM USE. PROCHEH ASSUMES NO RESPONSIBILITY FOR PERSONAL INJURY OR PROPERTY
DAMAGE TO USER. VENDEE/USER ASSUMES ALL RISKS ASSOCIATED
WITH USE.

13.) Safety Kleen



Material Safety Data Sheet

Material Name: IMMERSION CLEANER AND COLD PARTS CLEANER

ID: 82411

*** Section 1 - Chemical Product and Company Identification ***

Product Code: 50, 699, 6861, 9699

Product Use: For cleaning carburetors and metal parts. If this product is used in combination with other products, refer to the Material Safety Data Sheet for those products.

Synonyms: None.

Safety-Kleen Systems, Inc.
2600 North Central Expressway
Suite 400
Richardson, TX 75080

Phone: 1-800-669-5740

Emergency # 1-800-468-1760
www.safety-kleen.com

Issue Date

October 4, 2012

Supersedes Issue Date

October 13, 2009

Original Issue Date

December 1, 1989

PREPARED BY: Product MSDS Coordinator

APPROVED BY: MSDS Task Force

*** Section 2 - Hazardous Identification ***

EMERGENCY OVERVIEW

Appearance

Clear, brown liquid

Signal Word

WARNING!

Physical Hazards

Combustible liquid and vapor.

Health Hazards

May be harmful if inhaled.

May burn eyes.

May burn skin.

May be harmful if absorbed through skin. Harmful or fatal if swallowed.

May irritate the respiratory tract (nose, throat, and lungs).

Contains material which may cause cancer.

Contains material which may cause central nervous system, liver, kidney, lung, blood cell, eye, and skin damage.

POTENTIAL HEALTH EFFECTS

Inhalation (Breathing)

High concentrations of vapor or mist may be harmful if inhaled. High concentrations of vapor or mist may irritate the respiratory tract (nose, throat, and lungs). High concentrations of vapor or mist may cause nausea, vomiting, headaches, dizziness, loss of coordination, numbness, and other central nervous system effects. Massive acute overexposure may cause rapid central nervous system depression, sudden collapse, coma, and/or death.

Eyes

This product is severely irritating to the eyes and may cause eye burns.

Material Safety Data Sheet

Material Name: IMMERSION CLEANER AND COLD PARTS CLEANER

ID: 82411

Skin

May cause irritation, swelling, blistering, and/or burns. Dipropylene glycol monomethyl ether and naphthalene may be absorbed through the skin and cause harm as noted under **INHALATION (BREATHING)**.

Ingestion (Swallowing)

This product may be harmful or fatal if swallowed. May cause throat irritation, nausea, vomiting, and central nervous system effects as noted under **INHALATION (BREATHING)**, and/or heart injury. Monoethanolamine may burn mouth, throat, esophagus, and stomach. Breathing product into the lungs during ingestion or vomiting may cause lung injury and possible death.

Medical Conditions Aggravated by Exposure

Individuals with pre-existing liver, kidney, respiratory tract (nose, throat, and lungs), central nervous system, eye, and/or skin disorders may have increased susceptibility to the effects of exposure.

Chronic

Prolonged or repeated inhalation of monoethanolamine may cause inflammation and sores in the mouth; and bronchial and/or gastrointestinal disturbances. Prolonged or repeated inhalation of naphthalene may cause cataracts and/or corneal inflammation and sores. Prolonged or repeated exposure may have reproductive toxicity, teratogenic, or mutagenic effects. Prolonged or repeated inhalation may cause toxic effects as noted under **INHALATION (BREATHING)**. Prolonged or repeated eye contact may cause inflammation of the membrane lining the eyelids and covering the eyeball (conjunctivitis); and/or burns. Prolonged or repeated skin contact may cause drying, cracking, redness, itching, and/or swelling (dermatitis); and/or burns. Prolonged or repeated exposure may cause central nervous system, liver, kidney, lung, blood cell, eye, and skin damage.

Cancer Information

This product contains naphthalene which can cause cancer. Risk of cancer depends on duration and level of exposure. For more information, see **SECTION 11: CARCINOGENICITY**.

Also see **SECTION 15: CALIFORNIA**.

Environmental Hazards

Based upon components, product may be toxic to fish.; Based upon components, product may be toxic to fish. See **SECTION 12: ECOLOGICAL INFORMATION**.

*** Section 3 - Composition / Information on Ingredients ***

CAS	Component	Percent
64742-94-5	Solvent naphtha (petroleum), heavy arom.	30-60
872-50-4	1-Methyl-2-pyrrolidone	10-30
34590-94-8	Dipropylene glycol monomethyl ether	7-13
112-80-1	Oleic acid	5-10
141-43-5	Ethanolamine	3-7
91-20-3	Naphthalene	3-6

*** Section 4 - First Aid Measures ***

Inhalation (Breathing)

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Oxygen should only be administered by qualified personnel. Someone should stay with victim. Get medical attention if breathing difficulty persists.

Eyes

If irritation or redness from exposure to vapor develops, move away from exposure into fresh air. Upon contact,

Material Safety Data Sheet

ng eyelids apart, for 15 minutes. Get immediate medical attention.
Material Name: IMMERSION CLEANER AND COLD PARTS CLEANER

ID: 82411

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Material Safety Data Sheet

Material Name: IMMERSION CLEANER AND COLD PARTS CLEANER

ID: 82411

Skin

For skin contact, wash immediately with soap and water. Immediately remove contaminated clothing and shoes. Wash contaminated clothing before reuse. Call a physician immediately.

Ingestion (Swallowing)

Do NOT induce vomiting. Immediately get medical attention. Call 1-800-468-1760 for additional information. If spontaneous vomiting occurs, keep head below hips to avoid breathing the product into the lungs. Never give anything by mouth to an unconscious person.

Notes to Physicians

Treat symptomatically and supportively. Increased sensitivity of the heart to Adrenaline (epinephrine) may be caused by overexposure to product. Administration of gastric lavage, if warranted, should be performed by qualified medical personnel. Treatment may vary with condition of victim and specifics of incident. Call 1-800-468-1760 for additional information.

* * * Section 5 - Fire Fighting Measures * * *

Hazardous Combustion Products

Decomposition and combustion materials may be toxic. Burning may produce nitrogen oxides, acid halides, carbon monoxide and unidentified organic compounds.

Conditions of Flammability

Heat, sparks, or flame.

Extinguishing Media

Carbon dioxide, alcohol-resistant foam, dry chemical, water spray, or water fog.

Protective Equipment For Firefighting

A positive-pressure, self-contained breathing apparatus (SCBA) and full-body protective equipment are required for fire emergencies.

Fire Fighting Equipment/Instructions

Keep storage containers cool with water spray.

NFPA Ratings: Health: 2 Fire: 2 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Fire and Explosion Hazards

Vapor explosion hazard indoors, outdoors, or in sewers. Vapor may travel to ignition source and flashback. Vapors will spread along the ground and collect in low or confined areas. Run-off to sewer may create a fire hazard. Heated containers may rupture. "Empty" containers may retain residue and can be dangerous. Products are not sensitive to mechanical impact. Product may be sensitive to static discharge, which could result in fire or explosion.

* * * Section 6 - Accidental Release Measures * * *

Remove all ignition sources. Do not touch or walk through spilled product. Stop leak if you can do it without risk. Wear protective equipment and provide engineering controls as specified in **SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Ventilate area and avoid breathing vapor or mist. A vapor suppressing foam may be used to reduce vapors. Contain spill away from surface water and sewers. Contain spill as a liquid for possible recovery, or sorb with compatible sorbent material and shovel with a clean, sparkproof tool into a sealable container for disposal.

Additionally, for large spills: Water spray may reduce vapor, but may not prevent ignition in closed spaces. Dike far ahead of liquid spill for collection and later disposal.

There may be specific regulatory reporting requirements associated with spills, leaks, or releases of this product. Also see **SECTION 15: REGULATORY INFORMATION**.

Material Safety Data Sheet

Material Name: IMMERSION CLEANER AND COLD PARTS CLEANER

ID: 82411

*** Section 7 - Handling and Storage ***

Handling Procedures

Keep away from heat, sparks, or flame. Where flammable mixtures may be present, equipment safe for such locations should be used. Use clean, sparkproof tools and explosion-proof equipment. When transferring product, metal containers, including trucks and tank cars, should be grounded and bonded. Do not breathe vapor or mist. Use in a well ventilated area. Avoid contact with eyes, skin, clothing, and shoes. Do not smoke when using this product.

Shipping and Storing

Keep container tightly closed when not in use and during transport. Do not pressurize, cut, weld, braze, solder, drill, or grind containers. Keep containers away from heat, flame, sparks, static electricity, or other sources of ignition. Empty product containers may retain product residue and can be dangerous. See **SECTION 14: TRANSPORTATION INFORMATION** for Packing Group information.

*** Section 8 - Exposure Controls / Personal Protection ***

Exposure Guidelines Component

Exposure Limits

Dipropylene glycol monomethyl ether (34590-94-8)

ACGIH: 100 ppm TWA
150 ppm STEL
Skin - potential significant contribution to overall exposure by the cutaneous route

OSHA Final: 100 ppm TWA; 600 mg/m³ TWA
prevent or reduce skin absorption

OSHA Vacated: 100 ppm TWA; 600 mg/m³ TWA
150 ppm STEL; 900 mg/m³ STEL Prevent or
reduce skin absorption

NIOSH: 100 ppm TWA; 600 mg/m³ TWA
150 ppm STEL; 900 mg/m³ STEL Potential for
dermal absorption

Ethanolamine (141-43-5)

ACGIH: 3 ppm TWA
6 ppm STEL

OSHA Final: 3 ppm TWA; 6 mg/m³ TWA

OSHA Vacated: 3 ppm TWA; 8 mg/m³ TWA
6 ppm STEL; 15 mg/m³ STEL

NIOSH: 3 ppm TWA; 8 mg/m³ TWA
6 ppm STEL; 15 mg/m³ STEL

Naphthalene (91-20-3)

ACGIH: 10 ppm TWA
15 ppm STEL
Skin - potential significant contribution to overall exposure by the cutaneous route

OSHA Final: 10 ppm TWA; 50 mg/m³ TWA

OSHA Vacated: 10 ppm TWA; 50 mg/m³ TWA
15 ppm STEL; 75 mg/m³ STEL

NIOSH: 10 ppm TWA; 50 mg/m³ TWA
15 ppm STEL; 75 mg/m³ STEL

Engineering Controls

Provide general ventilation needed to maintain concentration of vapor or mist below applicable exposure limits. Where adequate general ventilation is unavailable, use process enclosures, local exhaust ventilation, or other engineering controls to

Material Safety Data Sheet

control airborne levels below applicable exposure limits. Where explosive mixtures may be present, equipment safe for such locations should be used.

Material Name: IMMERSION CLEANER AND COLD PARTS CLEANER

ID: 82411

Material Safety Data Sheet

Material Name: IMMERSION CLEANER AND COLD PARTS CLEANER

ID: 82411

Personal Protective Equipment: Respiratory

Use NIOSH-certified, full-faced, air-purifying respiratory protective equipment with organic vapor cartridges when concentration of vapor or mist exceeds applicable exposure limits. Protection provided by air purifying respirators is limited. Selection and use of respiratory protective equipment should be in accordance in the USA with OSHA General Industry Standard 29 CFR 1910.134; or in Canada with CSA Standard Z94.4.

Personal Protective Equipment: Eyes/Face

Where eye contact is likely, wear chemical goggles; contact lens use is not recommended.

Personal Protective Equipment: Skin

Where skin contact is likely, chemical impervious protective gloves; use of natural rubber (latex) or equivalent gloves is not recommended.

To avoid prolonged or repeated contact where spills and splashes are likely, wear appropriate chemical-resistant faceshield, boots, apron, whole body suits, or other protective clothing.

Personal Protective Equipment: Personal Hygiene

Use good personal hygiene. Wash thoroughly with soap and water after handling product and before eating, drinking, or using tobacco products. Clean affected clothing, shoes, and protective equipment before reuse. Discard leather articles, such as shoes, saturated with this product.

Other Personal Protective Equipment

Where spills and splashes are likely, facilities storing or using this product should be equipped with an emergency eyewash and shower, both equipped with clean water, in the immediate work area.

