

SAFETY DATA SHEET

Ammonia

Section 1. Identification

GHS product identifier	: Ammonia
Chemical name	: ammonia, anhydrous
Other means of identification	: ammonia; anhydrous ammonia; Aqueous ammonia; Aqua ammonia
Product use	: Synthetic/Analytical chemistry.
Synonym	: ammonia; anhydrous ammonia; Aqueous ammonia; Aqua ammonia
SDS #	: 001003
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 2 GASES UNDER PRESSURE - Liquefied gas ACUTE TOXICITY (inhalation) - Category 4 SKIN CORROSION/IRRITATION - Category 1 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1 AQUATIC HAZARD (ACUTE) - Category 1

GHS label elements

Hazard pictograms



Signal word : Danger

Hazard statements : Flammable gas.
Contains gas under pressure; may explode if heated.
May cause frostbite.
May form explosive mixtures in Air.
Harmful if inhaled.
Causes severe skin burns and eye damage.
Very toxic to aquatic life.

Precautionary statements

General

: Read and follow all Safety Data Sheets (SDS'S) before use. 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. Always keep container in upright position. Approach suspected leak area with caution.

Prevention

: Wear protective gloves. Wear eye or face protection. Wear protective clothing. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Avoid breathing gas. Wash hands thoroughly after handling.

Section 2. Hazards identification

- Response** : Collect spillage. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. 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 physician. Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so.
- Storage** : Store locked up. Protect from sunlight when ambient temperature exceeds 52°C/125°F. Store in a well-ventilated place.
- Disposal** : Dispose of contents and container in accordance with all local, regional, national and international regulations.
- Hazards not otherwise classified** : Liquid can cause burns similar to frostbite.

Section 3. Composition/information on ingredients

- Substance/mixture** : Substance
- Chemical name** : ammonia, anhydrous
- Other means of identification** : ammonia; anhydrous ammonia; Aqueous ammonia; Aqua ammonia

CAS number/other identifiers

- CAS number** : 7664-41-7
- Product code** : 001003

Ingredient name	%	CAS number
ammonia, anhydrous	100	7664-41-7

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** : 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 10 minutes. Chemical burns must be treated promptly by a physician.
- Inhalation** : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. 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. 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. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Skin contact** : Get medical attention immediately. Call a poison center or physician. 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. Continue to rinse for at least 10 minutes. In case of contact with liquid, warm frozen tissues slowly with lukewarm water and get medical attention. Do not rub affected area. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Section 4. First aid measures

- Ingestion** : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Chemical burns must be treated promptly by a physician. Ingestion of liquid can cause burns similar to frostbite. If frostbite occurs, get medical attention. 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. As this product rapidly becomes a gas when released, refer to the inhalation section.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye damage. Liquid can cause burns similar to frostbite.
- Inhalation** : Harmful if inhaled.
- Skin contact** : Causes severe burns. Dermal contact with rapidly evaporating liquid could result in freezing of the tissues or frostbite.
- Frostbite** : Try to warm up the frozen tissues and seek medical attention.
- Ingestion** : Ingestion of liquid can cause burns similar to frostbite.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:., pain, watering, redness, frostbite
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:., pain or irritation, redness, blistering may occur, frostbite
- Ingestion** : Adverse symptoms may include the following:., frostbite, stomach pains

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

- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. 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** : None known.

- Specific hazards arising from the chemical** : Contains gas under pressure. 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. This material is very toxic to aquatic life. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
nitrogen oxides

Section 5. Fire-fighting measures

- 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. For incidents involving large quantities, thermally insulated undergarments and thick textile or leather gloves should be worn.

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. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe 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. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

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. Do not get in eyes or on skin or clothing. Do not breathe gas. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Store and use away from heat, sparks, open flame or any other ignition source. 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.

Section 7. Handling and storage

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). Store locked up. Eliminate all ignition sources. 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). Refer to ANSI/CGA G-2.1, Section 5.13 for electrical classification of anhydrous ammonia storage and handling areas. Where anhydrous ammonia is stored indoors, use electrical (ventilating, lighting and material handling) equipment with the appropriate electrical classification rating and use only non-sparking tools.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
ammonia, anhydrous	<p>ACGIH TLV (United States, 3/2015). STEL: 24 mg/m³ 15 minutes. STEL: 35 ppm 15 minutes. TWA: 17 mg/m³ 8 hours. TWA: 25 ppm 8 hours.</p> <p>NIOSH REL (United States, 10/2013). STEL: 27 mg/m³ 15 minutes. STEL: 35 ppm 15 minutes. TWA: 18 mg/m³ 10 hours. TWA: 25 ppm 10 hours.</p> <p>OSHA PEL (United States, 2/2013). TWA: 35 mg/m³ 8 hours. TWA: 50 ppm 8 hours.</p> <p>OSHA PEL 1989 (United States, 3/1989). STEL: 27 mg/m³ 15 minutes. STEL: 35 ppm 15 minutes.</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 ventilation equipment with the appropriate electrical classification rating.

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: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

Skin protection

Section 8. Exposure controls/personal 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. If contact with the liquid is possible, insulated gloves suitable for low temperatures should be worn. 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** : 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** : Gas. [Liquefied gas]
- Color** : Colorless.
- Molecular weight** : 17.03 g/mole
- Molecular formula** : H₃-N
- Boiling/condensation point** : -33°C (-27.4°F)
- Melting/freezing point** : -77.7°C (-107.9°F)
- Critical temperature** : 132.85°C (271.1°F)
- Odor** : Pungent.
- Odor threshold** : Not available.
- pH** : Not available.
- Flash point** : Not available.
- 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: oxidizing materials.
- Lower and upper explosive (flammable) limits** : Lower: 15%
Upper: 28%
- Vapor pressure** : 114.1 (psig)
- Vapor density** : 0.59 (Air = 1)
- Specific Volume (ft³/lb)** : 22.7273
- Gas Density (lb/ft³)** : 0.044
- Relative density** : Not applicable.
- Solubility** : Not available
- Solubility in water** : 540 g/l
- Partition coefficient: n-octanol/water** : Not available.
- Auto-ignition temperature** : 651°C (1203.8°F)
- Decomposition temperature** : Not available.

Section 9. Physical and chemical properties

SADT	: Not available.
Viscosity	: Not applicable.
Physical/chemical properties comments	: SPECIFIC GRAVITY (AIR=1): @ 70°F (21.1°C) = 0.59 PH: Approx. 11.6 for 1 N Sol'n. in water

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

Product/ingredient name	Result	Species	Dose	Exposure
ammonia, anhydrous	LC50 Inhalation Gas.	Rat	7338 ppm	1 hours

IDLH : 300 ppm

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

Section 11. Toxicological information

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

- Eye contact** : Causes serious eye damage. Liquid can cause burns similar to frostbite.
- Inhalation** : Harmful if inhaled.
- Skin contact** : Causes severe burns. Dermal contact with rapidly evaporating liquid could result in freezing of the tissues or frostbite.
- Ingestion** : Ingestion of liquid can cause burns similar to frostbite.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:., pain, watering, redness, frostbite
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:., pain or irritation, redness, blistering may occur, frostbite
- Ingestion** : Adverse symptoms may include the following:., frostbite, stomach pains

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.
- Carcinogenicity** : No known significant effects or critical hazards.
- 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.
- Fertility effects** : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Other information : IDLH : 300 ppm

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
ammonia, anhydrous	Acute EC50 29.2 mg/l Marine water	Algae - Ulva fasciata - Zoea	96 hours
	Acute LC50 2080 µg/l Fresh water	Crustaceans - Gammarus pulex	48 hours
	Acute LC50 0.53 ppm Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 300 µg/l Fresh water	Fish - Hypophthalmichthys nobilis	96 hours
	Chronic NOEC 0.204 mg/l Marine water	Fish - Dicentrarchus labrax	62 days

Persistence and degradability

Not available.

Bioaccumulative potential

Not available.

Mobility in soil


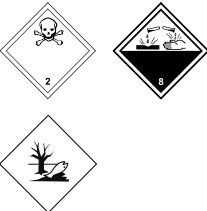

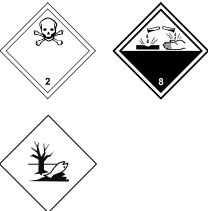

Soil/water partition coefficient (K_{oc}) : Not available.

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	UN1005	UN1005	UN1005	UN1005	UN1005
UN proper shipping name	AMMONIA, ANHYDROUS	AMMONIA, ANHYDROUS; OR ANHYDROUS AMMONIA	AMMONIA, ANHYDROUS	AMMONIA, ANHYDROUS	AMMONIA, ANHYDROUS
Transport hazard class(es)	2.2 	2.3 (8) 	2.3 (8) 	2.3 (8) 	2.3 (8) 
Packing group	-	-	-	-	-
Environment	No.	No.	No.	Yes.	No.

Section 14. Transport information

<p>Additional information</p>	<p>Inhalation hazard</p> <p>This product is not regulated as a marine pollutant when transported on inland waterways in sizes of ≤5 L or ≤5 kg or by road, rail, or inland air in non-bulk sizes, provided the packagings meet the general provisions of §§ 173.24 and 173.24a.</p> <p>Reportable quantity 100 lbs / 45.4 kg Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.</p> <p>Limited quantity Yes.</p> <p>Packaging instruction Passenger aircraft Quantity limitation: Forbidden.</p> <p>Cargo aircraft Quantity limitation: Forbidden.</p> <p>Special provisions 13,T50</p>	<p>Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2), 2.40-2.42 (Class 8), 2.7 (Marine pollutant mark).</p> <p>The marine pollutant mark is not required when transported by road or rail.</p> <p>Explosive Limit and Limited Quantity Index 0</p> <p>ERAP Index 3000</p> <p>Passenger Carrying Ship Index Forbidden</p> <p>Passenger Carrying Road or Rail Index Forbidden</p> <p>Special provisions</p>	<p>Toxic Inhalation Hazard Zone D</p>	<p>The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.</p>	<p>The environmentally hazardous substance mark may appear if required by other transportation regulations.</p> <p>Passenger and Cargo Aircraft Quantity limitation: 0 Forbidden</p> <p>Cargo Aircraft Only Quantity limitation: Forbidden</p>
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“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.

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: Not determined
United States inventory (TSCA 8b): This material is listed or exempted.
Clean Water Act (CWA) 311: ammonia, anhydrous

Clean Air Act (CAA) 112 regulated toxic substances: ammonia, anhydrous

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

Section 15. Regulatory information

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

Name	%	EHS	SARA 302 TPQ		SARA 304 RQ	
			(lbs)	(gallons)	(lbs)	(gallons)
ammonia, anhydrous	100	Yes.	500	-	100	-

SARA 304 RQ : 100 lbs / 45.4 kg

SARA 311/312

Classification : Fire hazard
Sudden release of pressure
Immediate (acute) health hazard

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
ammonia, anhydrous	100	Yes.	Yes.	No.	Yes.	No.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	ammonia, anhydrous	7664-41-7	100
Supplier notification	ammonia, anhydrous	7664-41-7	100

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 : This material is listed.
New York : This material is 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 : This material is listed or exempted.
Malaysia : This material is listed or exempted.
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.

Canada

WHMIS (Canada) : Class A: Compressed gas.
Class B-1: Flammable gas.
Class D-1A: Material causing immediate and serious toxic effects (Very toxic).
Class E: Corrosive material

Section 15. Regulatory information

CEPA Toxic substances: This material is listed.

Canadian ARET: This material is not listed.

Canadian NPRI: This material is 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 B-1: Flammable gas.
Class D-1A: Material causing immediate and serious toxic effects (Very toxic).
Class E: Corrosive material

Hazardous Material Information System (U.S.A.)

Health	3
Flammability	1
Physical hazards	2

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
Flam. Gas 2, H221	Expert judgment
Press. Gas Liq. Gas, H280	Expert judgment
Acute Tox. 4, H332	Expert judgment
Skin Corr. 1, H314	Expert judgment
Eye Dam. 1, H318	Expert judgment
Aquatic Acute 1, H400	Expert judgment

History

Date of printing : 1/5/2017
Date of issue/Date of revision : 1/5/2017
Date of previous issue : 12/20/2016
Version : 0.09

Section 16. Other information

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.



SAFETY DATA SHEET

Issuing Date January 5, 2015

Revision Date June 12, 2015

Revision Number 1

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name Clorox® Regular-Bleach₁

Other means of identification

EPA Registration Number 5813-100

Recommended use of the chemical and restrictions on use

Recommended use Household disinfecting, sanitizing, and laundry bleach

Uses advised against No information available

Details of the supplier of the safety data sheet

Supplier Address

The Clorox Company
1221 Broadway
Oakland, CA 94612

Phone: 1-510-271-7000

Emergency telephone number

Emergency Phone Numbers For Medical Emergencies, call: 1-800-446-1014
For Transportation Emergencies, call Chemtrec: 1-800-424-9300

2. HAZARDS IDENTIFICATION


Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Skin corrosion/irritation	Category 1
Serious eye damage/eye irritation	Category 1

GHS Label elements, including precautionary statements

Emergency Overview

Signal word	Danger		
Hazard Statements	Causes severe skin burns and eye damage Causes serious eye damage		
			
Appearance	Clear, pale yellow	Physical State	Thin liquid
			Odor Bleach

Precautionary Statements - Prevention

Wash face, hands and any exposed skin thoroughly after handling.
 Wear protective gloves, protective clothing, face protection, and eye protection such as safety glasses.

Precautionary Statements - Response

Immediately call a poison center or doctor.
 If swallowed: Rinse mouth. Do NOT induce vomiting.
 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
 Wash contaminated clothing before reuse.
 If inhaled: Remove person to fresh air and keep comfortable for breathing.
 Specific treatment (see supplemental first aid instructions on this label).
 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Precautionary Statements - Storage

Store locked up.

Precautionary Statements - Disposal

Dispose of contents in accordance with all applicable federal, state, and local regulations.

Hazards not otherwise classified (HNOC)

Although not expected, heart conditions or chronic respiratory problems such as asthma, chronic bronchitis, or obstructive lung disease may be aggravated by exposure to high concentrations of vapor or mist.

Product contains a strong oxidizer. Always flush drains before and after use.

Unknown Toxicity

Not applicable.

Other information

Very toxic to aquatic life with long lasting effects.

Interactions with Other Chemicals

Reacts with other household chemicals such as toilet bowl cleaners, rust removers, acids, or products containing ammonia to produce hazardous irritating gases, such as chlorine and other chlorinated compounds.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No	Weight %	Trade Secret
Sodium hypochlorite	7681-52-9	5 - 10	*

* The exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES**First aid measures****General Advice**

Call a poison control center or doctor immediately for treatment advice. Show this safety data sheet to the doctor in attendance.

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

Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Inhalation

Move to fresh air. If breathing is affected, call a doctor.

Ingestion

Have person sip a glassful of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person. Call a poison control center or doctor immediately for treatment advice.

Protection of First-aiders

Avoid contact with skin, eyes, and 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 of eyes and skin.

Indication of any immediate medical attention and special treatment needed**Notes to Physician**

Treat symptomatically. Probable mucosal damage may contraindicate the use of gastric lavage.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

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

This product causes burns to eyes, skin, and mucous membranes. Thermal decomposition can release sodium chlorate and irritating gases and vapors.

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 eyes, skin, and clothing. Ensure adequate ventilation. Use personal protective equipment as required. For spills of multiple products, responders should evaluate the MSDSs of the products for incompatibility with sodium hypochlorite. Breathing protection should be worn in enclosed and/or poorly-ventilated areas until hazard assessment is complete.

Other Information

Refer to protective measures listed in Sections 7 and 8.

Environmental precautions

Environmental Precautions

This product is toxic to fish, aquatic invertebrates, oysters, and shrimp. Do not allow product to enter storm drains, lakes, or streams. See Section 12 for 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

Absorb and containerize. Wash residual down to sanitary sewer. Contact the sanitary treatment facility in advance to assure ability to process washed-down material.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes, and clothing. Do not eat, drink, or smoke when using this product.

Conditions for safe storage, including any incompatibilities

Storage Store away from children. Reclose cap tightly after each use. Store this product upright in a cool, dry area, away from direct sunlight and heat to avoid deterioration. Do not contaminate food or feed by storage of this product.

Incompatible Products Toilet bowl cleaners, rust removers, acids, and products containing ammonia.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Sodium hypochlorite 7681-52-9	None	None	None

ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value. OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limits. NIOSH IDLH: Immediately Dangerous to Life or Health.

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 (or goggles) or face shield.

Skin and Body Protection Wear rubber or neoprene gloves and protective clothing such as long-sleeved shirt.

Respiratory Protection If 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.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice. Wash hands after direct contact. Do not wear product-contaminated clothing for prolonged periods. Remove and wash contaminated clothing before re-use. Do not eat, drink, or smoke when using this product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Physical State	Thin liquid	Odor	Bleach
Appearance	Clear	Odor Threshold	No information available
Color	Pale yellow		

<u>Property</u>	<u>Values</u>	<u>Remarks/ Method</u>
pH	~12	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 Limits in Air		
Upper flammability limit	No data available	None known
Lower flammability limit	No data available	None known
Vapor pressure	No data available	None known
Vapor density	No data available	None known
Specific Gravity	~1.1	None known
Water Solubility	Soluble	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
Explosive Properties	Not explosive	
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

Reacts with other household chemicals such as toilet bowl cleaners, rust removers, acids, or products containing ammonia to produce hazardous irritating gases, such as chlorine and other chlorinated compounds.

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

Toilet bowl cleaners, rust removers, acids, and products containing ammonia.

Hazardous Decomposition Products

None known based on information supplied.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Inhalation	Exposure to vapor or mist may irritate respiratory tract and cause coughing. Inhalation of high concentrations may cause pulmonary edema.
Eye Contact	Corrosive. May cause severe damage to eyes.
Skin Contact	May cause severe irritation to skin. Prolonged contact may cause burns to skin.
Ingestion	Ingestion may cause burns to gastrointestinal tract and respiratory tract, nausea, vomiting, and diarrhea.

Component Information

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sodium hypochlorite 7681-52-9	8200 mg/kg (Rat)	>10000 mg/kg (Rabbit)	-

Information on toxicological effects

Symptoms May cause redness and tearing of the eyes. May cause burns to eyes. May cause redness or burns to skin. Inhalation may cause coughing.

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 (oral)

54 g/kg

ATEmix (inhalation-dust/mist)

58 mg/L

12. ECOLOGICAL INFORMATION**Ecotoxicity**

Very toxic to aquatic life with long lasting effects.

This product is toxic to fish, aquatic invertebrates, oysters, and shrimp. Do not allow product to enter storm drains, lakes, or streams.

Persistence and Degradability

No information available.

Bioaccumulation

No information available.

Other adverse effects

No information available.

13. DISPOSAL CONSIDERATIONS**Disposal methods**

Dispose of in accordance with all applicable federal, state, and local regulations. Do not contaminate food or feed by disposal of this product.

Contaminated Packaging

Do not reuse empty containers. Dispose of in accordance with all applicable federal, state, and local regulations.

14. TRANSPORT INFORMATION**DOT**

Not restricted.

TDG

Not restricted for road or rail.

ICAO

Not restricted, as per Special Provision A197, Environmentally Hazardous Substance exception.

IATA

Not restricted, as per Special Provision A197, Environmentally Hazardous Substance exception.

IMDG/IMO

Not restricted, as per IMDG Code 2.10.2.7, Marine Pollutant exception.

15. REGULATORY INFORMATION

Chemical Inventories

TSCA All components of this product are either on the TSCA 8(b) Inventory or otherwise exempt from listing.

DSL/NDSL All components are 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

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	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

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

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 RQ RQ 45.4 kg final RQ

EPA Statement

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

DANGER: CORROSIVE. Causes irreversible eye damage and skin burns. Harmful if swallowed. Do not get in eyes, on skin, or on clothing. Wear protective eyewear and rubber gloves when handling this product. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the restroom. Avoid breathing vapors and use only in a well-ventilated area.

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 chlorate 7775-09-9	X	X	X		

International Regulations**Canada****WHMIS Hazard Class**

E - Corrosive material

**16. OTHER INFORMATION**

NFPA Health Hazard 3 Flammability 0 Instability 0 Physical and Chemical Hazards -

HMIS Health Hazard 3 Flammability 0 Physical Hazard 0 Personal Protection B

Prepared By Product Stewardship
23 British American Blvd.
Latham, NY 12110
1-800-572-6501

Revision Date June 12, 2015

Revision Note Revision Section 14.

Reference 1096036/164964.159

General 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



SAFETY DATA SHEET

1. Identification

Product identifier HP LaserJet CE505A-AC-X-XC-XD Print Cartridge

Other means of identification Not available.

Recommended use This product is a toner preparation that is used in HP LaserJet P2055/P2035 series printers

Recommended restrictions None known.

Company identification HP
1501 Page Mill Road
Palo Alto, CA 94304-1112
United States
Telephone 650-857-5020

HP health effects line
(Toll-free within the US) 1-800-457-4209
(Direct) 1-760-710-0048
HP Customer Care Line
(Toll-free within the US) 1-800-474-6836
(Direct) 1-208-323-2551
Email: hpcustomer.inquiries@hp.com

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards Not classified.

Environmental hazards Not classified.

OSHA defined hazards Not classified.

Label elements

Hazard symbol None.

Signal word None.

Hazard statement Not available.

Precautionary statement

Prevention Not available.

Response Not available.

Storage Not available.

Disposal Not available.

Hazard(s) not otherwise classified (HNOC) None of the other ingredients in this preparation are classified as carcinogens according to ACGIH, EU, IARC, MAK, NTP or OSHA.

Supplemental information This product is not classified as hazardous according to OSHA CFR 1910.1200 (HazCom 2012).

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Styrene acrylate copolymer		Trade Secret	<55
Ferrite including zinc		Trade Secret	<50
Amorphous silica	Amorphous silica	7631-86-9	<2

4. First-aid measures

Inhalation Move person to fresh air immediately. If irritation persists, consult a physician.

Skin contact Wash affected areas thoroughly with mild soap and water. Get medical attention if irritation develops or persists.

Eye contact	Do not rub eyes. Immediately flush with large amounts of clean, warm water (low pressure) for at least 15 minutes or until particles are removed. If irritation persists, consult a physician.
Ingestion	Rinse mouth out with water. Drink one to two glasses of water. If symptoms occur, consult a physician.
Most important symptoms/effects, acute and delayed	Not available.

5. Fire-fighting measures

Suitable extinguishing media	CO2, water, or dry chemical
Unsuitable extinguishing media	None known.
Specific hazards arising from the chemical	Not applicable.
Special protective equipment and precautions for firefighters	Not available.
Fire-fighting equipment/instructions	If fire occurs in the printer, treat as an electrical fire.
Specific methods	None established.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Minimize dust generation and accumulation.
Methods and materials for containment and cleaning up	Not available.
Environmental precautions	Do not flush into surface water or sanitary sewer system. See also section 13 Disposal considerations.

7. Handling and storage

Precautions for safe handling	Keep out of the reach of children. Avoid inhalation of dust and contact with skin and eyes. Use with adequate ventilation. Keep away from excessive heat, sparks, and open flames.
Conditions for safe storage, including any incompatibilities	Keep out of the reach of children. Keep tightly closed and dry. Store at room temperature. Store away from strong oxidizers.

8. Exposure controls/personal protection

Occupational exposure limits

US. NIOSH: Pocket Guide to Chemical Hazards Components

Type	Value
Amorphous silica (CAS 7631-86-9)	TWA 6 mg/m3

Biological limit values

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

Exposure guidelines

USA OSHA (TWA/PEL): 15 mg/m3 (Total Dust), 5 mg/m3 (Respirable Fraction)

ACGIH (TWA/TLV): 10 mg/m3 (Inhalable Particulate), 3 mg/m3 (Respirable Particulate)

Amorphous silica: USA OSHA (TWA/PEL): 20 mppcf 80 (mg/m3)/%SiO2, ACGIH (TWA/TLV): 10 mg/m3

TRGS 900 (Luftgrenzwert) - 10 mg/m3 (Einatembare partikel), 3 mg/m3 (Alveolengängige fraktion)

UK WEL: 10 mg/m3 (Respirable Dust), 5 mg/m3 (Inhalable Dust)

Appropriate engineering controls

Use in a well ventilated area.

Individual protection measures, such as personal protective equipment

Eye/face protection Not available.

Skin protection	
Hand protection	Not available.
Other	Not available.
Respiratory protection	Not available.
Thermal hazards	Not available.

9. Physical and chemical properties

Appearance	Fine powder
Physical state	Solid.
Color	Black.
Odor	Slight plastic odor
Odor threshold	Not available.
pH	Not applicable
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not applicable
Flash point	Not applicable
Evaporation rate	Not applicable
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not flammable
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not applicable
Solubility(ies)	
Solubility (water)	Negligible in water. Partially soluble in toluene and xylene.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not applicable
Decomposition temperature	> 392 °F (> 200 °C)
Viscosity	Not applicable
Other information	
Percent volatile	Negligible
Softening point	212 - 302 °F (100 - 150 °C)
Specific gravity	1.4 - 1.8
VOC (Weight %)	Not applicable

10. Stability and reactivity

Reactivity	Not available.
Chemical stability	Stable under normal storage conditions.
Possibility of hazardous reactions	Will not occur.
Conditions to avoid	Imaging Drum: Exposure to light
Incompatible materials	Strong oxidizers
Hazardous decomposition products	Carbon monoxide and carbon dioxide.

11. Toxicological information

Symptoms related to the physical, chemical and toxicological characteristics Not available.

Information on toxicological effects

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

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 Negative, does not indicate mutagenic potential (Ames Test: Salmonella typhimurium)
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 Based on available data, the classification criteria are not met.

Further information Complete toxicity data are not available for this specific formulation
Refer to Section 2 for potential health effects and Section 4 for first aid measures.

Components	Species	Test Results
Amorphous silica (CAS 7631-86-9)		
Acute		
<i>Oral</i>		
LD50	Mouse	> 15000 mg/kg
	Rat	> 22500 mg/kg

12. Ecological information

Ecotoxicity

Product	Species	Test Results
CE505A-AC-X-XC-XD		
Aquatic		
Fish	LL50 Fish	> 1000 mg/l, 96 Hours

Persistence and degradability Not available.

Bioaccumulative potential Not available.

Mobility in soil Not available.

Other adverse effects Not available.

13. Disposal considerations

Disposal instructions Do not shred toner cartridge, unless dust-explosion prevention measures are taken. Finely dispersed particles may form explosive mixtures in air. Dispose of in compliance with federal, state, and local regulations.

HP's Planet Partners (trademark) supplies recycling program enables simple, convenient recycling of HP original inkjet and LaserJet supplies. For more information and to determine if this service is available in your location, please visit <http://www.hp.com/recycle>.

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

UN number UN2807
UN proper shipping name Magnetized Material
Transport hazard class(es)
Class Not available.
Subsidiary risk -
Packing group Not applicable.
Environmental hazards No.
Special precautions for user Not available.

IMDG

Not regulated as dangerous goods.

ADR

Not regulated as dangerous goods.

Further information 47 or more of these cartridges shipped together in a single package (e.g., box, container), by air, are regulated as a magnetized material. These requirements do not apply to single or dual pack cartridges contained in an original HP package and shrink wrapped on a pallet for shipment by air.

15. Regulatory information

US federal regulations US EPA TSCA Inventory: All chemical substances in this product comply with all rules or orders under TSCA.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

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

Not listed.

SARA 311/312 No
Hazardous chemical

Other federal regulations

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations Not applicable.

US. Massachusetts RTK - Substance List

Not regulated.

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

Not listed.

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

Not listed.

US. Rhode Island RTK

Not regulated.

US. California Proposition 65

Not Listed.

Regulatory information

All chemical substances in this HP product have been notified or are exempt from notification under chemical substances notification laws in the following countries: US (TSCA), EU (EINECS/ELINCS), Switzerland, Canada (DSL/NDSL), Australia, Japan, Philippines, South Korea, New Zealand, and China.

16. Other information, including date of preparation or last revision

Issue date 16-Apr-2015

Revision date 21-Sep-2015

Version # 03

Disclaimer

This Safety Data Sheet document is provided without charge to customers of HP. Data is the most current known to HP at the time of preparation of this document and is believed to be accurate. It should not be construed as guaranteeing specific properties of the products as described or suitability for a particular application. This document was prepared to the requirements of the jurisdiction specified in Section 1 above and may not meet regulatory requirements in other countries.

Revision Information

Other information, including date of preparation or last revision: Disclaimer

Manufacturer information

HP
11311 Chinden Boulevard
Boise, ID 83714 USA
(Direct) 1-503-494-7199
(Toll-free within the US) 1-800-457-4209

Explanation of abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
COC	Cleveland Open Cup
DOT	Department of Transportation
EPCRA	Emergency Planning and Community Right-to-Know Act (aka SARA)
IARC	International Agency for Research on Cancer
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
RCRA	Resource Conservation and Recovery Act
REC	Recommended
REL	Recommended Exposure Limit
SARA	Superfund Amendments and Reauthorization Act of 1986
STEL	Short-Term Exposure Limit
TCLP	Toxicity Characteristics Leaching Procedure
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
VOC	Volatile Organic Compounds

Safety Data Sheet

according to Hazard Communication Standard; 29 CFR 1910.1200



WINDEX® ORIGINAL GLASS CLEANER WITH AMMONIA-D®

Version 1.1

Print Date 03/04/2015

Revision Date 02/25/2015

SDS Number 350000014153

1. PRODUCT AND COMPANY IDENTIFICATION

Product information

- Product name** : **WINDEX® ORIGINAL GLASS CLEANER WITH AMMONIA-D®**
- Recommended use** : Hard Surface Cleaner
- Manufacturer, importer, supplier** : S.C. Johnson & Son, Inc.
1525 Howe Street
Racine WI 53403-2236
- Telephone** : +18005585252
- Emergency telephone number** : 24 Hour Medical Emergency Phone: (866)231-5406
24 Hour International Emergency Phone: (703)527-3887
24 Hour Transport Emergency Phone: (800)424-9300

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

Globally Harmonized System (GHS) Classification

This product does not meet the criteria for classification in any hazard class according to regulation OSHA 29 CFR 1910.1200.

Labelling

Precautionary statements

Other hazards : None identified

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product does not contain hazardous chemicals at or above a reportable level as defined by OSHA 29 CFR 1910.1200

For additional information on product ingredients, see www.whatsinsidescjohnson.com.

4. FIRST AID MEASURES

Safety Data Sheet

according to Hazard Communication Standard; 29 CFR 1910.1200



WINDEX® ORIGINAL GLASS CLEANER WITH AMMONIA-D®

Version 1.1

Print Date 03/04/2015

Revision Date 02/25/2015

SDS Number 350000014153

- Eye contact** : No special requirements
- Skin contact** : No special requirements
- Inhalation** : No special requirements.
- Ingestion** : No special requirements

5. FIREFIGHTING MEASURES

- Suitable extinguishing media** : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
- Specific hazards during firefighting** : Container may melt and leak in heat of fire.
- Further information** : Fight fire with normal precautions from a reasonable distance. Standard procedure for chemical fires. Wear full protective clothing and positive pressure self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

- Personal precautions** : Wash thoroughly after handling.
- Environmental precautions** : Outside of normal use, avoid release to the environment.
- Methods and materials for containment and cleaning up** : Dike large spills.
Clean residue from spill site.

7. HANDLING AND STORAGE

- Handling**
- Precautions for safe handling** : Avoid contact with skin, eyes and clothing.
For personal protection see section 8.
KEEP OUT OF REACH OF CHILDREN AND PETS.

Safety Data Sheet

according to Hazard Communication Standard; 29 CFR 1910.1200



WINDEX® ORIGINAL GLASS CLEANER WITH AMMONIA-D®

Version 1.1

Print Date 03/04/2015

Revision Date 02/25/2015

SDS Number 350000014153

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

Storage

Requirements for storage areas and containers : Keep container closed when not in use.

Other data : Stable under normal conditions.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

ACGIH or OSHA exposure limits have not been established for this product or reportable ingredients unless noted in the table above.

Personal protective equipment

Respiratory protection : No special requirements.

Hand protection : No special requirements.

Eye protection : No special requirements.

Skin and body protection : No special requirements.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Wash thoroughly after handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form : liquid

Color : blue

Odor : pleasant

Odour Threshold : Test not applicable for this product type

pH : 10.7

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at (25 C)

- Melting point/freezing point** : 0 C
- Initial boiling point and boiling range** : 100 C
- Flash point** : > 93 °C
> 199.4 °F
Approximate
- Evaporation rate** : No data available
- Flammability (solid, gas)** : Does not sustain combustion.
- Upper/lower flammability or explosive limits** : No data available
- Vapour pressure** : No data available
- Vapour density** : No data available
- Relative density** : 1.00 g/cm³ at 25 C
- Solubility(ies)** : soluble
- Partition coefficient: n-octanol/water** : No data available
- Auto-ignition temperature** : No data available
- Decomposition temperature** : No data available

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- Viscosity, dynamic** : No data available
- Viscosity, kinematic** : No data available
- Oxidizing properties** : No data available
- Volatile Organic Compounds** : 0.2 % - additional exemptions may apply
Total VOC (wt. %)* *as defined by US Federal and State Consumer Product Regulations
- Other information** : None identified :

10. STABILITY AND REACTIVITY

- Possibility of hazardous reactions** : If accidental mixing occurs and toxic gas is formed, exit area immediately. Do not return until well ventilated.
- Conditions to avoid** : Direct sources of heat.
- Incompatible materials** : Do not mix with bleach or any other household cleaners. Strong bases
- Hazardous decomposition products** : Thermal decomposition can lead to release of irritating gases and vapours.

11. TOXICOLOGICAL INFORMATION

- Emergency Overview** : This product does not meet the criteria for classification in any hazard class according to regulation OSHA 29 CFR 1910.1200.
- Acute oral toxicity** : LD50 estimated

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> 5,000 mg/kg

Acute inhalation toxicity : LC50
estimated
> 2.58 mg/l

Acute dermal toxicity : LD50
estimated
> 5,000 mg/kg

GHS Properties	Classification	Routes of entry
Acute toxicity	No classification proposed	-
Skin corrosion/irritation	No classification proposed	-
Serious eye damage/eye irritation	No classification proposed	-
Skin sensitisation	No classification proposed	-
Respiratory sensitisation	No classification proposed	-
Germ cell mutagenicity	No classification proposed	-
Carcinogenicity	No classification proposed	-
Reproductive toxicity	No classification proposed	-
Specific target organ toxicity - single exposure	No classification proposed	-
Specific target organ toxicity - repeated exposure	No classification proposed	-
Aspiration hazard	No classification proposed	-

Aggravated Medical Condition : None known.

Safety Data Sheet

according to Hazard Communication Standard; 29 CFR 1910.1200



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12. ECOLOGICAL INFORMATION

Product : The product itself has not been tested.

Toxicity

The ingredients in this formula have been reviewed and no adverse impact to the environment is expected when used according to label directions.

No environmental data required.

Other adverse effects : None known.

13. DISPOSAL CONSIDERATIONS

Consumer may discard empty container in trash, or recycle where facilities exist.

14. TRANSPORT INFORMATION

Please refer to the Bill of Lading/receiving documents for up-to-date shipping information.

Land transport

Not classified as dangerous in the meaning of transport regulations.

Sea transport

Not classified as dangerous in the meaning of transport regulations.

Air transport

Not classified as dangerous in the meaning of transport regulations.

15. REGULATORY INFORMATION

Notification status : All ingredients of this product are listed or are excluded from

Safety Data Sheet

according to Hazard Communication Standard; 29 CFR 1910.1200



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listing on the U.S. Toxic Substances Control Act (TSCA)
Chemical Substance Inventory.

Notification status : All ingredients of this product comply with the New Substances Notification requirements under the Canadian Environmental Protection Act (CEPA).

California Prop. 65 : This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

HMIS Ratings

Health	1
Flammability	2
Reactivity	0

NFPA Ratings

Health	1
Fire	2
Reactivity	0
Special	-

This information is being provided in accordance with the Occupational Safety and Health Administration (OSHA) regulation (29 CFR 1910.1200). The information supplied is designed for workplaces where product use and frequency of exposure exceeds that established for the labeled consumer use.

Further information

Safety Data Sheet

according to Hazard Communication Standard; 29 CFR 1910.1200



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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 and Local laws and regulations.

Prepared by	SC Johnson Global Safety Assessment & Regulatory Affairs (GSARA)
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SAFETY DATA SHEET

1. Product and Company Identification

Product identifier	NU-BRITE (4291-01, 4291-05, 4291-08, 4891-08)
Other means of identification	Not available
Recommended use	Coil Cleaner / Degreaser
Recommended restrictions	None known.
Manufacturer information	Nu-Calgon 2008 Altom Court St. Louis, MO 63146 US Phone: 314-469-7000 / 800-554-5499 Emergency Phone: 1-800-424-9300 (CHEMTREC)
Supplier	See above.

2. Hazards Identification

Physical hazards	Corrosive to metals	Category 1
Health hazards	Skin corrosion/irritation	Category 1
	Serious eye damage/eye irritation	Category 1
Environmental hazards	Not classified.	
WHMIS 2015 defined hazards	Not classified	
Label elements		



Signal word Danger

Hazard statement May be corrosive to metals.
Causes severe skin burns and eye damage.

Precautionary statement

Prevention Keep only in original packaging.
Do not breathe mist or vapor. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection.

Response Absorb spillage to prevent material-damage. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. 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. Specific treatment (see information on this label).

Storage Store in a corrosion resistant container with a resistant inner liner.
Store locked up.

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

WHMIS 2015: Health Hazard(s) not otherwise classified (HHNOC) None known

WHMIS 2015: Physical Hazard(s) not otherwise classified (PHNOC) None known

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

Supplemental information Not applicable.

3. Composition/Information on Ingredients

Mixture

Chemical name	Common name and synonyms	CAS number	%
Sodium hydroxide		1310-73-2	15-40
Alkyl polyglycoside		110615-47-9	1-5

Composition comments

US GHS: The exact percentage (concentration) of composition has been withheld as a trade secret in accordance with paragraph (i) of §1910.1200.

4. First Aid Measures

Inhalation	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
Skin contact	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Specific treatment (see information on this label). Wash contaminated clothing before reuse. Immediately call a POISON CENTER/doctor.
Eye contact	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.
Ingestion	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER/doctor.
Most important symptoms/effects, acute and delayed	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. If you feel unwell, seek medical advice (show the label where possible). Show this safety data sheet to the doctor in attendance. Use of an impervious apron is recommended. Avoid contact with eyes and skin. Wear rubber gloves and chemical splash goggles. Keep out of reach of children.

5. Fire Fighting Measures

Suitable extinguishing media	Treat for surrounding material.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Firefighters should wear a self-contained breathing apparatus.
Special protective equipment and precautions for firefighters	Firefighters should wear full protective clothing including self contained breathing apparatus.
Fire-fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
Hazardous combustion products	May include and are not limited to: Oxides of carbon.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep out of low areas. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe 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.
Methods and materials for containment and cleaning up	Large Spills: Stop leak if you can do so without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb spillage to prevent material damage. Absorb in vermiculite, dry sand or earth and place into containers. 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.
Environmental precautions	Never return spills to original containers for re-use. Avoid discharge into drains, water courses or onto the ground. Do not discharge into lakes, streams, ponds or public waters.

7. Handling and Storage

Precautions for safe handling	Avoid prolonged exposure. Wear appropriate personal protective equipment. Wash thoroughly after handling. Ensure adequate ventilation. Do not get in eyes, on skin or on clothing. Use good industrial hygiene practices in handling this material. Keep container tightly closed. Avoid breathing vapors or mists of this product.
Conditions for safe storage, including any incompatibilities	Store locked up. Store in a corrosion resistant container with a resistant inner liner. Store in a closed container away from incompatible materials. Keep only in the original container. Store in a cool, dry place out of direct sunlight. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure Controls/Personal Protection

Occupational exposure limits

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21)

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

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

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	PEL	2 mg/m3

US. ACGIH Threshold Limit Values

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

Biological limit values

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

Exposure guidelines

Chemicals listed in section 3 that are not listed here do not have established limit values for ACGIH.

Appropriate engineering controls

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.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear chemical goggles.

Skin protection

Hand protection

Rubber gloves. Confirm with a reputable supplier first.

Other

Wear appropriate chemical resistant clothing. As required by employer code. Rubber apron recommended.

Respiratory protection

Avoid breathing mists or vapors.

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).

Thermal hazards

Not applicable.

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. Wash hands before breaks and immediately after handling the product.

9. Physical and Chemical Properties

Appearance	Liquid
Physical state	Liquid.
Form	Liquid.
Color	Blue
Odor	Characteristic, Mild
Odor threshold	Not available.
pH	12.7 (1%) 14 (Concentrate)
Melting point/freezing point	32 °F (0 °C)
Initial boiling point and boiling range	212 °F (100 °C)
Pour point	Not available.
Specific gravity	1.24
Partition coefficient (n-octanol/water)	Not available
Flash point	None to boiling
Evaporation rate	Equal to water
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	Not available
Vapor density	Not available
Relative density	Not available.
Solubility(ies)	Complete
Auto-ignition temperature	Not available
Decomposition temperature	Not available.
Viscosity	Water thin
Other information	
Bulk density	10.36 lb/gal
VOC (Weight %)	None

10. Stability and Reactivity

Reactivity	Reacts violently with acids. This product may react with oxidizing agents.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Chemical stability	Stable under recommended storage conditions.
Conditions to avoid	Do not mix with other chemicals. Hazardous vapours may be produced when mixed with chlorinated detergents or sanitizers.
Incompatible materials	Oxidizing agents. Acids.
Hazardous decomposition products	May include and are not limited to: Oxides of carbon.

11. Toxicological Information

Routes of exposure	Eye, Skin contact, Inhalation, Ingestion.
Information on likely routes of exposure	
Ingestion	Causes digestive tract burns.

Inhalation	Prolonged inhalation may be harmful. May cause irritation to the respiratory system.
Skin contact	Causes severe skin burns.
Eye contact	Causes serious eye damage.
Symptoms related to the physical, chemical and toxicological characteristics	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

Information on toxicological effects

Acute toxicity

Components	Species	Test Results
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Alkyl polyglycoside (CAS 110615-47-9)

Acute

Dermal

LD50	Rabbit	> 2000 mg/kg
------	--------	--------------

Inhalation

LC50	Not available	
------	---------------	--

Oral

LD50	Rat	> 5000 mg/kg
------	-----	--------------

Sodium hydroxide (CAS 1310-73-2)

Acute

Dermal

LD50	Rabbit	1350 mg/kg
------	--------	------------

Inhalation

LC50	Not available	
------	---------------	--

Oral

LD50	Not available	
------	---------------	--

Skin corrosion/irritation Causes severe skin burns and eye damage.

Exposure minutes Not available.

Erythema value Not available.

Oedema value Not available.

Serious eye damage/eye irritation Causes serious eye damage.

Corneal opacity value Not available.

Iris lesion value Not available.

Conjunctival reddening value Not available.

Conjunctival oedema value Not available.

Recover days Not available.

Respiratory or skin sensitization

Canada - Alberta OELs: Irritant

Sodium hydroxide (CAS 1310-73-2)	Irritant
----------------------------------	----------

Respiratory sensitization Not available.

Skin sensitization This product is not expected to cause skin sensitization.

Mutagenicity Non-hazardous by WHMIS/OSHA criteria.

Carcinogenicity Non-hazardous by WHMIS/OSHA criteria.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity Non-hazardous by WHMIS/OSHA criteria.

Teratogenicity Non-hazardous by WHMIS/OSHA criteria.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not available.

Chronic effects Prolonged inhalation may be harmful. Non-hazardous by WHMIS/OSHA criteria.

12. Ecological Information

Ecotoxicity Components of this product have been identified as having potential environmental concerns. See below

Ecotoxicological data

Components		Species	Test Results
Sodium hydroxide (CAS 1310-73-2)			
Aquatic			
Crustacea	EC50	Water flea (<i>Ceriodaphnia dubia</i>)	34.59 - 47.13 mg/L, 48 hours
Fish	LC50	Western mosquitofish (<i>Gambusia affinis</i>)	125 mg/L, 96 hours

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential No data available.

Mobility in soil No data available.

Mobility in general Not 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

Disposal instructions 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.

Local disposal regulations Dispose in accordance with all applicable regulations.

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

Waste from residues / unused products 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).

Contaminated packaging 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.

14. Transport Information

Transport of Dangerous Goods (TDG) Proof of Classification In accordance with Part 2.2.1 (SOR/2014-152) of the Transportation of Dangerous Goods Regulations, we certify that the classification of this product is correct as of the SDS date of issue.

U.S. Department of Transportation (DOT)

Basic shipping requirements:

UN number	UN3266
Proper shipping name	Corrosive liquid, basic, inorganic, n.o.s.
Technical name	Sodium hydroxide
Hazard class	8
Packing group	II
Special provisions	386, B2, IB2, T11, TP2, TP27
Packaging exceptions	154
Packaging non bulk	202
Packaging bulk	242

Transportation of Dangerous Goods (TDG - Canada)

Basic shipping requirements:

UN number	UN3266
Proper shipping name	CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S.
Technical name	SODIUM HYDROXIDE
Hazard class	8
Packing group	II
Special provisions	16
Packaging exceptions	<1L - Limited Quantity

IATA/ICAO (Air)

Basic shipping requirements:

UN number	UN3266
Proper shipping name	Corrosive liquid, basic, inorganic, n.o.s.
Technical name	Sodium hydroxide
Hazard class	8
Packing group	II

IMDG (Marine Transport)**Basic shipping requirements:**

UN number	UN3266
Proper shipping name	CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S.
Technical name	Sodium hydroxide
Hazard class	8
Packing group	II

DOT**IATA; IMDG; TDG**

15. Regulatory Information

Canadian federal regulations This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (SOR/2015-17) and the SDS contains all the information required by the HPR.

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Precursor Control Regulations

Not regulated.

WHMIS 2015 Exemptions Not applicable

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Sodium hydroxide (CAS 1310-73-2) Listed.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - No Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
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SARA 302 Extremely hazardous substance	No
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SARA 311/312 Hazardous chemical	No
--	----

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.
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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) Hazardous substance

US state regulations

US - California Hazardous Substances (Director's): Listed substance

Sodium hydroxide (CAS 1310-73-2) Listed.

US - Illinois Chemical Safety Act: Listed substance

Sodium hydroxide (CAS 1310-73-2)

US - Louisiana Spill Reporting: Listed substance

Sodium hydroxide (CAS 1310-73-2) Listed.

US - Minnesota Haz Subs: Listed substance

Sodium hydroxide (CAS 1310-73-2) Listed.

US - New Jersey RTK - Substances: Listed substance

Sodium hydroxide (CAS 1310-73-2)

US - Texas Effects Screening Levels: Listed substance

Sodium hydroxide (CAS 1310-73-2) Listed.

US. Massachusetts RTK - Substance List

Sodium hydroxide (CAS 1310-73-2)

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

Not regulated.

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

Sodium hydroxide (CAS 1310-73-2)

US. Rhode Island RTK

Sodium hydroxide (CAS 1310-73-2)

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.

Inventory status

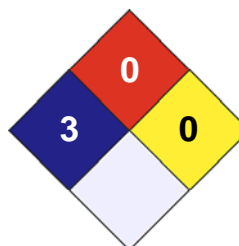
Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. Other Information

LEGEND	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0

HEALTH	/ 3
FLAMMABILITY	0
PHYSICAL HAZARD	0
PERSONAL PROTECTION	X



Disclaimer

The information in the sheet was written based on the best knowledge and experience currently available. 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.

Issue date 31-October-2016

Version # 01

Effective date 31-October-2016

Prepared by Nu-Calgon Technical Service Phone: (314) 469-7000

Other information For an updated SDS, please contact the supplier/manufacturer listed on the first page of the document.

SAFETY DATA SHEET

Nitrogen

Section 1. Identification

GHS product identifier	: Nitrogen
Chemical name	: nitrogen
Other means of identification	: nitrogen (dot); nitrogen gas; Nitrogen NF, Nitrogen FG
Product use	: Synthetic/Analytical chemistry.
Synonym	: nitrogen (dot); nitrogen gas; Nitrogen NF, Nitrogen FG
SDS #	: 001040
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 : GASES UNDER PRESSURE - Compressed gas

GHS label elements

Hazard pictograms :



Signal word : Warning

Hazard statements : 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. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction.

Prevention

: Not applicable.

Response

: Not applicable.

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

: 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 : nitrogen
Other means of identification : nitrogen (dot); nitrogen gas; Nitrogen NF, Nitrogen FG

CAS number/other identifiers

CAS number : 7727-37-9
Product code : 001040

Ingredient name	%	CAS number
Nitrogen	100	7727-37-9

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. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Skin contact** : 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.
- 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 : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Section 4. First aid measures

- 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 : Contains gas under pressure. In a fire or if heated, a pressure increase will occur and the container may burst or explode.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
nitrogen oxides

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.

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. 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.
- Large spill** : Immediately contact emergency personnel. Stop leak if without risk. 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 contact with eyes, skin and clothing. Avoid breathing gas. 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.

Section 7. Handling and storage

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). 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

Ingredient name	Exposure limits
Nitrogen	Oxygen Depletion [Asphyxiant]

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.

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	: Gas. [Compressed gas.]
Color	: Colorless.
Molecular weight	: 28.02 g/mole
Molecular formula	: N ₂
Boiling/condensation point	: -196°C (-320.8°F)
Melting/freezing point	: -210.01°C (-346°F)
Critical temperature	: -146.95°C (-232.5°F)
Odor	: Odorless.
Odor threshold	: Not available.
pH	: Not available.
Flash point	: [Product does not sustain combustion.]
Burning time	: Not applicable.
Burning rate	: Not applicable.
Evaporation rate	: Not available.
Flammability (solid, gas)	: Not available.
Lower and upper explosive (flammable) limits	: Not available.
Vapor pressure	: Not available.
Vapor density	: 0.967 (Air = 1) Liquid Density@BP: 50.46 lb/ft ³ (808.3 kg/m ³)
Specific Volume (ft³/lb)	: 13.8889
Gas Density (lb/ft³)	: 0.072
Relative density	: Not applicable.
Solubility	: Not available.
Solubility in water	: Not available.
Partition coefficient: n-octanol/water	: 0.67
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.
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	: No specific data.
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 10. Stability and reactivity

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

- 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** : 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.
- Carcinogenicity** : No known significant effects or critical hazards.

Section 11. Toxicological information

- 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.
- 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
Nitrogen	0.67	-	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	UN1066	UN1066	UN1066	UN1066	UN1066
UN proper shipping name	NITROGEN, COMPRESSED	NITROGEN, COMPRESSED	NITROGEN, COMPRESSED	NITROGEN, COMPRESSED	NITROGEN, COMPRESSED
Transport hazard class(es)	2.2 	2.2 	2.2 	2.2 	2.2 

Section 14. Transport information

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>Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2).</p> <p>Explosive Limit and Limited Quantity Index 0.125</p> <p>Passenger Carrying Road or Rail Index 75</p>	-	-	<p>Passenger and Cargo AircraftQuantity 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.

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
Nitrogen	100	No.	Yes.	No.	No.	No.

Section 15. Regulatory information

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.
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.

Canada

- WHMIS (Canada)** : Class A: Compressed gas.
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.

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.)



Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Section 16. Other information

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
Press. Gas Comp. Gas, H280	Expert judgment

History

Date of printing : 5/26/2016

Date of issue/Date of revision : 5/26/2016

Date of previous issue : 8/7/2015

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.



Safety Data Sheet

R-22

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: R-22
OTHER NAME: Chlorodifluoromethane
USE: Refrigerant Gas
DISTRIBUTOR: National Refrigerants, Inc.
661 Kenyon Avenue
Bridgeton, New Jersey 08302

FOR MORE INFORMATION CALL:
(Monday-Friday, 8:00am-5:00pm)
1-800-262-0012

IN CASE OF EMERGENCY CALL:
CHEMTREC: 1-800-424-9300

2. HAZARDS IDENTIFICATION

CLASSIFICATION:	Gases under pressure, Liquefied Gas	
SIGNAL WORD:	WARNING	
HAZARD STATEMENT:	Contains gas under pressure, may explode if heated	
SYMBOL:	Gas Cylinder	
PRECAUTIONARY STATEMENT:	STORAGE: Protect from sunlight, store in a well ventilated place	

EMERGENCY OVERVIEW: Colorless, volatile liquid with ethereal and faint sweetish odor. Non-flammable material. Overexposure may cause dizziness and loss of concentration. At higher levels, CNS depression and cardiac arrhythmia may result from exposure. Vapors displace air and can cause asphyxiation in confined spaces. At higher temperatures, (>250°C), decomposition products may include Hydrochloric Acid (HCl), Hydrofluoric Acid (HF) and carbonyl halides.

POTENTIAL HEALTH HAZARDS

SKIN: Irritation would result from a defatting action on tissue. Liquid contact could cause frostbite.

EYES: Liquid contact can cause severe irritation and frostbite. Mist may irritate.

INHALATION: R-22 is low in acute toxicity in animals. When oxygen levels in air are reduced to 12-14% by displacement, symptoms of asphyxiation, loss of coordination, increased pulse rate and deeper respiration will occur. At high levels, cardiac arrhythmia may occur.

INGESTION: Ingestion is unlikely because of the low boiling point of the material. Should it occur, discomfort in the gastrointestinal tract from rapid evaporation of the material and consequent evolution of gas would result. Some effects of inhalation and skin exposure would be expected.

DELAYED EFFECTS: None Known



Ingredients found on one of the OSHA designated carcinogen lists are listed below.

<u>INGREDIENT NAME</u>	<u>NTP STATUS</u>	<u>IARC STATUS</u>	<u>OSHA LIST</u>
No ingredients listed in this section			

3. COMPOSITION / INFORMATION ON INGREDIENTS

<u>INGREDIENT NAME</u>	<u>CAS NUMBER</u>	<u>WEIGHT %</u>
Chlorodifluoromethane	75-45-6	100

COMMON NAME and SYNONYMS
R-22; HCFC-22

There are no impurities or stabilizers that contribute to the classification of the material identified in Section 2

4. FIRST AID MEASURES

- SKIN:** Promptly flush skin with water until all chemical is removed. If there is evidence of frostbite, bathe (do not rub) with lukewarm (not hot) water. If water is not available, cover with a clean, soft cloth or similar covering. Get medical attention if symptoms persist.
- EYES:** Immediately flush eyes with large amounts of water for at least 15 minutes (in case of frostbite, water should be lukewarm, not hot) lifting eyelids occasionally to facilitate irrigation. Get medical attention if symptoms persist.
- INHALATION:** Immediately remove to fresh air. If breathing has stopped, give artificial respiration. Use oxygen as required, provided a qualified operator is available. Get medical attention immediately. **DO NOT** give epinephrine (adrenaline).
- INGESTION:** Ingestion is unlikely because of the physical properties and is not expected to be hazardous. **DO NOT** induce vomiting unless instructed to do so by a physician.
- ADVICE TO PHYSICIAN:** Because of the possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should be used with special caution and only in situations of emergency life support. Treatment of overexposure should be directed at the control of symptoms and the clinical conditions.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT:	Gas, not applicable per DOT regulations
FLASH POINT METHOD:	Not applicable
AUTOIGNITION TEMPERATURE:	Unknown
UPPER FLAME LIMIT (volume % in air):	None*
LOWER FLAME LIMIT (volume % in air):	None*
	*Based on ASHRAE Standard 34 with match ignition
FLAME PROPAGATION RATE (solids):	Not applicable
OSHA FLAMMABILITY CLASS:	Not applicable



EXTINGUISHING MEDIA:

Use any standard agent – choose the one most appropriate for type of surrounding fire (material itself is not flammable)

UNUSUAL FIRE AND EXPLOSION HAZARDS:

R-22 is not flammable at ambient temperatures and atmospheric pressure. However, this material will become combustible when mixed with air under pressure and exposed to strong ignition sources.

Contact with certain reactive metals may result in formation of explosive or exothermic reactions under specific conditions (e.g. very high temperatures and/or appropriate pressures).

SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:

Firefighters should wear self-contained, NIOSH-approved breathing apparatus for protection against possible toxic decomposition products. Proper eye and skin protection should be provided. Use water spray to keep fire-exposed containers cool.

6. ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR OTHER RELEASE:

(Always wear recommended personal protective equipment.)

Evacuate unprotected personnel. Product dissipates upon release. Protected personnel should remove ignition sources and shut off leak, if without risk, and provide ventilation. Unprotected personnel should not return to the affected area until air has been tested and determined safe, including low-lying areas.

Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting requirements.

7. HANDLING AND STORAGE

NORMAL HANDLING:

(Always wear recommended personal protective equipment.)

Avoid breathing vapors and liquid contact with eyes, skin or clothing. Do not puncture or drop cylinders, expose them to open flame or excessive heat. Use authorized cylinders only. Follow standard safety precautions for handling and use of compressed gas cylinders.

R-22 should not be mixed with air above atmospheric pressure for leak testing or any other purpose. See Section 5: Unusual Fire and Explosion Hazards

STORAGE RECOMMENDATIONS:

Store in a cool, well-ventilated area of low fire risk and out of direct sunlight. Protect cylinder and its fittings from physical damage. Storage in subsurface locations should be avoided. Close valve tightly after use and when empty.

INCOMPATIBILITIES:

Freshly abraded aluminum surfaces at specific temperatures and pressures may cause a strong exothermic reaction.
Chemically reactive metals: potassium, calcium, powdered aluminum, magnesium, and zinc.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS:

Provide local ventilation at filling zones and areas where leakage is probable. Mechanical (general) ventilation may be adequate for other operating and storage areas.



PERSONAL PROTECTIVE EQUIPMENT

SKIN PROTECTION:

Skin contact with refrigerant may cause frostbite. General work clothing and gloves (leather) should provide adequate protection. If prolonged contact with liquid or gas is anticipated, insulated gloves constructed of PVA, neoprene or butyl rubber should be used. Any contaminated clothing should be promptly removed and washed before reuse.

EYE PROTECTION:

For normal conditions, wear safety glasses. Where there is reasonable probability of liquid contact, wear chemical safety goggles.

RESPIRATORY PROTECTION:

None generally required for adequately ventilated work situations. For accidental release or non-ventilated situations, or release into confined space, where the concentration may be above the PEL of 1,000 ppm, use a self-contained, NIOSH approved breathing apparatus or supplied air respirator. For escape: use the former or a NIOSH approved gas mask with organic vapor canister.

ADDITIONAL RECOMMENDATIONS:

Where contact with liquid is likely, such as in a spill or leak, impervious boots and clothing should be worn. High dose-level warning signs are recommended for areas of principle exposure. Provide eyewash stations and quick-drench shower facilities at convenient locations. For tank cleaning operations, see OSHA regulations, 29 CFR 1910.132 and 29 CFR 1910.133.

EXPOSURE GUIDELINES

<u>INGREDIENT NAME</u>	<u>ACGIH TLV</u>	<u>OSHA PEL</u>	<u>OTHER LIMIT</u>
Chlorodifluoromethane	1000 ppm TWA (8hr)	1000 ppm TWA (8hr)	None

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:

Hydrogen Fluoride: ACGIH TLV = 2ppm ceiling, 0.5ppm TLV-TWA

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Clear, colorless liquid and vapor	
PHYSICAL STATE:	Gas at ambient temperatures	
MOLECULAR WEIGHT:	86.45	
CHEMICAL FORMULA:	CHClF ₂	
ODOR:	Faint ethereal odor	
SPECIFIC GRAVITY (water = 1.0):	1.21 @ 21.1°C (70°F)	
SOLUBILITY IN WATER (weight %):	0.3 wt% @ 25°C and 1 atmosphere	
pH:	Neutral	
BOILING POINT:	-40.8°C (-41.40°F)	
FREEZING POINT:	-160°C (-256°F)	
VAPOR PRESSURE:	136.1 psia @ 70°F 311.4 psia @ 130°F	
VAPOR DENSITY (air = 1.0):	3.0	
EVAPORATION RATE:	>1	COMPARED TO: CCl ₄ = 1
% VOLATILES:	100	
ODOR THRESHHOLD:	Not established	



FLAMMABILITY:	Not applicable
LEL/UEL:	None/None
RELATIVE DENSITY:	1.21 g/cm ³ at 21.1 C
PARTITION COEFF (n-octanol/water)	Log Pow: 1.08-1.13. Note: This product is more soluble than octanol
AUTO IGNITION TEMP:	Not Determined
DECOMPOSITION TEMPERATURE:	>250 °C
VISCOSITY:	Not applicable
FLASH POINT:	Not applicable

(Flash point method and additional flammability data are found in Section 5.)

10. STABILITY AND REACTIVITY

NORMALLY STABLE: (CONDITIONS TO AVOID):

The product is stable.

Do not mix with oxygen or air above atmospheric pressure. Any source of high temperatures, such as lighted cigarettes, flames, hot spots or welding may yield toxic and/or corrosive decomposition products.

INCOMPATIBILITIES:

(Under specific conditions: e.g. very high temperatures and/or appropriate pressures) – Freshly abraded aluminum surfaces (may cause strong exothermic reaction). Chemically reactive metals: potassium, calcium, powdered aluminum, magnesium, and zinc.

HAZARDOUS DECOMPOSITION PRODUCTS:

Halogens, halogen acids and possibly carbonyl halides.

HAZARDOUS POLYMERIZATION:

Will not occur.

11. TOXICOLOGICAL INFORMATION

IMMEDIATE (ACUTE) EFFECTS:

LC₅₀ : Inhalation 4 hr. (rat) - ≥ 300,000 ppm / Cardiac Sensitization threshold (dog) - 50,000 ppm

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:

Subchronic inhalation (rat) NOEL – 10,000 ppm

Not mutagenic in *in-vitro* or *in-vivo* tests

Not teratogenic

REPEATED DOSE TOXICITY:

Lifetime inhalation exposure of male rats was associated with a small increase in salivary gland fibrosarcomas.

FURTHER INFORMATION:

Acute effects of rapid evaporation of the liquid may cause frostbite. Vapors are heavier than air and can displace oxygen causing difficulty breathing or suffocation. May cause cardiac arrhythmia.

12. ECOLOGICAL INFORMATION

Degradability (BOD):

R-22 is a gas at room temperature; therefore, it is unlikely to remain in water.



Octanol Water Partition Coefficient: See Section 9

13. DISPOSAL CONSIDERATIONS

RCRA

Is the unused product a RCRA hazardous waste if discarded?	Not a hazardous waste
If yes, the RCRA ID number is:	Not applicable

OTHER DISPOSAL CONSIDERATIONS:

Disposal must comply with federal, state, and local disposal or discharge laws. R-22 is subject to U.S. Environmental Protection Agency Clean Air Act Regulations Section 608 in 40 CFR Part 82 regarding refrigerant recycling.

The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

14. TRANSPORT INFORMATION

US DOT ID NUMBER:	UN1018
US DOT PROPER SHIPPING NAME:	Chlorodifluoromethane or Refrigerant gas R 22
US DOT HAZARD CLASS:	2.2
US DOT PACKING GROUP:	Not applicable

For additional information on shipping regulations affecting this material, contact the information number found in Section 1.

15. REGULATORY INFORMATION

TOXIC SUBSTANCES CONTROL ACT (TSCA)

TSCA INVENTORY STATUS:	Listed on the TSCA inventory
OTHER TSCA ISSUES:	None

SARA TITLE III / CERCLA

“Reportable Quantities” (RQs) and/or “Threshold Planning Quantities” (TPQs) exist for the following ingredients.

<u>INGREDIENT NAME</u>	<u>SARA / CERCLA RQ (lb.)</u>	<u>SARA EHS TPO (lb.)</u>
No ingredients listed in this section		

Spills or releases resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center [(800) 424-8802] and to your Local Emergency Planning Committee.

SECTION 311 HAZARD CLASS:	IMMEDIATE PRESSURE
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SARA 313 TOXIC CHEMICALS:

The following ingredients are SARA 313 “Toxic Chemicals”. CAS numbers and weight percents are found in Section 2.

<u>INGREDIENT NAME</u>	<u>COMMENT</u>
Chlorodifluoromethane (HCFC-22)	None

STATE RIGHT-TO-KNOW



In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

<u>INGREDIENT NAME</u>	<u>WEIGHT %</u>	<u>COMMENT</u>
No ingredients listed in this section		

ADDITIONAL REGULATORY INFORMATION:

R-22 is subject to U.S. Environmental Protection Agency Clean Air Act Regulations at 40 CFR Part 82.

WARNING: DO NOT vent to the atmosphere. To comply with provisions of the U.S. Clean Air Act, any residual must be recovered. **Contains Chlorodifluoromethane**, an HCFC substance which harms public health and the environment by destroying ozone in the upper atmosphere. Destruction of the ozone layer can lead to increased ultraviolet radiation which, with excess exposure to sunlight, can lead to an increase in skin cancer and eye cataracts.

WHMIS CLASSIFICATION (CANADA):

This product has been evaluated in accordance with the hazard criteria of the CPR and the SDS contains all the information required by the CPR.