*** Section 9 - Physical & Chemical Properties ***

Appearance/Odor :	Liquid , clear and brown.	pH:	11
Boiling Point:	340°F (171°C) (initial)	Melting Point:	< 10°F (-12°C)
Solubility (H2O):	Complete.	Specific Gravity:	0.95 (water= 1)
Density:	7.9 LB/US gal (950 g/l)	Octanol/H2O Coeff.:	Not available.
Evaporation Rate:	1 (butyl acetate = 1)	Molecular Weight:	Not available.
Odor Threshold:	Not available.	Auto Ignition:	829°F (443°C) (approximately)
LFL:	0.8 VOL% (approximately)	Flash Point:	>140°F (60°C) Tag Closed Cup
UFL:	7 VOL% (approximately)	Viscosity:	Not available
Vapor Pressure:	<0.4 mmHg at 68°F (20°C)		

*** Section 10 - Chemical Stability & Reactivity Information ***

Stability

Stable under normal temperatures and pressures

Incompatibility

Avoid acids, alkalies, oxidizing agents, reactive halogens, or reactive metals., Oleic acid can react with perchlorates or perchloric acid to form explosive products.

Reactivity

Polymerization is not known to occur under normal temperature and pressures. Not reactive with water.

Hazardous Decomposition Products

None under normal temperatures and pressures. See also **SECTION 5: HAZARDOUS COMBUSTION PRODUCTS.**

Conditions To Avoid

Avoid heat, sparks, or flame and contact with incompatible materials.

Material Safety Data Sheet

Material Name: IMMERSION CLEANER AND COLD PARTS CLEANER

ID: 82411

*** Section 11 - Toxicological Information ***

Toxicity Data

Component Analysis - LD50/LC50

Solvent naphtha (petroleum), heavy arom. (64742-94-5)

Inhalation LC50 Rat >590 mg/m³ 4 h; Oral LD50 Rat >5000 mg/kg; Dermal LD50 Rabbit >2000 mg/kg

1-Methyl-2-pyrrolidone (872-50-4)

Inhalation LC50 Rat 3.1 mg/L 4 h; Oral LD50 Rat 3598 mg/kg; Dermal LD50 Rat 2500 mg/kg; Dermal LD50 Rabbit >5000 mg/kg

Dipropylene glycol monomethyl ether (34590-94-8)

Oral LD50 Rat 5230 mg/kg; Dermal LD50 Rabbit 9500 mg/kg

Oleic acid (112-80-1) Oral

LD50 Rat 25 g/kg

Ethanolamine (141-43-5)

Oral LD50 Rat 1720 mg/kg; Dermal LD50 Rabbit 1 ml/kg; Dermal LD50 Rabbit 1025 mg/kg

Naphthalene (91-20-3)

Inhalation LC50 Rat >340 mg/m³ 1 h; Oral LD50 Rat 490 mg/kg; Dermal LD50 Rat >2500 mg/kg; Dermal LD50 Rabbit >20 g/kg

Acute Effects

May cause severe irritation or burns to the eyes and skin. Components may be absorbed through the skin in harmful amounts. Monoethanolamine may burn mouth, throat, esophagus, and stomach. Breathing product into the lungs during ingestion or vomiting may cause lung injury and possible death. High concentrations of vapor or mist may irritate the respiratory tract (nose, throat, and lungs). High concentrations of vapor or mist may cause nausea, vomiting, headaches, dizziness, loss of coordination, numbness, and other central nervous system effects.

Repeated Dose Effects

Monoethanolamine has demonstrated human effects of mutagenicity. Naphthalene has demonstrated animal effects of mutagenicity. N-Methyl-2-pyrrolidinone and oleic acid have demonstrated experimental effects of mutagenicity. Based on best current information, the other components listed in **SECTION 2** are not mutagens. Monoethanolamine and naphthalene have demonstrated animal effects of teratogenicity. Based on best current information, the other components listed in **SECTION 2** are not teratogens.

Monoethanolamine and N-Methyl-2-pyrrolidinone have demonstrated experimental effects of reproductive toxicity. Based on best current information, the other components listed in **SECTION 2** are not reproductive toxicants. Also see **SECTION 15: CALIFORNIA**.

Based on best current information, there are no known toxicologically synergistic products associated with this product.

Component Carcinogenicity

Naphthalene (91-20-3)

ACGIH: A4- Not Classifiable as a Human Carcinogen

OSHA: Present (select carcinogen)

NTP: Reasonably Anticipated To Be A Human Carcinogen (Suspect Carcinogen)

IARC: Monograph 82 [2002] (Group 2B (possibly carcinogenic to humans))

Target Organ Effects

Prolonged or repeated inhalation of monoethanolamine may cause inflammation and sores in the mouth; and bronchial and/or gastrointestinal disturbances. Prolonged or repeated skin contact may cause drying, cracking, redness, itching, and/or swelling (dermatitis); and/or burns. Prolonged or repeated exposure may cause central nervous system, liver, kidney, lung, blood cell, eye, and skin damage.

Material Safety Data Sheet

Material Name: IMMERSION CLEANER AND COLD PARTS CLEANER

ID: 82411

* * * Section 12 - Ecological Information * * *

Ecotoxicity

Based upon components, this product may be toxic to aquatic life.

Component Analysis - Ecotoxicity - Aquatic Toxicity

Solvent naphtha (petroleum), heavy arom. (64742-94-5)

Duration/Test/Species	Concentration/Conditions	Notes
96 Hr LC50 Pimephales promelas	19 mg/L [static]	
96 Hr LC50 Oncorhynchus mykiss	2.34 mg/L	
96 Hr LC50 Lepomis macrochirus	1740 mg/L [static]	
Pimephales promelas 96 Hr LC50	45 mg/L [flow-through]	
Pimephales promelas 72 Hr EC50	41 mg/L	
Skeletonema costatum	2.5 mg/L	

1-Methyl-2-pyrrolidone (872-50-4)

Duration/Test/Species	Concentration/Conditions	Notes
96 Hr LC50 Lepomis macrochirus	832 mg/L [static]	
96 Hr LC50 Leuciscus idus	4000 mg/L [static]	
96 Hr LC50 Pimephales promelas	1072 mg/L [static]	
96 Hr LC50 Poecilia reticulata	1400 mg/L [static]	
72 Hr EC50 Desmodesmus subspicatus	>500 mg/L	

Dipropylene glycol monomethyl ether (34590-94-8)

Duration/Test/Species	Concentration/Conditions	Notes
96 Hr LC50 Pimephales promelas	>10000 mg/L [static]	

Oleic acid (112-80-1)

Duration/Test/Species	Persistence/Degradability	Concentration/Conditions
96 Hr LC50 Pimephales promelas	No information available for the product.	205 mg/L [static]

Ethanolamine (141-43-5)

Duration/Test/Species	Bioaccumulation/Accumulation	Concentration/Conditions
96 Hr LC50 Pimephales promelas	No information available for the product.	227 mg/L [flow-through]
96 Hr LC50 Brachydanio rerio		3684 mg/L [static]
96 Hr LC50 Lepomis macrochirus		300-1000 mg/L [static]
96 Hr LC50 Oncorhynchus mykiss		114-196 mg/L [static]
96 Hr LC50 Oncorhynchus mykiss		>200 mg/L [flow-through]
72 Hr EC50 Desmodesmus subspicatus		15 mg/L

Naphthalene (91-20-3)

Duration/Test/Species	Concentration/Conditions
96 Hr LC50 Pimephales promelas	5.74-6.44 mg/L [flow-through]
96 Hr LC50 Oncorhynchus mykiss	1.6 mg/L [flow-through]
96 Hr LC50 Oncorhynchus mykiss	0.91-2.82 mg/L [static]
96 Hr LC50 Pimephales promelas	1.99 mg/L [static]
72 Hr EC50 Lepomis macrochirus	31.0265 mg/L [static]
Skeletonema costatum	0.4 mg/L

Material Safety Data Sheet

Notes

Material Name: IMMERSION CLEANER AND COLD PARTS CLEANER

ID: 82411

Notes

Notes

Material Safety Data Sheet

Material Name: IMMERSION CLEANER AND COLD PARTS CLEANER

ID: 82411

Mobility in Environmental Media

No information available for the product.

Other Adverse Effects

No information available for the product.

* * * Section 13 - Disposal Considerations * * *

Disposal Instructions

Dispose in accordance with federal, state, provincial, and local regulations. Regulations may also apply to empty containers. The responsibility for proper waste disposal lies with the owner of the waste. Contact Safety-Kleen regarding proper recycling or disposal.

US EPA Waste Number & Descriptions

This product, if discarded, is not expected to be a characteristic or listed hazardous waste. Processing, use, or contamination by the user may change the waste code(s) applicable to the disposal of this product.

* * * Section 14 - Transportation Information * * *

Emergency Response Guide Number

153 Reference .North American Emergency Response Guidebook

DOT Shipping Name: Compounds, cleaning liquid (Contains: Ethanolamine)

UN/NA#: NA1760 **Hazard Class:** 8 **Packing Group:** III

Required Label(s): CORROSIVE

TDG Shipping Name: CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (monoethanolamine)

UN/NA#: UN3267 **Hazard Class:** 8 **Packing Group:** III

Required Label(s): CORROSIVE

IATA Information

No Classification Assigned.

IMDG Information

No Classification Assigned.

* * * Section 15 - Regulatory Information * * *

VOE (As Regulated)

100 Wf%; 7.9 LB/US gal; 950 g/1 As

per U.S EPA 40 CFR 51.100(s)

VOE VP <0.4mmHg @ 20°C

CONTAINS: Photochemical Reactive solvent 60% by volume

SARA Sections 311/312

This product poses the following health hazard(s) as defined in 40 CFR Part 370 and is subject to the requirements of sections 311 and 312 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA):

Immediate (Acute) Health Hazard

Delayed (Chronic) Health Hazard Fire

Hazard

SARA 302/304

Component Analysis

Based on the ingredient(s) listed in SECTION 3, this product does not contain any "extremely hazardous substances" listed pursuant to Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) Section 302 or Section 304 as identified in 40 CFR Part 355, Appendix A and B.

SARA Section 313

The following components are subject to the requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and 40 CFR Part 372.

Material Safety Data Sheet

Material Name: IMMERSION CLEANER AND COLD PARTS CLEANER

ID: 82411

Component Analysis

This product does contain a "toxic" chemical subject to the requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and 40 CFR Part 372.

1-Methyl-2-pyrrolidone (872-50-4) 1.0 % de minimis concentration
Naphthalene (91-20-3) 0.1 % de minimis concentration

CERCLA

Component Analysis

Based on the ingredient(s) listed in SECTION 3, this product contains the following "hazardous substance" listed under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) in 40 CFR Part 302, Table 302.4 with the following reportable quantities (RQ):

Naphthalene (91-20-3) 100 lb final RQ; 45.4 kg final RQ

TSCA

All the components of this product are listed on, or are automatically included as "naturally occurring chemical substances" on, or are exempted from the requirement to be listed on, the TSCA Inventory.

Component Analysis

Component	CAS#	TSCA
Solvent naphtha (petroleum), heavy arom.	64742-94-5	Yes
1-Methyl-2-pyrrolidone	872-50-4	Yes
Dipropylene glycol monomethyl ether	34590-94-8	Yes
Oleic acid	112-80-1	Yes
Ethanolamine	141-43-5	Yes
Naphthalene	91-20-3	Yes

State Regulations

This product contains:

Naphthalene CAS 91-20-3

This product may contain detectable amounts of:

Component	CAS#
Arsenic	7440-38-2
Benzene	71-32-2
Cadmium	7440-43-9
Chromium	7440-47-3
Lead	7439-92-1
Methylene Chloride	75-09-2
Perchloroethylene	127-18-4
Trichloroethylene	79-01-6
Para-dichlorobenzene	106-46-7
Beryllium	7440-41-7

WARNING: These chemicals are known to the State of California to cause cancer. This product contains:

N-Methyl-2-pyrrolidone CAS 872-50-4.

Material Safety Data Sheet

Material Name: IMMERSION CLEANER AND COLD PARTS CLEANER

ID: 82411

This product may contain detectable amounts of:

Component	CAS#
Arsenic	7440-38-2
Benzene	71-32-2
Cadmium	7440-43-9
Mercury	7439-97-6
Lead	7439-92-1
Toluene	108-88-3

WARNING: These chemicals are known to the State of California to cause birth defects or other reproductive harm.

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	MA	MN	NJ	PA	CA
1-Methyl-2-pyrrolidone	872-50-4	No	Yes	No	Yes	Yes
Dipropylene glycol monomethyl ether	34590-94-8	Yes	Yes	Yes	Yes	Yes
Oleic acid	112-80-1	No	No	No	No	Yes
Ethanolamine	141-43-5	Yes	Yes	Yes	Yes	Yes
Naphthalene	91-20-3	Yes	Yes	Yes	Yes	Yes

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause cancer. WARNING! This product contains a chemical known to the state of California to cause reproductive/developmental effects.

Canadian Regulations

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all information required by the CPR.

Component Analysis

Component	CAS#	CAN
Solvent naphtha (petroleum), heavy arom.	64742-94-5	DSL
1-Methyl-2-pyrrolidone	872-50-4	DSL
Dipropylene glycol monomethyl ether	34590-94-8	DSL
Oleic acid	112-80-1	DSL
Ethanolamine	141-43-5	DSL
Naphthalene	91-20-3	DSL

Canadian WHMIS Information

Class 83 - Combustible Liquid Class D2A - Chronic toxic effects. Class E - Corrosive

Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Dipropylene glycol monomethyl ether (34590-94-8)	1 %
Oleic acid (112-80-1)	1 %
Ethanolamine (141-43-5)	1 %
Naphthalene (91-20-3)	1 %

Canadian Environmental Protection Act (CEPA)

All the components of this product are listed on, or are automatically included as "substance occurring in nature" on, or are exempted from the requirements to be listed on, the Canadian Domestic Substances List (DSL).

Material Safety Data Sheet

Material Name: IMMERSION CLEANER AND COLD PARTS CLEANER

ID: 82411

* * * Section 16 - Other Information * * *

Label/Other Information

Not available.

Revision Information

Regulatory Update. Regulatory update, updated to ANSI 2400.1-2004 format. This MSDS has been revised in the following sections: Section 1 (Dates), Section 2 (Composition updated), Section 3 (switched to Emergency Overview), Section 4 (Phone Numbers), Section 5 (Fire Fields), Section 8 (Exposure Limits added), Section 11 (Toxicology fields updated), Section 12 (Ecotoxicity , fields updated), Section 16 (Revision Information).

Disclaimer

User assumes all risks incident to the use of this product. To the best of our knowledge, the information contained herein is accurate. However, Safety-Kleen assumes no liability whatsoever for the accuracy or completeness of the information contained herein. No representations or warranties, either expressed or implied, or merchantability, fitness for a particular purpose or of any other nature are made hereunder with respect to the information or the product to which the information refers. The data contained on this sheet apply to the product as supplier to the user.

End of Sheet 82411

14.) *Slither*

PRO CHEM, INC.
 1475 BLUEGRASS LAKES Pkwy.
 ALPHARETTA, GA 30004
 EMERGENCY/NOF# (800) 241-8180
 ADDITIONAL EMERGENCY# INFO TRAC 1-800-535-5083

MATERIAL SAFETY DATA SHEET

SLITHER/ 1727

December 2012

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SECTION 1 – Chemical and Company Identification

Description: Penetrant/ Lubricant

SECTION 2 – Composition on Ingredients

COMPONENTS	CAS #	% by Weight
Petroleum Naphtha	64742-95-6	55-65%
Paraffin	63449-39-8	5-15%
Petroleum Distillates	64742-53-6	5-15%
2-butoxyethanol	111-76-2	5-15%
Carbon Dioxide	124-39-9	<5%

SECTION 3 – Hazards Information

EMERGENCY OVERVIEW:

Product is EXTREMELY flammable. Pressurized container *may* explode when exposed to heat or flame. Contact *may* cause skin and eye irritation. Mist *may* cause nose and throat irritation. Ingestion *may* cause nausea, vomiting, pain, upset stomach, and diarrhea.

POTENTIAL HEALTH EFFECTS:

INHALATION: This product *may* cause dizziness, nausea, upper respiratory irritation, drowsiness, mental depression or narcosis, difficulty in breathing, irregular heart beats. See Section 8 for recommended exposure limits.

EYE CONTACT: Liquid or vapors *may* irritate the eyes. Symptoms *may* include stinging, tearing, redness, swelling, and blurred vision. Eye contact *may* lead to permanent damage if not treated promptly.

SKIN CONTACT: This product *may* cause irritation to the skin. Prolonged or repeated contact with this product may dry and/or defat the skin. This product may be harmful if it is absorbed through the skin.

INGESTION: This product is harmful if swallowed. Ingestion can cause gastrointestinal irritation, nausea, and diarrhea.

TARGET ORGANS: Central Nervous System, lungs, skin, eyes.

SECTION 4 - First Aid Measures

EYE CONTACT: Immediately flush with plenty of water for at least 15 minutes, holding eyelids open at all times. Get medical attention immediately.

SKIN CONTACT: For skin contact, wash immediately with soap and water. If irritation persists, get medical attention.

INHALATION: Move person to non-contaminated air. If the affected person is not breathing, apply artificial respiration. Call a physician if symptoms develop or persist.

INGESTION: If the material is swallowed, get immediate medical attention or advice. DO NOT induce vomiting. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Seek immediate medical attention. Do not give anything.

SECTION 5 – Fire Fighting Measures

FLASH POINT: Concentrate - 57 °C / Propellant: N/A

DUST EXPLOSION HAZARD: None Known

EXTINGUISHER MEDIA: Use dry chemical, carbon dioxide, or foam. Use water to cool fire-exposed containers and to protect personnel. Do not direct a solid stream of water or foam into hot, burning pools. This may result in frothing and increase fire intensity.

FLAMMABILITY LIMITS IN AIR:	Upper% by Volume	7.0	Lower % by Volume	1.0
	Concentrate:		Concentrate:	
	Upper% by Volume	N/A	Lower % by Volume	N/A
	Propellant:		Propellant:	

SENSITIVITY TO MECHANICAL IMPACT: Container could potentially burst or be punctured upon mechanical impact, releasing flammable vapors.

BASIC FIRE FIGHTING PROCEDURES: Dangerous when exposed to heat or flame. This material can be ignited by flame or spark under normal atmospheric condition. Vapors are heavier than air and may travel along the ground to some distant source of ignition and flash back. Pressurized Container. May explode when exposed to heat or flame. Empty containers may retain product residue including Flammable or Explosive vapors. DO NOT cut, drill, grind, or weld near full, partially full, or empty product containers.

FIRE FIGHTING EQUIPMENT/INSTRUCTIONS: Wear full protective clothing, including helmet, sea contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

UNUSUAL FIRE & EXPLOSION HAZARDS: During a fire, irritating and highly toxic gases may be generated during combustion or decomposition. High temperatures can cause sealed containers to rupture due to a build up of internal pressures. Cool with water.

SECTION 6 - Accidental Release Measures

EMERGENCY ACTION: Evacuate the area promptly and keep upwind of the spilled material. Isolate the spill area to prevent people from entering. Wear appropriate protective equipment and clothing during clean-up.

CONTAINMENT: Stop discharge if safe to do so. Stop material from contaminating soil or from entering sewers or water streams. Cover spills with non-flammable absorbent and place in closed chemical waste containers.

SECTION 7 – Handling and Storage

HANDLING: Keep this product away from heat, sparks or open flame. Avoid getting this material into contact with your skin and eyes. Avoid breathing mists or aerosols of this product. Use this product with adequate ventilation. Do not reuse the empty container.

STORAGE: Store in a cool, dry, well-ventilated area. Do not handle or store near an open flame, heat or other sources of ignition. Keep out of direct sunlight. Do not store above 120F (49 C). **EMPTY CONTAINER PRECAUTIONS:** Attention! Follow label warnings even after container is emptied. Do not reuse empty container.

SECTION 8 - Exposure Controls/Personal Protection

RESPIRATORY PROTECTION: Use NIOSH approved respiratory protection. High airborne concentrations *may* necessitate the use of self-contained breathing apparatus (SCBA).

SKIN AND BODY PROTECTION: Impervious gloves should be used when handling this product. Use of protective coveralls and long sleeves is recommended.

EYE PROTECTION: Wear goggles or safety glasses with side shields.

ENGINEERING CONTROLS: Provide local and general exhaust ventilation to effectively remove and prevent buildup of any vapors or mists generated from the handling of this product.

GENERAL: Use good hygiene practices in handling this material.

THIS INFORMATION MUST BE ON ALL MSDS'S COPIED AND DISTRIBUTED FOR THIS MATERIAL
 NO WARRANTY IS EXPRESSED/IMPLIED REGARDING THE ACCURACY OF THIS DATA OR RESULTS
 OBTAINED FROM USE. PRO-CHEM ASSUMES NO RESPONSIBILITY FOR PERSONAL INJURY OR PROPERTY DAMAGE
 TO USER. VENDEE/USER ASSUMES ALL RISKS ASSOCIATED
 WITH USE.

15.) Solar Shield



Safety Data Sheet

Solar Shield

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Manufacturer's Name: HaloSource, Inc.
Corporate Address: 1725 220th St. SE, Suite 103, Bothell, WA 98021
Manufacturer's Telephone: (425) 881-6464 (Monday-Friday, 8AM-5PM PDT)
Emergency Telephone (24 Hours): 800-424-9300 CHEMTREC (Domestic, North America)
 703-527-3887 CHEMTREC (International, collect calls accepted)

Material/Trade/Product Name: **Solar Shield**
Synonyms: Solar Solution
Chemical Name: Not applicable
Chemical Formula: Not applicable
CAS No.: Not applicable
EPA Registration #: Not applicable
Product Use: Reduces heat and chemical loss by preventing water evaporation.

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

CAS NO.	COMPONENT	%	OSHA HAZARDOUS?
	<i>Confidential Business Information</i>		No
			Yes

NOTE: See Section 8 for permissible exposure limits.

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Yellow liquid with a slight fatty/waxy odor.

May be mildly irritating to eyes. Not likely to be hazardous to skin, respiratory tract, or by ingestion.

POTENTIAL HEALTH EFFECTS

EYE: May be mildly irritating to eyes.

SKIN: Not likely to be hazardous to skin. **INHALATION:** Not

likely to be hazardous by inhalation. **INGESTION:** Not likely

to be hazardous by ingestion.

CHRONIC EXPOSURE/CARCINOGENICITY: None of the components present in this material at concentrations of equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen. A component may affect genetic material (mutagenic) and may cause adverse reproductive effects and birth defects (teratogenic) based on animal test data.

AGGRAVATION OF PRE-EXISTING CONDITIONS: None known.

POTENTIAL ENVIRONMENTAL EFFECTS: None known.

SECTION 4: FIRST AID MEASURES

FIRST AID PROCEDURES

EYE CONTACT: Remove contact lenses (if applicable), flush with water for 15 minutes. Call a physician.

SKIN CONTACT: Cleansing the skin after exposure is advisable.

INHALATION: If large amounts of fumes are inhaled, remove to fresh air and consult a physician.

INGESTION: Consult a physician if necessary.

NOTE TO PHYSICIANS: None.

SECTION 5: FIRE FIGHTING MEASURES

FLASH POINT: >93°C (>200°F)

UPPER FLAMMABLE LIMIT: Not available

FLAMMABILITY CLASS (OSHA): Not applicable

AUTOIGNITION TEMPERATURE: Not available

LOWER FLAMMABLE LIMIT: Not available

FLAME PROPAGATION/BURNING RATE: Not available

UNIQUE FIRE PROPERTIES: None known or expected.

HAZARDOUS COMBUSTION PRODUCTS: Releases carbon monoxide when burned.

EXTINGUISHING MEDIA: Water spray, CO₂ (carbon dioxide), foam or dry chemical.

PROTECTION OF FIREFIGHTERS: Water can be used to cool fire-exposed containers, to protect personnel and to disperse vapors and spills. Water run off from chemical fires can cause environmental damage. Dike and collect water used to fight chemical fires. Fire fighters should wear normal protective equipment and positive-pressure self-contained breathing apparatus.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PROTECTIVE EQUIPMENT: See Section 8 (Personal Protective Equipment).

ENVIRONMENTAL PRECAUTIONS: None known.

METHODS FOR CLEANING UP: Spilled material should be absorbed onto an inert material and scooped up. Flush spill areas thoroughly with water and scrub to remove residue. If slipperiness remains apply more dry-sweeping compound.

SECTION 7: HANDLING AND STORAGE

SAFE HANDLING RECOMMENDATIONS

VENTILATION: General ventilation should be sufficient.

FIRE PREVENTION: No unique fire hazards known.

SPECIAL HANDLING REQUIREMENTS: No special handling requirements.

SAFE STORAGE RECOMMENDATIONS

CONTAINMENT: Keep container closed when not in use.

STORAGE ROOM RECOMMENDATIONS: Store at room temperature.

INCOMPATIBLE MATERIALS: To avoid product degradation and equipment corrosion, do not use iron, copper or aluminum containers or equipment.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: General ventilation should be sufficient.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

EYE/FACE PROTECTION: Eye protection is recommended.

SKIN PROTECTION: Special skin protection should not be needed.

HAND PROTECTION: Gloves are recommended any time handling chemicals.

RESPIRATORY PROTECTION: A respiratory protection program that meets OSHA’s 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator’s use.

GOOD HYGIENE/WORK PRACTICES: Always follow good hygiene/work practices by avoiding dusts, vapors, or mists and contact with eyes and skin. Thoroughly wash hands after handling and before eating or drinking.