FOREIGN INVENTORY STATUS:

Canada – Listed on DSL
EU - EINECS # 2008719

16. OTHER INFORMATION

CURRENT ISSUE DATE: April, 2015
PREVIOUS ISSUE DATE: November, 2012

OTHER INFORMATION: HMIS Classification: Health – 1, Flammability – 1, Reactivity – 0
NFPA Classification: Health – 2, Flammability – 1, Reactivity – 0
ANSI/ASHRAE 34 Safety Group – A1
UL Classified

Regulatory Standards:

1. OSHA regulations for compressed gases: 29 CFR 1910.101
2. DOT classification per 49 CFR 172.101
3. Clean Air Act Class II Substance

DISCLAIMER:

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NATIONAL REFRIGERANTS, INC.

R-134a

Safety Data Sheet

R-134a

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: R-134a
OTHER NAME: 1,1,1,2-Tetrafluoroethane
USE: Refrigerant Gas
DISTRIBUTOR: National Refrigerants, Inc.
661 Kenyon Avenue
Bridgeton, New Jersey 08302

FOR MORE INFORMATION CALL:
(Monday-Friday, 8:00am-5:00pm)
1-800-262-0012

IN CASE OF EMERGENCY CALL:
CHEMTREC: 1-800-424-9300

2. HAZARDS IDENTIFICATION

CLASSIFICATION: Gases under pressure, Liquefied Gas
SIGNAL WORD: WARNING
HAZARD STATEMENT: Contains gas under pressure, may explode if heated
SYMBOL: Gas Cylinder
PRECAUTIONARY STATEMENT: STORAGE: Protect from sunlight, store in a well ventilated place



EMERGENCY OVERVIEW: Colorless, volatile liquid with ethereal and faint sweetish odor. Non-flammable material. Overexposure may cause dizziness and loss of concentration. At higher levels, CNS depression and cardiac arrhythmia may result from exposure. Vapors displace air and can cause asphyxiation in confined spaces. At higher temperatures, (>250°C), decomposition products may include Hydrofluoric Acid (HF) and carbonyl halides.

POTENTIAL HEALTH HAZARDS

SKIN: Irritation would result from a defatting action on tissue. Liquid contact could cause frostbite.

EYES: Liquid contact can cause severe irritation and frostbite. Mist may irritate.

INHALATION: R-134a is low in acute toxicity in animals. When oxygen levels in air are reduced to 12-14% by displacement, symptoms of asphyxiation, loss of coordination, increased pulse rate and deeper respiration will occur. At high levels, cardiac arrhythmia may occur.

INGESTION: Ingestion is unlikely because of the low boiling point of the material. Should it occur, discomfort in the gastrointestinal tract from rapid evaporation of the material and consequent evolution of gas would result. Some effects of inhalation and skin exposure would be expected.

DELAYED EFFECTS: None Known

Ingredients found on one of the OSHA designated carcinogen lists are listed below.



INGREDIENT NAME

NTP STATUS

IARC STATUS

OSHA LIST

No ingredients listed in this section

3. COMPOSITION / INFORMATION ON INGREDIENTS

INGREDIENT NAME

CAS NUMBER

WEIGHT %

1,1,1,2-Tetrafluoroethane

811-97-2

100

COMMON NAME AND SYNONYMS

R-134a; HFC134a

There are no impurities or stabilizers that contribute to the classification of the material identified in Section 2

4. FIRST AID MEASURES

SKIN: Promptly flush skin with water until all chemical is removed. If there is evidence of frostbite, bathe (do not rub) with lukewarm (not hot) water. If water is not available, cover with a clean, soft cloth or similar covering. Get medical attention if symptoms persist.

EYES: Immediately flush eyes with large amounts of water for at least 15 minutes (in case of frostbite, water should be lukewarm, not hot) lifting eyelids occasionally to facilitate irrigation. Get medical attention if symptoms persist.

INHALATION: Immediately move to fresh air. If breathing has stopped, give artificial respiration. Use oxygen as required, provided a qualified operator is available. Get medical attention immediately. **DO NOT** give epinephrine (adrenaline).

INGESTION: Ingestion is unlikely because of the physical properties and is not expected to be hazardous. **DO NOT** induce vomiting unless instructed to do so by a physician.

ADVICE TO PHYSICIAN: Because of the possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should be used with special caution and only in situations of emergency life support. Treatment of overexposure should be directed at the control of symptoms and the clinical conditions.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT:	Gas, not applicable per DOT regulations
FLASH POINT METHOD:	Not applicable
AUTOIGNITION TEMPERATURE:	>750°C
UPPER FLAME LIMIT (volume % in air):	None*
LOWER FLAME LIMIT (volume % in air):	None*
	*Based on ASHRAE Standard 34 with match ignition
FLAME PROPAGATION RATE (solids):	Not applicable
OSHA FLAMMABILITY CLASS:	Not applicable

EXTINGUISHING MEDIA:

Use any standard agent – choose the one most appropriate for type of surrounding fire (material itself is not flammable)



UNUSUAL FIRE AND EXPLOSION HAZARDS:

R-134a is not flammable at ambient temperatures and atmospheric pressure. However, this material will become combustible when mixed with air under pressure and exposed to strong ignition sources. Contact with certain reactive metals may result in formation of explosive or exothermic reactions under specific conditions (e.g. very high temperatures and/or appropriate pressures).

SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:

Firefighters should wear self-contained, NIOSH-approved breathing apparatus for protection against possible toxic decomposition products. Proper eye and skin protection should be provided. Use water spray to keep fire-exposed containers cool.

6. ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR OTHER RELEASE: (Always wear recommended personal protective equipment.)

Evacuate unprotected personnel. Product dissipates upon release. Protected personnel should remove ignition sources and shut off leak, if without risk, and provide ventilation. Unprotected personnel should not return to the affected area until air has been tested and determined safe, including low-lying areas.

Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting requirements.

7. HANDLING AND STORAGE

NORMAL HANDLING:

(Always wear recommended personal protective equipment.)

Avoid breathing vapors and liquid contact with eyes, skin or clothing. Do not puncture or drop cylinders, expose them to open flame or excessive heat. Use authorized cylinders only. Follow standard safety precautions for handling and use of compressed gas cylinders.

R-134a should not be mixed with air above atmospheric pressure for leak testing or any other purpose.

STORAGE RECOMMENDATIONS:

Store in a cool, well-ventilated area of low fire risk and out of direct sunlight. Protect cylinder and its fittings from physical damage. Storage in subsurface locations should be avoided. Close valve tightly after use and when empty.

INCOMPATIBILITIES:

Freshly abraded aluminum surfaces at specific temperatures and pressures may cause a strong exothermic reaction. Chemically reactive metals: potassium, calcium, powdered aluminum, magnesium, and zinc.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS:

Provide local ventilation at filling zones and areas where leakage is probable. Mechanical (general) ventilation may be adequate for other operating and storage areas.



PERSONAL PROTECTIVE EQUIPMENT

SKIN PROTECTION:

Skin contact with refrigerant may cause frostbite. General work clothing and gloves (leather) should provide adequate protection. If prolonged contact with liquid or gas is anticipated, insulated gloves constructed of PVA, neoprene or butyl rubber should be used. Any contaminated clothing should be promptly removed and washed before reuse.

EYE PROTECTION:

For normal conditions, wear safety glasses. Where there is reasonable probability of liquid contact, wear chemical safety goggles.

RESPIRATORY PROTECTION:

None generally required for adequately ventilated work situations. For accidental release or non-ventilated situations, or release into confined space, where the concentration may be above the PEL of 1,000 ppm, use a self-contained, NIOSH approved breathing apparatus or supplied air respirator. For escape: use the former or a NIOSH approved gas mask with organic vapor canister.

ADDITIONAL RECOMMENDATIONS:

Where contact with liquid is likely, such as in a spill or leak, impervious boots and clothing should be worn. High dose-level warning signs are recommended for areas of principle exposure. Provide eyewash stations and quick-drench shower facilities at convenient locations. For tank cleaning operations, see OSHA regulations, 29 CFR 1910.132 and 29 CFR 1910.133.

EXPOSURE GUIDELINES

<u>INGREDIENT NAME</u>	<u>ACGIH TLV</u>	<u>OSHA PEL</u>	<u>OTHER LIMIT</u>
1,1,1,2-Tetrafluoroethane	None	None	*1000 ppm TWA (8hr)

* = Workplace Environmental Exposure Level (AIHA)

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:

Hydrogen Fluoride: ACGIH TLV: 2 ppm ceiling, 0.5 ppm TLV-TWA

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Clear, colorless liquid and vapor
PHYSICAL STATE:	Gas at ambient temperatures
MOLECULAR WEIGHT:	102
CHEMICAL FORMULA:	F ₃ CCH ₂ F
ODOR:	Faint ethereal odor
SPECIFIC GRAVITY (water = 1.0):	<1.22
SOLUBILITY IN WATER (weight %):	0.15 wt%
pH:	Neutral
BOILING POINT:	-26.2°C (-15.1°F)
FREEZING POINT:	-92.5°C (-141.9°F)
VAPOR PRESSURE:	85.8 psia @ 70°F 213.4 psia @ 130°F
VAPOR DENSITY (air = 1.0):	3.5
EVAPORATION RATE:	>1 COMPARED TO: CC1 ₄ = 1
% VOLATILES:	100



ODOR THRESHHOLD:	Not established
FLAMMABILITY:	Not applicable
LEL/UEL:	None/None
RELATIVE DENSITY:	1.21g/cm ³ at 25°C
PARTITION COEFF (n-octanol/water)	Log Pow: 1.06
AUTO IGNITION TEMP:	>750°C
DECOMPOSITION TEMPERATURE:	>250°C
VISCOSITY:	Not applicable
FLASH POINT:	Not applicable

(Flash point method and additional flammability data are found in Section 5.)

10. STABILITY AND REACTIVITY

NORMALLY STABLE: (CONDITIONS TO AVOID):

The product is stable.

Do not mix with oxygen or air above atmospheric pressure. Any source of high temperatures, such as lighted cigarettes, flames, hot spots or welding may yield toxic and/or corrosive decomposition products.

INCOMPATIBILITIES:

(Under specific conditions: e.g. very high temperatures and/or appropriate pressures) – Freshly abraded aluminum surfaces (may cause strong exothermic reaction). Chemically reactive metals: potassium, calcium, powdered aluminum, magnesium, and zinc.

HAZARDOUS DECOMPOSITION PRODUCTS:

Halogens, halogen acids and possibly carbonyl halides.

HAZARDOUS POLYMERIZATION:

Will not occur.

11. TOXICOLOGICAL INFORMATION

IMMEDIATE (ACUTE) EFFECTS:

LC₅₀ :Inhalation 4 hr. (rat) - > 500,000 ppm / Cardiac Sensitization threshold (dog) 80,000 ppm. NOEL – 50,000 ppm

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:

Not mutagenic in four tests
Teratogenic NOEL (rat and rabbit) – 40,000 ppm
Subchronic inhalation (rat) NOEL – 50,000 ppm
Chronic NOEL – 10,000 ppm

REPEATED DOSE TOXICITY:

Lifetime inhalation exposure of male rats was associated with a small increase in salivary gland fibrosarcomas.

FURTHER INFORMATION:

Acute effects of rapid evaporation of the liquid may cause frostbite. Vapors are heavier than air and can displace oxygen causing difficulty breathing or suffocation. May cause cardiac arrhythmia.

OTHER DATA:

Metabolism <0.5% as CO₂ in tests at 50,000 ppm, late developing benign tumors were found.



12. ECOLOGICAL INFORMATION

Degradability (BOD): R-134a is a gas at room temperature; therefore, it is unlikely to remain in water.
Octanol Water Partition Coefficient: See Section 9

13. DISPOSAL CONSIDERATIONS

RCRA

Is the unused product a RCRA hazardous waste if discarded? Not a hazardous waste
If yes, the RCRA ID number is: Not applicable

OTHER DISPOSAL CONSIDERATIONS:

Disposal must comply with federal, state, and local disposal or discharge laws. R-134a is subject to U.S. Environmental Protection Agency Clean Air Act Regulations Section 608 in 40 CFR Part 82 regarding refrigerant recycling.

The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

14. TRANSPORT INFORMATION

US DOT ID NUMBER: UN3159
US DOT PROPER SHIPPING NAME: 1,1,1,2-Tetrafluoroethane or Refrigerant Gas R 134a
US DOT HAZARD CLASS: 2.2
US DOT PACKING GROUP: Not applicable

For additional information on shipping regulations affecting this material, contact the information number found in Section 1.

15. REGULATORY INFORMATION

TOXIC SUBSTANCES CONTROL ACT (TSCA)

TSCA INVENTORY STATUS: Listed on the TSCA inventory
OTHER TSCA ISSUES: Subject to Section 12(b) export notification. May contain 0-10 ppm Ethane, 2-chloro-1,1,1-trifluoro, CAS# 75-88-7

SARA TITLE III / CERCLA

“Reportable Quantities” (RQs) and/or “Threshold Planning Quantities” (TPQs) exist for the following ingredients.

<u>INGREDIENT NAME</u>	<u>SARA / CERCLA RQ (lb.)</u>	<u>SARA EHS TPQ (lb.)</u>
No ingredients listed in this section		

Spills or releases resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center [(800) 424-8802] and to your Local Emergency Planning Committee.

SECTION 311 HAZARD CLASS: IMMEDIATE
PRESSURE

SARA 313 TOXIC CHEMICALS:
The following ingredients are SARA 313 “Toxic Chemicals”. CAS numbers and weight percents are found in Section 2.

<u>INGREDIENT NAME</u>	<u>COMMENT</u>
No ingredients listed in this section	



STATE RIGHT-TO-KNOW

In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

<u>INGREDIENT NAME</u>	<u>WEIGHT %</u>	<u>COMMENT</u>
No ingredients listed in this section		

ADDITIONAL REGULATORY INFORMATION:

R-134a is subject to U.S. Environmental Protection Agency Clean Air Act Regulations at 40 CFR Part 82.

WARNING: DO NOT vent to the atmosphere. To comply with provisions of the U.S. Clean Air Act, any residual must be recovered. **Contains 1,1,1,2-Tetrafluoroethane (HFC-134a)**, a greenhouse gas which may contribute to global warming.

WHMIS CLASSIFICATION (CANADA):

This product has been evaluated in accordance with the hazard criteria of the CPR and the SDS contains all the information required by the CPR.

FOREIGN INVENTORY STATUS:

Canada – Listed on DSL
EU - EINECS # 223770

16. OTHER INFORMATION

CURRENT ISSUE DATE: April, 2015
PREVIOUS ISSUE DATE: November, 2012

OTHER INFORMATION: HMIS Classification: Health – 1, Flammability – 1, Reactivity – 0
NFPA Classification: Health – 2, Flammability – 1, Reactivity – 0
ANSI/ASHRAE 34 Safety Group – A1
UL Classified

Regulatory Standards:

1. OSHA regulations for compressed gases: 29 CFR 1910.101
2. DOT classification per 49 CFR 172.101

Toxicity information per PAFT Testing

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Safety Data Sheet

R-410A

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: R-410A
OTHER NAME: Difluoromethane, Pentafluoroethane
USE: Refrigerant Gas

DISTRIBUTOR: National Refrigerants, Inc.
661 Kenyon Avenue
Bridgeton, New Jersey 08302

FOR MORE INFORMATION CALL:
(Monday-Friday, 8:00am-5:00pm)
1-800-262-0012

IN CASE OF EMERGENCY CALL:
CHEMTREC: 1-800-424-9300

2. HAZARDS IDENTIFICATION

CLASSIFICATION:	Gases under pressure, Liquefied Gas	
SIGNAL WORD:	WARNING	
HAZARD STATEMENT:	Contains gas under pressure, may explode if heated	
SYMBOL:	Gas Cylinder	
PRECAUTIONARY STATEMENT:	STORAGE: Protect from sunlight, store in a well ventilated place	

EMERGENCY OVERVIEW: Colorless, volatile liquid with ethereal and faint sweetish odor. Non-flammable material. Overexposure may cause dizziness and loss of concentration. At higher levels, CNS depression and cardiac arrhythmia may result from exposure. Vapors displace air and can cause asphyxiation in confined spaces. At higher temperatures, (>250°C), decomposition products may include Hydrofluoric Acid (HF) and carbonyl halides.

POTENTIAL HEALTH HAZARDS

SKIN: Irritation would result from a defatting action on tissue. Liquid contact could cause frostbite.

EYES: Liquid contact can cause severe irritation and frostbite. Mist may irritate.

INHALATION: R-410A is low in acute toxicity in animals. When oxygen levels in air are reduced to 12-14% by displacement, symptoms of asphyxiation, loss of coordination, increased pulse rate and deeper respiration will occur. At high levels, cardiac arrhythmia may occur.

INGESTION: Ingestion is unlikely because of the low boiling point of the material. Should it occur, discomfort in the gastrointestinal tract from rapid evaporation of the material and consequent evolution of gas would result. Some effects of inhalation and skin exposure would be expected.

DELAYED EFFECTS: None known.



3. COMPOSITION / INFORMATION ON INGREDIENTS

<u>INGREDIENT NAME</u>	<u>CAS NUMBER</u>	<u>WEIGHT %</u>
Difluoromethane	75-10-5	50
Pentafluoroethane	354-33-6	50

COMMON NAME and SYNONYMS

R-410A; HFC410A

There are no impurities or stabilizers that contribute to the classification of the material identified in Section 2

4. FIRST AID MEASURES

SKIN: Promptly flush skin with water until all chemical is removed. If there is evidence of frostbite, bathe (do not rub) with lukewarm (not hot) water. If water is not available, cover with a clean, soft cloth or similar covering. Get medical attention if symptoms persist.

EYES: Immediately flush eyes with large amounts of water for at least 15 minutes (in case of frostbite water should be lukewarm, not hot) lifting eyelids occasionally to facilitate irrigation. Get medical attention if symptoms persist.

INHALATION: Immediately remove to fresh air. If breathing has stopped, give artificial respiration. Use oxygen as required, provided a qualified operator is available. Get medical attention. Do not give epinephrine (adrenaline).

INGESTION: Ingestion is unlikely because of the physical properties and is not expected to be hazardous. Do not induce vomiting unless instructed to do so by a physician.

ADVICE TO PHYSICIAN: Because of the possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should be used with special caution and only in situations of emergency life support. Treatment of overexposure should be directed at the control of symptoms and the clinical conditions.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT:	Gas, not applicable per DOT regulations
FLASH POINT METHOD:	Not applicable
AUTOIGNITION TEMPERATURE:	>750°C
UPPER FLAME LIMIT (volume % in air):	None by ASTM D-56-82
LOWER FLAME LIMIT (volume % in air):	None by ASTM E-681
FLAME PROPAGATION RATE (solids):	Not applicable
OSHA FLAMMABILITY CLASS:	Not applicable

EXTINGUISHING MEDIA:

Use any standard agent – choose the one most appropriate for type of surrounding fire (material itself is not flammable)



UNUSUAL FIRE AND EXPLOSION HAZARDS:

R-410A is not flammable at ambient temperatures and atmospheric pressure. However, this material will become combustible when mixed with air under pressure and exposed to strong ignition sources.

Contact with certain reactive metals may result in formation of explosive or exothermic reactions under specific conditions (e.g. very high temperatures and/or appropriate pressures).

SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:

Firefighters should wear self-contained, NIOSH-approved breathing apparatus for protection against possible toxic decomposition products. Proper eye and skin protection should be provided. Use water spray to keep fire-exposed containers cool.

6. ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR OTHER RELEASE: (Always wear recommended personal protective equipment.)

Evacuate unprotected personnel. Product dissipates upon release. Protected personnel should remove ignition sources and shut off leak, if without risk, and provide ventilation. Unprotected personnel should not return to the affected area until air has been tested and determined safe, including low-lying areas.

Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting requirements.

7. HANDLING AND STORAGE

NORMAL HANDLING: (Always wear recommended personal protective equipment.)

Avoid breathing vapors and liquid contact with eyes, skin or clothing. Do not puncture or drop cylinders, expose them to open flame or excessive heat. Use authorized cylinders only. Follow standard safety precautions for handling and use of compressed gas cylinders.

R-410A should not be mixed with air above atmospheric pressure for leak testing or any other purpose.

STORAGE RECOMMENDATIONS:

Store in a cool, well-ventilated area of low fire risk and out of direct sunlight. Protect cylinder and its fittings from physical damage. Storage in subsurface locations should be avoided. Close valve tightly after use and when empty.

INCOMPATIBILITIES:

Freshly abraded aluminum surfaces at specific temperatures and pressures may cause a strong exothermic reaction. Chemically reactive metals: potassium, calcium, powdered aluminum, magnesium, and zinc.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS:

Provide local ventilation at filling zones and areas where leakage is probable. Mechanical (general) ventilation may be adequate for other operating and storage areas.

PERSONAL PROTECTIVE EQUIPMENT

SKIN PROTECTION:

Skin contact with refrigerant may cause frostbite. General work clothing and gloves (leather) should provide adequate protection. If prolonged contact with the liquid or gas is anticipated, insulated gloves constructed of PVA,



neoprene or butyl rubber should be used. Any contaminated clothing should be promptly removed and washed before reuse.

EYE PROTECTION:

For normal conditions, wear safety glasses. Where there is reasonable probability of liquid contact, wear chemical safety goggles.

RESPIRATORY PROTECTION:

None generally required for adequately ventilated work situations. For accidental release or non-ventilated situations, or release into confined space, where the concentration may be above the PEL of 1,000 ppm, use a self-contained, NIOSH-approved breathing apparatus or supplied air respirator. For escape: use the former or a NIOSH-approved gas mask with organic vapor canister.

ADDITIONAL RECOMMENDATIONS:

Where contact with liquid is likely, such as in a spill or leak, impervious boots and clothing should be worn. High dose-level warning signs are recommended for areas of principle exposure. Provide eyewash stations and quick-drench shower facilities at convenient locations. For tank cleaning operations, see OSHA regulations, 29 CFR 1910.132 and 29 CFR 1910.133.

EXPOSURE GUIDELINES

<u>INGREDIENT NAME</u>	<u>ACGIH TLV</u>	<u>OSHA PEL</u>	<u>OTHER LIMIT</u>
Difluoromethane	None	None	*1000 ppm TWA (8hr)
Pentafluoroethane	None	None	*1000 ppm TWA (8hr)

* = Workplace Environmental Exposure Level (AIHA)

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:

Hydrogen Fluoride: ACGIH TLV: 2 ppm ceiling, 0.5ppm TLV-TWA

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Clear, colorless liquid and vapor
PHYSICAL STATE:	Gas at ambient temperatures
MOLECULAR WEIGHT:	72.6
CHEMICAL FORMULA:	CH ₂ F ₂ , CHF ₂ CF ₃
ODOR:	Faint ethereal odor
SPECIFIC GRAVITY (water = 1.0):	1.08 @ 21.1°C (70°F)
SOLUBILITY IN WATER (weight %):	Unknown
pH:	Neutral
BOILING POINT:	-48.5°C (-55.4°F)
FREEZING POINT:	Not determined
VAPOR PRESSURE:	215.3 psia @ 70°F 490.2 psia @ 130°F
VAPOR DENSITY (air = 1.0):	3.0
EVAPORATION RATE:	>1 COMPARED TO: CCl ₄ = 1
% VOLATILES:	100
ODOR THRESHHOLD:	Not established
FLAMMABILITY:	Not applicable
LEL/UEL:	None/None
RELATIVE DENSITY:	1.08 g/cm ³ at 21.1°C
PARTITION COEFF (n-octanol/water)	Not applicable



AUTO IGNITION TEMP: >750°C
DECOMPOSITION TEMPERATURE: >250°C
VISCOSITY: Not applicable
FLASH POINT: Not applicable
(Flash point method and additional flammability data are found in Section 5.)

10. STABILITY AND REACTIVITY

NORMALLY STABLE? (CONDITIONS TO AVOID):

The product is stable.

Do not mix with oxygen or air above atmospheric pressure. Any source of high temperature, such as lighted cigarettes, flames, hot spots or welding may yield toxic and/or corrosive decomposition products.

INCOMPATIBILITIES:

(Under specific conditions: e.g. very high temperatures and/or appropriate pressures) – Freshly abraded aluminum surfaces (may cause strong exothermic reaction). Chemically active metals: potassium, calcium, powdered aluminum, magnesium and zinc.

HAZARDOUS DECOMPOSITION PRODUCTS:

Halogens, halogen acids and possibly carbonyl halides.

HAZARDOUS POLYMERIZATION:

Will not occur.

11. TOXICOLOGICAL INFORMATION

IMMEDIATE (ACUTE) EFFECTS:

Difluoromethane: LC₅₀ : Inhalation 4 hr. (rat) - $\geq 520,000$ ppm

Pentafluoroethane: Cardiac Sensitization threshold (dog) $\geq 100,000$ ppm

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:

Teratology – negative

Subchronic inhalation (rat) NOEL – 50,000 ppm

REPEATED DOSE TOXICITY:

Lifetime inhalation exposure of male rats was associated with a small increase in salivary gland fibrosarcomas.

OTHER DATA:

Not active in four genetic studies

FURTHER INFORMATION:

Acute effects of rapid evaporation of the liquid may cause frostbite. Vapors are heavier than air and can displace oxygen causing difficulty breathing or suffocation. May cause cardiac arrhythmia.

POTENTIAL HEALTH HAZARDS

SKIN: Irritation would result from a defatting action on tissue. Liquid contact could cause frostbite.

EYES: Liquid contact can cause severe irritation and frostbite. Mist may irritate.



INHALATION: R-410A is low in acute toxicity in animals. When oxygen levels in air are reduced to 12-14% by displacement, symptoms of asphyxiation, loss of coordination, increased pulse rate and deeper respiration will occur. At high levels, cardiac arrhythmia may occur.

INGESTION: Ingestion is unlikely because of the low boiling point of the material. Should it occur, discomfort in the gastrointestinal tract from rapid evaporation of the material and consequent evolution of gas would result. Some effects of inhalation and skin exposure would be expected.

DELAYED EFFECTS: None known.

Ingredients found on one of the OSHA designated carcinogen lists are listed below.

<u>INGREDIENT NAME</u>	<u>NTP STATUS</u>	<u>IARC STATUS</u>	<u>OSHA LIST</u>
No ingredients listed in this section			

12. ECOLOGICAL INFORMATION

Degradability (BOD): R-410A is a gas at room temperature; therefore, it is unlikely to remain in water.
Octanol Water Partition Coefficient: Log P_{ow} = 1.48 (pentafluoroethane), 0.21 (difluoromethane)

13. DISPOSAL CONSIDERATIONS

RCRA

Is the unused product a RCRA hazardous waste if discarded?	Not a hazardous waste.
If yes, the RCRA ID number is:	Not applicable.

OTHER DISPOSAL CONSIDERATIONS:

Disposal must comply with federal, state, and local disposal or discharge laws. R-410A is subject to U.S. Environmental Protection Agency Clean Air Act Regulations Section 608 in 40 CFR Part 82 regarding refrigerant recycling.

The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

14. TRANSPORT INFORMATION

US DOT ID NUMBER:	UN3163
US DOT PROPER SHIPPING NAME:	Liquefied gas, n.o.s., (Pentafluoroethane, Difluoromethane)
US DOT HAZARD CLASS:	2.2
US DOT PACKING GROUP:	Not applicable

For additional information on shipping regulations affecting this material, contact the information number found in Section 1.

15. REGULATORY INFORMATION

TOXIC SUBSTANCES CONTROL ACT (TSCA)

TSCA INVENTORY STATUS: Components listed on the TSCA inventory



OTHER TSCA ISSUES: Subject to Section 12(b) export notification. May contain 0-10ppm Ethane, 2-chloro-1,1,1-trifluoro, CAS#75-88-7

SARA TITLE III / CERCLA

“Reportable Quantities” (RQs) and/or “Threshold Planning Quantities” (TPQs) exist for the following ingredients.

<u>INGREDIENT NAME</u>	<u>SARA / CERCLA RQ (lb.)</u>	<u>SARA EHS TPQ (lb.)</u>
------------------------	-------------------------------	---------------------------

No ingredients listed in this section

Spills or releases resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center [(800) 424-8802] and to your Local Emergency Planning Committee.

SECTION 311 HAZARD CLASS: IMMEDIATE PRESSURE

SARA 313 TOXIC CHEMICALS:

The following ingredients are SARA 313 “Toxic Chemicals”. CAS numbers and weight percents are found in Section 2.

<u>INGREDIENT NAME</u>	<u>COMMENT</u>
------------------------	----------------

No ingredients listed in this section

STATE RIGHT-TO-KNOW

In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

<u>INGREDIENT NAME</u>	<u>WEIGHT %</u>	<u>COMMENT</u>
------------------------	-----------------	----------------

No ingredients listed in this section

ADDITIONAL REGULATORY INFORMATION:

R-410A is subject to U.S. Environmental Protection Agency Clean Air Act Regulations at 40 CFR Part 82.

WARNING: Do not vent to the atmosphere. To comply with provisions of the U.S. Clean Air Act, any residual must be recovered. **Contains Pentafluoroethane (HFC-125) and Difluoromethane (HFC-32)**, greenhouse gases which may contribute to global warming.

WHMIS CLASSIFICATION (CANADA):

This product has been evaluated in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

FOREIGN INVENTORY STATUS:

EU – EINECS # 2065578 – HFC-125

16. OTHER INFORMATION

CURRENT ISSUE DATE: April, 2015
PREVIOUS ISSUE DATE: November, 2012

OTHER INFORMATION: HMIS Classification: Health – 1, Flammability – 1, Reactivity – 0
NFPA Classification: Health – 2, Flammability – 1, Reactivity – 0
ANSI / ASHRAE 34 Safety Group – A1

Regulatory Standards:

1. OSHA regulations for compressed gases: 29 CFR 1910.101



2. DOT classification per 49 CFR 172.101

Toxicity information per PAFT Testing

DISCLAIMER:

National Refrigerants, Inc. believes that the information and recommendations contained herein (including data and statements) are accurate as of the date hereof. NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY, OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE INFORMATION PROVIDED HEREIN. The information provided herein relates only to the specific product designated and may not be valid where such product is used in combination with any other methods or use of the product and of the information referred to herein are beyond the control of National Refrigerants. National Refrigerants expressly disclaims any and all liability as to any results obtained or arising from any use of the product or reliance on such information.



SAFETY DATA SHEET

CALCI-FREE™ Tankless water heater flush

SECTION 1 – PRODUCT AND COMPANY INFORMATION

Product Name

Calci-Free™

Product Codes

68708

Chemical Family

Inorganic acids

Use

Scale remover

Manufacturer's Name

The RectorSeal Corporation
2601 Spenwick Drive
Houston, Texas 77055 USA

Date of Validation

January 12, 2017

Date of Preparation

January 12, 2017

HMIS Codes

Health	3
Flammability	0
Reactivity	0
PPI	D

Emergency Telephone No.

Chemtrec 24 Hours
(800)-424-9300 USA
(703)-527-3887 International

Technical Service Telephone No.

(800)-231-3345 or (713)-263-8001

SECTION 2 – HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

OSHA Hazards

Corrosive

GHS CLASSIFICATION

Acute toxicity, Oral (Category 5)
Skin irritation (Category 2)
Serious eye damage (Category 1)
Acute aquatic toxicity (Category 3)

GHS Label elements, including precautionary statements



GHS05: Corrosive

Signal word: **Danger**

Hazard statement(s)

H303 May be harmful if swallowed.

H315 Causes skin irritation.

H318 Causes serious eye damage.

H402 Harmful to aquatic life.

Precautionary statement(s)

P280 Wear protective gloves/ eye protection/ face protection.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Summary Of Acute Hazards

Exposure to human tissue will result in irritation and subsequent chemical burns, bronchitis, pulmonary edema and chemical pneumonitis.

INHALATION

Respiratory and mucous membrane irritation, coughing, difficulty breathing.

EYE CONTACT

Corrosive, causes eye burns.

SKIN CONTACT

Causes skin irritation. Prolonged contact may cause skin burns.

INGESTION

Burns on mouth and lips, sour acrid taste, severe gastrointestinal irritation, nausea, vomiting, bloody diarrhea, difficult swallowing, severe abdominal pains, thirst, acidemia, difficult breathing, convulsions, collapse, shock, possible death.

SUMMARY OF CHRONIC HAZARDS

Bronchitis, pulmonary edema and chemical burns, bronchitis and chemical pneumonitis; possible death.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Skin disorders, eye problems, impaired liver and kidney, or respiratory function.

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient:	Sulfamic Acid
Percentage By Weight:	70-99
CAS Number:	5329-14-6
EC#:	226-218-8

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:	Immediately flush with large amounts of water; use soap if available. Remove contaminated clothing.
If in eyes:	Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Call a physician immediately.
If swallowed:	If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.

SECTION 5 – FIRE FIGHTING MEASURES

Extinguishing Media

Use agents appropriate for surrounding fires.

Special Fire Fighting Procedures: Wear self-contained breathing apparatus (SCBA) and other protective clothing. Hazardous decomposition products possible (see Section 10). Evacuate immediate area.