EXPOSURE GUIDELINES

PERMISSIBLE EXPOSURE LIMITS						
INGREDIENT CAS NO.	OSHA		WISHA		ACGIH (TLV)	
	TWA	STEL	TWA	STEL	TWA	STEL
Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

COLOR: Yellow
PHYSICAL FORM: Liquid
pH: 6 – 8

SHAPE: Not applicable, liquid
ODOR: Mild fatty-waxy
VAPOR PRESSURE: Not available

VAPOR DENSITY: Not available
MELTING POINT: Not available
SOLUBILITY IN WATER: Incomplete

BOILING POINT: Not available
FREEZING POINT: Not available
SPECIFIC GRAVITY OR DENSITY: 0.98 –1.02

NOTE: These physical data are typical values based on material tested but may vary from sample to sample. Values should not be construed as a guaranteed analysis of any specific lot or as specifications.

SECTION 10: STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable

CONDITIONS TO AVOID: None known.

MATERIALS TO AVOID (INCOMPATIBILITY): Aluminum, copper, iron, strong oxidizers, and acids.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11: TOXICOLOGICAL INFORMATION

ORAL LD₅₀ (rat): Not available. **DERMAL LD₅₀**

(rabbit): Not available. **SKIN IRRITATION:**

Not available.

EYE IRRITATION: Not available.

ADDITIONAL INFORMATION: None.

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICITY: Not available.

MOBILITY: Not available.

PERSISTENCE AND DEGRADABILITY: Not available.

BIOACCUMULATIVE POTENTIAL: Not available.

ADDITIONAL INFORMATION: Not available.

SECTION 13: DISPOSAL CONSIDERATIONS

If this product as supplied becomes a waste, it does not meet the criteria of a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Please be advised that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

NOTE: Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate or otherwise inappropriate.

SECTION 14: TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION (DOT):

Proper Shipping Name: Not Regulated
 Hazard Class: Not Regulated
 Identification Number (UN Number): Not Regulated
 Packing Group (PG): Not Regulated

SECTION 15: REGULATORY INFORMATION

TSCA STATUS: All components are listed.

CERCLA REPORTABLE QUANTITY (RQ):

CHEMICAL NAME	RQ
Not applicable	Not applicable

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (EHS):

CHEMICAL NAME	TPQ	RQ
Not applicable	Not applicable	Not applicable

SARA TITLE III SECTION 311/312 HAZARD CATEGORIES: Does this product/material meet the definition of the following hazard classes according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of SARA Title III?

ACUTE HEALTH HAZARD	CHRONIC HEALTH HAZARD	FIRE HAZARD	REACTIVE HAZARD	SUDDEN RELEASE OF PRESSURE
YES	NO	NO	NO	NO

SARA TITLE III SECTION 313 TOXIC CHEMICALS INFORMATION:

CHEMICAL NAME	CAS NO.	CONCENTRATION (%)
Not applicable	Not applicable	Not applicable

CALIFORNIA PROPOSITION 65: The following chemical(s) is/are known to the state of California to cause cancer or reproductive toxicity:

CHEMICAL NAME	CAS NO.	CONCENTRATION (%)
Not applicable	Not applicable	Not applicable

16.) White Lube

PRO CHEM, INC.
1475 BLUEGRASS LAKES PKWY
ALPHARETTA, GA 30004
EMERGENCY/INFORM (800) 241-8180
ADDITIONAL EMERGENCY/INFORM TRAC 1-800-535-5053

MATERIAL SAFETY DATA SHEET

WHITE LUBE/ 1723

SEPTEMBER 2012

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Complies With USDL Safety and Health Regulations, (29 CFR 1910.200)

SECTION 1 – Chemical and Company Identification

PRODUCT TYPE: Aerosol
FORMULA: Proprietary

SECTION 2 – Composition on Ingredients

CHEMICAL NAME	CAS #	%WT
Petroleum Distillate	64742-52-5	
Aliphatic Petroleum Solvent	64742-69-8	
Propane	74-98-6	30-40
Paraffinic, Naphthenic Solvent	64742-47-8	30-40
Non-hazardous and other components below reportable levels		15-20
		8-10
		1-2.5

SECTION 3 – Hazards Information

EMERGENCY OVERVIEW: Aerosol. Will be easily ignited by heat, spark or flames. CONTENTS UNDER PRESSURE. Irritating to skin. Irritating to eyes. Irritating to respiratory system. Prolonged exposure may cause chronic effects. EXTREMELY FLAMMABLE.

PRIMARY ROUTES OF ENTRY: Inhalation, Skin contact
POTENTIAL HEALTH EFFECTS:

EYES: Causes eye irritation.

SKIN: Irritating to skin. Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash).

INHALATION: Intentional misuse by concentrating and inhaling the product can be harmful or fatal.

Irritating to respiratory system.

INGESTION: Exposure by ingestion of an aerosol is unlikely. May cause delayed lung damage.

TARGET ORGANS: Central nervous system

CHRONIC EFFECTS: May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion and blurred vision) and/or damage.

SIGNS AND SYMPTOMS: Narcosis

SECTION 4 – First Aid Measures

EYES: Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation persists after washing.

SKIN: Wash off immediately with plenty of water. Remove and isolate contaminated clothing and shoes. Get medical attention if irritation develops and persists.

INHALATION: Move to fresh air. For breathing difficulties, oxygen may be necessary. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician if symptoms develop or persist.

INGESTION: Do not induce vomiting without advice from poison control center. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician immediately. NOTE TO PHYSICIAN: Symptoms may be delayed.

SECTION 5 – Fire Fighting Measures

FLASH POINT: -156°F (-104.4°C) Propellant
FLAMMABILITY (HOC): 26,798 kJ/g estimated

FLASHBACK: Yes

EXTINGUISHING MEDIA: Water fog, Carbon Dioxide (CO2), Dry Chemicals.

SPECIAL FIRE FIGHTING PROCEDURES: In case of fire and/or explosion do not breathe fumes. Containers should be cooled with water to prevent vapor pressure build up. Move containers from fire area if you can do so without risk. Cool containers exposed to flames with water until well after the fire is out. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out.

FLAMMABLE PROPERTIES: Heat may cause the containers to explode. Vapor or gas may spread to distant ignition sources and flash back. Runoff to sewer may cause fire or explosion hazard.

SECTION 6 – Accidental Release Measures

METHODS FOR CONTAINMENT: Stop leak if you can do so without risk. Move the cylinder to a safe and open area if the leak is irreparable. Stop the flow of material, if this is without risk.

METHODS FOR CLEANING UP: Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

SECTION 7 – Handling and Storage

HANDLING: Pressurized container. Do not pierce or burn, even after use. Do not smoke while using or until sprayed surface is thoroughly dry. Use only in area provided with appropriate exhaust ventilation. Do not use if spray button is missing or defective. Do not re-use empty containers. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid contact with skin. Avoid contact with eyes. Wear personal protective equipment. Avoid prolonged exposure.

STORAGE: Contents under pressure. Do not puncture, incinerate or crush. Keep away from heat and sources of ignition. Avoid exposure to long periods of sunlight. Store in cool place. Store in a well-ventilated place. Keep out of the reach of children. Keep away from food, drink and animal feedingstuffs. Level 2 Aerosol.

SECTION 8 – Exposure Controls/Personal Protection

EXPOSURE LIMITS:

ACGIH	COMPONENTS	CAS#	TWA	STEL	CEILING
	Propane	74-98-6	1000 ppm	Not Established	Not Established
OSHA	COMPONENTS	CAS#	TWA	STEL	CEILING
	Propane	74-98-6	1000 ppm	Not Established	Not Established

PERSONAL PROTECTIVE EQUIPMENT:

EYE/FACE PROTECTION: Not normally needed.

SKIN PROTECTION: Wear protective gloves.

RESPIRATORY PROTECTION: None required where adequate ventilation conditions exist. If permissible levels are exceeded use NIOSH mechanical filter/organic vapor cartridge or an air-supplied respirator.

SECTION 9 – Physical and Chemical Properties

BOILING POINT:	368.6°F (187.2°C) estimated	DENSITY:	0.722 g/cm3 estimated
pH:	N/A	SPECIFIC GRAVITY:	0.7221 estimated
SOLUBILITY:	Partially	APPEARANCE/ODOR:	White compressed

PRESSURE: 70-90 psig @ 70°F
FREEZING POINT: Not Available
FLASHBACK: Yes
FLASH POINT: -156°F (-104.4°C) Propellant

liquefied gas, solvent odor
FORM: Aerosol PHYSICAL
STATE: Liquid
FLAMMABILITY (HOC): 26,798 kJ/g estimated
FLASHBACK: Yes

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PRO CHEM, INC.
 1475 BLUEGRASS LAKES PKWY
 ALPHARETTA, GA 30004
 EMERGENCY/INFO# (800) 241-8180
 ADDITIONAL EMERGENCY/INFO TRAC 1-800-535-6053

MATERIAL SAFETY DATA SHEET

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SECTION 10 - Stability and Reactivity

INCOMPATIBLE MATERIALS: Strong oxidizing agents
HAZARDOUS DECOMPOSITION PRODUCTS: May include oxides of carbon. No hazardous decomposition products are known.

SECTION 11 - Toxicological Information

ACUTE EFFECTS:

Acute LD50: 2886 mg/kg estimated, Rat, Dermal
 Acute LC50: 4 mg/4h estimated, Rat, Inhalation

COMPONENT ANALYSIS: LOSO:

Toxicology Data - Selected LD50s and LC50s
 Aliphatic Petroleum Solvent 64742-89-8

Paraffinic, Naphthenic Solvent 64742-47-8

Petroleum Distillate 64742-52-5

Propane 74-98-6

SENSITIZATION: TERATOGENICITY:

Oral LD50 Mouse 5000 mg/kg; Dermal LD50 Rabbit 3000 mg/kg
 Inhalation LC50 Rat >5.2 mg/L 4 h; Oral LD50 Rat >5000 mg/kg; Dermal LD50 Rabbit >2000 mg/kg
 Inhalation LC50 Rat 2.18 mg/L 4 h; Oral LD50 Rat >5000 mg/kg; Dermal LD50 Rabbit >2000 mg/kg
 Inhalation LC50 Rat 658 mg/L 4 h
 Not expected to be hazardous by OSHA criteria. Not expected to be hazardous by OSHA criteria.

SECTION 12 - Ecological Information

ECOTOXICITY: LC50 480 mg/L estimated, Fish, 96.00 Hours,
 EC50 2568 mg/L estimated, Daphnia, 48.00 Hours, IC50 14696 mg/L estimated, Algae, 72.00 Hours.
 Contains a substance which causes risk of hazardous effects to the environment.

SECTION 13 - Disposal Consideration

WASTE CODES: D001: Waste Flammable material with a flash point <140 F
DISPOSAL INSTRUCTIONS: Contents under pressure. Dispose of this material and its container to hazardous or special waste collection point. Do not incinerate sealed containers. If discarded, this product is considered a RCRA ignitable waste, D001. Dispose in accordance with applicable regulations.

SECTION 14 - Transport Information

DEPARTMENT OF TRANSPORTATION (DOT) REQUIREMENTS: BASIC SHIPPING REQUIREMENTS:

PROPER SHIPPING NAME: HAZARD CLASS: Consumer commodity
 ORM-D
 None
SUBSIDIARY HAZARD CLASS: None
ADDITIONAL INFORMATION:
PACKAGING EXCEPTIONS: 156, 306

PACKAGING NON BULK: PACKAGING BULK: 156, 306
 None

IMDG BASIC SHIPPING REQUIREMENTS:

PROPER SHIPPING NAME: Aerosols
HAZARD CLASS: 2.1
UN NUMBER: 1950
ADDITIONAL INFORMATION:
PACKAGING EXCEPTIONS: ITEM: LTD QTY
 SF

Complies With USDL Safety and Health Regulations (29 CFR 1910.200)

None
 2

TRANSPORT CATEGORY:

IATA

BASIC SHIPPING REQUIREMENTS:

HAZARD CLASS: Aerosols, flammable
UN NUMBER: 2.1
ADDITIONAL INFORMATION: 1950

PACKAGING EXCEPTIONS: LTD QTY
LABEL REQUIRED: None

SECTION 15 - Regulatory Information

US FEDERAL REGULATIONS: This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

CERCLA/SARA Hazardous Substances - Not applicable.