Unusual Fire And Explosion Hazards: May release sulfur dioxide (SO₂), sulfur trioxide (SO₃), and ammonia gas (NH₃) if involved in a fire.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Steps To Be Taken In Case Material Is Released Or Spilled: Sweep up spillage and flush the area with large quantities of water. May be neutralized with sodium bicarbonate mixed with water.

SECTION 7 – HANDLING AND STORAGE

Precautions To Be Taken In Handling And Storing: Prevent from absorption of moisture and possible caking. Should be stored in a cool and dry place. Do not store with cyanides, sulfides, chlorine, hypochlorous acid, or hypochlorites.

Other Precautions: Refrain from splashing product when pouring. Avoid all contact with skin or clothing. Empty containers may contain residues and vapors.

KEEP OUT OF REACH OF CHILDREN.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredient	Units
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Sulfamic Acid

ACGIH TLV: N/D

OSHA PEL: N/D

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: N/A

Mechanical (General): Acceptable

Other: N/A

Protective Gloves: Wear acid resistant gloves (neoprene, PVC, butyl rubber).

Eye Protection: Full-face shield and chemical splash goggles (ANSI Z-87.1 or equivalent).

Other Protective Clothing Or Equipment: Acid resistant vinyl or polyethylene coated coveralls.

Work/Hygienic Practices: Where use can result in skin contact, wash exposed areas thoroughly before eating, drinking, smoking, or leaving work area. Launder contaminated clothing before reuse.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Boiling point: 214°F (101°C) @ 760 mmHg

Specific gravity (H₂O = 1): 2.126

Vapor pressure (mmHg): N/A

Melting point: N/A

Vapor Density (Air = 1): N/A

Evaporation rate (Ethyl Acetate = 1): N/A

Appearance/Odor: White solid/None

Solubility in water: Soluble

Volatile Organic Compounds (VOC) Content
(theoretical percentage by weight): 0% or (0 g/L)

Flash point: None

Lower explosion limit: N/D

Upper explosion limit: N/D

SECTION 10 – STABILITY AND REACTIVITY

Stability: Stable

Conditions To Avoid: Incompatibles.

Incompatibility (Materials To Avoid): Hazardous reaction in aqueous solution may occur with chlorine, hypochlorous acid, hypochlorites, cyanides, nitric acid, or sulfides. **An explosion occurred when chlorine was being passed at room temperature into a reaction mixture which included sulfamic acid and water.** It is suspected that nitrogen trichloride, a very sensitive explosive, was formed. Fuming nitric acid combined with sulfamic acid causes violent releases of nitrous oxide.

Hazardous Decomposition Products: Decomposes with heat (209°C) to release sulfur dioxide (SO₂), sulfur trioxide (SO₃), nitrogen (N₂), water (H₂O), and ammonia gas (NH₃).

Hazardous Polymerization: Will not occur.

SECTION 11 – TOXICOLOGY INFORMATION

Chronic Health Hazards

No ingredient in this product is an IARC, NTP or OSHA listed carcinogen.

Toxicology Data

Ingredient Name

Sulfamic Acid

Oral-Rat LD50:	3160 mg/kg
Inhalation-Rat LC50:	N/D

SECTION 12 – ECOLOGICAL INFORMATION

Ecological Data

Ingredient Name:	Sulfamic Acid
Food Chain Concentration Potential	N/D
Waterfowl Toxicity	N/D
BOD	N/D
Aquatic Toxicity	N/D

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Classification: Corrosive (D002)

Disposal Method: Neutralization

RCRA classified hazardous waste. Dispose of absorbed materials and liquid waste in accordance with all local, state and federal regulations.

SECTION 14 – TRANSPORTATION INFORMATION

DOT: UN1759, Corrosive Solid, n.o.s. (sulfamic acid), Class 8, PGIII, ERG#154
 Individual containers under 11 lbs.: Limited Quantities or Ltd Qty

Ocean (IMDG): UN1759, Corrosive solid, n.o.s. (sulfamic acid), Class 8, PGIII, EMS-No: F-A, S-B
 Individual containers under 11 lbs.: UN1759, Corrosive solid, n.o.s. (sulfamic acid),
 Class 8, PGIII, EMS-No: F-A, S-B, Limited Quantities or Ltd. Qty.

Air (IATA): UN1759, Corrosive solid, n.o.s. (sulfamic acid), Class 8, UN1759, PGIII, ERG#154

SECTION 15 – REGULATORY INFORMATION

Regulatory Data

Ingredient Name:	Sulfamic Acid
SARA 313	No
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 (29 CFR 1910.1200).
 The information herein is given in good faith, but no warranty, expressed or implied is made.

Consult RectorSeal for further information: (713) 263-8001

SAFETY DATA SHEET

Acetylene

Section 1. Identification

GHS product identifier	: Acetylene
Chemical name	: acetylene
Other means of identification	: Ethyne; Ethine; Narcylen; C2H2; Acetylen; UN 1001; Vinylene
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 when ambient temperature exceeds 52°C/125°F. 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

CAS number/other identifiers

CAS number : 74-86-2
Product code : 001001

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.
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. 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 contact with eyes, skin and clothing. 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. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. 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). Eliminate all ignition sources. 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

Ingredient name	Exposure limits
acetylene	NIOSH REL (United States, 10/2013). CEIL: 2662 mg/m ³ CEIL: 2500 ppm

- 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.
- 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

Section 8. Exposure controls/personal 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** : 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** : Gas.
- Color** : Colorless.
- Molecular weight** : 26.04 g/mole
- Molecular formula** : C₂H₂
- Melting/freezing point** : -81°C (-113.8°F)
- Critical temperature** : 35.25°C (95.5°F)
- Odor** : Mild. Ethereal.
- Odor threshold** : Not available.
- pH** : Not available.
- Flash point** : Closed cup: -18.15°C (-0.67°F)
- 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: open flames, sparks and static discharge, heat and oxidizing materials.
- 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 available.
- Solubility in water** : 1.2 g/l
- Partition coefficient: n-octanol/water** : 0.37
- Auto-ignition temperature** : 305°C (581°F)
- 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.
- 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)

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

Eye contact : Contact with rapidly expanding gas may cause burns or frostbite.

Inhalation : No known significant effects or critical hazards.

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.
Carcinogenicity : No known significant effects or critical hazards.
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.
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
acetylene	0.37	-	low

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	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	-	-	-	-	-
Environment	No.	No.	No.	No.	No.
Additional information	<p>Limited quantity Yes.</p> <p>Packaging instruction Passenger aircraft Quantity limitation: Forbidden.</p> <p>Cargo aircraft Quantity limitation: 15 kg</p>	<p>Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2).</p> <p>Explosive Limit and Limited Quantity Index 0</p> <p>Passenger Carrying Ship Index 75</p> <p>Passenger Carrying Road or Rail Index Forbidden</p> <p>Special provisions 38</p>	-	-	<p>Passenger and Cargo Aircraft Quantity limitation: 0 Forbidden Cargo Aircraft Only Quantity limitation: 15 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.

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
United States inventory (TSCA 8b): This material is listed or exempted.
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

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** : This material is listed or exempted.
- 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.

Canada

- WHMIS (Canada)** : Class A: Compressed gas.
 Class B-1: Flammable gas.
 Class F: Dangerously reactive material.
CEPA Toxic substances: This material is not listed.
Canadian ARET: This material is not listed.
Canadian NPRI: This material is 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 B-1: Flammable gas.
Class F: Dangerously reactive material.

Hazardous Material Information System (U.S.A.)

Health	1
Flammability	4
Physical hazards	2

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.)



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
Flam. Gas 1, H220 Press. Gas Comp. Gas, H280	Expert judgment According to package

History

Date of printing : 9/12/2017
Date of issue/Date of revision : 9/12/2017
Date of previous issue : 6/7/2016
Version : 1

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

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.

SAFETY DATA SHEET

Nonflammable Gas Mixture: Argon 1ppm-98% / Carbon Dioxide 2-99%

Section 1. Identification

GHS product identifier	: Nonflammable Gas Mixture: Argon 1ppm-98% / Carbon Dioxide 2-99%
Other means of identification	: Not available.
Product use	: Synthetic/Analytical chemistry.
SDS #	: 002004
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	: GASES UNDER PRESSURE - Compressed gas

GHS label elements

Hazard pictograms

:



Signal word

: Warning

Hazard statements

: Contains gas under pressure; may explode if heated.
May displace oxygen and cause rapid suffocation.
May increase respiration and heart rate.

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.

Prevention

: Not applicable.

Response

: Not applicable.

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

: 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 : Mixture
Other means of identification : Not available.

CAS number/other identifiers

CAS number : Not applicable.
Product code : 002004

Ingredient name	%	CAS number
Carbon Dioxide	2 - 99	124-38-9
Argon	0.0001 - 98	7440-37-1

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. 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.
- 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.

Section 4. First aid measures

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

- Hazardous thermal decomposition products** : Contains gas under pressure. In a fire or if heated, a pressure increase will occur and the container may burst or explode.
- : 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.

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. 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.
- Large spill** : Immediately contact emergency personnel. Stop leak if without risk. 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 contact with eyes, skin and clothing. Avoid breathing gas. 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.

Section 7. Handling and storage

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). 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

Ingredient name	Exposure limits
Carbon Dioxide	<p>ACGIH TLV (United States, 3/2016). Oxygen Depletion [Asphyxiant]. STEL: 54000 mg/m³ 15 minutes. STEL: 30000 ppm 15 minutes. TWA: 9000 mg/m³ 8 hours. TWA: 5000 ppm 8 hours.</p> <p>NIOSH REL (United States, 10/2013). STEL: 54000 mg/m³ 15 minutes. STEL: 30000 ppm 15 minutes. TWA: 9000 mg/m³ 10 hours. TWA: 5000 ppm 10 hours.</p> <p>OSHA PEL (United States, 6/2016). TWA: 9000 mg/m³ 8 hours. TWA: 5000 ppm 8 hours.</p> <p>OSHA PEL 1989 (United States, 3/1989). STEL: 54000 mg/m³ 15 minutes. STEL: 30000 ppm 15 minutes. TWA: 18000 mg/m³ 8 hours. TWA: 10000 ppm 8 hours. Oxygen Depletion [Asphyxiant]</p>
Argon	

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

Section 8. Exposure controls/personal 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 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** : Gas.
- Color** : Not available.
- Melting/freezing point** : -189.2°C (-308.6°F) This is based on data for the following ingredient: argon.
- Critical temperature** : Lowest known value: -122.4°C (-188.3°F) (argon).
- Odor** : Not available.
- Odor threshold** : Not available.
- pH** : Not available.
- Flash point** : Not available.
- Burning time** : Not applicable.
- Burning rate** : Not applicable.
- Evaporation rate** : Not available.
- Flammability (solid, gas)** : Not available.
- Lower and upper explosive (flammable) limits** : Not available.
- Vapor pressure** : Not available.
- Vapor density** : Highest known value: 1.66 (Air = 1) (argon). Weighted average: 1.58 (Air = 1)
- Gas Density (lb/ft³)** : Weighted average: 0.11
- Relative density** : Not applicable.
- Solubility** : Not available.
- Solubility in water** : Not available.
- Partition coefficient: n-octanol/water** : Not available.
- 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.
- 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** : No specific data.
- 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

- 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.

Section 11. Toxicological information

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.

Carcinogenicity : No known significant effects or critical hazards.

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.

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
Carbon Dioxide	0.83	-	low
Argon	0.74	-	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	UN1956	UN1956	UN1956	UN1956	UN1956
UN proper shipping name	COMPRESSED GAS, N.O.S. (argon, Carbon dioxide)	COMPRESSED GAS, N.O.S. (argon, Carbon dioxide)	COMPRESSED GAS, N.O.S. (argon, Carbon dioxide)	COMPRESSED GAS, N.O.S. (argon, Carbon dioxide)	COMPRESSED GAS, N.O.S. (argon, Carbon dioxide)
Transport hazard class(es)	2.2 	2.2 	2.2 	2.2 	2.2 
Packing group	-	-	-	-	-
Environment	No.	No.	No.	No.	No.
Additional information	-	Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2). <u>Explosive Limit and Limited Quantity Index</u> 0.125 <u>Passenger Carrying, Road or Rail Index</u> 75	-	-	-

“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.

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:** All components are listed or exempted.
United States inventory (TSCA 8b): All components are listed or exempted.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Section 15. Regulatory information

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 : The following components are listed: CARBON DIOXIDE; ARGON

New York : None of the components are listed.

New Jersey : The following components are listed: CARBON DIOXIDE; CARBONIC ACID GAS; ARGON

Pennsylvania : The following components are listed: CARBON DIOXIDE; ARGON

International regulations

International lists

National inventory

Australia : All components are listed or exempted.

Canada : All components are listed or exempted.

China : All components are listed or exempted.

Europe : All components are listed or exempted.

Japan : Not determined.

Malaysia : Not determined.

New Zealand : All components are listed or exempted.

Philippines : All components are listed or exempted.

Republic of Korea : All components are listed or exempted.

Taiwan : All components are listed or exempted.

Canada

WHMIS (Canada) : Class A: Compressed gas.

CEPA Toxic substances: The following components are listed: Carbon dioxide

Canadian ARET: None of the components are listed.

Canadian NPRI: None of the components are listed.

Alberta Designated Substances: None of the components are listed.

Ontario Designated Substances: None of the components are listed.

Quebec Designated Substances: None of the components are listed.

Section 16. Other information

Canada Label requirements : Class A: Compressed gas.

Hazardous Material Information System (U.S.A.)

Health	1
Flammability	0
Physical hazards	3

Section 16. Other information

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
Press. Gas Comp. Gas, H280	On basis of test data

[History](#)

Date of printing : 4/20/2017

Date of issue/Date of revision : 4/20/2017

Date of previous issue : 5/25/2016

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.

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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.

SAFETY DATA SHEET

Airgas

Methane

Section 1. Identification

GHS product identifier	: Methane
Chemical name	: methane
Other means of identification	: Methane or natural gas; Marsh gas; Methyl hydride; CH ₄ ; Fire Damp;
Product use	: Synthetic/Analytical chemistry.
Synonym	: Methane or natural gas; Marsh gas; Methyl hydride; CH ₄ ; Fire Damp;
SDS #	: 001033
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. 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 when ambient temperature exceeds 52°C/125°F. 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 : methane
Other means of identification : Methane or natural gas; Marsh gas; Methyl hydride; CH₄; Fire Damp;

CAS number/other identifiers

CAS number : 74-82-8
Product code : 001033

Ingredient name	%	CAS number
methane	100	74-82-8

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 : Wash contaminated skin with soap and 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.
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. 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 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

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. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. 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). Eliminate all ignition sources. 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

Ingredient name	Exposure limits
methane	Oxygen Depletion [Asphyxiant]

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.

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

Section 8. Exposure controls/personal 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** : 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** : Gas. [Compressed gas.]
- Color** : Colorless.
- Molecular weight** : 16.05 g/mole
- Molecular formula** : C-H4
- Boiling/condensation point** : -161.48°C (-258.7°F)
- Melting/freezing point** : -187.6°C (-305.7°F)
- Critical temperature** : -82.45°C (-116.4°F)
- Odor** : Odorless.
- Odor threshold** : Not available.
- pH** : Not available.
- Flash point** : Closed cup: -188.15°C (-306.7°F)
- 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: open flames, sparks and static discharge and oxidizing materials.
- Lower and upper explosive (flammable) limits** : Lower: 5%
Upper: 15%
- Vapor pressure** : Not available.
- Vapor density** : 0.55 (Air = 1) Liquid Density@BP: 26.5 lb/ft3 (424.5 kg/m3)
- Specific Volume (ft³/lb)** : 24.3956
- Gas Density (lb/ft³)** : 0.040991 (25°C / 77 to °F)
- Relative density** : Not applicable.
- Solubility** : Not available.
- Solubility in water** : 0.0244 g/l
- Partition coefficient: n-octanol/water** : 1.09
- Auto-ignition temperature** : 287°C (548.6°F)
- Decomposition temperature** : Not available.
- SADT** : Not available.

Section 9. Physical and chemical properties

Viscosity : Not applicable.

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)

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

Section 11. Toxicological information

- 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** : 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.
Carcinogenicity : No known significant effects or critical hazards.
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.
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
methane	1.09	-	low

Mobility in soil

Section 12. Ecological information






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	UN1971	UN1971	UN1971	UN1971	UN1971
UN proper shipping name	Methane, compressed	Methane, compressed or Methane or Natural gas, compressed (with high methane content)	Methane, compressed	Methane, compressed	Methane, compressed
Transport hazard class(es)	2.1 	2.1 	2.1 	2.1 	2.1 
Packing group	-	-	-	-	-
Environment	No.	No.	No.	No.	No.
Additional information	-	Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2). <u>Explosive Limit and Limited Quantity Index</u> 0.125 <u>ERAP Index</u> 3000 <u>Passenger Carrying Ship Index</u> Forbidden <u>Passenger Carrying Road or Rail Index</u> Forbidden	-	-	Passenger and Cargo Aircraft Quantity limitation: 0 Forbidden Cargo Aircraft Only Quantity limitation: 150 kg

“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: Not determined
 United States inventory (TSCA 8b): This material is listed or exempted.
 Clean Air Act (CAA) 112 regulated flammable substances: methane

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 : Fire hazard
 Sudden release of pressure

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
methane	100	Yes.	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 : This material is listed or exempted.
 Malaysia : This material is listed or exempted.
 New Zealand : This material is listed or exempted.
 Philippines : This material is listed or exempted.
 Republic of Korea : This material is listed or exempted.

Section 15. Regulatory information

Taiwan : This material is listed or exempted.

Canada

WHMIS (Canada) : Class A: Compressed gas.
Class B-1: Flammable gas.
CEPA Toxic substances: This material is listed.
Canadian ARET: This material is not listed.
Canadian NPRI: This material is 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 B-1: Flammable gas.

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 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
Flam. Gas 1, H220 Press. Gas Comp. Gas, H280	Expert judgment According to package

History

Date of printing : 5/9/2016
Date of issue/Date of revision : 5/9/2016
Date of previous issue : No previous validation
Version : 0.01

Section 16. Other information

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.

1. PRODUCT AND COMPANY INFORMATION

Product/Chemical Name: ABS/ Solvent Mixture

Trade Names: **LOW VOC ABS Cement Products** 210 Low VOC Medium Body/ Black ABS Cement

Recommended Use: Solvent Cement for ABS Materials

Product Part Number(s): 210- 21001, 21002, 21003, 21004

Manufacturer: E-Z Weld Group, LLC 1661 Old Dixie Hwy, Riviera Beach, FL 33404

Phone (281) 351-9889 Fax (281) 351-9896

www.e-zweld.com

In case of Emergency: CHEMTREC 1-800-424-9300 (U.S. and Canada)

Preparation/ Revision Date: May 27, 2015

2. HAZARDS IDENTIFICATION

Appearance: Black tint glue.

Odor: Ether-like

GHS SYMBOLS:



SIGNAL WORD: DANGER

Hazard Statements:

Extremely Flammable liquid and vapors.

Toxic in case of inhalation or ingestion.

Harmful in contact with skin.

Keep out of reach of children.

Read label before use.

Keep away from heat/ sparks/ open flames/ hot surfaces- DO NOT SMOKE.

Keep container tightly closed.

Do not breathe vapors.

Use only in open air and well-ventilated places.

Principal Hazards:

Skin or Eyes: Contact with this product can be irritating to contaminated skin and eyes. Vapors of this product can redden and irritate the eyes. If the eyes are contaminated with splashes, sprays or mists of this product, reddening, tearing, and corneal opacity can occur. The liquid can be mildly to severely irritating to contaminated skin (depending on duration of exposure).

Inhalation: Inhalation of vapors, mists, or sprays of this product can be irritating to the nose, throat, mucous membranes, and other tissues of the respiratory system. Symptoms of overexposure can include coughing, sneezing, and shortness of breath. Additionally, the components of this product are central nervous system depressants. Symptoms of over-exposure can include drowsiness, dizziness, fatigue, headache, nausea, and general anesthetic effects. Inhalation of high concentrations of this product (as may occur in a poorly-ventilated area) may be fatal.

This product must be used with adequate ventilation. Mechanical exhaust may be needed. Ensure exposure to vapors is minimized by use of appropriate engineering controls, work practices, and personal protective equipment, as described in the remainder of this document.



SAFETY DATA SHEET

Prepared according to OSHA, GHS and ANSI Z400.1-2004 standards

Ingestion: Ingestion is not anticipated to be a significant route of occupational overexposure for this product. If ingestion occurs, refer to Section 4 (First-Aid Measures) and get medical help immediately. If ingestion of this product does occur, symptoms of such over-exposure can include nausea, vomiting, and other symptoms described for "Inhalation". Ingestion can also lead to liver and kidney damage. Ingestion of this product may be fatal.

Injection: Injection is not anticipated to be a significant route of over-exposure for this product. If injection does occur (i.e. through a puncture by an object contaminated with the product), local irritation and swelling can occur. Additional symptoms may include those described for "Inhalation".

See section 11 for complete health hazard information

3. COMPOSITION/ INFORMATION ON INGREDIENTS

Hazardous ingredients:

CAS NUMER	INGREDIENT/ CHEMICAL NAME	PERCENT BY WEIGHT
78-93-3	METHYL ETHYL KETONE	20-50
9003-56-9	ABS RESIN	18-40
67-64-1	ACETONE	10-30

4. FIRST AID MEASURES

Eye Contact

If this product's liquid or vapors enter the eyes, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. The contaminated individual must seek immediate medical attention.

Skin Contact

If this product contaminates the skin, immediately begin decontamination with running water. Minimum flushing is for 15 minutes. Remove exposed or contaminated clothing, taking care not to contaminate eyes. The contaminated individual must seek medical attention if any adverse effect occurs.

Inhalation

If vapors, mists, or sprays of this product are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Remove or cover gross contamination to avoid exposure to rescuers.

Ingestion

If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. If professional advice is not available, do not induce vomiting. The contaminated individual should drink milk, egg whites, or large quantities of water. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or unable to swallow.

The contaminated individual must be taken for medical attention, especially if any adverse effect occurs. Rescuers should be taken for medical attention, if necessary. Take a copy of label and MSDS to health professional with victim.

5. FIRE FIGHTING MEASURES

Flash Point

Methyl Ethyl Ketone: -9°C (15°F)

Extinguishing Media

Foam, CO₂ or Dry Chemical. Cool fire exposed container with water.



SAFETY DATA SHEET

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Fire-Fighting Instructions

Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. If it is safe to do so, allow small fires involving this product to burn-out, while protecting exposures. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas. If necessary, rinse contaminated equipment thoroughly before returning such equipment to service.

Unusual Fire or Explosion Hazards

This is a Class I-B Flammable Liquid. When involved in a fire, this material may ignite and produce irritating vapors and toxic gases (e.g., carbon monoxide, carbon dioxide). This material will readily ignite at room temperature. The vapors are heavier than air and may travel to a source of ignition, and flash back to a leak or open container.

Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: The vapors of this product can be ignited by static electrical energy.

6. ACCIDENTAL RELEASE MEASURES

Spill /Leak Procedures

In case of a spill, clear the affected area and protect people. Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. Small releases (e.g., 1-pint) must be cleaned-up by personnel wearing gloves, goggles, and appropriate eye protection. Face shields must be worn if splashes or sprays of this product may be generated. In the event of a non-incident release (e.g., five, 1-gallon containers leaking simultaneously in a poorly-ventilated area), the minimum Personal Protective Equipment should be Level B: triple-gloves (rubber gloves and nitrile gloves, over latex gloves), chemically resistant suit and boots, hard-hat, and Self-Contained Breathing Apparatus. Level B should always be used during responses in which the oxygen level is below 19.5% or unknown.

Waste Disposal Method

Dispose of in accordance with U.S. Federal, State, or local procedures, the applicable standards of Canada and its Provinces, or the appropriate requirements of European Community member States (see Section 13, Disposal Considerations).

Cleanup:

Eliminate all sources of ignition before spill clean-up begins. Use non-sparking tools. Absorb spilled liquid with activated carbon, polypads or other suitable absorbent materials. Monitor the area for combustible vapors and the level of oxygen. Monitoring must indicate less than 10% of the LEL (see Section 5, Fire-Fighting Measures) and greater than 19.5 % Oxygen is in the atmosphere before personnel are permitted in the area without Level B Protection. Place all spill residues in an appropriate container and seal. Place the bulk of any spilled material into drums.

7. HANDLING AND STORAGE

Precautions to Be Taken in Handling and Storing

Keep away from heat, sparks and flame. Avoid breathing vapor.

Handling Precautions

All employees who handle this material should be trained to handle it safely. Containers of this product must be properly labeled. If this mixture is used in other types of containers, only use portable containers approved for flammable liquids. Post "NO SMOKING" signs, where appropriate in storage and use areas. Use non-sparking tools. Bond and ground during transfer of material. Empty containers may contain residual flammable liquid or vapors. Therefore, empty containers should be handled with care. Do not expose "empty" containers to welding touches, or any other source of ignition.

Storage Requirements

Store containers of the product in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Material should be stored in secondary containers, or in a designated area, as appropriate. Storage areas should be made of fire-resistant materials. Inspect all incoming containers before storage, to ensure containers



SAFETY DATA SHEET

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are properly labeled and not damaged. Refer to NFPA 30, Flammable and Combustible Liquids Code for additional information on storage.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

Component Exposure Limits:

Methyl Ethyl Ketone (78-93-3)

ACGIH: 200 ppm TWA; 300 ppm STEL

OSHA: 200 ppm TWA; 590 mg/m³ TWA

NIOSH: 200 ppm TWA; 590 mg/m³ TWA; 300 ppm STEL; 885 mg/m³ STEL

Acetone (67-64-1)

ACGIH: 500 ppm TWA; 750 ppm STEL

OSHA: 1000 ppm TWA; 2400 mg/m³ TWA

NIOSH: 250 ppm TWA; 590 mg/m³ TWA

ABS Resin (9003-56-9)

ACGIH: 300 ppm STEL

OSHA: 200 ppm TWA

Ventilation: Mechanical exhaust may be needed. If the product is used in a confined area, provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s). Explosion-proof equipment is required.

Respiratory Protection: Respiratory protection is not generally needed when using this product. Maintain airborne contaminant concentrations below guidelines listed in this section. If respiratory protection is needed, use only protection authorized in 29 CFR 1910.134 or applicable State regulations. Use supplied air respiration protection if oxygen levels are below 19.5% or are unknown. Respiratory protection guidelines for Tetrahydrofuran (a component of this product) are provided as follows.

NIOSH/OSHA RECOMMENDATIONS FOR TETRAHYDROFURAN CONCENTRATIONS IN AIR UP TO 2000 ppm:

Supplied Air Respirator (SAR) operated in a continuous-flow mode, full-facepiece chemical cartridge respirator with organic vapor cartridge(s), gas mask with organic vapor canister, powered air-purifying respirator with organic vapor cartridge(s), full-facepiece Self-Contained Breathing Apparatus (SCBA), or full-facepiece SAR.

EMERGENCY OR PLANNED ENTRY INTO UNKNOWN CONCENTRATIONS OR IDLH CONDITIONS: Positive pressure, full-facepiece SCBA or positive pressure, full-facepiece SAR with an auxiliary positive pressure SCBA.

ESCAPE: Gas mask with organic vapor canister or escape-type SCBA.

Protective Gloves: Wear gloves for routine industrial use to protect hands from contact. For long exposures, or unusual contact, such as spill cleanup, chemical resistant gloves may be required. See section 6.

Eye Protection: Splash goggles or safety glasses. Face shield should be worn when working in situations in which splashes or sprays can be generated. Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

Other Protective Clothing or Equipment: Use body protection appropriate for task (e.g., Apron or Tyvek suit).

Other/Hygienic Practices: Wash with soap and water after use. Never eat or drink in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Black tint glue.

Physical State: Liquid

Odor: Ether-like

Odor Threshold: 2.48–3.47 ppm (Tetrahydrofuran)

pH: Not determined

Freezing Point: Not determined



SAFETY DATA SHEET

Prepared according to OSHA, GHS and ANSI Z400.1-2004 standards

Melting Point: Not determined
Boiling Point and Boiling Range: Not determined
Flash Point: Methyl Ethyl Ketone: -9°C (15°F)
Evaporation Rate: (n-Butyl acetate) >1
Flammability: NFPA Class IB
Vapor Pressure: Not determined
Specific Gravity (H₂O=1, at 4 °C): < 1.0
Water Solubility: Somewhat soluble.
Partition coefficient (n-octanol/ water): Not determined
Auto-ignition temperature: Methyl Ethyl Ketone: 404°C (759°F)
Decomposition temperature: Not determined
Viscosity: Not available

10. STABILITY AND REACTIVITY

Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
Conditions to Avoid: Avoid exposure or contact to extreme temperatures, sources of ignition, incompatible chemicals.
Incompatible Materials: This product will not be compatible with strong oxidizers, lithium aluminum hydride, and alkaline earth hydroxides.
Polymerization: Polymerization is not expected to present a significant hazard.
Hazardous Decomposition or byproducts: Carbon monoxide, carbon dioxide, silicon and chloride compounds.

11. TOXICOLOGICAL INFORMATION

ACUTE EXPOSURE

Component Analysis (LD50/ LC50)

Methyl Ethyl Ketone (CAS# 78-93-3)

Oral-Rat LD50: 2737 mg/kg, Inhalation-Rat LC50: 23,500 mg/m³/8hr, Inhalation-Mouse LC50: 40 g/m³/2hr

Eye Irritation: Can cause irritation, tearing and blurred vision.

Skin Irritation: Can cause irritation, redness and defatting (dryness).

Ingestion Health Risks: Causes nausea, headache, dizziness, stupor, and /or diarrhea. Ingestion of this product at high concentration may be fatal.

Respiratory Irritation: Can cause respiratory irritation and headache.

Dermal Toxicity: Severe irritation and defatting. Can cause a rash.

Inhalation Toxicity: Inhalation of product's vapors at high concentrations may be fatal

Target Organs: Skin, eyes, respiratory system, central nervous system.

CHRONIC EXPOSURE

Chronic Toxicity: Prolonged or repeated skin exposures can lead to dermatitis (dryness, reddening and irritation of the skin). There is limited evidence from animal studies that Methyl Ethyl Ketone, a component of this product, is a reproductive toxin.

Target Organs: Liver, Kidneys.

Carcinogenicity:

Tetrahydrofuran (CAS# 109-99-9)

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

Acetone (CAS# 67-64-1)

ACGIH: A4 - Not Classifiable as a Human Carcinogen



SAFETY DATA SHEET

Prepared according to OSHA, GHS and ANSI Z400.1-2004 standards

Mutagenicity: This product is not reported to produce mutagenic effects in humans. Animal mutation data are available for Methyl Ethyl Ketone (a component of this product); these data were obtained during clinical studies on specific animal tissues or micro-organisms exposed to high doses of these compounds.

Reproductive Toxicity: This product is not reported to cause reproductive effects in humans. Reproductive toxicity data are available for Methyl Ethyl Ketone (a component of this product); these data were obtained from clinical studies on test animals exposed to relatively high doses.

Teratogenicity: This product is not reported to cause teratogenic effects in humans. Three animal studies involving Methyl Ethyl Ketone (a component of this product) have shown fetotoxicity (skeletal anomalies) at doses which did not produce significant maternal toxicity.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL TOXICITY

Aquatic Life Toxicity: This product can be harmful or fatal to contaminated aquatic plant or animal life, especially if released in large quantity in a body of water. The following aquatic toxicity data are available for the components of this product:

METHYL ETHYL KETONE:

EC₀ (*Scenedesmus quadricauda*, green algae) = 4300 mg/L/ 8 days

EC₀ (*Entosiphon sulcatum*, protozoa) = 190 mg/L/ 72 hours

EC₀ (*Uronema parduczi* Chatton-Lwoff, protozoa) = 2830 mg/L EC₀ (*Pseudomonas putida*, bacteria) = 1150 mg/L/ 16 hours

LC₅₀ (*Pimephales promelas*, fathead minnow) = 3200 mg/L/96 hour

LD₀ (*Pseudomonas*, bacteria) = 2,500 mg/L

LD₀ (*Scenedesmus*, algae) = 12,500 mg/L

LD₀ (*Colpoda*, protozoa) = 5,000 mg/L

LC₅₀ (mosquito fish) = 5,600 mg/L/ 24 96 hours

LC₅₀ (bluegill) = 5,640 1,690 mg/L/ 24 96 hours

LC₅₀ (goldfish) = 5,000 mg/L/ 24 hours

ENVIRONMENTAL DATA

Biodegradation: Biodegradation: The components of this product will biodegrade into other organic compounds.

Environmental data are available for components of this product, as follows:

ACETONE: Log K_{ow} = -0.24. Water Solubility= Miscible. Acetone is quite readily degraded in the environment.