Occupational Safety and Health Administration (OSHA) 29

CFR 1910.1200 hazardous Yes

Chemical: None

CERCLA (Superfund) reportable quantity: None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Section 302 extremely hazardous substance: No

Section 311 hazardous chemical: Yes

Hazard categories (311/312): Immediate Hazard - Yes

Delayed Hazard - No Fire Hazard - Yes Pressure Hazard - Yes Reactivity Hazard - No

INVENTORY STATUS

Country(s) or region	Inventory name	On Inventory (yes/no)
China	Inventory of Existing Chemical Substances in (IECSC)	No China
Europe	European Inventory of New and Existing Chemicals (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

STATE REGULATIONS:

U.S. - Pennsylvania - RTK (Right to Know) List

Aliphatic Petroleum Solvent	64742-89-8	Present
Paraffinic, Naphthenic Solvent	64742-47-8	Present
Petroleum Distillate	64742-52-5	Present
Propane	74-98-6	Present

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PRO CHEM, INC.
1475 BLUEGRASS LAKES HWY.
ALPHARETTA, GA 30004
EMERGENCY/INFO # (800) 241-8180
ADDITIONAL EMERGENCY # INFO TRAC 1-800-635-5053

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Complies With USDL Safety and Health Regulations, (29 CFR 1910.200)

SECTION 16 - Other Information

Further Information: HMIS® is a registered trade and service mark of the NPCA. HMIS:

Health: 1
Flammability: 3 Physical
hazard: 0

NOTICE: The information contained on this Material Safety Data Sheet is considered accurate as of the date of publication. It is not necessarily all inclusive nor fully adequate in every circumstance. The suggestions should not be confused with, nor followed in violation of applicable laws, regulations, rules or insurance requirements. No warranty, express or implied, of merchantability, fitness, accuracy of data, or the results to be obtained from the use thereof is made. The vendor assumes no responsibility for injury or damages resulting from the inappropriate use of this product.

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WITH USE

G. Welding & Cutting Materials

1.) Abrasive Blades & Wheels

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identity / Trade Name: Grinding and Cutting Wheels, Resinoid (Type 1, Type 27, Type 28, Type 29),
Cup Wheels (Type 11) Cones and Plugs (Type 16, Type 17 and Type 18),
Mounted Points

Product Use: Abrasive materials used for cutting and grinding metals, concrete, masonry and building materials.

Manufacturer: United Abrasives, Inc.
185 Boston Post Road North
Windham, CT 06256

Internet: www.unitedabrasives.com

Information Phone: (860) 456-7131 **Emergency Phone:** (860) 456-7131

MSDS Date of Preparation: September 22, 2015

2. HAZARDS IDENTIFICATION

This product is a black, brown or reddish colored solid wheel with no odor.

EMERGENCY OVERVIEW

Dust may cause eye and respiratory irritation. Dust particles may cause abrasive injury to the eyes.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Component	CAS #	%
Aluminum Oxide	1344-28-1	0-95
Silicon Carbide	409-21-2	0-95
Zirconium Oxide	1314-23-4	0-80
Cured Phenolic Resin	N/A	1-30
Nitrile Compounds	N/A	1-20
Fluoride Compounds	N/A	1-20
Iron Pyrite	12068-85-8	0-20
Woven Fiberglass	N/A	0-15
Calcium Compounds	N/A	0-15
Sulfur	7704-34-9	0-15
Calcium Oxide	1305-78-8	1-10
Cryolite	15096-52-3	1-10
Cured Epoxy Resin	N/A	1-10
Titanium Dioxide	13463-67-7	0-5
Calcium Carbonate	1317-65-3	0-5
Aluminum Potassium fluoride	14484-69-6	0-5
Iron Oxide	1309-37-1	0-5
Graphite	7782-42-5	0-5
Potassium Fluoroborate	14075-53-7	0-5

4. FIRST AID MEASURES

Ingestion: If grinding dust is swallowed, seek medical attention.

Inhalation: If overexposed to grinding dust, remove victim to fresh air and get medical attention.

Eye Contact: Flush eyes thoroughly with water, holding open eyelids. Get medical attention if irritation persists. Obtain immediate medical attention for foreign body in the eye.

Skin Contact: Wash dust from skin with soap and water. Launder contaminated clothing before reuse.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Use any media that is appropriate for the surrounding fire.

Special Firefighting Procedures: None needed.

Unusual Fire and Explosion Hazards: This product is not combustible, however, consideration must be given to the potential fire/explosion hazards from the base material being processed. Many materials create flammable/explosive dusts or turnings when machined or ground.

Hazardous Combustion Products: None known.

6. ACCIDENTAL RELEASE MEASURES

Pick up, sweep up or vacuum and place in a container for disposal. Minimize generation of dust. Notify authorities as required by local, state and federal regulations.

7. HANDLING AND STORAGE

Recommended Work Practices: Use only with adequate ventilation. Avoid breathing dust. Wash thoroughly after handling and use, especially before eating, drinking or smoking. Refer to ANSI B7.1, Safety Requirements for the Use, Care and Protection of Abrasive Wheels for additional information. Consider potential exposure to components of the base materials or coatings being ground. Refer to OSHA's substance specific standards for additional work practice requirements where applicable.

Storage: Store in accordance with ANSI B7.1. Protect abrasive wheels from damage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines:

Hazardous Component	OSHA PEL	ACGIH TLV
Aluminum Oxide	5 mg/m ³ (Respirable fraction) 15 mg/m ³ (total dust)	1 mg/m ³ (respirable) (as Al metal)
Silicon Carbide	None Established	10 mg/m ³ (inhalable) 3 mg/m ³ (respirable)
Zirconium Oxide (as zirconium compounds)	5 mg/m ³	5 mg/m ³ 10 mg/m ³ STEL
Cured Phenolic Resin	None Established	None Established
Nitrile Compounds	None Established	None Established
Fluoride Compounds	2.5 mg/m ³	2.5 mg/m ³
Iron Pyrite	None Established	None Established
Woven Fiberglass	5 mg/m ³ (Respirable fraction) 15 mg/m ³ (total dust)	5 mg/m ³ (Inhalable) 1 f/cc
Calcium Compounds	None Established	None Established
Sulfur	None Established	None Established
Calcium Oxide	5 mg/m ³	2 mg/m ³
Cryolite (as fluorides)	2.5 mg/m ³	2.5 mg/m ³
Cured epoxy resin	None Established	None Established
Titanium Dioxide	15 mg/m ³ (total dust)	10 mg/m ³

United Abrasives MSDS #1/2
Resinoid Bonded Abrasives

Calcium Carbonate	5 mg/m ³ (Respirable fraction) 15 mg/m ³ (total dust)	None Established
Aluminum Potassium Fluoride (as Al metal)	5 mg/m ³ (Respirable fraction) 15 mg/m ³ (total dust)	1 mg/m ³ (respirable)
Aluminum Potassium Fluoride (as fluorides)	2.5 mg/m ³	2.5 mg/m ³
Iron Oxide	10 mg/m ³ (fume)	5 mg/m ³ (respirable)
Graphite	15 mppcf	2 mg/m ³ (respirable)
Potassium Fluoroborate (as fluorides)	2.5 mg/m ³	2.5 mg/m ³

Note: Consider also components of base materials and coatings being ground.

Ventilation: Use local exhaust or general ventilation as required to minimize exposure to dust and maintain the concentration of contaminants below the TLVs.

Respiratory Protection: Use NIOSH approved respirator if exposure limits are exceeded or where dust exposures are excessive. Consider the potential for exposure to components of the coatings or base material being ground in selecting proper respiratory protection. Refer to OSHA's specific standards for lead, cadmium, etc. where appropriate. Selection of respiratory protection depends on the contaminant type, form and concentration. Select and use respirators in accordance with OSHA 1910.134 and good industrial hygiene practice.

Gloves: Cloth or leather gloves recommended.

Eye Protection: Safety goggles or face shield over safety glasses with side shields.

Other: Protective clothing as needed to prevent contamination of personal clothing. Hearing protection may be required.

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point: Not Applicable

Solubility in Water: Insoluble

Specific Gravity: Not Applicable

Melting Point: Not Applicable

Flammable Limits: LEL: Not Applicable

Appearance and Odor: Black, brown or reddish colored solid wheel with no odor.

Vapor Pressure: (mm Hg) Not Applicable

Vapor Density: (Air = 1) Not Applicable

Evaporation Rate: Not Applicable

Flash Point: Non-Combustible

UEL: Not Applicable

10. STABILITY AND REACTIVITY

Stability: Stable

Incompatibility: None known.

Hazardous Decomposition Products: Dust from grinding could contain ingredients listed in Section 3 and other, potentially more hazardous components of the base material being ground or coatings applied to the base material. **Hazardous**

Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

HEALTH HAZARDS:

Ingestion: None expected under normal use conditions. Swallowing large pieces may cause obstruction of the gastrointestinal tract.

Inhalation: Dust may cause respiratory irritation.

Eye: Dust may cause eye irritation. Dust particles may cause abrasive injury to the eyes.

Skin: None expected under normal use conditions. Rubbing product across the skin may cause mechanical irritation or abrasions.

Sensitization: This material is not known to cause sensitization.

Chronic: Long-term overexposure to respirable dust may cause lung damage (fibrosis) with symptoms of coughing, shortness of breath and diminished breathing capacity. Chronic effects may be aggravated by smoking. Prolonged overexposure to fluorides may cause a bone condition, fluorosis. Prolonged exposure to elevated noise levels during operations may affect hearing. A greater hazard, in most cases, is the exposure to the dust/fumes from the material or paint/coatings being ground. Most of the dust generated during grinding is from the base material being ground and the potential hazard from this exposure must be evaluated.

Carcinogenicity: Titanium Dioxide is listed by IARC as a group 2B Carcinogen (suspected human carcinogen). None of the other components is listed as a carcinogen or potential carcinogen by OSHA, NTP or IARC. **Medical Conditions Aggravated by Exposure:** Employees with pre-existing respiratory disease may be at risk from exposure.

Acute Toxicity Values:

This product and its components are not acutely toxic. The only acute toxicity data available for the components are listed below.

Aluminum Oxide: Oral rat LD50 >5,000 mg/kg

Cryolite: Oral rat LD50 >5,000 mg/kg

12. ECOLOGICAL INFORMATION

No ecological data is available for this product. No hazards to the environment are expected from this product. However, consideration must be given to potential environment effects of the base material being processed.

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable local, state/provincial and federal regulations. Local regulations may be more stringent than regional and national requirements. It is the responsibility of the waste generator to determine the toxicity and physical characteristics of the material to determine the proper waste identification and disposal in compliance with applicable regulations.

14. TRANSPORT INFORMATION

DOT Hazardous Materials Description:

Proper Shipping Name: Not Regulated UN

Number: None

Hazard Class/Packing Group: None Labels

Required: None

15. REGULATORY INFORMATION

SARA Section 311/312 Hazard Categories: Not Applicable (manufactured articles)

SARA Section 313: Some products contain the following toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 (Toxic Chemical Release Reporting): None

California Proposition 65: WARNING You create dust when you cut, sand, drill or grind materials such as wood, paint, cement, masonry or metal. This dust often contains chemicals known to cause cancer, birth defects or other reproductive harm.

Canadian WHMIS Classification: Not a controlled product. This product meets the definition of a "manufactured article" under the WHMIS regulations.

This product has been classified under the CPR and this MSDS discloses information elements required by the CPR.

16. OTHER INFORMATION

NFPA Hazard Rating: Health: 1

Fire: 0
Reactivity: 0

Date Previous Revision: 12/1/09

Date This Revision: 9/22/15

Revision Summary: Section 3 Updated Composition, Section 8 Updated exposure limits, Section 11 Updated Acute toxicity values.

The preceding information is believed to be correct and current as of the date of preparation of this Material Safety Data Sheet. Since the use of this information and the conditions of use of this product are not within the control of United Abrasives, Inc., it is the user's obligation to assure safe use of this product.

2.) *Compressed Acetylene*

SAFETY DATA SHEET

Airgas

Acetylene

Section 1. Identification

GHS product identifier	: Acetylene
Chemical name	: acetylene
Other means of identification	: Ethyne; Ethine; Narcylen; C2H2; Acetylen; UN 1001; Vinylene
Product type	: Gas.
Product use	: Synthetic/Analytical chemistry.
Synonym	: Ethyne; Ethine; Narcylen; C2H2; Acetylen; UN 1001; Vinylene
SDS #	: 001001
Supplier's details	: Airgas USA, LLC and its affiliates 259 North Radnor-Chester Road Suite 100 Radnor, PA 19087-5283 1-610-687-5253
24-hour telephone	: 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture	: FLAMMABLE GASES - Category 1 GASES UNDER PRESSURE - Compressed gas

GHS label elements

Hazard pictograms



Signal word	: Danger
Hazard statements	: Extremely flammable gas. May form explosive mixtures with air. Contains gas under pressure; may explode if heated. May displace oxygen and cause rapid suffocation.