BO D = 122%; 5 day s. The potential for bioconcentration in fish is negligible. One experimental study of bioconcentration in adult haddock at 7-9°C (static test) resulted in a BCF of 0.69.

METHYL ETHYL KETONE: Log K_{ow} = 0.29. Water Solubility = 239,000 mg/L. Methyl Ethyl Ketone is rapidly volatilized from water and undergoes slow biodegradation. It undergoes moderate atmospheric photodegradation.

Soil Mobility: Not determined

VOC INFORMATION: This product emits VOC's (volatile organic compounds) in its use. Make sure that use of this product complies with local VOC emission regulations, where they exist. **Maximum VOC Level for E-Z Weld 210: 325 g/l as per SCAQMD Test Method 1168/316A.**

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Waste disposal must be in accordance with appropriate U.S. Federal, State, and local regulations, those of Canada and its Provinces, as well as those applicable to the EC Member States. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority.

U.S. EPA WASTE NUMBER: D001 (Characteristic/Ignitability)

14. TRANSPORT INFORMATION

For Greater than 1 liter (0.3 gal):

Shipping Name: Adhesives

UN Number: 1133

Prepared according to OSHA, GHS and ANSI Z400.1-2004 standards

Transport Hazard Class/ Packing Group: Class 3 (Flammable Liquid), Group II DOT LABEL(S)**Required Labels:** Flammable Liquid**For Less than 1 liter (0.3 gal):****Shipping Name:** Adhesives**UN Number:** 1133**Transport Hazard Class/ Packing Group:** Class 3 (Flammable Liquid), Group II DOT LABEL(S)**Required Labels:** None (Limited Quantities are expected from labeling)**Marine Pollutant:** N**IMDG Code:** 3230**15. REGULATORY INFORMATION****U.S. Federal Regulations:****Component Analysis**

The components of this product are subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act, and are listed as follows:

CHEMICAL NAME	SARA 304 (40 CFR Table 302.4)	SARA 313 (40 CFR 372.65)
Acetone (CAS# 67-64-1)	Yes	No
Methyl Ethyl Ketone (CAS# 78-93-3)	Yes	Yes

U.S. CERCLA REPORTABLE QUANTITY (RQ): MEK: 5000 lb;**TSCA:** All ingredients contained in this product are listed on the U.S. EPA TSCA Chemical Substance Inventory.**State Regulations**

The following components appear on one or more of the following state hazardous substances list:

CHEMICAL NAME	CAS	AK	CA	FL	IL	KS	MA	MN	MO	NJ	ND	PA	RI	TX	WV	WI
Methyl Ethyl Ketone	78-93-3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Acetone	67-64-1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

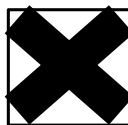
CALIFORNIA, SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): Users are expected to follow normal PPE and ventilation guidelines such as those in section 8 and other portions of this MSDS.

Canadian Federal Regulations:

The components of this product are on the DSL Inventory.

WHMIS Symbols: Class B2: Flammable Liquid Class D2A/B: Materials Causing Other Toxic Effects.

EINECS: All ingredients contained in this product are listed on the European Inventory of Existing Chemical Substances (EINECS). Based on the information on the product's components and an assessment of the physical and health hazards associated with the material, the following assignments have been made (per council directive 67/548/EEC)

EC CLASSIFICATION: Highly Flammable; Carcinogenic Category 3; Harmful; Irritant. [F;Carc.Cat.3;Xn;Xi]**EUROPEAN COMMUNITY ANNEX II HAZARD SYMBOLS:**

EINECS Components: Primary components of this product under European Community Regulation are Methyl Ethyl Ketone and Acetone.



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Prepared according to OSHA, GHS and ANSI Z400.1-2004 standards

16. OTHER INFORMATION

Prepared by: Karla A. Torruellas, Technical Manager

Revision Summary: Revision # 2

Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration.

Other Information

NFPA and HMIS:

NFPA Hazard Signal: Health: 2 Flammability: 3 Reactivity: 0 Special: None

HMIS Hazard Signal: Health: 2* Flammability: 3 Reactivity: 0 PPE: G



Manufacturer Disclaimer: Information given herein is offered in good faith as accurate, but without guarantee. Conditions of use and suitability of the product for particular uses are beyond our control; all risks of use of the product are therefore assumed by the user. Nothing is intended as a recommendation for uses which infringe valid patents or as extending license under valid patents. Appropriate warnings and safe handling procedures should be provided to handlers and users.



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1. PRODUCT AND COMPANY INFORMATION

Product/Chemical Name: Chlorinated Polyvinyl Chloride/ Solvent Mixture

Trade Names: **LOW VOC CPVC Cement Products** LOW VOC 207 CPVC Cement Medium Body/ Orange, 208 LOW VOC Multipurpose Cement Medium Body/ Amber, 217 LOW VOC CPVC Cement Heavy Body/ Gray, 227 LOW VOC FlowGuard Gold® CPVC One-Step Medium Body/ Yellow, 786 LOW VOC CPVC Cement Heavy Body/ Orange

Recommended Use: Solvent Cement for CPVC Materials

Product Part Number(s): **207**-20701, 20702, 20703, 20704; **208**-20801, 20802, 20803, 20804; **217**- 21703, 21704, 21705; **227**-22701, 22702, 22703, 22704, 22708, 22720; **786**- 78601-LV, 78602-LV, 78603-LV, 78604-LV

Manufacturer: E-Z Weld Group, LLC 1661 Old Dixie Hwy, Riviera Beach, FL 33404

Phone (281) 351-9889 Fax (281) 351-9896

www.e-zweld.com

In case of Emergency: CHEMTREC 1-800-424-9300 (U.S. and Canada)

Preparation/ Revision Date: April 7, 2015

2. HAZARDS IDENTIFICATION

Appearance: Product comes in a variety of colors.

Odor: Ether-like

GHS SYMBOLS:



SIGNAL WORD: DANGER

Hazard Statements:

Extremely Flammable liquid and vapors.

Toxic in case of inhalation or ingestion.

Harmful in contact with skin.

Keep out of reach of children.

Read label before use.

Keep away from heat/ sparks/ open flames/ hot surfaces- DO NOT SMOKE.

Keep container tightly closed.

Do not breathe vapors.

Use only in open air and well-ventilated places.

Principal Hazards:

Skin or Eyes: Contact with this product can be irritating to contaminated skin and eyes. Vapors of this product can redden and irritate the eyes. If the eyes are contaminated with splashes, sprays or mists of this product, reddening, tearing, and corneal opacity can occur. The liquid can be mildly to severely irritating to contaminated skin (depending on duration of exposure). Prolonged or repeated skin over-exposures can lead to dermatitis. Skin absorption is a potential route of overexposure for Cyclohexanone (a component of this product).



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Prepared according to OSHA, GHS and ANSI Z400.1-2004 standards

Inhalation: : Inhalation of vapors, mists, or sprays of this product can be irritating to the nose, throat, mucous membranes, and other tissues of the respiratory system. Symptoms of overexposure can include coughing, sneezing, and shortness of breath. Additionally, the components of this product are central nervous system depressants. Symptoms of over-exposure can include drowsiness, dizziness, fatigue, headache, nausea, and general anesthetic effects. Inhalation of high concentrations of this product (as may occur in a poorly-ventilated area) may be fatal. Based on clinical studies involving test animals, Cyclohexanone and Tetrahydrofuran, components of this product, may cause liver and kidney damage after long-term inhalation overexposures.

This product must be used with adequate ventilation. Mechanical exhaust may be needed. Ensure exposure to vapors is minimized by use of appropriate engineering controls, work practices, and personal protective equipment, as described in the remainder of this document.

Ingestion: Ingestion is not anticipated to be a significant route of occupational overexposure for this product. If ingestion occurs, refer to Section 4 (First-Aid Measures) and get medical help immediately. If ingestion of this product does occur, symptoms of such over-exposure can include nausea, vomiting, and other symptoms described for "Inhalation". Ingestion can also lead to liver and kidney damage. Ingestion of this product may be fatal.

Injection: Injection is not anticipated to be a significant route of over-exposure for this product. If injection does occur (i.e. through a puncture by an object contaminated with the product), local irritation and swelling can occur. Additional symptoms may include those described for "Inhalation".

See section 11 for complete health hazard information

3. COMPOSITION/ INFORMATION ON INGREDIENTS

Hazardous ingredients:

CAS NUMER	INGREDIENT/ CHEMICAL NAME	PERCENT BY WEIGHT
109-99-9	TETRAHYDROFURAN	20-50
78-93-3	METHYL ETHYL KETONE	10-40
68648-82-8	CHLORINATED POLYVINYL CHLORIDE RESIN	<25
108-94-1	CYCLOHEXANONE	5-25
67-64-1	ACETONE	0-20
112945-52-5	SILICON DIOXIDE	<3
106-88-7	1,2 BUTYLENE DIOXIDE	<1

4. FIRST AID MEASURES

Eye Contact

If this product's liquid or vapors enter the eyes, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. The contaminated individual must seek immediate medical attention.

Skin Contact

If this product contaminates the skin, immediately begin decontamination with running water. Minimum flushing is for 15 minutes. Remove exposed or contaminated clothing, taking care not to contaminate eyes. The contaminated individual must seek medical attention if any adverse effect occurs.

Inhalation

If vapors, mists, or sprays of this product are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Remove or cover gross contamination to avoid exposure to rescuers.



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Ingestion

If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. If professional advice is not available, do not induce vomiting. The contaminated individual should drink milk, egg whites, or large quantities of water. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or unable to swallow.

The contaminated individual must be taken for medical attention, especially if any adverse effect occurs. Rescuers should be taken for medical attention, if necessary. Take a copy of label and MSDS to health professional with victim.

5. FIRE FIGHTING MEASURES

Flash Point

Methyl Ethyl Ketone: -9°C (15°F) Tetrahydrofuran: -15.5°C (4.1°F)

Extinguishing Media

Foam, CO₂ or Dry Chemical. Cool fire exposed container with water.

Fire-Fighting Instructions

Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. If it is safe to do so, allow small fires involving this product to burn-out, while protecting exposures. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas. If necessary, rinse contaminated equipment thoroughly before returning such equipment to service.

Unusual Fire or Explosion Hazards

This is a Class I-B Flammable Liquid. When involved in a fire, this material may ignite and produce irritating vapors and toxic gases (e.g., carbon monoxide, carbon dioxide). This material will readily ignite at room temperature. The vapors are heavier than air and may travel to a source of ignition, and flash back to a leak or open container. Tetrahydrofuran can form potentially explosive peroxides; closed containers contaminated with peroxides can rupture violently in the heat of a fire. Another component, 1,2-Butylene Oxide, can undergo hazardous polymerization.

Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: The vapors of this product can be ignited by static electrical energy.

6. ACCIDENTAL RELEASE MEASURES

Spill /Leak Procedures

In case of a spill, clear the affected area and protect people. Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. Small releases (e.g., 1-pint) must be cleaned-up by personnel wearing gloves, goggles, and appropriate eye protection. Face shields must be worn if splashes or sprays of this product may be generated. In the event of a non-incident release (e.g., five, 1-gallon containers leaking simultaneously in a poorly-ventilated area), the minimum Personal Protective Equipment should be Level B: triple-gloves (rubber gloves and nitrile gloves, over latex gloves), chemically resistant suit and boots, hard-hat, and Self-Contained Breathing Apparatus. Level B should always be used during responses in which the oxygen level is below 19.5% or unknown.

Waste Disposal Method

Dispose of in accordance with U.S. Federal, State, or local procedures, the applicable standards of Canada and its Provinces, or the appropriate requirements of European Community member States (see Section 13, Disposal Considerations).

Cleanup:

Eliminate all sources of ignition before spill clean-up begins. Use non-sparking tools. Absorb spilled liquid with activated carbon, polypads or other suitable absorbent materials. Monitor the area for combustible vapors and the level of oxygen. Monitoring must indicate less than 10% of the LEL (see Section 5, Fire-Fighting Measures) and greater than 19.5 % Oxygen is in the atmosphere before personnel are permitted in the area without Level B Protection. Place all spill residues in an appropriate container and seal. Place the bulk of any spilled material into drums.



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Prepared according to OSHA, GHS and ANSI Z400.1-2004 standards

7. HANDLING AND STORAGE

Precautions to Be Taken in Handling and Storing

Keep away from heat, sparks and flame. Avoid breathing vapor.

Handling Precautions

All employees who handle this material should be trained to handle it safely. Containers of this product must be properly labeled. If this mixture is used in other types of containers, only use portable containers approved for flammable liquids. Post "NO SMOKING" signs, where appropriate in storage and use areas. Use non-sparking tools. Bond and ground during transfer of material. Empty containers may contain residual flammable liquid or vapors. Therefore, empty containers should be handled with care. Do not expose "empty" containers to welding touches, or any other source of ignition.

Storage Requirements

Store containers of the product in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Material should be stored in secondary containers, or in a designated area, as appropriate. Storage areas should be made of fire-resistant materials. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged. Refer to NFPA 30, Flammable and Combustible Liquids Code for additional information on storage.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

Component Exposure Limits:

Tetrahydrofuran (109-99-9)

ACGIH: 50 ppm TWA; 100 ppm STEL

Skin - potential significant contribution to overall exposure by the cutaneous route

OSHA: 200 ppm TWA; 590 mg/m³ TWA

NIOSH: 200 ppm TWA; 590 mg/m³ TWA; 250 ppm STEL; 735 mg/m³ STEL

Methyl Ethyl Ketone (78-93-3)

ACGIH: 200 ppm TWA; 300 ppm STEL

OSHA: 200 ppm TWA; 590 mg/m³ TWA

NIOSH: 200 ppm TWA; 590 mg/m³ TWA; 300 ppm STEL; 885 mg/m³ STEL

Cyclohexanone (108-94-1)

ACGIH: 20 ppm TWA; 50 ppm STEL

Skin - potential significant contribution to overall exposure by the cutaneous route

OSHA: 50 ppm TWA; 200 mg/m³ TWA

NIOSH: 25 ppm TWA; 100 mg/m³ TWA

Potential for dermal absorption

Acetone (67-64-1)

ACGIH: 500 ppm TWA; 750 ppm STEL

OSHA: 1000 ppm TWA; 2400 mg/m³ TWA

NIOSH: 250 ppm TWA; 590 mg/m³ TWA

Ventilation: Mechanical exhaust may be needed. If the product is used in a confined area, provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s). Explosion-proof equipment is required.

Respiratory Protection: Respiratory protection is not generally needed when using this product. Maintain airborne contaminant concentrations below guidelines listed in this section. If respiratory protection is needed, use only protection authorized in 29 CFR 1910.134 or applicable State regulations. Use supplied air respiration protection if oxygen levels are below 19.5% or are unknown. Respiratory protection guidelines for Tetrahydrofuran (a component of this product) are provided as follows.



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Prepared according to OSHA, GHS and ANSI Z400.1-2004 standards

NIOSH/OSHA RECOMMENDATIONS FOR TETRAHYDROFURAN CONCENTRATIONS IN AIR UP TO 2000 ppm:
Supplied Air Respirator (SAR) operated in a continuous-flow mode, full-facepiece chemical cartridge respirator with organic vapor cartridge(s), gas mask with organic vapor canister, powered air-purifying respirator with organic vapor cartridge(s), full-facepiece Self-Contained Breathing Apparatus (SCBA), or full-facepiece SAR.

EMERGENCY OR PLANNED ENTRY INTO UNKNOWN CONCENTRATIONS OR IDLH CONDITIONS: Positive pressure, full-facepiece SCBA or positive pressure, full-facepiece SAR with an auxiliary positive pressure SCBA.

ESCAPE: Gas mask with organic vapor canister or escape-type SCBA.

NOTE: The IDLH concentration for Tetrahydrofuran is 2000 ppm. This value is based on the lower explosive limit (LEL). Respiratory protection equipment may not be adequate for fire situations.

Protective Gloves: Wear gloves for routine industrial use to protect hands from contact. For long exposures, or unusual contact, such as spill cleanup, chemical resistant gloves may be required. See section 6.

Eye Protection: Splash goggles or safety glasses. Face shield should be worn when working in situations in which splashes or sprays can be generated. Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

Other Protective Clothing or Equipment: Use body protection appropriate for task (e.g., Apron or Tyvek suit).

Other/Hygienic Practices: Wash with soap and water after use. Never eat or drink in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Product comes in a variety of colors.

Physical State: Liquid

Odor: Ether-like

Odor Threshold: 2.48–3.47 ppm (Tetrahydrofuran)

pH: Not determined

Freezing Point: Not determined

Melting Point: Not determined

Boiling Point and Boiling Range: Not determined

Flash Point: Methyl Ethyl Ketone: -9°C (15°F) Tetrahydrofuran: -15.5°C (4.1°F)

Evaporation Rate: (n-Butyl acetate) >1

Flammability: NFPA Class IB

Vapor Pressure: Not determined

Specific Gravity (H₂O=1, at 4 °C): < 1.0

Water Solubility: Somewhat soluble.

Partition coefficient (n-octanol/ water): Not determined

Auto-ignition temperature: Methyl Ethyl Ketone: 404°C (759°F) Tetrahydrofuran: 321°C (610°F)

Decomposition temperature: Not determined

Viscosity: Not available

10. STABILITY AND REACTIVITY

Stability: Stable at room temperature in closed containers under normal storage and handling conditions.

Note: Tetrahydrofuran, a component of this product, can form potentially explosive peroxide compounds when exposed to light or air. Though this product contains inhibitors to prevent peroxide formation, care should be used when storing this product, or handling old containers of this material.

Conditions to Avoid: Avoid exposure or contact to extreme temperatures, sources of ignition, incompatible chemicals.

Incompatible Materials: This product will not be compatible with strong oxidizers, lithium aluminum hydride, and alkaline earth hydroxides.



SAFETY DATA SHEET

Prepared according to OSHA, GHS and ANSI Z400.1-2004 standards

Polymerization: A component of this product, 1,2-Butylene Oxide, may undergo hazardous polymerization. However, at the concentration present in this mixture, polymerization is not expected to present a significant hazard.

Hazardous Decomposition or byproducts: Carbon monoxide, carbon dioxide, silicon and chloride compounds.

11. TOXICOLOGICAL INFORMATION

ACUTE EXPOSURE

Component Analysis (LD50/ LC50)

Tetrahydrofuran (CAS# 109-99-9)

Inhalation-Rat LC50: 21,000 ppm/3H, Oral-Rat LD50: 1650 mg/kg.

Methyl Ethyl Ketone (CAS# 78-93-3)

Oral-Rat LD50: 2737 mg/kg, Inhalation-Rat LC50: 23,500 mg/m³/8hr, Inhalation-Mouse LC50: 40 g/m³/2hr

Cyclohexanone (CAS# 108-94-1)

Inhalation-Rat LC50: 8000 ppm/4 hours, Oral-Rat LD50: 1535 mg/kg, Oral-Mouse LD50: 1400 mg/kg

Silicon Dioxide (CAS# 112945-52-5)

Oral-Rat LD50: 3160 mg/kg

Eye Irritation: Can cause irritation, tearing and blurred vision.

Skin Irritation: Can cause irritation, redness and defatting (dryness).

Ingestion Health Risks: Causes nausea, headache, dizziness, stupor, and /or diarrhea. Ingestion of this product at high concentration may be fatal.

Respiratory Irritation: Can cause respiratory irritation and headache.

Dermal Toxicity: Severe irritation and defatting. Can cause a rash.

Inhalation Toxicity: Inhalation of product's vapors at high concentrations may be fatal

Target Organs: Skin, eyes, respiratory system, central nervous system.

CHRONIC EXPOSURE

Chronic Toxicity: Prolonged or repeated skin exposures can lead to dermatitis (dryness, reddening and irritation of the skin). Tetrahydrofuran, a component of this product, may cause liver and kidney damage after long-term inhalation overexposures. There is limited evidence from animal studies that Methyl Ethyl Ketone, a component of this product, is a reproductive toxin.

Target Organs: Liver, Kidneys.

Carcinogenicity:

Tetrahydrofuran (CAS# 109-99-9)

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

Acetone (CAS# 67-64-1)

ACGIH: A4 - Not Classifiable as a Human Carcinogen

Cyclohexanone (CAS# 108-94-1)

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

IARC: Monograph 71 [1999]; Monograph 47 [1989] (Group 3 (not classifiable))

Silicon Dioxide (CAS# 112945-52-5)

IARC: Monograph 68 [1997] (listed under Amorphous silica) (Group 3 (not classifiable))

Mutagenicity: This product is not reported to produce mutagenic effects in humans. Human mutation data are available for Cyclohexanone (a component of this product); these data were obtained on specific human tissues exposed to relatively high doses. Animal mutation data are available for Methyl Ethyl Ketone, Silicon Dioxide, and Tetrahydrofuran (components of this product); these data were obtained during clinical studies on specific animal tissues or micro-organisms exposed to high doses of these compounds.



SAFETY DATA SHEET

Prepared according to OSHA, GHS and ANSI Z400.1-2004 standards

Reproductive Toxicity: This product is not reported to cause reproductive effects in humans. Reproductive toxicity data are available for 1,2-Butylene Oxide, Methyl Ethyl Ketone and Tetrahydrofuran (components of this product); these data were obtained from clinical studies on test animals exposed to relatively high doses.

Teratogenicity: This product is not reported to cause teratogenic effects in humans. Three animal studies involving Methyl Ethyl Ketone (a component of this product) have shown fetotoxicity (skeletal anomalies) at doses which did not produce significant maternal toxicity.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL TOXICITY

Aquatic Life Toxicity: This product can be harmful or fatal to contaminated aquatic plant or animal life, especially if released in large quantity in a body of water. The following aquatic toxicity data are available for the components of this product:

CYCLOHEXANONE:

LC₅₀ (*Pimephales promelas* fathead minnow) 527 mg/L 96 hours
EC₀ (bacteria *Pseudomonas putida*) 16 hours = 180 mg/L
EC₀ (algae *Microcystis aeruginosa*) 8 days = 52 mg/L
EC₀ (green algae *Scenedesmus quadricauda*) 7 days = 370 mg/L
EC₀ (protozoa *Entosiphon sulcatum*) 72 hours = 545 mg/L
EC₀ (protozoa *Uronema parduczi* Chatton-Lwoff) = 280 mg/L
EC₀ (bacteria *Pseudomonas fluorescens*) 16 hours = 180 mg/L (pH = 7)
EC₀ (*Chilomonas paramecium* Ehrenberg) 48 hours = 573 mg/L
EC₀ (*Daphnia magna* Straus) 24 hours = 526 mg/L
EC₅₀ (*Daphnia magna* Straus) 24 hours = 820 mg/L
EC₁₀₀ (*Daphnia magna* Straus) 24 hours = 1,240 mg/L
EC₀ (*Daphnia magna*) 24 hours = 540 mg/L
EC₅₀ (*Daphnia magna*) 24 hours = 800 mg/L
EC₁₀₀ (*Daphnia magna*) 24 hours = 1,540 mg/L
LC₅₀ (fathead minnow) 96 hours = 526; 618; 630 mg/L
LC₅₀ (*Leuciscus idus*) 24 hours = 538 mg/L
LC₅₀ (*Leuciscus idus*) 96 hours = 536; 539; 752 mg/L

METHYL ETHYL KETONE:

EC₀ (*Scenedesmus quadricauda*, green algae) = 4300 mg/L/ 8 days
EC₀ (*Entosiphon sulcatum*, protozoa) = 190 mg/L/ 72 hours

METHYL ETHYL KETONE (continued):

EC₀ (*Uronema parduczi* Chatton-Lwoff, protozoa) = 2830 mg/L EC₀ (*Pseudomonas putida*, bacteria) = 1150 mg/L/ 16 hours
LC₅₀ (*Pimephales promelas*, fathead minnow) = 3200 mg/L/96 hour
LD₀ (*Pseudomonas*, bacteria) = 2,500 mg/L
LD₀ (*Scenedesmus*, algae) = 12,500 mg/L
LD₀ (*Colpoda*, protozoa) = 5,000 mg/L
LC₅₀ (mosquito fish) = 5,600 mg/L/ 24 96 hours
LC₅₀ (bluegill) = 5,640 1,690 mg/L/ 24 96 hours
LC₅₀ (goldfish) = 5,000 mg/L/ 24 hours

TETRAHYDROFURAN:

Growth Inhibition (*Microcystis*, blue algae) = 225 mg/L Toxicity Threshold (Cell Multiplication Inhibit System test): (*Uronema parduczi* Chatton-Lwoff, protozoa) = 858 mg/L (*Pseudomonas putida*, bacteria) = 580 mg/L (*Microcystis aeruginosa*, algae) = 225 mg/L
LC₅₀ (silver/golden orfe) = 2820-2930 mg/L LC₅₀ (fathead minnow) = 2160 mg/L/ 96 hours
LC₅₀ (carp) = 4400 mg/L/ 48 hours
LC₅₀ (goldfish) = 2400 mg/L/ 48 hours

ENVIRONMENTAL DATA

Biodegradation: The components of this product will biodegrade into other organic compounds.

Environmental data are available for components of this product, as follows:

ACETONE: Log K_{ow} = -0.24. Water Solubility= Miscible. Acetone is quite readily degraded in the environment. BO D = 122%; 5 day s. The potential for bioconcentration in fish is negligible. One experimental study of bioconcentration in adult haddock at 7-9°C (static test) resulted in a BCF of 0.69.

CYCLOHEXANONE: KOC - 0.81. Water Solubility 23,000 mg/L. Cyclohexanone is not rapidly volatilized from water, except for fast moving streams or very shallow ponds. Significant soil leaching occurs, contributing to ground water contamination. Biodegradation and photolysis occur in water. Rapid atmospheric degradation occurs via photolysis, with a half-life of about 1 to 5 days.

METHYL ETHYL KETONE: Log K_{ow} = 0.29. Water Solubility = 239,000 mg/L. Methyl Ethyl Ketone is rapidly volatilized from water and undergoes slow biodegradation. It undergoes moderate atmospheric photodegradation.

TETRAHYDROFURAN: Water Solubility = 30% (25°C). Tetrahydrofuran is significantly biodegraded in standard tests. This compound is not expected to bioconcentrate in fish significantly.

Soil Mobility: Not determined

VOC INFORMATION: This product emits VOC's (volatile organic compounds) in its use. Make sure that use of this product complies with local VOC emission regulations, where they exist. **Max. VOC Level for E-Z Weld 207, 208, 217, 227 and 786-Low VOC: 490 g/l as per SCAQMD Test Method 1168/316A.**



SAFETY DATA SHEET

Prepared according to OSHA, GHS and ANSI Z400.1-2004 standards

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Waste disposal must be in accordance with appropriate U.S. Federal, State, and local regulations, those of Canada and its Provinces, as well as those applicable to the EC Member States. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority.

U.S. EPA WASTE NUMBER: D001 (Characteristic/Ignitability)

14. TRANSPORT INFORMATION

For Greater than 1 liter (0.3 gal):

Shipping Name: Adhesives

UN Number: 1133

Transport Hazard Class/ Packing Group: Class 3 (Flammable Liquid), Group II DOT LABEL(S)

Required Labels: Flammable Liquid

For Less than 1 liter (0.3 gal):

Shipping Name: Adhesives

UN Number: 1133

Transport Hazard Class/ Packing Group: Class 3 (Flammable Liquid), Group II DOT LABEL(S)

Required Labels: None (Limited Quantities are expected from labeling)

Marine Pollutant: N

IMDG Code: 3230

15. REGULATORY INFORMATION

U.S. Federal Regulations:

Component Analysis

The components of this product are subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act, and are listed as follows:

CHEMICAL NAME	SARA 304 (40 CFR Table 302.4)	SARA 313 (40 CFR 372.65)
1,2-Butylene Oxide (CAS#106-88-7)	Yes	Yes
Cyclohexanone (CAS# 108-94-1)	Yes	Yes
Methyl Ethyl Ketone (CAS# 78-93-3)	Yes	Yes
Tetrahydrofuran (CAS# 109-99-9)	Yes	No

U.S. CERCLA REPORTABLE QUANTITY (RQ): 1,2-Butylene Oxide = 100 lb; Cyclohexanone = 5000 lb; MEK: 5000 lb; Tetrahydrofuran = 1000 lb.

TSCA: All ingredients contained in this product are listed on the U.S. EPA TSCA Chemical Substance Inventory.

State Regulations

The following components appear on one or more of the following state hazardous substances list:

CHEMICAL NAME	CAS	A	CA	FL	IL	KS	MA	MN	MO	NJ	ND	PA	RI	TX	WV	WI
Tetrahydrofuran	109-99-9	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Methyl Ethyl Ketone	78-93-3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Cyclohexanone	108-94-1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
1,2-Butylene Oxide	106-88-7	N	N	N	N	Y	Y	N	N	Y	N	Y	Y	N	N	N

Prepared according to OSHA, GHS and ANSI Z400.1-2004 standards

CALIFORNIA, SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): This product may contain trace constituents, such as vinyl chloride, present in one of the product's components. Under common usage, exposures to these trace constituents at levels exceeding the "no significant risk level" (NSRL) would not occur. Users are expected to follow normal PPE and ventilation guidelines such as those in section 8 and other portions of this MSDS.

Canadian Federal Regulations:

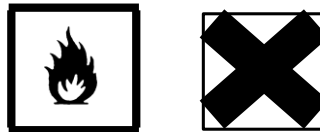
The components of this product are on the DSL Inventory.

WHMIS Symbols: Class B2: Flammable Liquid Class D2A/B: Materials Causing Other Toxic Effects.

EINECS: All ingredients contained in this product are listed on the European Inventory of Existing Chemical Substances (EINECS). Based on the information on the product's components and an assessment of the physical and health hazards associated with the material, the following assignments have been made (per council directive 67/548/EEC)

EC CLASSIFICATION: Highly Flammable; Carcinogenic Category 3; Harmful; Irritant. [F;Carc.Cat.3;Xn;Xi]

EUROPEAN COMMUNITY ANNEX II HAZARD SYMBOLS:



EINECS Components: Primary components of this product under European Community Regulation are Tetrahydrofuran, Methyl Ethyl Ketone, Cyclohexanone and Acetone.

16. OTHER INFORMATION

Prepared by: Karla A. Torruellas, Technical Manager

Revision Summary: Revision # 2

Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration.

Other Information

NFPA and HMIS:

NFPA Hazard Signal: Health: 2 Flammability: 3 Reactivity: 1 Special: None

HMIS Hazard Signal: Health: 2* Flammability: 3 Reactivity: 1 PPE: G



Manufacturer Disclaimer: Information given herein is offered in good faith as accurate, but without guarantee. Conditions of use and suitability of the product for particular uses are beyond our control; all risks of use of the product are therefore assumed by the user. Nothing is intended as a recommendation for uses which infringe valid patents or as extending license under valid patents. Appropriate warnings and safe handling procedures should be provided to handlers and users.



SAFETY DATA SHEET

C-FLUX[®]

High-quality soft soldering flux

SECTION 1 – PRODUCT AND COMPANY INFORMATION

Product Name

C-Flux[®]

Product Codes

74025, 74026, 74027, 74028, 74029

Chemical Family

Organic/Inorganic

Use

Soldering flux

Manufacturer's Name

The RectorSeal Corporation
2601 Spenwick Drive
Houston, Texas 77055 USA

Date of Validation

January 23, 2015

Date of Preparation

August 1, 2012

HMIS Codes

Health	2
Flammability	1
Reactivity	0
PPI	B

Emergency Telephone No.

Chemtrec 24 Hours
(800)-424-9300 USA
(703)-527-3887 International

Technical Service Telephone No.

(800)-231-3345 or (713)-263-8001

SECTION 2 – HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

OSHA Hazards

Irritant

GHS CLASSIFICATION

Physical Hazards

None

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

Respiratory or Skin Sensitization: Not Classified

Germ Cell Mutagenicity: Not Classified

Carcinogenicity: Not Classified

Reproductive Toxicology: Not Classified
Target Organ Systemic Toxicity - Single Exposure: Not Classified
Target Organ Systemic Toxicity - Repeated Exposure: Not Classified

Aspiration Toxicity: Not Classified

ENVIRONMENTAL HAZARDS

Hazardous to the Aquatic Environment: Not Classified
Acute aquatic toxicity: Not Classified
Chronic aquatic toxicity: Not Classified
Bioaccumulation potential: Not Classified
Rapid degradability: Not Classified

GHS Label elements, including precautionary statements



GHS07: Exclamation Mark/Irritant
Signal Word: **Warning**

Hazard Statements:

H302 - Harmful if swallowed.
H315 - Causes skin irritation.
H319 - Causes serious eye irritation.

Precautionary Statements:

P102 - Keep out of reach of children.
P262 - Do not get in eyes, on skin, or on clothing.
P264 - Wash hands thoroughly after handling.
P281 Use personal protective equipment as required.

Summary Of Acute Hazards

Irritation to respiratory system from fumes evolved during soldering. Eye contact may cause intense irritation and injury.

Route Of Exposure, Signs And Symptoms

INHALATION

Irritation to respiratory system from fumes evolved during soldering.

EYE CONTACT

Contact may cause intense irritation and injury.

SKIN CONTACT

May cause skin irritation.

INGESTION

Nausea, vomiting, irritation to digestive system.

SUMMARY OF CHRONIC HAZARDS

Short term effects to liver and kidneys can occur. Chemical irritation from continued skin contact can occur. Continuous industrial use in small unventilated areas may result in sufficient inhalation of solder and flux fumes to cause lung damage and irritation of respiratory tract.

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 exposure.

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient: Zinc Chloride

Percentage By Weight: < 20

CAS#: 7646-85-7

EC#: 231-592-0

Ingredient: Ammonium Chloride

Percentage By Weight: < 1

CAS Number: 12125-02-9

EC#: 235-186-4

Ingredient: Zinc Oxide

Percentage By Weight: < 10

CAS Number: 1314-13-2

EC#: 215-222-5

Ingredient: Tin

Percentage By Weight: —

CAS Number: 7440-31-5

EC#: 231-141-8

Ingredient: Antimony

Percentage By Weight: < 1

CAS Number: 7440-36-0

EC#: 231-146-5

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:	Immediately wash with soap and water. Remove and wash any contaminated clothing.
If in eyes:	Immediately flush with large amounts of water for at least 15 minutes. Get prompt medical attention if irritation persists.
If swallowed:	If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.

SECTION 5 – FIRE FIGHTING MEASURES

Extinguishing Media

Foam, dry chemical, carbon dioxide or water fog.

Special Fire Fighting Procedures: Wear self-contained full face piece breathing apparatus and other protective clothing. Hazardous decomposition products possible (see Section 10). May release ZnO and HCl fumes.

Unusual Fire And Explosion Hazards: Heat may build up pressure and rupture closed containers.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Steps To Be Taken In Case Material Is Released Or Spilled: Wipe up spills to prevent footing hazard. Avoid flushing into sewers, drains, waterways and soil. Wear protective clothing during clean up.

SECTION 7 – HANDLING AND STORAGE

Precautions To Be Taken In Handling And Storing: Keep container closed and upright when not in use. Store flux at ambient conditions. Wash thoroughly after handling to remove all residue.

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.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredient	Units
Zinc Chloride	
ACGIH TLV:	1 mg/m ³
OSHA PEL:	1 mg/m ³

Ammonium Chloride

ACGIH TLV: 10 mg/m³
 OSHA PEL: 10 mg/m³

Zinc Oxide

ACGIH TLV: 5 mg/m³
 OSHA PEL: 5 mg/m³

Tin

ACGIH TLV: 5 mg/m³
 OSHA PEL: 5 mg/m³

Antimony

ACGIH TLV: 0.5 mg/m³
 OSHA PEL: 0.5 mg/m³

Respiratory Protection (Specify Type): In confined poorly ventilated areas, use NIOSH/MSHA approved air purifying or supplied air purifying or supplied air respirators during soldering operations until fumes have dissipated.

Ventilation – Local Exhaust: Acceptable

Special: N/A

Mechanical (General): Acceptable.

Other: N/A

Protective Gloves: Wear rubber gloves.

Eye Protection: Safety glasses (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 areas thoroughly before eating, drinking, smoking, or leaving work area. Launder contaminated clothing before reuse.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Boiling point:	N/D
Specific gravity (H ₂ O = 1):	1.59
Vapor pressure (mmHg):	N/D
Melting point:	N/D
Vapor Density (Air = 1):	N/A
Evaporation rate (Ethyl Acetate = 1):	N/A
Appearance/Odor:	Gray paste/No odor
Solubility in water:	Insoluble
Volatile Organic Compounds (VOC) Content (theoretical percentage by weight):	0% or (0 g/L)
Flash point:	> 230°F (110°C) SETA CC
Lower explosion limit:	N/D
Upper explosion limit:	N/D

SECTION 10 – STABILITY AND REACTIVITY

Stability: Stable

Conditions To Avoid: None

Incompatibility (Materials To Avoid): None known

Hazardous Decomposition Products: Toxic fumes of zinc, chlorine, and HCL may be evolved during soldering.

Hazardous Polymerization: Will not occur.

SECTION 11 – TOXICOLOGY INFORMATION

Chronic Health Hazards

No ingredient in this product is an IARC, NTP or OSHA listed carcinogen.

Toxicology Data

Ingredient Name

Zinc Chloride

Oral-Rat LD50: 350 mg/kg

Inhalation-Rat LCLo: 1960 mg/m³/10M

Ammonium Chloride

Oral-Rat LD50: 1650 mg/kg

Inhalation-Rat LC50: N/D

Zinc Oxide

Oral-Rat TDLo: 6846 mg/kg

Inhalation-Mouse LC50: 2500 mg/m³

Tin

Oral-Rat LD50: N/D

Inhalation-Rat LC50: N/D

Antimony

Oral-Rat LD50: 7 g/kg

Inhalation-Rat TCLo: 50 mg/m³/7H/52W-I

SECTION 12 – ECOLOGICAL INFORMATION

Ecological Data

Ingredient Name:	Zinc Chloride
Food Chain Concentration Potential	None
Waterfowl Toxicity	N/A
BOD	None
Aquatic Toxicity	7.2 ppm/96 hr/medium bluegill/TLm

Ingredient Name:	Ammonium Chloride
Food Chain Concentration Potential	None
Waterfowl Toxicity	N/A
BOD	N/A
Aquatic Toxicity	6 ppm/96 hr/sunfish/TLm

Ingredient Name:	Zinc Oxide
Food Chain Concentration Potential	N/D
Waterfowl Toxicity	N/D
BOD	N/D
Aquatic Toxicity	N/D

Ingredient Name:	Tin
Food Chain Concentration Potential	N/D
Waterfowl Toxicity	N/D
BOD	N/D
Aquatic Toxicity	N/D

Ingredient Name:	Antimony
Food Chain Concentration Potential	N/D
Waterfowl Toxicity	N/D
BOD	N/D
Aquatic Toxicity	N/D

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):	Non-regulated
Air (IATA):	Non-regulated
WHMIS (Canada):	Non-regulated

SECTION 15 – REGULATORY INFORMATION

Regulatory Data

Ingredient Name: **Zinc Chloride**
 SARA 313 No
 TSCA Inventory Yes
 CERCLA RQ 1000 lb.
 RCRA Code N/A

Ingredient Name: **Ammonium Chloride**
 SARA 313 No
 TSCA Inventory Yes
 CERCLA RQ N/A
 RCRA Code N/A

Ingredient Name: **Zinc Oxide**
 SARA 313 Yes
 TSCA Inventory Yes
 CERCLA RQ N/A
 RCRA Code N/A

Ingredient Name: **Tin**
 SARA 313 No
 TSCA Inventory Yes
 CERCLA RQ N/A
 RCRA Code N/A

Ingredient Name: **Antimony**
 SARA 313 No
 TSCA Inventory Yes
 CERCLA RQ 5000 lb.
 RCRA Code N/A

SECTION 16 – OTHER INFORMATION

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200).
 The information herein is given in good faith, but no warranty, expressed or implied is made.

Consult RectorSeal for further information: (713) 263-8001

Safety Data Sheet

Material Name: FG 550 Gray

Product #: 304132- 1 gal
304134- 11oz

Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Material Name

FG 550 Gray

Synonyms

Sealant

Chemical Family

Water based mastic

Product Use

Duct sealant

Restrictions on Use

For industrial use only.

Manufacturer Information

Carlisle HVAC Products
900 Hensley Lane
Wylie, TX 75098
www.carlislehvac.com

Medical Emergency:

CHEMTREC (USA): (800) 424-9300

MSDS Assistance – 972-442-6545

Technical Assistance – 888-229-2199

Customer Service – 888-229-0199

Section 2 - HAZARDS IDENTIFICATION

Classification in accordance with paragraph (d) of 29 CFR 1910.1200.

Reproductive Toxicity - Category 1B

Specific Target Organ Toxicity - Single Exposure - Category 1 (central nervous system, eyes, body, systemic toxicity)

Specific Target Organ Toxicity - Repeated Exposure - Category 1 (eyes,central nervous system)

GHS Label Elements**Symbol(s)****Signal Word**

Danger

Safety Data Sheet

Material Name: FG 550 Gray

**Product #: 304132- 1 gal
304134- 11oz**

Hazard Statement(s)

May damage fertility or the unborn child
Causes damage to organs
Causes damage to organs through prolonged or repeated exposure

Precautionary Statement(s)

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
Do not breathe dust/fume/gas/mist/vapours/spray
Wash thoroughly after handling
Do not eat, drink or smoke when using this product

Response

If exposed: Call a POISON CENTER or doctor/physician
Get medical advice/attention if you feel unwell
Specific treatment (see label)

Storage

Store locked up

Disposal

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

Statement of Unknown Toxicity

88.189% of the mixture consists of ingredient(s) of unknown acute toxicity.

Other Hazards

No additional information available.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

CAS	Component Name	Percent
Trade Secret	De-foaming agent	0.1-1
Trade Secret	Nonylphenol polyethylene glycol ether	0.1-1
Mixture	Polymer, ethyl acrylate and methacrylic acid	0.1-1
Mixture	Acrylic polymer	0.1-1
141-43-5	Ethanolamine	0.1-1
Mixture	Polycarboxylate salt	0.1-1
107-21-1	Ethylene glycol	0.1-1
Mixture	Fuller's earth	1-5

Safety Data Sheet

Material Name: FG 550 Gray

Product #: 304132- 1 gal
304134- 11oz

14808-60-7	Silica, crystalline	0.1-1
1317-65-3	Limestone	15-40
Trade Secret	Clay compound	1-5
67-56-1	Methanol	1-5
Mixture	4,4-Dimethyloxazolidine	0.1-1
Mixture	1,2-Propylene glycol	0.1-1

Section 4 - FIRST AID MEASURES

Description of Necessary Measures

If exposed or concerned: Call a POISON CENTER or doctor/physician.

Inhalation

Remove person to fresh air and keep comfortable for breathing. Get medical attention, if needed.

Skin

Wash exposed skin with soap and water. Remove contaminated clothing and wash it before reuse. If skin irritation occurs, get medical advice/attention.

Eyes

Flush eyes with plenty of water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.

Ingestion

Do NOT induce vomiting. If swallowed, get medical attention.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically and supportively.

Most Important Symptoms/Effects

Acute

Causes damage to central nervous system, body, eyes, systemic toxicity.

Delayed

May damage fertility or the unborn child. Causes damage to organs through prolonged or repeated exposure: eyes, central nervous system.

Note to Physicians

Contains. ethylene glycol, methanol

Section 5 - FIRE FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

Use dry chemical, carbon dioxide, alcohol-resistant foam or water spray.

Safety Data Sheet

Material Name: FG 550 Gray

Product #: 304132- 1 gal
304134- 11oz

Unsuitable Extinguishing Media

None reported.

Special Hazards Arising from the Chemical

Slight fire hazard. Sealed containers may rupture or explode if exposed to heat.

Hazardous Combustion Products

Oxides of carbon, oxides of nitrogen, hydrocarbons

Advice for firefighters

Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure. Do not inhale any material or combustion by-products.

Fire Fighting Measures

Remove product from area of fire. Stay upwind and keep out of low areas.

Section 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

Wear personal protective clothing and equipment, see Section 8.

Methods and Materials for Containment and Cleaning Up

Absorb with earth, sand or other non-combustible material and transfer to container. Dike for later disposal. Dispose in accordance with all applicable regulations.

Environmental Precautions

Avoid release to the environment.

Section 7 - HANDLING AND STORAGE

Precautions for Safe Handling

This product contains crystalline silica, which is a known carcinogen: Do not grind or sand. 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. Do not breathe dust/fume/gas/mist/vapors/spray. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wash contaminated clothing before reuse. KEEP OUT OF REACH OF CHILDREN.

Conditions for Safe Storage, Including any Incompatibilities

Store locked up

Store in a well-ventilated place. Store above 0 C. Store below 45 C. When not in use, keep containers tightly closed. Do not cut, puncture, or weld on or near this container.

Incompatible Materials

Strong acids, strong oxidizing agents

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits

Safety Data Sheet

Material Name: FG 550 Gray

**Product #: 304132- 1 gal
304134- 11oz**

Ethanolamine	141-43-5	
ACGIH:	3 ppm TWA	6 ppm STEL
NIOSH:	3 ppm TWA; 8 mg/m ³ TWA	6 ppm STEL; 15 mg/m ³ STEL
	30 ppm IDLH	
Europe:	1 ppm TWA; 2.5 mg/m ³ TWA	3 ppm STEL; 7.6 mg/m ³ STEL
	Possibility of significant uptake through the skin	
OSHA (US):	3 ppm TWA; 6 mg/m ³ TWA	
Mexico:	3 ppm TWA LMPE-PPT; 8 mg/m ³ TWA LMPE-PPT	
	6 ppm STEL [LMPE-CT]; 15 mg/m ³ STEL [LMPE-CT]	
Ethylene glycol	107-21-1	
ACGIH:	100 mg/m ³ Ceiling aerosol only	
Europe:	20 ppm TWA; 52 mg/m ³ TWA	40 ppm STEL; 104 mg/m ³ STEL
	Possibility of significant uptake through the skin	
Mexico:	100 mg/m ³ Ceiling aerosol	
Silica, crystalline	14808-60-7	
ACGIH:	0.025 mg/m ³ TWA respirable fraction	
NIOSH:	0.05 mg/m ³ TWA respirable dust	50 mg/m ³ IDLH respirable dust
OSHA (US):	((30)/(%SiO ₂ + 2) mg/m ³ TWA) total dust; ((250)/(%SiO ₂ + 5) mppcf TWA) respirable fraction; ((10)/(%SiO ₂ + 2) mg/m ³ TWA) respirable fraction	
Mexico:	0.1 mg/m ³ TWA LMPE-PPT respirable fraction	
Limestone	1317-65-3	
NIOSH:	10 mg/m ³ TWA total dust; 5 mg/m ³ TWA respirable dust	
OSHA (US):	15 mg/m ³ TWA total dust; 5 mg/m ³ TWA respirable fraction	
Mexico:	10 mg/m ³ TWA LMPE-PPT	20 mg/m ³ STEL [LMPE-CT]

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Material Name: FG 550 Gray

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304134- 11oz

Methanol	67-56-1	
ACGIH:	200 ppm TWA	250 ppm STEL
	Skin - potential significant contribution to overall exposure by the cutaneous route	
NIOSH:	200 ppm TWA; 260 mg/m ³ TWA	250 ppm STEL; 325 mg/m ³ STEL
	Potential for dermal absorption	
	6000 ppm IDLH	
Europe:	200 ppm TWA; 260 mg/m ³ TWA	
	Possibility of significant uptake through the skin	
OSHA (US):	200 ppm TWA; 260 mg/m ³ TWA	
Mexico:	200 ppm TWA LMPE-PPT; 260 mg/m ³ TWA LMPE-PPT	
	250 ppm STEL [LMPE-CT]; 310 mg/m ³ STEL [LMPE-CT]	
	Skin - potential for cutaneous absorption	

Biological limit value

There are no biological limit values for any of this product's components.

Engineering Controls

Provide adequate ventilation. Ensure compliance with applicable exposure limits.

Individual Protection Measures, such as Personal Protective Equipment

Eye/face protection

Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Skin Protection

Wear appropriate work clothing.

Respiratory Protection

A NIOSH approved air-purifying respirator with an appropriate cartridge or canister may be appropriate under certain circumstances where airborne concentrations are expected to exceed exposure limits.

Glove Recommendations

Wear protective gloves. Recommended material: Hycron(R), neoprene, nitrile.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance	thick gray paste	Physical State	liquid
Odor	Slight, ammonia	Color	gray
Odor Threshold	Not available	pH	8.4 - 9.5
Melting Point	Not available	Boiling Point	212 °F
Freezing point	Not available	Evaporation Rate	30 - 40 % volatile

Safety Data Sheet

Material Name: FG 550 Gray

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Boiling Point Range	Not available	Flammability (solid, gas)	Not available
Autoignition	Not available	Flash Point	Not available
Lower Explosive Limit	Not available	Decomposition	Not available
Upper Explosive Limit	Not available	Vapor Pressure	17 mmHg (@ 20 °C)
Vapor Density (air=1)	>1	Specific Gravity (water=1)	Not available
Water Solubility	soluble	Partition coefficient: n-octanol/water	Not available
Viscosity	300 Kcps (@ 77 °F)	Solubility (Other)	Not available
Density	1.32 (relative)	VOC	49 g/L (SCAQMD calculation method)

Other Information

No additional information available.

Section 10 - STABILITY AND REACTIVITY

Reactivity

No reactivity hazard is expected.

Chemical Stability

Stable under normal conditions of use.

Possibility of Hazardous Reactions

Hazardous polymerization will not occur.

Conditions to Avoid

Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials.

Incompatible Materials

Strong acids, strong oxidizing agents

Hazardous decomposition products

Oxides of carbon, oxides of nitrogen, hydrocarbons

Section 11 - TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Inhalation

May cause adverse effects on the central nervous system.

Skin Contact

May cause mild skin irritation.

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Eye Contact

May cause mild eye irritation.

Ingestion

Methanol can produce blindness with onset of symptoms being delayed for 18-24 hours.

Acute and Chronic Toxicity

Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

Ethylene-vinyl acetate copolymer (Trade Secret)

Oral LD50 Rat >2000 mg/kg

Epoxidized soybean oil (Trade Secret)

Oral LD50 Rat >5000 mg/kg

Dermal LD50 Rabbit >20 mL/kg

De-foaming agent (Trade Secret)

Oral LD50 >2000 mg/kg

Nonylphenol polyethylene glycol ether (Trade Secret)

Oral LD50 Rat 2780 mg/kg

Chlorinated paraffins (Trade Secret)

Oral LD50 Rat >4000 mg/kg

Polymer, ethyl acrylate and methacrylic acid (Mixture)

Oral LD50 Rat >5000 mg/kg

Dermal LD50 Rabbit >5000 mg/kg

Acrylic polymer (Mixture)

Oral LD50 Rat >5000 mg/kg

Dermal LD50 Rabbit >5000 mg/kg

Ethanolamine (141-43-5)

Oral LD50 Rat 1515 mg/kg

Dermal LD50 Rabbit 2504 mg/kg

Inhalation LC50 Rat >1.3 mg/L vapor 6 hr

Polycarboxylate salt (Mixture)

Oral LD50 Rat >5000 mg/kg

Dermal LD50 Rabbit >2000 mg/kg

Ethylene glycol (107-21-1)

Oral LD50 Rat 4700 mg/kg

Dermal LD50 Rat 10600 mg/kg

Inhalation LC50 Rat >200 mg/m³ vapor 4 hr

Silica, crystalline (14808-60-7)

Oral LD50 Rat 500 mg/kg

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Limestone (1317-65-3)

Oral LD50 Rat 6450 mg/kg

Methanol (67-56-1)

Oral LD50 Rat 6200 mg/kg

Inhalation LC50 Rat 22500 ppm 8 h

4,4-Dimethyloxazolidine (Mixture)

Oral LD50 Rat 1037 mg/kg

Dermal LD50 Rabbit >2000 mg/kg

Inhalation LC50 Rat 1.1 mg/L 4 hr

1,2-Propylene glycol (Mixture)

Oral LD50 Rat >5000 mg/kg

Dermal LD50 Rabbit >5000 mg/kg

Immediate Effects

Causes damage to central nervous system, body, eyes, systemic toxicity.

Delayed Effects

May damage fertility or the unborn child. Causes damage to organs through prolonged or repeated exposure: eyes, central nervous system.

Irritation/Corrosivity Data

May cause mild skin irritation. May cause mild eye irritation.

Respiratory Sensitization

No data available.

Dermal Sensitization

No data available.

Component Carcinogenicity

Chlorinated paraffins	Trade Secret
IARC:	Monograph 48 [1990] (Group 2B (possibly carcinogenic to humans))
DFG:	Category 3B (could be carcinogenic for man)
OSHA:	Present
Ethylene glycol	107-21-1
ACGIH:	A4 - Not Classifiable as a Human Carcinogen
Silica, crystalline	14808-60-7
ACGIH:	A2 - Suspected Human Carcinogen
IARC:	Monograph 100C [2012]; Monograph 68 [1997] (Group 1 (carcinogenic to humans))

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NTP:	Known Human Carcinogen (respirable size)
DFG:	Category 1 (causes cancer in man, alveola fraction)
OSHA:	Present (respirable size)

Germ Cell Mutagenicity

No data available.

Reproductive Toxicity

May damage fertility or the unborn child.

Specific Target Organ Toxicity - Single Exposure

Central nervous system, body, systemic toxicity, eyes

Specific Target Organ Toxicity - Repeated Exposure

Central nervous system, eyes

Aspiration hazard

No data available.

Medical Conditions Aggravated by Exposure

No data available.

Additional Data

This product contains crystalline silica, which is a known carcinogen. However, this component is bound by the polymer portion of the sealant. The only way this component would be released is through incineration. Therefore, this product is not considered a carcinogen.

Section 12 - ECOLOGICAL INFORMATION

Ecotoxicity

Avoid release to the environment.

Component Analysis - Aquatic Toxicity

Ethylene-vinyl acetate copolymer	Trade Secret
Fish:	LC50 96 hr Cyprinus carpio >1000 mg/kg
Epoxidized soybean oil	Trade Secret
Fish:	LC50 48 hr freshwater fish 900 mg/L
Algae:	EC50 72 h Desmodesmus subspicatus 8 mg/L IUCLID
De-foaming agent	Trade Secret
Fish:	LC50 hr fish >100 mg/L
Chlorinated paraffins	Trade Secret

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	LC50 96 h <i>Lepomis macrochirus</i> >300 mg/L [static]; LC50 96 h <i>Oncorhynchus mykiss</i> >0.0109 mg/L [flow-through]; Fish: LC50 96 h <i>Oncorhynchus mykiss</i> 94.5 - 271 mg/L [static]; LC50 96 h <i>Lepomis macrochirus</i> >0.1 mg/L [flow-through]; LC50 96 h <i>Pimephales promelas</i> >100 mg/L [static]
Invertebrate:	EC50 48 hr <i>Daphnia magna</i> 0.0059 mg/L
Polymer, ethyl acrylate and methacrylic acid	
	Mixture
Fish:	LC50 96 hr <i>Pimephales promelas</i> >1000 mg/L
Ethanolamine	
	141-43-5
Fish:	LC50 96 h <i>Pimephales promelas</i> 227 mg/L [flow-through]; LC50 96 h <i>Brachydanio rerio</i> 3684 mg/L [static]; LC50 96 h <i>Lepomis macrochirus</i> 300 - 1000 mg/L [static]; LC50 96 h <i>Oncorhynchus mykiss</i> 114 - 196 mg/L [static]; LC50 96 h <i>Oncorhynchus mykiss</i> >200 mg/L [flow-through]
Algae:	EC50 72 h <i>Desmodesmus subspicatus</i> 15 mg/L IUCLID
Invertebrate:	EC50 48 h <i>Daphnia magna</i> 65 mg/L IUCLID
Ethylene glycol	
	107-21-1
Fish:	LC50 96 h <i>Oncorhynchus mykiss</i> 41000 mg/L; LC50 96 h <i>Oncorhynchus mykiss</i> 14 - 18 mL/L [static]; LC50 96 h <i>Lepomis macrochirus</i> 27540 mg/L [static]; LC50 96 h <i>Oncorhynchus mykiss</i> 40761 mg/L [static]; LC50 96 h <i>Pimephales promelas</i> 40000 - 60000 mg/L [static]; LC50 96 h <i>Poecilia reticulata</i> 16000 mg/L [static]
Algae:	EC50 96 h <i>Pseudokirchneriella subcapitata</i> 6500 - 13000 mg/L IUCLID
Invertebrate:	EC50 48 h <i>Daphnia magna</i> 46300 mg/L IUCLID
Limestone	
	1317-65-3
Fish:	LC50 hr fish >200 mg/L
Methanol	
	67-56-1

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Fish:	LC50 96 h Pimephales promelas 28200 mg/L [flow-through]; LC50 96 h Pimephales promelas >100 mg/L [static]; LC50 96 h Oncorhynchus mykiss 19500 - 20700 mg/L [flow-through]; LC50 96 h Oncorhynchus mykiss 18 - 20 mL/L [static]; LC50 96 h Lepomis macrochirus 13500 - 17600 mg/L [flow-through]
1,2-Propylene glycol	Mixture
Fish:	LC50 96 h Oncorhynchus mykiss 51600 mg/L [static]; LC50 96 h Oncorhynchus mykiss 41 - 47 mL/L [static]; LC50 96 h Pimephales promelas 51400 mg/L [static]; LC50 96 h Pimephales promelas 710 mg/L
Algae:	EC50 96 h Pseudokirchneriella subcapitata 19000 mg/L IUCLID
Invertebrate:	EC50 48 h Daphnia magna >1000 mg/L [static] EPA

Persistence and Degradability

No information available for the product.

Bioaccumulative Potential

No information available for the product.

Mobility

No information available for the product.

Other Toxicity

No additional information available.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Methods

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

Section 14 - TRANSPORT INFORMATION

US DOT Information:

UN/NA #: Not regulated

IATA Information:

UN#: Not regulated

IMDG Information:

UN#: Not regulated

TDG Information:

UN#: Not regulated

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Section 15 - REGULATORY INFORMATION

U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

Ethylene glycol	107-21-1
SARA 313:	1 % de minimis concentration
CERCLA:	5000 lb final RQ; 2270 kg final RQ
Methanol	67-56-1
SARA 313:	1 % de minimis concentration
CERCLA:	5000 lb final RQ; 2270 kg final RQ

SARA Section 311/312 (40 CFR 370 Subparts B and C)

Acute Health: Yes **Chronic Health:** Yes **Fire:** No **Pressure:** No **Reactivity:** No

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA
Chlorinated paraffins	Trade Secret	No	Yes	No	No	No
Ethanolamine	141-43-5	Yes	Yes	Yes	Yes	Yes
Ethylene glycol	107-21-1	Yes	Yes	Yes	Yes	Yes
Silica, crystalline	14808-60-7	No	Yes	Yes	Yes	Yes
Limestone	1317-65-3	No	Yes	Yes	Yes	Yes
Methanol	67-56-1	Yes	Yes	Yes	Yes	Yes
1,2-Propylene glycol	Mixture	No	No	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

Silica, crystalline	14808-60-7
Carc:	carcinogen , initial date 10/1/88 (airborne particles of respirable size)
Methanol	67-56-1
Repro/Dev. Tox	Developmental toxicity , initial date 3/16/12

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Canadian WHMIS Ingredient Disclosure List (IDL)

Components of this material have been checked against the Canadian WHMIS Ingredients Disclosure List. The List is composed of chemicals which must be identified on MSDSs if they are included in products which meet WHMIS criteria specified in the Controlled Products Regulations and are present above the threshold limits listed on the IDL

Ethanolamine	141-43-5
	1 %
Ethylene glycol	107-21-1
	1 %
Silica, crystalline	14808-60-7
	1 %
Methanol	67-56-1
	1 %
1,2-Propylene glycol	Mixture
	1 %

Component Analysis - Inventory

Ethylene-vinyl acetate copolymer (Trade Secret)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR - KECI/KECL	KR - TCCA	CN	NZ	MX
Yes	DSL	ELN	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes

Epoxidized soybean oil (Trade Secret)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR - KECI/KECL	KR - TCCA	CN	NZ	MX
Yes	DSL	EIN	Yes	Yes	No	No	Yes	No	Yes	Yes	Yes

Nonylphenol polyethylene glycol ether (Trade Secret)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR - KECI/KECL	KR - TCCA	CN	NZ	MX
Yes	DSL	No	Yes	Yes	Yes	No	Yes	No	Yes	Yes	No

Chlorinated paraffins (Trade Secret)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR - KECI/KECL	KR - TCCA	CN	NZ	MX
Yes	DSL	EIN	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes

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Polymer, ethyl acrylate and methacrylic acid (Mixture)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR - KECI/KECL	KR - TCCA	CN	NZ	MX
Yes	DSL	No	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes

Ethanolamine (141-43-5)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR - KECI/KECL	KR - TCCA	CN	NZ	MX
Yes	DSL	EIN	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes

Ethylene glycol (107-21-1)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR - KECI/KECL	KR - TCCA	CN	NZ	MX
Yes	DSL	EIN	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes

Fuller's earth (Mixture)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR - KECI/KECL	KR - TCCA	CN	NZ	MX
Yes	DSL	No	Yes	Yes	No	No	Yes	No	Yes	Yes	Yes

Silica, crystalline (14808-60-7)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR - KECI/KECL	KR - TCCA	CN	NZ	MX
Yes	DSL	EIN	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes

Limestone (1317-65-3)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR - KECI/KECL	KR - TCCA	CN	NZ	MX
Yes	NSL	EIN	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes

Methanol (67-56-1)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR - KECI/KECL	KR - TCCA	CN	NZ	MX
Yes	DSL	EIN	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes

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Material Name: FG 550 Gray

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4,4-Dimethyloxazolidine (Mixture)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR - KECI/KECL	KR - TCCA	CN	NZ	MX
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes

1,2-Propylene glycol (Mixture)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR - KECI/KECL	KR - TCCA	CN	NZ	MX
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes

Section 16 - OTHER INFORMATION

HMIS Rating

Health: 1* Fire: 0 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

NFPA Ratings

Health: 1 Fire: 0 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Summary of Changes

New SDS: May 27, 2015

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH- Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States.



Safety Data Sheet

Material Name: FG 550 Gray

**Product #: 304132- 1 gal
304134- 11oz**

Other Information

Disclaimer:

The information contained herein is based upon data and information available to us, and reflects our best professional judgment. This product may be formulated in part with components purchased from other companies. In many instances, especially when proprietary or trade secret materials are used, CCWI Company must rely upon the hazard evaluation of such components submitted by that product's manufacturer or importer. No warranty of merchantability, fitness for any use, or any other warranty is expressed or implied regarding the accuracy of such data or information. The results to be obtained from the use thereof, or that any such use does not infringe any patent, since the information contained herein may be applied under conditions of use beyond our control and with which we may be unfamiliar, we do not assume responsibility for the results of such application. This information is furnished upon the condition that the person receiving it shall make his own determination of the suitability of the material for his particular use.



SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

PRODUCT: PROPYLENE GLYCOL (Inhibited Solution)

PRODUCT CODES: 55PG30, 5PG96, 5PG40, 55PG40, 55PG45, PROPYL55G, 275PG35D, 55PG35D, 55PG35, 1PG70, 5PG70, 55PG70

CHEMICAL NAME/FAMILY: Glycols

OTHER NAME: Coolant

MANUFACTURER: NATIONAL REFRIGERANTS, INC.

ADDRESS: 11401 Roosevelt Boulevard Phila., Pa. 19154

INFORMATION: 800-262-0012

EMERGENCY: 800-424-9300

DATE: 4/2015

PREPARER: Matt Callahan

2. HAZARD IDENTIFICATION

CLASSIFICATION: Not classified as hazardous according to 29 CFR 1910.1200 (2012)

OTHER HAZARDS: SKIN AND EYE CONTACT: Prolonged contact may cause minor skin irritation.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

Propylene Glycol	(CAS#57-55-6)	35-96 %
Deminerlized Water	(CAS#7732-18-5)	< 65 %
Dipotassium Hydrogen Phosphate	(CAS#7758-11-4)	< 5 %

COMMON NAME and SYNONYM:

Coolant

There are no stabilizers or impurities that contribute to the classification of the material identified in section 2

4. FIRST AID MEASURES

INHALATION:	Move person to fresh air; if effects occur, consult a physician.
EYE CONTACT:	Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.
SKIN CONTACT:	Wash skin with plenty of water.
INGESTION:	No emergency medical treatment necessary.



SAFETY DATA SHEET

ADVICE TO PHYSICIANS: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Water fog of fine spray. Dry chemical & carbon dioxide fire extinguishers. Foam. Do not use direct water stream, may spread fire. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Liquid mist of the product can burn. Flammable concentrations of vapor can accumulate at temperatures above flash point.

FIRE FIGHTING PROCEDURES: Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of re-ignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream, may spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage.

SPECIAL PROTECTIVE

EQUIPMENT FOR FIREFIGHTERS: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, pants, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

HAZARDOUS COMBUSTION PRODUCTS: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide, Carbon dioxide.



SAFETY DATA SHEET

6. ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR OTHER RELEASE:

Small spills: Absorb with materials such as—cat litter, sawdust, vermiculite. Collect in suitable and properly labeled container.

Large spills: Dike area to contain spill. Recover spilled material if possible. See Disposal Considerations section for additional information.