Precautionary statements

General	: Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Fusible plugs in top, bottom, or valve melt at 98°C to 107°C (208°F to 224°F). Do not discharge at pressures above 15psig (103kpa). Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Approach suspected leak area with caution.
Prevention	: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Response	: Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so.
Storage	: Protect from sunlight. Store in a well-ventilated place.
Disposal	: Not applicable.

Hazards not otherwise classified

: In addition to any other important health or physical hazards, this product may displace oxygen and cause rapid suffocation.

Section 3. Composition/information on ingredients

Substance/mixture : Substance
 Chemical name : acetylene
 Other means of identification : Ethyne; Ethine; Narcylen; C2H2; Acetylen; UN 1001; Vinylene

Product code : 001001

CAS number/other identifiers

CAS number : 74-86-2

Ingredient name	%	CAS number
acetylene	100	74-86-2

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : As this product is a gas, refer to the inhalation section.

Most important symptoms/effects, acute and delayed Potential acute

health effects

Eye contact : Contact with rapidly expanding gas may cause burns or frostbite.
Inhalation : No known significant effects or critical hazards.
Skin contact : Contact with rapidly expanding gas may cause burns or frostbite.
Frostbite : Try to warm up the frozen tissues and seek medical attention.
Ingestion : As this product is a gas, refer to the inhalation section.

Over-exposure signs/symptoms

Eye contact : No specific data.
Inhalation : No specific data.
Skin contact : No specific data.
Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Section 4. First aid measures

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : Contains gas under pressure. Extremely flammable gas. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.

Hazardous thermal decomposition products : Decomposition products may include the following materials: carbon dioxide
carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk. If this is impossible, withdraw from area and allow fire to burn. Fight fire from protected location or maximum possible distance. Eliminate all ignition sources if safe to do so.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : Accidental releases pose a serious fire or explosion hazard. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.

Large spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures

- : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Avoid breathing gas. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement. Use only non-sparking tools. Avoid contact with eyes, skin and clothing. Empty containers retain product residue and can be hazardous. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment.

Advice on general occupational hygiene

- : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

- : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Eliminate all ignition sources. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F). Keep container tightly closed and sealed until ready for use. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters Occupational exposure limits

Ingredient name	Exposure limits
acetylene	<p>NIOSH REL (United States, 10/2016). CEIL: 2662 mg/m³ CEIL: 2500 ppm</p> <p>ACGIH TLV (United States, 3/2017). Oxygen Depletion [Asphyxiant].</p> <p>California PEL for Chemical Contaminants (Table AC-1) (United States). Oxygen Depletion [Asphyxiant].</p>

Appropriate engineering controls

- : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls

- : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures

- : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 8. Exposure controls/personal protection

- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side- shields.
- Skin protection Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti- static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

- Physical state** : Gas.
- Color** : Colorless.
- Odor** : Mild. Ethereal.
- Odor threshold** : Not available.
- pH** : Not available.
- Melting point** : -81°C (-113.8°F)
- Boiling point** : Not available.
- Critical temperature** : 35.25°C (95.5°F)
- Flash point** : Closed cup: -18.15°C (-0.67°F)
- Evaporation rate** : Not available.

- Flammability (solid, gas)** : Extremely flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and oxidizing materials.
Highly flammable in the presence of the following materials or conditions: heat.

- Lower and upper explosive (flammable) limits** : Lower: 2.5%
Upper: 100%

- Vapor pressure** : 635 (psig)
- Vapor density** : 0.907 (Air = 1)

- Specific Volume (ft³/lb)** : 14.7058
- Gas Density (lb/ft³)** : 0.0691
- Relative density** : Not applicable.
- Solubility** : Not avai

Section 9. Physical and chemical properties

Decomposition temperature : Not available.

Viscosity : Not applicable.

Flow time (ISO 2431) : Not available.

Molecular weight : 26.04 g/mole

Aerosol product

Heat of combustion : -48257522 J/kg

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

Incompatible materials : Oxidizers

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects Acute

toxicity

Not available.

Irritation/Corrosion

Not available.

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Acetylene
Not available.

Section 9. Physical and chemical properties

Section 11. Toxicological information

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Contact with rapidly expanding gas may cause burns or frostbite.
Inhalation : No known significant effects or critical hazards.
Skin contact : Contact with rapidly expanding gas may cause burns or frostbite.
Ingestion : As this product is a gas, refer to the inhalation section.

Symptoms related to the physical, chemical and toxicological characteristics Eye contact

Eye contact : No specific data.
Inhalation : No specific data.
Skin contact : No specific data.
Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure Short term

exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards. No
Carcinogenicity : known significant effects or critical hazards. No
Mutagenicity : known significant effects or critical hazards. No
Teratogenicity : known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Not available.

Acetylene

Section 11 Toxicological information

[Persistence and degradability](#)

Not available.

[Bioaccumulative potential](#)

Acetylene

Section 12. Ecological information

Product/ingredient name	LogP _{ow}	BCF	Potential
acetylene	0.37	-	low

Mobility in soil






Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty Airgas-owned pressure vessels should be returned to Airgas. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1001	UN1001	UN1001	UN1001	UN1001
UN proper shipping name	ACETYLENE, DISSOLVED	ACETYLENE, DISSOLVED	ACETYLENE, DISSOLVED	ACETYLENE, DISSOLVED	ACETYLENE, DISSOLVED
Transport hazard class(es)	2.1 	2.1 	2.1 	2.1 	2.1 
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Additional information

DOT Classification

: **Limited quantity** Yes.

Quantity limitation Passenger aircraft/rail: Forbidden. Cargo aircraft: 15 kg.

TDG Classification

: Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2).

Explosive Limit and Limited Quantity Index

0

Passenger Carrying Ship Index

75

Passenger Carrying Road or Rail

Section 14. Transport information

Special provisions

38

IATA

: **Quantity limitation** Passenger and Cargo Aircraft: Forbidden. Cargo Aircraft Only: 15 kg.

Special precautions for user

: **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations

: TSCA 8(a) CDR Exempt/Partial exemption: Not determined

Clean Air Act (CAA) 112 regulated flammable substances: acetylene

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs)

: Not listed

Clean Air Act Section 602 Class I Substances

: Not listed

Clean Air Act Section 602 Class II Substances

: Not listed

DEA List I Chemicals (Precursor Chemicals)

: Not listed

DEA List II Chemicals (Essential Chemicals)

: Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ

: Not applicable.

SARA 311/312

Classification

: Refer to Section 2: Hazards Identification of this SDS for classification of substance.

State regulations

Massachusetts

: This material is listed.

New York

: This material is not listed.

New Jersey

: This material is listed.

Pennsylvania

: This material is listed. International

regulations Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Acetylene

[Rotterdam Convention on Prior Informed Consent \(PIC\)](#)

Not listed

Section 14. Transport information

[UNECE Aarhus Protocol on POPs and Heavy Metals](#)

Section 15. Regulatory information

Not listed.

Inventory list

Australia	: This material is listed or exempted.
Canada	: This material is listed or exempted.
China	: This material is listed or exempted.
Europe	: This material is listed or exempted.
Japan	: Japan inventory (ENCS): This material is listed or exempted. : Japan inventory (ISHL): Not determined.
Malaysia	: Not determined.
New Zealand	: This material is listed or exempted.
Philippines	: This material is listed or exempted.
Republic of Korea	: This material is listed or exempted.
Taiwan	: This material is listed or exempted.
Thailand	: Not determined.
Turkey	: This material is listed or exempted.
United States	: This material is listed or exempted.
Viet Nam	: Not determined.

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health	/	0
Flammability		4
Physical hazards		3

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)



Note: The instability hazard rating for acetylene, dissolved (stabilized acetylene) is 2.

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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification		Justification	
Date of issue/Date of revision	: 1/18/2018	Date of previous issue	: 10/10/2017
		Version	: 1.01 14/11

FLAMMABLE GASES - Category 1	Expert judgment According
GASES UNDER PRESSURE - Compressed gas	to package
Section 15. Regulatory information	

Section 16. Other information

History

Date of printing : 1/18/2018
Date of issue/Date of revision : 1/18/2018
Date of previous issue : 10/10/2017
Version : 1.01

Key to abbreviations

: ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References

: Not available.

✓ Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

3.) Compressed Oxygen

SAFETY DATA SHEET

Oxygen

Section 1. Identification

GHS product identifier	: Oxygen
Chemical name	: oxygen
Other means of identification	: Molecular oxygen; Oxygen molecule; Pure oxygen; O ₂ ; UN 1072; Dioxygen; Oxygen USP, Aviator's Breathing Oxygen (ABO)
Product use	: Synthetic/Analytical chemistry.
Synonym	: Molecular oxygen; Oxygen molecule; Pure oxygen; O ₂ ; UN 1072; Dioxygen; Oxygen USP, Aviator's Breathing Oxygen (ABO)
SDS #	: 001043
Supplier's details	: Airgas USA, LLC and its affiliates 259 North Radnor-Chester Road Suite 100 Radnor, PA 19087-5283 1-610-687-5253
24-hour telephone	: 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture	: OXIDIZING GASES - Category 1 GASES UNDER PRESSURE - Compressed gas

GHS label elements

Hazard pictograms



Signal word : Danger

Hazard statements : May cause or intensify fire; oxidizer.
Contains gas under pressure; may explode if heated.

Precautionary statements

General

: Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Open valve slowly. Use only with equipment cleaned for Oxygen service.

Prevention

: Keep away from clothing, incompatible materials and combustible materials. Keep reduction valves, valves and fittings free from oil and grease.

Response

: In case of fire: Stop leak if safe to do so.

Storage

: Protect from sunlight when ambient temperature exceeds 52°C/125°F. Store in a well-ventilated place.

Disposal

: Not applicable.

Hazards not otherwise classified

: None known.

Section 3. Composition/information on ingredients

Substance/mixture	: Substance
Chemical name	: oxygen
Other means of identification	: Molecular oxygen; Oxygen molecule; Pure oxygen; O ₂ ; UN 1072; Dioxygen; Oxygen USP, Aviator's Breathing Oxygen (ABO)

CAS number/other identifiers

CAS number	: 7782-44-7
Product code	: 001043

Ingredient name	%	CAS number
oxygen	100	7782-44-7

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact	: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
Inhalation	: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Skin contact	: As this product is a gas, refer to the inhalation section.
Ingestion	: As this product is a gas, refer to the inhalation section.

Most important symptoms/effects, acute and delayed Potential acute

health effects

Eye contact	: Contact with rapidly expanding gas may cause burns or frostbite.
Inhalation	: No known significant effects or critical hazards.
Skin contact	: Contact with rapidly expanding gas may cause burns or frostbite.
Frostbite	: Try to warm up the frozen tissues and seek medical attention.
Ingestion	: As this product is a gas, refer to the inhalation section.

Over-exposure signs/symptoms

Eye contact	: No specific data.
Inhalation	: No specific data.
Skin contact	: No specific data.
Ingestion	: No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	: Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
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Specific treatments : No specific treatment.

Section 4. First aid measures

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : Contains gas under pressure. Oxidizing material. This material increases the risk of fire and may aid combustion. Contact with combustible material may cause fire. In a fire or if heated, a pressure increase will occur and the container may burst or explode.

Hazardous thermal decomposition products : No specific data.

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.

Large spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Section 7. Handling and storage

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Avoid contact with eyes, skin and clothing. Avoid breathing gas. Keep away from clothing, incompatible materials and combustible materials. Keep reduction valves free from grease and oil. Empty containers retain product residue and can be hazardous. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Separate from acids, alkalies, reducing agents and combustibles. Keep container tightly closed and sealed until ready for use. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

Section 8. Exposure controls/personal protection

Control parameters Occupational exposure limits

oxygen

None.