PERSONAL PRECAUTIONS: Use appropriate safety equipment. For additional information, refer to Exposure Controls and Personal Protection section.

ENVIRONMENTAL PRECAUTIONS: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Ecological Information section.

7. HANDLING AND STORAGE

HANDLING: (Always wear recommended personal protective equipment)

Ventilation: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

Other Precautions: Spills of these organic materials on hot fibrous insulations may lead to lowering of the auto-ignition temperatures possibly resulting in spontaneous combustion.

STORAGE: Store below: 121 deg. C (250 deg. F). Do not store in: galvanized steel.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES

<u>INGREDIENT NAME</u>	<u>ACGIH TLV</u>	<u>OSHA PEL</u>	<u>OTHER LIMIT</u>
Propylene glycol	NA	NA	10 mg/m ³ TWA 8 AIHA WEEL

PERSONAL PROTECTION

Respiratory Protection: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air-purifying respirator. In dusty or misty atmospheres, use an approved particulate respirator.

Ventilation: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

Eye Protection: Use safety glasses.



SAFETY DATA SHEET

Other Protective Equipment: No precautions other than clean body-covering clothing should be needed. Use gloves chemically resistant to this material.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Light Blue Liquid
ODOR:	Mild
ODOR THRESHOLD:	Not Determined
PH:	9-11
FREEZING POINT:	≤ -51 deg. C / ≤ -60 deg. F
BOILING POINT:	(760 mmHg) 162 deg. C / 323 deg. F
FLASH POINT:	102 deg. C / 216 deg. F Closed Cup
EVAPORATION RATE:	0.07 (Butyl Acetate = 1)
FLAMMABILITY LEL/UEL:	LEL=2.6%(V)100 deg.C UEL=12.5%(V)130 deg.C
VAPOR PRESSURE:	0.7 mmHg 20 deg. C
VAPOR DENSITY:	2.6 (Air=1)
RELATIVE DENSITY:	1.05 (Water=1) 20 deg. C
SOLUBILITY:	100% by weight 20 deg. C
PARTITION COEFFICIENT	Not Determined
n-Octanol/water:	Not Determined
AUTO IGNITION TEMPERATURE:	416 deg. C / 780 deg. F
DECOMPOSITION TEMPERATURE:	Not Determined
VISCOSITY:	Low
PERCENT VOLATILES:	98 wt.%

NOTE: Physical and Chemical Properties are based on a 96% solution of Propylene Glycol. Diluted concentrations of Propylene Glycol may have slightly different Properties.

10. STABILITY AND REACTIVITY

STABILITY/INSTABILITY: Thermally stable at recommended temperatures and pressures.

CONDITIONS TO AVOID: Product can oxidize at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

MATERIALS TO AVOID: Avoid contact with: Strong acids, strong bases and strong oxidizers.

THERMAL DECOMPOSITION: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Aldehydes, Alcohols, and Ethers.

HAZARDOUS POLYMERIZATION: Will not occur.



SAFETY DATA SHEET

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY:

PERORAL

Rat; female; LD50 = 20300 mg/kg

PERCUTANEOUS

Based on information for a similar material:

Rabbit; LD50=> 10000 mg/kg

DEVELOPMENTAL TOXICITY: Contains component(s) which did not cause birth defects or any other fetal effects in lab animals. The component(s) is/are: Propylene glycol.

REPRODUCTIVE TOXICITY: Contains component(s) which did not interfere with reproduction in animal studies. Contains component(s) which did not interfere with fertility in animal studies. The component(s) is/are: Propylene glycol.

CHRONIC TOXICITY AND CARCINOGENICITY: Similar formulations did not cause cancer in laboratory animals.

GENETIC TOXICOLOGY:

In Vitro: In vitro genetic toxicity studies were negative.

In Vitro: Genetic toxicity studies in animals were negative for component(s) tested.

SIGNIFICANT DATA WITH POSSIBLE RELEVANCE TO HUMANS: In rare cases, repeated excessive exposure to propylene glycol may cause central nervous system effects.

POTENTIAL HEALTH EFFECTS:

EFFECTS OF SINGLE ACUTE OVEREXPOSURE

INHALATION: At room temperature, exposure to vapor is minimal due to low volatility. Mist may cause irritation of upper respiratory tract (nose and throat).

EYE CONTACT: May cause slight temporary eye irritation. Corneal injury is unlikely.

SKIN CONTACT: Prolonged contact is essentially nonirritating to the skin. Repeated contact may cause flaking and softening of skin.

SKIN ABSORPTION: Prolonged skin contact is unlikely to result in absorption of harmful amounts.

INGESTION: Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.



SAFETY DATA SHEET

CHRONIC, PROLONGED OR REPEATED OVEREXPOSURE

EFFECTS OF REPEATED OVEREXPOSURE: In rare cases, repeated excessive exposure to propylene glycol may cause central nervous system effects.

OTHER EFFECTS OF OVEREXPOSURE: No information currently available.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE: Based largely or completely on information for: Propylene glycol. Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Degradation is expected in the atmospheric environment within minutes to hours.

ECOTOXICITY: Based largely or completely on information for: Propylene glycol. Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50 > 100 mg/L in the most sensitive species tested).

FURTHER INFORMATION: Based largely or completely on information for: Propylene glycol. Bio-concentration potential is low (BCF < 100 or Log Pow < 3). Potential for mobility in soil is very high (Koc between 0 and 50).

13. DISPOSAL CONSIDERATIONS

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OR WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. NATIONAL REFRIGERANTS HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN THIS SDS'S COMPOSITION INFORMATION SECTION. FOR UNUSED & UNCONTAMINATED PRODUCT, THE PREFERRED OPTIONS INCLUDED SENDING TO A LICENSED, PERMITTED: RECYCLER. RECLAIMER. INCINERATOR OR OTHER THERMAL DESTRUCTION DEVICE.

14. TRANSPORTATION INFORMATION

PROPER SHIPPING NAME:

NON-BULK-----Not Regulated by DOT

BULK-----Not Regulated by DOT



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15.REGULATORY INFORMATION

FEDERAL/NATIONAL:

OSHA Hazard communication standard

This product is not a “hazardous chemical” as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-To Know Act of 1986) Section 313

To the best of our knowledge this product does not contain chemicals at levels which require reporting under this statute.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-To Know Act of 1986) Section 302

To the best of our knowledge this product does not contain chemicals at levels which require reporting under this statute.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-To Know Act of 1986) Section 311 & 312

Delayed (Chronic) Health Hazard: No
Fire Hazard: No
Immediate (Acute) Health Hazard: No
Reactive Hazard: No
Sudden Release of Pressure Hazard: No

Toxic Substances Control Act (TSCA)

All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30.

CEPA – Domestic substances List (DSL)

All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

European Inventory of Existing Commercial Chemical Substances (EINECS)

All components of this product are on the EINECS inventory or are exempt from EINECS inventory requirements.

STATE/LOCAL:

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or

Pennsylvania Environmental Hazardous Substance List:



SAFETY DATA SHEET

The following product components are cited in the Pennsylvania Hazardous Substance List and/or the

Pennsylvania Environmental Substance List, and are present at levels which require reporting.

Component	CAS#
Propylene glycol	57-55-6

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:

To the best of our knowledge this product does not contain chemicals at levels which require reporting under this statute.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)

This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

California SCAQMD Rule 443.1 (South Coast Air Quality Management District Rule 443.1, Labeling of Materials Containing Organic Solvents)

VOC: Vapor pressure 0.66 mmHg @ 20 deg. C
1002 g/l VOC
1030 g/l less water and less exempted solvents

This section provides selected regulatory information on this product including its components. This is not intended to include all regulations. It is the responsibility of the user to know and comply with all applicable rules, regulations and laws relating to the product being used.

16. OTHER INFORMATION

(NFPA RATINGS)

HEALTH:	0
FIRE:	1
REACTIVITY:	0

DISCLAIMER:

INFORMATION AND RECOMMENDATIONS CONTAINED HEREIN ARE BELIEVED TO BE ACCURATE AT THE TIME OF PREPARATION. NO WARRANTY IS MADE CONCERNING THE ACCURACY AND NO LIABILITY SHALL BE MADE FOR CLAIMS FOR USE OR RELIANCE OF THE RECOMMENDATIONS CONTAINED HEREIN

SAFETY DATA SHEET

Klean-Strip Green Muriatic Acid

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Revision: 09/08/2014
Supersedes Revision: 01/24/2014

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Klean-Strip Green Muriatic Acid
Company Name: W. M. Barr
2105 Channel Avenue
Memphis, TN 38113
Phone Number: (901)775-0100

Web site address: www.wmbarr.com

Emergency Contact: 3E 24 Hour Emergency Contact (800)451-8346
Information: W.M. Barr Customer Service (800)398-3892

Synonyms: GKGM75006

Synonyms for muriatic acid: hydrochloric acid solution, hydrogen chloride, aqueous hydrogen chloride

2. HAZARDS IDENTIFICATION

Skin Corrosion/Irritation, Category 1B

Target Organ Systemic Toxicity (single exposure), Category 3



GHS Signal Word: Danger

GHS Hazard Phrases: H314: Causes severe skin burns and eye damage.
H335: May cause respiratory irritation.

GHS Precaution Phrases: P260: Do not breathe gas/mist/vapours/spray.
P264: Wash hands thoroughly after handling.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P261: Avoid breathing gas/mist/vapours/spray.
P271: Use only outdoors or in a well-ventilated area.

GHS Response Phrases: P303+361+353: IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
P363: Wash contaminated clothing before reuse.
P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P301+330+331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P310: Immediately call a POISON CENTER/doctor.
P321: Specific treatment see label.
P312: Call a POISON CENTER/doctor if you feel unwell.

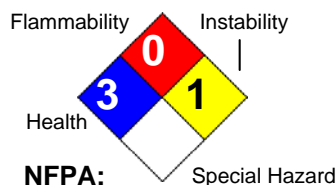
GHS Storage and Disposal Phrases: P405: Store locked up.
P501: Dispose of contents/container according to local, state and federal regulations.
P403+233: Store container tightly closed in well-ventilated place - if product is as volatile as to generate hazardous atmosphere.

SAFETY DATA SHEET

Klean-Strip Green Muriatic Acid

Hazard Rating System:

HEALTH	*	3
FLAMMABILITY		0
PHYSICAL		0
PPE		H

**HMIS:****OSHA Regulatory Status:**

This material is classified as hazardous under OSHA regulations.

**Potential Health Effects
(Acute and Chronic):**

Inhalation Acute Exposure Effects:

Inhalation of muriatic acid vapors can cause irritation of respiratory tract, burns, pulmonary edema, and coughing.

Inhalation long term exposure:

Long term exposure to muriatic acid can cause erosion of the teeth.

Skin Contact Acute Exposure Effects:

May cause severe burns, irritation, pain, and ulceration.

Skin contact long term exposure:

May cause dermatitis.

Eye Contact Acute Exposure Effects:

May cause severe burns, eye damage, and blindness.

Eye contact long term exposure:

No effects are known.

Ingestion Acute Exposure Effects:

Poison. May be fatal if swallowed. May cause severe irritation, perforation of the intestinal tract, and burns in mouth, pharynx, and gastrointestinal tract. May cause intense pain, nausea, vomiting, bleeding, circulating collapse, and shock.

Medical Conditions Generally Respiratory system (including asthma and other breathing disorders)

Aggravated By Exposure:

3. COMPOSITION/INFORMATION ON INGREDIENTS

CAS #	Hazardous Components (Chemical Name)	Concentration
7647-01-0	Hydrochloric acid {Hydrogen chloride}	20.0 %

4. FIRST AID MEASURES

Emergency and First Aid Procedures:

Inhalation:
If user experiences breathing difficulty, move to air free of vapors. Administer oxygen or artificial respiration until medical assistance can be rendered. Obtain medical attention immediately.

Skin Contact:
Wash with soap and large quantities of water and remove contaminated clothing, jewelry, and shoes immediately. Wash for 15 minutes. If irritation persists, seek medical attention.

Eye Contact:
Immediately begin to flush with large quantities of water, remove any contact lens. Continue to flush with water for at least 15 minutes, forcibly holding eyelids apart to ensure complete irrigation of all of the eye and lid tissues. Flushing the eyes with water within several seconds is essential to achieve maximum effectiveness. Seek immediate medical attention.

Ingestion:
Do not induce vomiting. Give milk of magnesia or large amounts of water. Never give anything by mouth to an unconscious person. Call your poison control center, hospital emergency room or physician immediately for instructions. If vomiting occurs spontaneously, keep airway clear. Give more water when vomiting stops.

Signs and Symptoms Of Exposure:

See Potential Health Effects.

Note to Physician:

Call your local poison control center for further information.

The absence of visible signs or symptoms of burns does not reliably exclude the presence of actual tissue damage. Probable mucosal damage may contraindicate the use of gastric lavage.

5. FIRE FIGHTING MEASURES

Flash Pt: No data.

Explosive Limits: LEL: No data. UEL: No data.

Autoignition Pt: No data.

Suitable Extinguishing Media: Use extinguishing agent suitable for type of surrounding fire.

Fire Fighting Instructions: Keep unnecessary people away, isolate hazard area and deny entry. Wear NIOSH approved positive -pressure self-contained breathing apparatus. Storage containers exposed to fire should be kept cool with water spray to prevent pressure build-up. Stay away from heads of containers that have been exposed to intense heat or flame. Move containers from fire if it can be done without risk.

Flammable Properties and Hazards: Non-flammable.

6. ACCIDENTAL RELEASE MEASURES

Steps To Be Taken In Case Material Is Released Or Spilled:

Small Spills:

Keep unnecessary people away and isolate hazard area. Wear appropriate personal protective equipment. Take up liquid with sand, earth or other noncombustible absorbent material and place in a plastic container where applicable. Material may be neutralized with baking soda, soda ash, or dilute caustic soda. Stay upwind, out of low areas, and ventilate closed spaces before entering.

Large Spills:

Evacuation of surrounding area may be necessary for large spills. Wear appropriate personal protective equipment. Completely contain spilled material with dikes, sandbags, etc. Shut off ventilation system if needed. Reprocess or reuse if possible. Neutralize with soda ash or dilute caustic soda. Collect with appropriate absorbent and place into suitable container. Keep out of sewers and water supplies. This material is acidic and may lower the pH of the surface waters with low buffering capacity.

7. HANDLING AND STORAGE

Precautions To Be Taken in Handling:

Read carefully all cautions and directions on product label before use. Since empty container retains residue, follow all label warnings even after container is empty. Dispose of empty container according to all regulations. Do not reuse this container.

Avoid breathing vapor or mist. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling.

When mixing, slowly add acid to water to minimize heat generation and spattering. Never add water to acid.

Keep container tightly closed when not in use. Keep container properly labeled.

Precautions To Be Taken in Storing:

Keep container tightly closed when not in use. Store in a cool, dry place away from direct sunlight and heat to avoid container deterioration. Avoid storage at extreme high or low temperatures. Protect from freezing. Keep container properly labeled. Keep separated from incompatible substances.

Store in acid-resistant plastic, glass containers, or rubber-lined steel containers. Do not store in aluminum containers or use aluminum fittings or transfer lines.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

CAS #	Partial Chemical Name	OSHA TWA	ACGIH TWA	Other Limits
7647-01-0	Hydrochloric acid {Hydrogen chloride}	CEIL: 5 ppm	CEIL: 2 ppm)	No data.

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Respiratory Equipment (Specify Type):

Where vapor concentration exceeds or is likely to exceed applicable exposure limits, a NIOSH approved respirator with acid gas cartridges is required. When an air-purifying respirator is not adequate or for spills and/or emergencies of unknown concentrations, a NIOSH approved self-contained breathing apparatus or airline respirator with full-face piece is required. A respiratory protection program that meets 29 CFR 1910.134 must be followed whenever workplace conditions warrant use of a respirator.

For OSHA controlled work place and other regular users. Use only with adequate ventilation under engineered air control systems designed to prevent exceeding appropriate TLV.

For occasional consumer use, where engineered air control is not feasible, use properly maintained and properly fitted NIOSH approved respirator. A dust mask does not provide protection against vapors.

Eye Protection:

Safety glasses with side shields. Wearing chemical goggles with a face shield is recommended to safeguard against potential eye contact, irritation, or injury. Contact lenses should not be worn.

Provide an emergency eyewash station or quick drench shower in the immediate work area.

Protective Gloves:

Wear impermeable gloves. Gloves contaminated with product should be discarded. Promptly remove clothing that becomes soiled with products.

Other Protective Clothing:

Wear chemical resistant clothing and rubber boots when potential for contact with the material exists.

Various application methods can dictate use of additional protective safety equipment, such as impermeable aprons, etc., to minimize exposure.

Before reuse, thoroughly clean any clothing or protective equipment that has been contaminated by prior use. Discard any clothing or other protective equipment that cannot be decontaminated, such as gloves or shoes.

Engineering Controls (Ventilation etc.):

Use closed system when possible. Provide local exhaust ventilation where vapor or mist may be generated. Ensure compliance with applicable exposure limits.

Use only with adequate ventilation to prevent build-up of vapors. Open all windows and doors. Use only with a cross ventilation of moving fresh air across the work area. If strong odor is noticed or you experience slight dizziness, headache, nausea, burning sensations, or eye-watering -- Stop -- ventilation is inadequate. Leave area immediately.

Work/Hygienic/Maintenance Practices:

A source of clean water should be available in the work area for flushing of eyes and skin.

Wash hands thoroughly after use and before eating, drinking, or smoking. Do not eat, drink, or smoke in the work area. Discard any clothing or other protective equipment that cannot be decontaminated.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical States: [] Gas [X] Liquid [] Solid
Appearance and Odor: water white, free and clear

potential slight pungent odor
Melting Point: -59.00 C
Boiling Point: 108.00 C
Autoignition Pt: No data.
Flash Pt: No data.
Explosive Limits: LEL: No data. UEL: No data.
Specific Gravity (Water = 1): 1.092 - 1.097
Density: 9.09 LB/GA
Vapor Pressure (vs. Air or mm Hg): 0.2 MM HG
Vapor Density (vs. Air = 1): > 1
Evaporation Rate: < 1
Solubility in Water: 100 %
pH: < 1
Percent Volatile: 100.0 % by weight.

10. STABILITY AND REACTIVITY

Stability: Unstable [] Stable [X]
Conditions To Avoid - Instability: No data available.
Incompatibility - Materials To Avoid: Incompatible with strong oxidizing agents, strong caustics, alkalis and alkali metals, mercuric sulfate, perchloric acid, carbides of calcium, cesium, rubidium, acetylides of cesium and rubidium, phosphides of calcium and uranium, lithium silicide, cyanides (which may produce lethal concentrations of hydrocyanic acid), and common and active metals (which produce flammable hydrogen gas).
Hazardous Decomposition Or Byproducts: Thermal decomposition may produce hydrogen chloride vapors and toxic gases.
Possibility of Hazardous Reactions: Will occur [] Will not occur [X]
Conditions To Avoid - Hazardous Reactions: No data available.

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11. TOXICOLOGICAL INFORMATION

Toxicological Information: No data available.

CAS #	Hazardous Components (Chemical Name)	NTP	IARC	ACGIH	OSHA
7647-01-0	Hydrochloric acid {Hydrogen chloride}	n.a.	3	A4	n.a.

12. ECOLOGICAL INFORMATION

General Ecological Information: No data available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method: Dispose in accordance with applicable local, state, and federal regulations.

14. TRANSPORT INFORMATION

LAND TRANSPORT (US DOT):

DOT Proper Shipping Name: UN1789, Hydrochloric Acid, 8, PGIII, LTD. QTY.

DOT Hazard Class:

UN/NA Number:

MARINE TRANSPORT (IMDG/IMO):

IMDG/IMO Shipping Name: UN1789, Hydrochloric Acid, 8, PGIII, LTD. QTY.

AIR TRANSPORT (ICAO/IATA):

ICAO/IATA Shipping Name: UN1789, Hydrochloric Acid, 8, PGIII

Additional Transport Information: For D.O.T. information, contact W.M. Barr Technical Services at 1-800-398-3892.

15. REGULATORY INFORMATION

This material meets the EPA 'Hazard Categories' defined for SARA Title III Sections 311/312 as indicated:
[X] Yes [] No Acute (immediate) Health Hazard
[X] Yes [] No Chronic (delayed) Health Hazard
[] Yes [X] No Fire Hazard
[] Yes [X] No Sudden Release of Pressure Hazard
[X] Yes [] No Reactive Hazard

CAS #	Hazardous Components (Chemical Name)	Other US EPA or State Lists
7647-01-0	Hydrochloric acid {Hydrogen chloride}	CAA HAP,ODC: HAP; CWA NPDES: No; TSCA: Yes - Inventory, 4 Test; CA PROP.65: No

Regulatory Information Statement: All components of this material are listed on the TSCA Inventory or are exempt.

16. OTHER INFORMATION

Revision Date: 09/08/2014

Preparer Name: W.M. Barr EHS Department (901)775-0100

Additional Information About This Product: No data available.

Company Policy or Disclaimer:

The information contained herein is presented in good faith and believed to be accurate as of the effective date shown above. This information is furnished without warranty of any kind. Employers should use this information only as a supplement to other information gathered by them and must make independent determination of suitability and completeness of information from all sources to assure proper use of these materials and the safety and health of employees. Any use of this data and information

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must be determined by the user to be in accordance with applicable federal, state and local laws and regulations.

Safety Data Sheet



1. Identification

Product Name:	SEM-R-O SSPR 24PK NEVERWET TOP COAT	Revision Date:	4/4/2017
Product Identifier:	274234	Supersedes Date:	3/28/2017
Product Use/Class:	NeverWet Topcoat/ Aerosols		
Supplier:	Rust-Oleum Corporation 11 Hawthorn Parkway Vernon Hills, IL 60061 USA	Manufacturer:	Rust-Oleum Corporation 11 Hawthorn Parkway Vernon Hills, IL 60061 USA
Preparer:	Regulatory Department		
Emergency Telephone:	24 Hour Hotline: 847-367-7700		

2. Hazard Identification

Classification

Symbol(s) of Product



Signal Word

Danger

Possible Hazards

26% of the mixture consists of ingredient(s) of unknown acute toxicity.

GHS HAZARD STATEMENTS

Flammable Aerosol, category 1	H222	Extremely flammable aerosol.
Compressed Gas	H280	Contains gas under pressure; may explode if heated.
STOT, single exposure, category 3, NE	H336	May cause drowsiness or dizziness.
Eye Irritation, category 2	H319	Causes serious eye irritation.

GHS LABEL PRECAUTIONARY STATEMENTS

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P211	Do not spray on an open flame or other ignition source.
P251	Do not pierce or burn, even after use.
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.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P271	Use only outdoors or in a well-ventilated area.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312	Call a POISON CENTER or doctor/physician if you feel unwell.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local, regional and national regulations.
P264	Wash hands thoroughly after handling.

P280
P305+P351+P338
P337+P313

Wear protective gloves/protective clothing/eye protection/face protection.
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 advice/attention.

3. Composition/Information On Ingredients

HAZARDOUS SUBSTANCES

<u>Chemical Name</u>	<u>CAS-No.</u>	<u>Wt.% Range</u>	<u>GHS Symbols</u>	<u>GHS Statements</u>
Acetone	67-64-1	50-75	GHS02-GHS07	H225-319-332-336
Propane	74-98-6	10-25	GHS04	H280
n-Butane	106-97-8	2.5-10	GHS04	H280
Dimethyl siloxane, reaction product with silica	67762-90-7	1.0-2.5	Not Available	Not Available

4. First-aid Measures

FIRST AID - EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes holding eyelids open. Get medical attention. Do NOT allow rubbing of eyes or keeping eyes closed.

FIRST AID - SKIN CONTACT: Wash skin with soap and water. Remove contaminated clothing. Get medical attention if irritation develops or persists.

FIRST AID - INHALATION: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention. Do NOT use mouth-to-mouth resuscitation. If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, get medical assistance immediately.

FIRST AID - INGESTION: Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. Get immediate medical attention. If swallowed, get medical attention.

5. Fire-fighting Measures

EXTINGUISHING MEDIA: Alcohol Film Forming Foam, Carbon Dioxide, Dry Chemical, Dry Sand, Water Fog

UNUSUAL FIRE AND EXPLOSION HAZARDS: FLASH POINT IS LESS THAN 20°F. EXTREMELY FLAMMABLE LIQUID AND VAPOR! Water spray may be ineffective. Closed containers may explode when exposed to extreme heat due to buildup of steam. Closed containers may explode when exposed to extreme heat. Vapors may form explosive mixtures with air. Vapors can travel to a source of ignition and flash back. Isolate from heat, electrical equipment, sparks and open flame. Perforation of the pressurized container may cause bursting of the can. No unusual fire or explosion hazards noted. Keep containers tightly closed.

SPECIAL FIREFIGHTING PROCEDURES: Full protective equipment including self-contained breathing apparatus should be used. Evacuate area and fight fire from a safe distance. Water may be used to cool closed containers to prevent pressure buildup and possible autoignition or explosion. Use water spray to keep fire-exposed containers cool. Containers may explode when heated.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Contain spilled liquid with sand or earth. DO NOT use combustible materials such as sawdust. Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Remove all sources of ignition, ventilate area and remove with inert absorbent and non-sparking tools. Dispose of according to local, state (provincial) and federal regulations. Do not incinerate closed containers. Ventilate area, isolate spilled material, and remove with inert absorbent. Dispose of contaminated absorbent, container, and unused contents in accordance with local, state, and federal regulations.

7. Handling and Storage

HANDLING: Wash thoroughly after handling. Wash hands before eating. Remove contaminated clothing and launder before reuse. Use only with adequate ventilation. Follow all MSDS/label precautions even after container is emptied because it may retain product residues. Avoid breathing fumes, vapors, or mist. Avoid contact with eyes, skin and clothing.

STORAGE: Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Contents under pressure. Do not store above 120 ° F. Store large quantities in buildings designed and protected for storage of flammable aerosols. Product should be stored in tightly sealed containers and protected from heat, moisture, and foreign materials. Store in a dry, well ventilated place. Keep container tightly closed when not in use. Keep away from heat, sparks, flame and sources of ignition. Avoid excess heat.

8. Exposure Controls/Personal Protection

Chemical Name	CAS-No.	Weight % Less Than	ACGIH TLV- TWA	ACGIH TLV- STEL	OSHA PEL-TWA	OSHA PEL- CEILING
Acetone	67-64-1	75.0	250 ppm	500 ppm	1000 ppm	N.E.
Propane	74-98-6	20.0	N.E.	N.E.	1000 ppm	N.E.
n-Butane	106-97-8	10.0	N.E.	1000 ppm	N.E.	N.E.
Dimethyl siloxane, reaction product with silica	67762-90-7	5.0	N.E.	N.E.	N.E.	N.E.

PERSONAL PROTECTION

ENGINEERING CONTROLS: Use explosion-proof ventilation equipment. Provide general dilution of local exhaust ventilation in volume and pattern to keep TLV of hazardous ingredients below acceptable limits. Prevent build-up of vapors by opening all doors and windows to achieve cross-ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

RESPIRATORY PROTECTION: A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use. A NIOSH/MSHA approved air purifying respirator with organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits.

SKIN PROTECTION: Use gloves to prevent prolonged skin contact. Nitrile or Neoprene gloves may afford adequate skin protection.

EYE PROTECTION: Use safety eyewear designed to protect against splash of liquids.

OTHER PROTECTIVE EQUIPMENT: Refer to safety supervisor or industrial hygienist for further guidance regarding types of personal protective equipment and their applications.

HYGIENIC PRACTICES: Wash thoroughly with soap and water before eating, drinking or smoking. Remove contaminated clothing immediately and launder before reuse.

9. Physical and Chemical Properties

Appearance:	Aerosolized Mist	Physical State:	Liquid
Odor:	Strong Acetone	Odor Threshold:	N.E.
Relative Density:	0.707	pH:	N.A.
Freeze Point, °C:	N.D.	Viscosity:	N.D.
Solubility in Water:	Partially	Partition Coefficient, n-octanol/ water:	N.D.
Decomposition Temp., °C:	N.D.	Explosive Limits, vol%:	1.8 - 13.0
Boiling Range, °C:	-37 - 260	Flash Point, °C:	-96
Flammability:	Supports Combustion	Auto-ignition Temp., °C:	N.D.
Evaporation Rate:	Faster than Ether	Vapor Pressure:	N.D.
Vapor Density:	Heavier than Air		

(See "Other information" Section for abbreviation legend)

10. Stability and Reactivity

CONDITIONS TO AVOID: Avoid temperatures above 120°F (49°C). Avoid all possible sources of ignition. Avoid contact with strong acid and strong bases.

INCOMPATIBILITY: Incompatible with strong oxidizing agents, strong acids and strong alkalis.

HAZARDOUS DECOMPOSITION: By open flame, carbon monoxide and carbon dioxide. When heated to decomposition, it emits acrid smoke and irritating fumes. Contains solvents which may form carbon monoxide, carbon dioxide, and formaldehyde.

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.

STABILITY: This product is stable under normal storage conditions.

11. Toxicological information

EFFECTS OF OVEREXPOSURE - EYE CONTACT: Causes Serious Eye Irritation

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: May cause skin irritation. Allergic reactions are possible.

EFFECTS OF OVEREXPOSURE - INHALATION: High gas, vapor, mist or dust concentrations may be harmful if inhaled. High vapor concentrations are irritating to the eyes, nose, throat and lungs. Harmful if inhaled. Avoid breathing fumes, spray, vapors, or mist. Prolonged or excessive inhalation may cause respiratory tract irritation.

EFFECTS OF OVEREXPOSURE - INGESTION: Harmful if swallowed.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion, and blurred vision) and/or damage. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. High concentrations may lead to central nervous system effects (drowsiness, dizziness, nausea, headaches, paralysis, and blurred vision) and/or damage.

PRIMARY ROUTE(S) OF ENTRY: Eye Contact, Ingestion, Inhalation, Skin Absorption, Skin Contact

ACUTE TOXICITY VALUES

The acute effects of this product have not been tested. Data on individual components are tabulated below:

<u>CAS-No.</u>	<u>Chemical Name</u>	<u>Oral LD50</u>	<u>Dermal LD50</u>	<u>Vapor LC50</u>
67-64-1	Acetone	5800 mg/kg Rat	>15700 mg/kg Rabbit	50.1 mg/L Rat
74-98-6	Propane	N.I.	N.I.	658 mg/L Rat
106-97-8	n-Butane	N.I.	N.I.	658 mg/L Rat

N.I. - No Information

12. Ecological Information

ECOLOGICAL INFORMATION: Product is a mixture of listed components.

13. Disposal Information

DISPOSAL INFORMATION: Dispose of material in accordance to local, state, and federal regulations and ordinances. Do not allow to enter waterways, wastewater, soil, storm drains or sewer systems.

14. Transport Information

	<u>Domestic (USDOT)</u>	<u>International (IMDG)</u>	<u>Air (IATA)</u>	<u>TDG (Canada)</u>
UN Number:	N.A.	1950	1950	N.A.
Proper Shipping Name:	Paint Products in Limited Quantities	Aerosols	Aerosols	Paint Products in Limited Quantities
Hazard Class:	N.A.	2.1	2.1	N.A.
Packing Group:	N.A.	N.A.	N.A.	N.A.
Limited Quantity:	Yes	Yes	Yes	Yes

15. Regulatory Information

U.S. Federal Regulations:

CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Fire Hazard, Pressure Hazard, Acute Health Hazard, Chronic Health Hazard

Sara Section 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

No Sara 313 components exist in this product.

Toxic Substances Control Act:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(b) if exported from the United States:

No TSCA 12(b) components exist in this product.

16. Other Information**HMIS RATINGS**

Health: 2* Flammability: 4 Physical Hazard: 0 Personal Protection: X

NFPA RATINGS

Health: 2 Flammability: 4 Instability: 0

VOLATILE ORGANIC COMPOUNDS, g/L: 514

SDS REVISION DATE: 4/4/2017

REASON FOR REVISION:

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

Rust-Oleum Corporation believes, to the best of its knowledge, information and belief, the information contained herein to be accurate and reliable as of the date of this safety data sheet. However, because the conditions of handling, use, and storage of these materials are beyond our control, we assume no responsibility or liability for personal injury or property damage incurred by the use of these materials. Rust-Oleum Corporation makes no warranty, expressed or implied, regarding the accuracy or reliability of the data or results obtained from their use. All materials may present unknown hazards and should be used with caution. The information and recommendations in this material safety data sheet are offered for the users' consideration and examination. It is the responsibility of the user to determine the final suitability of this information and to comply with all applicable international, federal, state, and local laws and regulations.