- Appropriate engineering controls** : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection Hand protection

- : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection

- : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Section 8. Exposure controls/personal protection

- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance Physical

- state Color** : Gas. [Compressed gas.]
- Molecular weight Molecular formula** : Colorless. Blue.
- Boiling/condensation point** : 32 g/mole
- Melting/freezing point** : O₂
- Critical temperature** : -183°C (-297.4°F)
- Odor** : -218.4°C (-361.1°F)
- Odor threshold** : -118.15°C (-180.7°F)
- pH** : Odorless.
- Flash point** : Not available.
- : Not available.
- : [Product does not sustain combustion.]
- Burning time** : Not applicable.
- Burning rate** : Not applicable.
- Evaporation rate** : Not available.
- Flammability (solid, gas)** : Extremely flammable in the presence of the following materials or conditions: reducing materials, combustible materials and organic materials.
- Lower and upper explosive (flammable) limits** : Not available.
- Vapor pressure** : Not available.
- Vapor density** : 1.1 (Air = 1)
- Specific Volume (ft³/lb)** : 12.0482
- Gas Density (lb/ft³)** : 0.083
- Relative density** : Not applicable.
- Solubility** : Not available.
- Solubility in water** : Not available.
- Partition coefficient: n-octanol/water** : 0.65
- Auto-ignition temperature** : Not available.
- Decomposition temperature** : Not available.
- SADT** : Not available.
- Viscosity** : Not applicable.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Date of issue/Date of revision : 1/27/2017 **Date of previous issue** : 8/26/2015 **Version** : 0.02 **5/11**

Oxygen

Section 8: Exposure controls/personal protection

Section 10. Stability and reactivity

- Possibility of hazardous reactions** : Hazardous reactions or instability may occur under certain conditions of storage or use. Conditions may include the following:
contact with combustible materials
Reactions may include the following: risk of causing fire
- Conditions to avoid** : No specific data.
- Incompatible materials** : Highly reactive or incompatible with the following materials: combustible materials
reducing materials grease
oil
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.
- Hazardous polymerization** : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects Acute

toxicity

Not available.

Irritation/Corrosion

Not available.

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Oxygen

Eye contact

: Contact with rapidly expanding gas may cause burns or frostbite.

Section 10. Stability and reactivity

Section 11. Toxicological information

- Skin contact** : Contact with rapidly expanding gas may cause burns or frostbite.
Ingestion : As this product is a gas, refer to the inhalation section.

Symptoms related to the physical, chemical and toxicological characteristics Eye contact

- : No specific data.
Inhalation : No specific data.
Skin contact : No specific data.
Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

- General** : No known significant effects or critical hazards. No
Carcinogenicity : known significant effects or critical hazards. No
Mutagenicity : known significant effects or critical hazards. No
Teratogenicity : known significant effects or critical hazards.

- Developmental effects** : No known significant effects or critical hazards.
Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
oxygen	0.65	-	low

Oxygen

Section 11. Toxicological information

Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.










Section 12. Ecological information

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty Airgas-owned pressure vessels should be returned to Airgas. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1072	UN1072	UN1072	UN1072	UN1072
UN proper shipping name	OXYGEN, COMPRESSED	OXYGEN, COMPRESSED	OXYGEN, COMPRESSED	OXYGEN, COMPRESSED	OXYGEN, COMPRESSED
Transport hazard class(es)	2.2 (5.1)  	2.2 	2.2 (5.1)  	2.2 (5.1)  	2.2 (5.1)  
Packing group	-	-	-	-	-
Environment	No.	No.	No.	No.	No.
Additional information	<p>Limited quantity Yes.</p> <p>Packaging instruction Passenger aircraft Quantity limitation: 75 kg</p> <p>Cargo aircraft Quantity limitation: 150 kg</p> <p>Special provisions A52</p>	<p>Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2), 2.23-2.25 (Class 5).</p> <p>Explosive Limit and Limited Quantity Index 0.125</p> <p>ERAP Index 3000</p> <p>Passenger Carrying Ship Index 50</p> <p>Passenger Carrying Road or Rail Index 75</p> <p>Special provisions 42</p>	-	-	<p>Passenger and Cargo Aircraft Quantity limitation: 75 kg Cargo Aircraft Only Quantity limitation: 150 kg</p>

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 14. Transport information

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : TSCA 8(a) CDR Exempt/Partial exemption: This material is listed or exempted.
United States inventory (TSCA 8b): This material is listed or exempted.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Sudden release of pressure

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
oxygen	100	No.	Yes.	No.	No.	No.

State regulations

Massachusetts : This material is listed.

New York : This material is not listed.

New Jersey : This material is listed.

Pennsylvania : This material is listed.

International regulations

International lists National

inventory

Australia : This material is listed or exempted.

Canada : This material is listed or exempted.

China : This material is listed or exempted.

Europe : This material is listed or exempted.

Japan : Not determined.

Oxygen

Malaysia : Not determined.

New Zealand : This material is listed or exempted.

Philippines : This material is listed or exempted.

Republic of Korea : This material is listed or exempted.

Taiwan : This material is listed or exempted.

Section 14. Transport Information

Section 15. Regulatory information

Canada

WHMIS (Canada)

: Class A: Compressed gas. Class C:
Oxidizing material.

CEPA Toxic substances: This material is not listed.

Canadian ARET: This material is not listed.

Canadian NPRI: This material is not listed.

Alberta Designated Substances: This material is not listed. **Ontario**

Designated Substances: This material is not listed. **Quebec**

Designated Substances: This material is not listed.

Section 16. Other information

Canada Label requirements

: Class A: Compressed gas.
Class C: Oxidizing material.

Hazardous Material Information System (U.S.A.)

Health	0
Flammability	0
Physical hazards	3

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on SDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material. [National Fire](#)

Protection Association (U.S.A.)



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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
Ox. Gas 1, H270 Press. Gas Comp. Gas, H280	Expert judgment According to package

History

Date of printing : 1/27/2017
Date of issue/Date of revision : 1/27/2017
Date of previous issue : 8/26/2015
Version : 0.02

Key to abbreviations

: ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References

: Not available.

▣ Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

4.) *Welding Rod (6010)*

Safety Data Sheet: E6011 WELDING ELECTRODE

Supersedes Date Not applicable

Issuing Date 04/17/2013

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name E6011 WELDING ELECTRODE

Recommended use Welding

Information on Manufacturer

Partsmaster, Div of NCH Corp.

P.O. Box 655326 Dallas,

TX 75265-5326

Product Code IT7025B

Chemical nature Inorganic solid blend

Emergency Telephone Number

CHEMTREC® 800-424-9300

Telephone inquiry

972-579-2477

2. HAZARD IDENTIFICATION

Color Dark gray

Physical State Solid

Odor Not significant

GHS

Classification

Physical Hazards

None Health

Hazard

Acute Oral Toxicity

Acute Aquatic Toxicity

Chronic Aquatic Toxicity

Other hazards

None

Category 4

Category 1

Category 1

Labeling Signal

Word

WARNING



Hazard Statements

H302 - Harmful if swallowed

H410 - Very toxic to aquatic life with long lasting effects

Precautionary Statements

P264 - Wash face, hands and any exposed skin thoroughly after handling. P270 -

Do not eat, drink or smoke when using this product

P273 - Avoid release to the environment P330 -

Rinse mouth

P301+ P312 - IF SWALLOWED: Call a physician if unwell

P501 - Dispose of contents and container to an approved waste disposal plant.

Dispose of contents/container to an approved incineration plant

106.5 % of the mixture consists of ingredient(s) of unknown toxicity

3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS-No	Weight %
Iron	7439-89-6	60-100
Cellulose pulp	65996-61-4	1-5
Magnesium oxide	1309-48-4	<5
Sodium silicate	1344-09-8	1-5
Titanium dioxide	13463-67-7	<5
Manganese	7439-96-5	1-5
Quartz	14808-60-7	<.5
Calcium carbonate	1317-65-3	.5-1.5

4. FIRST AID MEASURES

General advice

Wash thoroughly after handling. Do not take internally.

Eye Contact
Skin Contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician
Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes

Inhalation If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion If swallowed, call a poison control center or doctor immediately. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Rinse mouth.

Notes to physician Treat symptomatically

5. FIRE-FIGHTING MEASURES

Flash Point The product is not flammable **Method** Set a closed cup
Upper No data available **Lower** No data available
Suitable Extinguishing Media
 Carbon dioxide (CO2). Dry chemical. Foam. Water spray.
Specific hazards arising from the chemical
 The product causes burns of eyes, skin and mucous membranes
Protective Equipment and Precautions for Firefighters
 As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear
NFPA Health 2 Flammability 1 Instability 0 Other 0
HMIS Health 2 Flammability 1 Instability 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions Use personal protective equipment. Prevent further leakage or spillage if safe to do so. Material can create slippery conditions.

Environmental Precautions Do not flush into surface water or sanitary sewer system.

Methods for Containment Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).

Methods for Cleaning Up Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).

Neutralizing Agent Not applicable.

7. HANDLING AND STORAGE

Handling Avoid contact with skin, eyes and clothing.

Storage Store in original container. Keep containers tightly closed in a dry, cool and well-ventilated place. **Storage**

Temperature **Minimum** No information available **Maximum** No information available **Storage**

Conditions **Indoor** X **Outdoor** X **Heated** **Refrigerated**

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH
Iron	No data available	No data available	No data available
Cellulose pulp	No data available	No data available	No data available
Magnesium oxide	TWA: 10 mg/m ³	TWA: 15 mg/m ³	IDLH: 750 mg/m ³
Sodium silicate	No data available	No data available	No data available
Titanium dioxide	TWA: 10 mg/m ³	TWA: 15 mg/m ³	IDLH: 5000 mg/m ³
Manganese	TWA: 0.2 mg/m ³	Ceiling: 5 mg/m ³	IDLH: 500 mg/m ³ STEL 3 mg/m ³ TWA: 1 mg/m ³
Quartz	TWA: 0.025 mg/m ³	No data available	IDLH: 50 mg/m ³ TWA: 0.05 mg/m ³
Calcium carbonate	No data available	TWA: 15 mg/m ³ TWA: 5 mg/m ³	TWA: 10 mg/m ³ TWA: 5 mg/m ³

Engineering Measures Use enough ventilation, local exhaust at the arc, or both to keep the fumes and gasses below the TLV's in the workers' breathing zone and the general area. Train the worker to keep his head out of the fumes. Use MSHA/NIOSH approved or equivalent fume respirator or air supplied respirator when welding in a confined space or when local exhaust or ventilation does not keep exposure below TLV.

Personal Protective Equipment

Eye/Face Protection
Skin Protection

Safety glasses with side-shields.
 Wear head, hand and body protection which help to prevent injury from radiation, sparks and electrical shock. SEE ANSI Z-49.1. Train the welder not to touch live electrical parts and to insulate himself from work and ground

Respiratory Protection	Use a NIOSH/MSHA approved or equivalent fume respirator or air supplied respirator when welding in confined spaces, or where local exhaust or ventilation does not keep exposure below TLV's .
General Hygiene Considerations	Do not eat, drink or smoke when using this product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Solid	Viscosity	Not applicable
Color	Dark gray	Odor	Not significant
Odor Threshold	Not applicable	Appearance	Metallic
pH	Not applicable	Specific Gravity	No data available
Evaporation Rate	No information available	Percent Volatile (Volume)	No information available
VOC Content (%)	No information available	Vapor Pressure	No information available
Vapor Density	Not applicable	Solubility	Insoluble
n-Octanol/Water Partition	No data available	Melting Point/Range	2150 2710 °F / 1177 °C
Decomposition Temperature	No data available	Boiling Point/Range	No data available
Flammability (solid, gas)	No data available	Method	Seta closed cup
Flash Point	The product is not flammable		
Autoignition Temperature	No information available.		
Upper No data available Lower No data available			

10. STABILITY AND REACTIVITY

Chemical Stability	Stable under normal conditions
Conditions to Avoid	None known
Incompatible Products	No materials to be especially mentioned
Hazardous Decomposition Products	None under normal use
Possibility of Hazardous Reactions	None under normal processing

11. TOXICOLOGICAL INFORMATION

Product Information

The following values are calculated based on chapter 3.1 of the GHS document (Rev. 3, 2009): Oral LD50

Dermal LD50	No information available
Inhalation LC50	No information available
Gas	No information available
Mist	No information available
Vapor	No information available

Principle Route of Exposure Inhalation, Ingestion.

Primary Routes of Entry Inhalation

Acute Effects

Eyes May cause slight irritation

Skin Substance may cause slight skin irritation

Inhalation Inhalation may cause central nervous system effects. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness.

Ingestion Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Chronic Toxicity No information available

Target Organ Effects Blood, Central nervous system, Kidney, Respiratory system.

Aggravated Medical Conditions Central nervous system, Kidney disorders.

Component Information

Acute Toxicity

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation	Draize Test	Other
Iron	= 984 mg/kg (Rat)	no data available	no data available	no data available	no data available
Cellulose pulp	no data available	no data available	no data available	no data available	no data available
Magnesium oxide	no data available	no data available	no data available	no data available	no data available
Sodium silicate	= 1153 mg/kg (Rat)	> 4640 mg/kg (Rabbit)	no data available	no data available	no data available
Titanium dioxide	> 10000 mg/kg (Rat)	no data available	no data available	no data available	no data available
Manganese	= 9 g/kg (Rat)	no data available	no data available	no data available	no data available
Quartz	= 500 mg/kg (Rat)	no data available	no data available	no data available	no data available
Calcium carbonate	no data available	no data available	no data available	no data available	no data available

Chronic Toxicity

Component	Mutagenicity	Sensitization	Developmental Toxicity	Reproductive Toxicity	Target Organ Effects
Iron	no data available	no data available	no data available	no data available	no data available
Cellulose pulp	no data available	no data available	no data available	no data available	no data available
Magnesium oxide	no data available	no data available	no data available	no data available	eyes, respiratory system
Sodium silicate	no data available	no data available	no data available	no data available	kidneys
Titanium dioxide	no data available	no data available	no data available	no data available	respiratory system

Manganese	no data available	no data available	no data available	no data available	CNS,respiratory system,blood,kidneys
Quartz	no data available	no data available	no data available	no data available	eyes,respiratory system
Calcium carbonate	no data available	no data available	no data available	no data available	eyes, respiratory system, skin

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	ACGIH	IARC	NTP	OSHA	Other
Iron	not applicable	not applicable	not applicable	not applicable	not applicable
Cellulose pulp	not applicable	not applicable	not applicable	not applicable	not applicable
Magnesium oxide	not applicable	not applicable	not applicable	not applicable	not applicable
Sodium silicate	not applicable	not applicable	not applicable	not applicable	not applicable
Titanium dioxide	not applicable	Group 2B	not applicable	X	not applicable
Manganese	not applicable	not applicable	not applicable	not applicable	not applicable
Quartz	A2	Group 1	Known	X	not applicable
Calcium carbonate	not applicable	not applicable	not applicable	not applicable	not applicable

12. ECOLOGICAL INFORMATION

Product Information No information available.

Component Information

Component	Toxicity to Algae	Toxicity to Fish	Microtox	Water Flea	log Pow
Iron	no data available	LC50 = 13.6 mg/L <i>Morone saxatilis</i> 96 h LC50 = 0.56 mg/L <i>Cyprinus carpio</i> 96 h	no data available	no data available	N/A
Cellulose pulp	no data available	no data available	no data available	no data available	N/A
Magnesium oxide	no data available	no data available	no data available	no data available	N/A
Sodium silicate	no data available	LC50 301 - 478 mg/L <i>Lepomis macrochirus</i> 96 h LC50 = 3185 mg/L <i>Brachydanio rerio</i> 96 h	no data available	EC50= 216 mg/L 96 h	N/A
Titanium dioxide	no data available	no data available	no data available	no data available	N/A
Manganese	no data available	no data available	no data available	no data available	N/A
Quartz	no data available	no data available	no data available	no data available	N/A
Calcium carbonate	no data available	no data available	no data available	no data available	N/A

Persistence and Degradability No information available.

Bioaccumulation No information available.

Mobility No information available.

13. DISPOSAL CONSIDERATIONS

Product Disposal Dispose of in accordance with local regulations.

Container Disposal Empty containers should be taken for local recycling, recovery, or waste disposal.

14. TRANSPORT INFORMATION

DOT Not regulated

TDG Not regulated

ICAO Not regulated

IATA Not regulated

IMDG/IMO Not regulated

15. REGULATORY INFORMATION

Inventories

TSCA Complies

DSL Complies

U.S. Federal Regulations SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals

5.) Welding Rod (308L-16)

Excalibur[®] 308L-16

AWS E308L-16 • Stainless

Typical Applications

- ◆ Type 302, 304 and 308 stainless steels
- ◆ A743 and A744 Type CF-8 cast material

Conformances

AWSA5.4/A5.4M:2006	E308L-16
ASME SFA-A5.4:	E308L-16
ABS:	E308L-16
CWB/CSA W48-06:	E308L-16
MIL-E-22200/2:	MIL-308L-16

Welding Positions

All, except vertical down

Key Features

- ◆ Flux coating provides smooth arc ~~in~~ all welding positions, except vertical down
- ◆ Versatile electrode designed to weld ~~a~~ types of austenitic steels
- ◆ Q2 Lot* - Certificate showing actual ~~h~~ composition and calculated ferrite number (FN) available online
- ◆ Designed with low carbon levels to ~~e~~liminate carbide precipitation in high

temperature service

DIAMETERS / PACKAGING

Diameter in (mm)	Length in (mm)	8 lb (3.6 kg) Easy Open Can	10 lb (4.5 kg) Easy Open Can
3/32 (2.4)	12 (300)	ED033079	
1/8 (3.2)	14 (350)		ED033080
5/32 (4.0)	14 (350)		ED033081
3/16 (4.8)	14 (350)		ED033082

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.4/A5.4M: 2006

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Ferrite Number
Requirements - AWS E308L-16	Not Specified	520 (75) min.	35 min.	Not Specified
Typical Performance ⁽³⁾ - As-Welded	370-420 (54-61)	540-595 (78-86)	50-55	8-9

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.4/A5.4M: 2006

	%C ⁽⁴⁾	%Cr	%Ni	%Mo	%Mn
Requirements - AWS E308L-16	0.04-0.08 ⁽⁴⁾	18.0-21.0	9.0-11.0	0.75 max.	0.5-2.5
Typical Performance ⁽⁵⁾	0.02-0.03	19.5-19.8	9.7-10.3	0.04-0.13	0.6-0.9
	%Si	%P	%S	%Cu	
Requirements - AWS E308L-16	1.00 max.	0.04 max.	0.03 max.	0.75 max.	
Typical Performance ⁽⁵⁾	0.29-0.36	≤0.03	≤0.02	≤0.1	

TYPICAL OPERATING PROCEDURES

Polarity ⁽⁵⁾	Current (Amps)			
	3/32 in (2.4 mm)	1/8 in (3.2 mm)	5/32 in (4.0 mm)	3/16 in (4.8 mm)
DC+	40-70	60-100	90-140	120-185
AC	40-70	60-100	90-140	120-185

IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED

Fumes from the normal use of some welding products can contain significant quantities of components - such as chromium and manganese - which can lower the 5.0 mg/m³ maximum exposure guideline for general welding fume. BEFORE USE, READ AND UNDERSTAND THE MATERIAL SAFETY DATA SHEET (MSDS) FOR THIS PRODUCT AND SPECIFIC INFORMATION PRINTED ON THE PRODUCT CONTAINER.

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer below. ⁽⁴⁾AWS Requirement for E308L-16 is 0.08% max. carbon. ⁽⁵⁾Preferred polarity is listed

Material Safety Data Sheets (MSDS) and Certificates of Conformance are available on our website at www.lincolnelectric.com

TEST RESULTS

Test results for mechanical properties, deposit or electrode composition and diffusible hydrogen levels were obtained from a weld produced and tested according to prescribed standards, and should not be assumed to be the expected results in a particular application or weldment. Actual results will vary depending on many factors, including, but not limited to, weld procedure, plate chemistry and temperature, weldment design and fabrication methods. Users are cautioned to confirm by qualification testing, or other appropriate means, the suitability of any welding consumable and procedure before use in the intended application.

CUSTOMER ASSISTANCE POLICY

The Lincoln Electric Company is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for information or advice about their use of our products. Our employees respond to inquiries to the best of their ability based on information provided to them by the customers and the knowledge they may have concerning the application. Our employees, however, are not in a position to verify the information provided or to evaluate the engineering requirements for the particular weldment. Accordingly, Lincoln Electric does not warrant or guarantee or assume any liability with respect to such information or advice. Moreover, the provision of such information or advice does not create, expand, or alter any warranty on our products. Any express or implied warranty that might arise from the information or advice, including any implied warranty of merchantability or any warranty of fitness for any customers' particular purpose is specifically disclaimed.

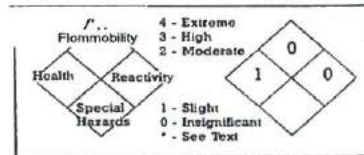
Lincoln Electric is a responsive manufacturer, but the selection and use of specific products sold by Lincoln Electric is solely within the control of, and remains the sole responsibility of the customer. Many variables beyond the control of Lincoln Electric affect the results obtained in applying these types of fabrication methods and service requirements.

Subject to Change – This information is accurate to the best of our knowledge at the time of printing. Please refer to www.lincolnelectric.com for any updated information.

6.) *Welding Rod (7018)*

Product: EasyArc 7018 MR

Date: 1/14/2011



SECTION IV - HEALTH HAZARD DATA

Threshold Limit Value: The ACGIH recommended general limit for Welding Fume NOS - (Not Otherwise Specified) is 5 mg/m^3 . ACGIH-1999 preface states that the TLV-TWA should be used as guides in the control of health hazards and should not be used as fine lines between safe and dangerous concentrations. See Section V for specific fume constituents which may modify this TLV. Threshold Limit Values are figures published by the American Conference of Government Industrial Hygienists. Units are milligrams per cubic meter of air.

Effects of Overexposure: Electric arc welding may create one or more of the following health hazards:

Fumes and Gases can be dangerous to your health. Common entry is by inhalation. Other possible routes are skin contact and ingestion.

Short-term (acute) overexposure to welding fumes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema).

Long-term (chronic) overexposure to welding fumes can lead to siderosis (iron deposits in lung) and may affect pulmonary function. Manganese overexposure can affect the central nervous system, resulting in impaired speech and movement. Bronchitis and some lung fibrosis have been reported. Repeated exposure to fluorides may cause excessive calcification of the bone and calcification of ligaments of the ribs, pelvis and spinal column. May cause skin rash. Titanium dioxide is listed on the IARC (International Agency for Research on Cancer) as a Group 2B carcinogen (possibly carcinogenic to humans based on animal studies). Respiratory exposure to the crystalline silica present in this welding electrode is not anticipated during normal use. Respiratory overexposure to airborne crystalline silica is known to cause silicosis, a form of disabling pulmonary fibrosis which can be progressive and may lead to death. Crystalline silica is on the IARC (International Agency for Research on Cancer) and NTP (National Toxicology Program) lists as posing a cancer risk to humans. WARNING: This product contains or produces a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code Section 25249.5 et seq.)

Arc Rays can injure eyes and burn skin. *Skin cancer has been reported.*

Electric Shock can kill. If welding must be performed in damp locations or with wet clothing, on metal structures or when in cramped positions such as sitting, kneeling or lying, or if there is a high risk of unavoidable or accidental contact with workpiece, use the following equipment: Semiautomatic DC Welder, DC Manual (Stick) Welder, or AC Welder with Reduced Voltage Control.

Emergency and First Aid Procedures: Call for medical aid. Employ first aid techniques recommended by the American Red Cross.

IF BREATHING IS DIFFICULT give oxygen. IF NOT BREATHING employ CPR (Cardiopulmonary Resuscitation) techniques. IN CASE OF ELECTRICAL SHOCK, turn off power and follow recommended treatment. In all cases call a physician.

SECTION V - REACTIVITY DATA

Hazardous Decomposition Products: Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure and electrodes used.

Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating, or galvanizing), the number of welders and the volume of the worker area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities.)

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section II. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section II, plus those from the base metal and coating, etc., as noted above.

Reasonably expected fume constituents of this product would include: Primarily iron oxide and fluorides; secondarily complex oxides of manganese, potassium, silicon, and sodium.

Maximum fume exposure guideline for this product (based on manganese content) is 3.0 milligrams per cubic meter.

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.

Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet if worn or in the worker's breathing zone. Improve ventilation if exposures are not below limits. See ANSI/AWS F1.1, F1.2, F1.3 and F1.5, available from the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

SECTION VI AND VII

CONTROL MEASURES AND PRECAUTIONS FOR SAFE HANDLING AND USE

Read and understand the manufacturer's instruction and the precautionary label on the product. Request Lincoln Safety Publication E205. See American National Standard Z49.1, "Safety in Welding, Cutting and Allied Processes" published by the American Welding Society, 550 N.W. LeJeune Road, Miami, FL, 33126 (both available for free download at <http://www.lincolncuttric.com/community/safety/>) and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954 for more details on many of the following:

Ventilation: Use enough ventilation, local exhaust at the arc, or both to keep the fumes and gases from the worker's breathing zone and the general area. **Train the welder to keep his head out of the fumes. Keep exposure as low as possible.**

Respiratory Protection: Use respirable fume respirator or air supplied respirator when welding in confined space or general work area when local exhaust or ventilation does not keep exposure below TLV.

Eye Protection: Wear helmet or use face shield with filter lens shade number 12 or darker. Shield others by providing screens and flash goggles.

Protective Clothing: Wear hand, head, and body protection which help to prevent injury from radiation, sparks and electrical shock. See Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the welder not to permit electrically live parts or electrodes to contact skin ... or clothing or gloves if they are wet. Insulate from work and ground.

Disposal Information: Discard any product, residue, disposable container, or liner as ordinary waste in an environmentally acceptable manner according to Federal, State and Local Regulations unless otherwise noted. No applicable ecological information available.