SAFETY DATA SHEET

RECTORSEAL® NO. 5® Premium multi-purpose pipe thread sealant

SECTION 1 – PRODUCT AND COMPANY INFORMATION

Product Name

Rectorseal® No.5®

Product Codes

25112, 25191, 25271, 25300, 25431, 25551, 25552, 25631,
25633, 25780, 25790, 25793

Chemical Family

Organic

Use

Pipe thread sealant

Manufacturer's Name

The RectorSeal Corporation
2601 Spenwick Drive
Houston, Texas 77055 USA

Date of Validation

January 23, 2015

Date of Preparation

January 9, 2013

HMIS Codes

Health	1
Flammability	2
Reactivity	0
PPI	B

Emergency Telephone No.

Chemtrec 24 Hours
(800)-424-9300 USA
(703)-527-3887 International

Technical Service Telephone No.

(800)-231-3345 or (713)-263-8001

SECTION 2 – HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

OSHA Hazards

Combustable

Target Organs

Not Classified

GHS CLASSIFICATION

Physical Hazards

Combustable 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



GHS07: Exclamation Mark
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

P102 - 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:	Wash with soap and water. If irritation occurs, seek medical attention.
If in eyes:	Flush eyes with large amounts of water for 15 minutes. Get medical attention.
If swallowed:	If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.

SECTION 5 – FIRE FIGHTING MEASURES

Extinguishing Media

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 flash point. Vapors heavier than air and may travel along the ground or to low spots at considerable distances 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 materials 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
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Diacetone Alcohol

ACGIH TLV:	50 ppm
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OSHA PEL:	50 ppm
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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 areas 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) @ 760mm Hg
Specific gravity (H2O = 1):	1.38
Vapor pressure (mmHg):	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:	Yellow paste/Mild odor
Solubility in water:	23%
Volatile Organic Compounds (VOC) Content (theoretical percentage by weight):	23% or (317 g/L)
Flash point:	150° F (65°C) SETA CC
Lower explosion limit:	N/D
Upper explosion limit:	N/D

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 ingredient 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):	Non-regulated
Air (IATA):	Non-regulated
WHMIS (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 (29 CFR 1910.1200). The information herein is given in good faith, but no warranty, expressed or implied is made.

Consult RectorSeal for further information: (713) 263-8001



SAFETY DATA SHEET

Prepared according to OSHA, GHS and ANSI Z400.1-2004 standards

1. PRODUCT AND COMPANY INFORMATION

Product/Chemical Name: Polyvinyl Chloride/ Solvent Cement Mixture

Trade Names: **LOW VOC PVC Cement Products** 201 ENT Medium Body/ Blue Low VOC PVC Cement, 202 EZ 1 Regular Body/ Clear Low VOC PVC Cement, 203 Pool Pro Combo Medium Body/ Blue Low VOC PVC Cement, 204 Medium Body/ Clear Low VOC PVC Cement, 205 Regular Body/ Clear Low VOC PVC Cement, 206 Medium Body/ Gray Low VOC PVC Cement, 209 Industrial Grade Medium Body/ Cloudy Low VOC PVC Cement, 215 All Temperature Medium Body/ Clear Low VOC PVC Cement, 216 Heavy Body/ Gray Low VOC PVC Cement, 218 Heavy Body/ Clear Low VOC PVC Cement, 220T Transition Medium Body/ Green Low VOC PVC Cement, 222 Wet Weld® Medium Body/ Blue Low VOC PVC Cement

Recommended Use: Solvent Cement for PVC Materials

Product Part Number(s): **201-** 20103, 20104, 20105; **202-** 20201, 20202, 20203, 20204, 20205; **203-** 20301, 20302, 20303, 20304, 20305; **204-** 20401, 20402, 20403, 20404, 20405; **205-** 20501, 20502, 20503, 20504, 20505; **206-** 20601, 20602, 20603, 20604, 20605; **209-** 20903, 20904, 20905; **215-** 21503, 21504, 21505; **216-** 21603, 21604, 21605; **218-** 21803, 21804, 21805; **220-** 22003, 22004; **222-** 22201, 22202, 22203, 22204, 22205

Manufacturer: E-Z Weld Group, LLC 1661 Old Dixie Hwy, Riviera Beach, FL 33404
Phone (281) 351-9889 Fax (281) 351-9896

www.e-zweld.com

In case of Emergency: CHEMTREC 1-800-424-9300 (U.S. and Canada) 1-703-527-3887 (International)

Preparation/ Revision Date: April 7, 2015

2. HAZARDS IDENTIFICATION

Appearance: Product comes in a variety of colors.

Odor: Ether-like

GHS SYMBOLS:



SIGNAL WORD: DANGER

Hazard Statements:

Extremely Flammable liquid and vapors.

Toxic in case of inhalation or ingestion.

Harmful in contact with skin.

Keep out of reach of children.

Read label before use.

Keep away from heat/ sparks/ open flames/ hot surfaces- DO NOT SMOKE.

Keep container tightly closed.

Do not breathe vapors.

Use only in open air and well-ventilated places.

Principal Hazards:

Skin or Eyes: Contact with this product can be irritating to contaminated skin and eyes. Vapors of this product can redden and irritate the eyes. If the eyes are contaminated with splashes, sprays or mists of this product, reddening, tearing, and corneal opacity can occur. The liquid can be mildly to severely irritating to contaminated skin (depending on duration of exposure). Prolonged or repeated skin over-exposures can lead to dermatitis. Skin absorption is a potential route of overexposure for Cyclohexanone (a component of this product).



SAFETY DATA SHEET

Prepared according to OSHA, GHS and ANSI Z400.1-2004 standards

Inhalation: : Inhalation of vapors, mists, or sprays of this product can be irritating to the nose, throat, mucous membranes, and other tissues of the respiratory system. Symptoms of overexposure can include coughing, sneezing, and shortness of breath. Additionally, the components of this product are central nervous system depressants. Symptoms of over-exposure can include drowsiness, dizziness, fatigue, headache, nausea, and general anesthetic effects. Inhalation of high concentrations of this product (as may occur in a poorly-ventilated area) may be fatal. Based on clinical studies involving test animals, Cyclohexanone and Tetrahydrofuran, components of this product, may cause liver and kidney damage after long-term inhalation overexposures.

This product must be used with adequate ventilation. Mechanical exhaust may be needed. Ensure exposure to vapors is minimized by use of appropriate engineering controls, work practices, and personal protective equipment, as described in the remainder of this document.

Ingestion: Ingestion is not anticipated to be a significant route of occupational overexposure for this product. If ingestion occurs, refer to Section 4 (First-Aid Measures) and get medical help immediately. If ingestion of this product does occur, symptoms of such over-exposure can include nausea, vomiting, and other symptoms described for "Inhalation". Ingestion can also lead to liver and kidney damage. Ingestion of this product may be fatal.

Injection: Injection is not anticipated to be a significant route of over-exposure for this product. If injection does occur (i.e. through a puncture by an object contaminated with the product), local irritation and swelling can occur. Additional symptoms may include those described for "Inhalation".

See section 11 for complete health hazard information

3. COMPOSITION/ INFORMATION ON INGREDIENTS

Hazardous ingredients:

CAS NUMER	INGREDIENT/ CHEMICAL NAME	PERCENT BY WEIGHT
109-99-9	TETRAHYDROFURAN	10-60
78-93-3	METHYL ETHYL KETONE	0-25
67-64-1	ACETONE	10-30
108-94-1	CYCLOHEXANONE	5-30
9002-86-2	POLYVINYL CHLORIDE RESIN	<20
112945-52-5	SILICON DIOXIDE	Balance

4. FIRST AID MEASURES

Eye Contact

If this product's liquid or vapors enter the eyes, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. The contaminated individual must seek immediate medical attention.

Skin Contact

If this product contaminates the skin, immediately begin decontamination with running water. Minimum flushing is for 15 minutes. Remove exposed or contaminated clothing, taking care not to contaminate eyes. The contaminated individual must seek medical attention if any adverse effect occurs.



SAFETY DATA SHEET

Prepared according to OSHA, GHS and ANSI Z400.1-2004 standards

Inhalation

If vapors, mists, or sprays of this product are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Remove or cover gross contamination to avoid exposure to rescuers.

Ingestion

If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. If professional advice is not available, do not induce vomiting. The contaminated individual should drink milk, egg whites, or large quantities of water. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or unable to swallow.

The contaminated individual must be taken for medical attention, especially if any adverse effect occurs. Rescuers should be taken for medical attention, if necessary. Take a copy of label and MSDS to health professional with victim.

5. FIRE FIGHTING MEASURES

Flash Point

Methyl Ethyl Ketone: -9°C (15°F) Tetrahydrofuran: -15.5°C (4.1°F)

Extinguishing Media

Foam, CO₂ or Dry Chemical. Cool fire exposed container with water.

Fire-Fighting Instructions

Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. If it is safe to do so, allow small fires involving this product to burn-out, while protecting exposures. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas. If necessary, rinse contaminated equipment thoroughly before returning such equipment to service.

Unusual Fire or Explosion Hazards

This is a Class I-B Flammable Liquid. When involved in a fire, this material may ignite and produce irritating vapors and toxic gases (e.g., carbon monoxide, carbon dioxide). This material will readily ignite at room temperature. The vapors are heavier than air and may travel to a source of ignition, and flash back to a leak or open container. Tetrahydrofuran can form potentially explosive peroxides; closed containers contaminated with peroxides can rupture violently in the heat of a fire.

Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: The vapors of this product can be ignited by static electrical energy.

6. ACCIDENTAL RELEASE MEASURES

Spill /Leak Procedures

In case of a spill, clear the affected area and protect people. Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. Small releases (e.g., 1-pint) must be cleaned-up by personnel wearing gloves, goggles, and appropriate eye protection. Face shields must be worn if splashes or sprays of this product may be generated. In the event of a non-incident release (e.g., five, 1-gallon containers leaking simultaneously in a poorly-ventilated area), the minimum Personal Protective Equipment should be Level B: triple-gloves (rubber gloves and nitrile gloves, over latex gloves), chemically resistant suit and boots, hard-hat, and Self-Contained Breathing Apparatus. Level B should always be used during responses in which the oxygen level is below 19.5% or unknown.

Waste Disposal Method

Dispose of in accordance with U.S. Federal, State, or local procedures, the applicable standards of Canada and its Provinces, or the appropriate requirements of European Community member States (see Section 13, Disposal Considerations).

Cleanup:

Eliminate all sources of ignition before spill clean-up begins. Use non-sparking tools. Absorb spilled liquid with activated carbon, polypads or other suitable absorbent materials. Monitor the area for combustible vapors and the



SAFETY DATA SHEET

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level of oxygen. Monitoring must indicate less than 10% of the LEL (see Section 5, Fire- Fighting Measures) and greater than 19.5 % Oxygen is in the atmosphere before personnel are permitted in the area without Level B Protection. Place all spill residues in an appropriate container and seal. Place the bulk of any spilled material into drums.

7. HANDLING AND STORAGE

Precautions to Be Taken in Handling and Storing

Keep away from heat, sparks and flame. Avoid breathing vapor.

Handling Precautions

All employees who handle this material should be trained to handle it safely. Containers of this product must be properly labeled. If this mixture is used in other types of containers, only use portable containers approved for flammable liquids. Post "NO SMOKING" signs, where appropriate in storage and use areas. Use non-sparking tools. Bond and ground during transfer of material. Empty containers may contain residual flammable liquid or vapors. Therefore, empty containers should be handled with care. Do not expose "empty" containers to welding touches, or any other source of ignition.

Storage Requirements

Store containers of the product in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Material should be stored in secondary containers, or in a designated area, as appropriate. Storage areas should be made of fire-resistant materials. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged. Refer to NFPA 30, Flammable and Combustible Liquids Code for additional information on storage.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

Component Exposure Limits:

Tetrahydrofuran (109-99-9)

ACGIH: 50 ppm TWA; 100 ppm STEL

Skin - potential significant contribution to overall exposure by the cutaneous route

OSHA: 200 ppm TWA; 590 mg/m³ TWA

NIOSH: 200 ppm TWA; 590 mg/m³ TWA; 250 ppm STEL; 735 mg/m³ STEL

Methyl Ethyl Ketone (78-93-3)

ACGIH: 200 ppm TWA; 300 ppm STEL

OSHA: 200 ppm TWA; 590 mg/m³ TWA

NIOSH: 200 ppm TWA; 590 mg/m³ TWA; 300 ppm STEL; 885 mg/m³ STEL

Cyclohexanone (108-94-1)

ACGIH: 20 ppm TWA; 50 ppm STEL

Skin - potential significant contribution to overall exposure by the cutaneous route

OSHA: 50 ppm TWA; 200 mg/m³ TWA

NIOSH: 25 ppm TWA; 100 mg/m³ TWA

Potential for dermal absorption

Acetone (67-64-1)

ACGIH: 500 ppm TWA; 750 ppm STEL

OSHA: 1000 ppm TWA; 2400 mg/m³ TWA

NIOSH: 250 ppm TWA; 590 mg/m³ TWA

Ventilation: Mechanical exhaust may be needed. If the product is used in a confined area, provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s). Explosion-proof equipment is required.

Respiratory Protection: Respiratory protection is not generally needed when using this product. Maintain airborne contaminant concentrations below guidelines listed in this section. If respiratory protection is needed, use only protection authorized in 29 CFR 1910.134 or applicable State regulations. Use supplied air respiration protection if



SAFETY DATA SHEET

Prepared according to OSHA, GHS and ANSI Z400.1-2004 standards

oxygen levels are below 19.5% or are unknown. Respiratory protection guidelines for Tetrahydrofuran (a component of this product) are provided as follows.

NIOSH/OSHA RECOMMENDATIONS FOR TETRAHYDROFURAN CONCENTRATIONS IN AIR UP TO 2000 ppm:

Supplied Air Respirator (SAR) operated in a continuous-flow mode, full-facepiece chemical cartridge respirator with organic vapor cartridge(s), gas mask with organic vapor canister, powered air-purifying respirator with organic vapor cartridge(s), full-facepiece Self-Contained Breathing Apparatus (SCBA), or full-facepiece SAR.

EMERGENCY OR PLANNED ENTRY INTO UNKNOWN CONCENTRATIONS OR IDLH CONDITIONS: Positive pressure, full-facepiece SCBA or positive pressure, full-facepiece SAR with an auxiliary positive pressure SCBA.

ESCAPE: Gas mask with organic vapor canister or escape-type SCBA.

NOTE: The IDLH concentration for Tetrahydrofuran is 2000 ppm. This value is based on the lower explosive limit (LEL). Respiratory protection equipment may not be adequate for fire situations.

Protective Gloves: Wear gloves for routine industrial use to protect hands from contact. For long exposures, or unusual contact, such as spill cleanup, chemical resistant gloves may be required. See section 6.

Eye Protection: Splash goggles or safety glasses. Face shield should be worn when working in situations in which splashes or sprays can be generated. Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

Other Protective Clothing or Equipment: Use body protection appropriate for task (e.g., Apron or Tyvek suit).

Other/Hygienic Practices: Wash with soap and water after use. Never eat or drink in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Product comes in a variety of colors.

Physical State: Liquid

Odor: Ether-like

Odor Threshold: 2.48–3.47 ppm (Tetrahydrofuran)

pH: Not determined

Freezing Point: Not determined

Melting Point: Not determined

Boiling Point and Boiling Range: Not determined

Flash Point: Not determined

Evaporation Rate: (n-Butyl acetate) >1

Flammability: NFPA Class IB

Vapor Pressure: Not determined

Specific Gravity (H₂O=1, at 4 °C): < 1.0

Water Solubility: Somewhat soluble.

Partition coefficient (n-octanol/ water): Not determined

Auto-ignition temperature: Methyl Ethyl Ketone: 404°C (759°F) Tetrahydrofuran: 321°C (610°F)

Decomposition temperature: Not determined

Viscosity: Not available

10. STABILITY AND REACTIVITY

Stability: Stable at room temperature in closed containers under normal storage and handling conditions.

Note: Tetrahydrofuran, a component of this product, can form potentially explosive peroxide compounds when exposed to light or air. Though this product contains inhibitors to prevent peroxide formation, care should be used when storing this product, or handling old containers of this material.

Conditions to Avoid: Avoid exposure or contact to extreme temperatures, sources of ignition, incompatible chemicals.



SAFETY DATA SHEET

Prepared according to OSHA, GHS and ANSI Z400.1-2004 standards

Incompatible Materials: This product will not be compatible with strong oxidizers, lithium aluminum hydride, and alkaline earth hydroxides.

Polymerization: Polymerization is not expected to present a significant hazard.

Hazardous Decomposition or byproducts: Carbon monoxide, carbon dioxide, silicon and chloride compounds.

11. TOXICOLOGICAL INFORMATION

ACUTE EXPOSURE

Component Analysis (LD50/ LC50)

Tetrahydrofuran (CAS# 109-99-9)

Inhalation-Rat LC50: 21,000 ppm/3H, Oral-Rat LD50: 1650 mg/kg.

Methyl Ethyl Ketone (CAS# 78-93-3)

Oral-Rat LD50: 2737 mg/kg, Inhalation-Rat LC50: 23,500 mg/m³/8hr, Inhalation-Mouse LC50: 40 g/m³/2hr

Cyclohexanone (CAS# 108-94-1)

Inhalation-Rat LC50: 8000 ppm/4 hours, Oral-Rat LD50: 1535 mg/kg, Oral-Mouse LD50: 1400 mg/kg

Silicon Dioxide (CAS# 112945-52-5)

Oral-Rat LD50: 3160 mg/kg

Eye Irritation: Can cause irritation, tearing and blurred vision.

Skin Irritation: Can cause irritation, redness and defatting (dryness).

Ingestion Health Risks: Causes nausea, headache, dizziness, stupor, and /or diarrhea. Ingestion of this product at high concentration may be fatal.

Respiratory Irritation: Can cause respiratory irritation and headache.

Dermal Toxicity: Severe irritation and defatting. Can cause a rash.

Inhalation Toxicity: Inhalation of product's vapors at high concentrations may be fatal

Target Organs: Skin, eyes, respiratory system, central nervous system.

CHRONIC EXPOSURE

Chronic Toxicity: Prolonged or repeated skin exposures can lead to dermatitis (dryness, reddening and irritation of the skin). Tetrahydrofuran, a component of this product, may cause liver and kidney damage after long-term inhalation overexposures. There is limited evidence from animal studies that Methyl Ethyl Ketone, a component of this product, is a reproductive toxin.

Target Organs: Liver, Kidneys.

Carcinogenicity:

Tetrahydrofuran (CAS# 109-99-9)

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

Acetone (CAS# 67-64-1)

ACGIH: A4 - Not Classifiable as a Human Carcinogen

Cyclohexanone (CAS# 108-94-1)

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

IARC: Monograph 71 [1999]; Monograph 47 [1989] (Group 3 (not classifiable))

Silicon Dioxide (CAS# 112945-52-5)

IARC: Monograph 68 [1997] (listed under Amorphous silica) (Group 3 (not classifiable))

Mutagenicity: This product is not reported to produce mutagenic effects in humans. Human mutation data are available for Cyclohexanone (a component of this product); these data were obtained on specific human tissues exposed to relatively high doses. Animal mutation data are available for Methyl Ethyl Ketone, Silicon Dioxide, and Tetrahydrofuran (components of this product); these data were obtained during clinical studies on specific animal tissues or micro-organisms exposed to high doses of these compounds.



SAFETY DATA SHEET

Prepared according to OSHA, GHS and ANSI Z400.1-2004 standards

Reproductive Toxicity: This product is not reported to cause reproductive effects in humans. Reproductive toxicity data are available for Methyl Ethyl Ketone and Tetrahydrofuran (components of this product); these data were obtained from clinical studies on test animals exposed to relatively high doses.

Teratogenicity: This product is not reported to cause teratogenic effects in humans. Three animal studies involving Methyl Ethyl Ketone (a component of this product) have shown fetotoxicity (skeletal anomalies) at doses which did not produce significant maternal toxicity.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL TOXICITY

Aquatic Life Toxicity: This product can be harmful or fatal to contaminated aquatic plant or animal life, especially if released in large quantity in a body of water. The following aquatic toxicity data are available for the components of this product:

CYCLOHEXANONE:

LC₅₀ (*Pimephales promelas* fathead minnow) 527 mg/L 96 hours
EC₀ (bacteria *Pseudomonas putida*) 16 hours = 180 mg/L
EC₀ (algae *Microcystis aeruginosa*) 8 days = 52 mg/L
EC₀ (green algae *Scenedesmus quadricauda*) 7 days = 370 mg/L
EC₀ (protozoa *Entosiphon sulcatum*) 72 hours = 545 mg/L
EC₀ (protozoa *Uronema parduczi* Chatton-Lwoff) = 280 mg/L
EC₀ (bacteria *Pseudomonas fluorescens*) 16 hours = 180 mg/L (pH = 7)
EC₀ (*Chilomonas paramecium* Ehrenberg) 48 hours = 573 mg/L
EC₀ (*Daphnia magna* Straus) 24 hours = 526 mg/L
EC₅₀ (*Daphnia magna* Straus) 24 hours = 820 mg/L
EC₁₀₀ (*Daphnia magna* Straus) 24 hours = 1,240 mg/L
EC₀ (*Daphnia magna*) 24 hours = 540 mg/L
EC₅₀ (*Daphnia magna*) 24 hours = 800 mg/L
EC₁₀₀ (*Daphnia magna*) 24 hours = 1,540 mg/L
LC₅₀ (fathead minnow) 96 hours = 526; 618; 630 mg/L
LC₅₀ (*Leuciscus idus*) 24 hours = 538 mg/L
LC₅₀ (*Leuciscus idus*) 96 hours = 536; 539; 752 mg/L

METHYL ETHYL KETONE:

EC₀ (*Scenedesmus quadricauda*, green algae) = 4300 mg/L/ 8 days
EC₀ (*Entosiphon sulcatum*, protozoa) = 190 mg/L/ 72 hours

METHYL ETHYL KETONE (continued):

EC₀ (*Uronema parduczi* Chatton-Lwoff, protozoa) = 2830 mg/L EC₀ (*Pseudomonas putida*, bacteria) = 1150 mg/L/ 16 hours
LC₅₀ (*Pimephales promelas*, fathead minnow) = 3200 mg/L/96 hour
LD₀ (*Pseudomonas*, bacteria) = 2,500 mg/L
LD₀ (*Scenedesmus*, algae) = 12,500 mg/L
LD₀ (*Colpoda*, protozoa) = 5,000 mg/L
LC₅₀ (mosquito fish) = 5,600 mg/L/ 24 96 hours
LC₅₀ (bluegill) = 5,640 1,690 mg/L/ 24 96 hours
LC₅₀ (goldfish) = 5,000 mg/L/ 24 hours

TETRAHYDROFURAN:

Growth Inhibition (*Microcystis*, blue algae) = 225 mg/L Toxicity Threshold (Cell Multiplication Inhibit System test): (*Uronema parduczi* Chatton-Lwoff, protozoa) = 858 mg/L (*Pseudomonas putida*, bacteria) = 580 mg/L (*Microcystis aeruginosa*, algae) = 225 mg/L
LC₅₀ (silver/golden orfe) = 2820-2930 mg/L LC₅₀ (fathead minnow) = 2160 mg/L/ 96 hours
LC₅₀ (carp) = 4400 mg/L/ 48 hours
LC₅₀ (goldfish) = 2400 mg/L/ 48 hour

ENVIRONMENTAL DATA

Biodegradation: The components of this product will biodegrade into other organic compounds.

Environmental data are available for components of this product, as follows:

ACETONE: Log K_{ow} = -0.24. Water Solubility= Miscible. Acetone is quite readily degraded in the environment. BO D = 122%; 5 day s. The potential for bioconcentration in fish is negligible. One experimental study of bioconcentration in adult haddock at 7-9°C (static test) resulted in a BCF of 0.69.

CYCLOHEXANONE: KOC - 0.81. Water Solubility 23,000 mg/L. Cyclohexanone is not rapidly volatilized from water, except for fast moving streams or very shallow ponds. Significant soil leaching occurs, contributing to ground water contamination. Biodegradation and photolysis occur in water. Rapid atmospheric degradation occurs via photolysis, with a half-life of about 1 to 5 days.

METHYL ETHYL KETONE: Log K_{ow} = 0.29. Water Solubility = 239,000 mg/L. Methyl Ethyl Ketone is rapidly volatilized from water and undergoes slow biodegradation. It undergoes moderate atmospheric photodegradation.

TETRAHYDROFURAN: Water Solubility = 30% (25°C). Tetrahydrofuran is significantly biodegraded in standard tests. This compound is not expected to bioconcentrate in fish significantly.

Bioaccumulation: Not determined.

Soil Mobility: Not determined



SAFETY DATA SHEET

Prepared according to OSHA, GHS and ANSI Z400.1-2004 standards

VOC INFORMATION: This product emits VOC's (volatile organic compounds) in its use. Make sure that use of this product complies with local VOC emission regulations, where they exist. **Max. VOC Level for E-Z Weld 201, 202, 203, 204, 205, 206, 209, 215, 216, 218, 220 and 222: 510 g/l as per SCAQMD Test Method 1168/316A.**

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Waste disposal must be in accordance with appropriate U.S. Federal, State, and local regulations, those of Canada and its Provinces, as well as those applicable to the EC Member States. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority.

U.S. EPA WASTE NUMBER: D001 (Characteristic/Ignitability)

14. TRANSPORT INFORMATION

For Greater than 1 liter (0.3 gal):

Shipping Name: Adhesives

UN Number: 1133

Transport Hazard Class/ Packing Group: Class 3 (Flammable Liquid), Group II DOT LABEL(S)

Required Labels: Flammable Liquid

For Less than 1 liter (0.3 gal):

Shipping Name: Adhesives

UN Number: 1133

Transport Hazard Class/ Packing Group: Class 3 (Flammable Liquid), Group II DOT LABEL(S)

Required Labels: None (Limited Quantities are expected from labeling)

Marine Pollutant: N

IMDG Code: 3230

15. REGULATORY INFORMATION

U.S. Federal Regulations:

Component Analysis

The components of this product are subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act, and are listed as follows:

CHEMICAL NAME	SARA 304 (40 CFR Table 302.4)	SARA 313 (40 CFR 372.65)
Cyclohexanone (CAS# 108-94-1)	Yes	Yes
Methyl Ethyl Ketone (CAS# 78-93-3)	Yes	Yes
Tetrahydrofuran (CAS# 109-99-9)	Yes	No

U.S. CERCLA REPORTABLE QUANTITY (RQ): Cyclohexanone = 5000 lb; MEK: 5000 lb; Tetrahydrofuran = 1000 lb.

TSCA: All ingredients contained in this product are listed on the U.S. EPA TSCA Chemical Substance Inventory.

State Regulations

The following components appear on one or more of the following state hazardous substances list:

CHEMICAL NAME	CAS	AK	CA	FL	IL	KS	MA	MN	MO	NJ	ND	PA	RI	TX	WV	WI
Tetrahydrofuran	109-99-9	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Methyl Ethyl Ketone	78-93-3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Cyclohexanone	108-94-1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

CALIFORNIA, SAFE DRINKING WATER AND TO XIC ENFORCEMENT ACT (PROPOSITION 65): This product may contain trace constituents, such as vinyl chloride, present in one of the product's components. Under common usage, exposures to these trace constituents at levels exceeding the "no significant risk level" (NSRL) would not occur. Users

Prepared according to OSHA, GHS and ANSI Z400.1-2004 standards

are expected to follow normal PPE and ventilation guidelines such as those in section 8 and other portions of this MSDS.

Canadian Federal Regulations:

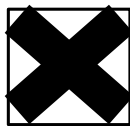
The components of this product are on the DSL Inventory.

WHMIS Symbols: Class B2: Flammable Liquid Class D2A/B: Materials Causing Other Toxic Effects.

EINECS: All ingredients contained in this product are listed on the European Inventory of Existing Chemical Substances (EINECS). Based on the information on the product's components and an assessment of the physical and health hazards associated with the material, the following assignments have been made (per council directive 67/548/EEC)

EC CLASSIFICATION: Highly Flammable; Carcinogenic Category 3; Harmful; Irritant. [F;Carc.Cat.3;Xn;Xi]

EUROPEAN COMMUNITY ANNEX II HAZARD SYMBOLS:



EINECS Components: Primary components of this product under European Community Regulation are Tetrahydrofuran, Methyl Ethyl Ketone, Cyclohexanone and Acetone.

16. OTHER INFORMATION

Prepared by: Karla A. Torruellas, Technical Manager

Revision Summary: Revision # 2

Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration.

Other Information

NFPA and HMIS:

NFPA Hazard Signal: Health: 2 Flammability: 3 Reactivity: 1 Special: None

HMIS Hazard Signal: Health: 2* Flammability: 3 Reactivity: 1 PPE: G



Manufacturer Disclaimer: Information given herein is offered in good faith as accurate, but without guarantee. Conditions of use and suitability of the product for particular uses are beyond our control; all risks of use of the product are therefore assumed by the user. Nothing is intended as a recommendation for uses which infringe valid patents or as extending license under valid patents. Appropriate warnings and safe handling procedures should be provided to handlers and users.



Safety Data Sheet

24 Hour Emergency Phone Numbers
Medical/Poison Control:
In U.S.: Call 1-800-222-1222

Outside U.S.: Call your local poison control center

Transportation/National Response Center:

1-800-535-5053

1-352-323-3500

NOTE: The National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

IMPORTANT: Provide this information to employees, customers, and users of this product. Read this SDS before handling or disposing of this product. This product is covered by the OSHA Hazard Communication Standard and this document has been prepared in accordance with requirements of this standard. All abbreviated terms used in this MSDS are further described in Section 16.

1. Identification

This Safety Data Sheet is available in American Spanish upon request.
 Los Datos de Seguridad pueden obtenerse en Espanol si lo requiere.

Product Name:	Alex Fast Dry Acrylic Latex Caulk Plus Silicone	Revision Date:	6/19/2015
Product UPC Number:	05892 11425 18425 18428	Supercedes Date:	New SDS
Product Use/Class:	Caulking Compound	SDS No:	00010013001
Manufacturer:	DAP Products Inc. 2400 Boston Street Suite 200 Baltimore, MD 21224-4723 888-327-8477 (non - emergency matters)		
Preparer:	Regulatory Department		

2. Hazards Identification

EMERGENCY OVERVIEW: Under normal use conditions, this product is not expected to cause adverse health effects.

GHS Classification

Not a hazardous substance or mixture.

Symbol(s) of Product

None

Signal Word

Not a hazardous substance or mixture.

3. Composition/Information on Ingredients

<u>Chemical Name</u>	<u>CAS-No.</u>	<u>Wt. %</u>	<u>GHS Symbols</u>	<u>GHS Statements</u>
Limestone	1317-65-3	50-75	GHS03	H270
Petroleum distillates	64741-88-4	1.0-2.5	GHS03-GHS06	H270-331

Diethylene glycol dibenzoate	120-55-8	1.0-2.5	GHS03-GHS07	H270-312
Titanium dioxide	13463-67-7	0.1-1.0	No Information	No Information
Quartz	14808-60-7	0.1-1.0	GHS03-GHS07	H270-302

The text for GHS Hazard Statements shown above (if any) is given in the "Other information" Section.

4. First-aid Measures

FIRST AID - INHALATION: Material is not likely to present an inhalation hazard at ambient conditions. If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, get medical attention immediately.

FIRST AID - SKIN CONTACT: No health hazards are known to exist. In case of contact, wash skin immediately with soap and water.

FIRST AID - EYE CONTACT: In case of contact, immediately flush eyes with large quantities of water for at least 15 minutes until irritation subsides. Get medical attention immediately.

FIRST AID - INGESTION: If swallowed, DO NOT INDUCE VOMITING. Get medical attention immediately.

5. Fire-fighting Measures

UNUSUAL FIRE AND EXPLOSION HAZARDS: 465 <undefined>

SPECIAL FIREFIGHTING PROCEDURES: Wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent) and full protective gear. Use water spray to cool exposed surfaces.

EXTINGUISHING MEDIA: Carbon Dioxide, Dry Chemical, Foam, Water Fog

6. Accidental Release Measures

ENVIRONMENTAL MEASURES: No Information

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations. Scrape up dried material and place into containers. Use personal protective equipment as necessary. In case of spillage, absorb with inert material and dispose of in accordance with applicable regulations.

7. Handling and Storage

HANDLING: KEEP OUT OF REACH OF CHILDREN! DO NOT TAKE INTERNALLY. Use only with adequate ventilation. Ensure fresh air entry during application and drying. Wash thoroughly after handling.

STORAGE: Avoid excessive heat and freezing. Do not store at temperatures above 120 degrees F. Store away from caustics and oxidizers.

8. Exposure Controls/Personal Protection

Ingredients with Occupational Exposure Limits

<u>Chemical Name</u>	<u>ACGIH TLV-TWA</u>	<u>ACGIH-TLV STEL</u>	<u>OSHA PEL-TWA</u>	<u>OSHA PEL-CEILING</u>
Limestone	N.E.	N.E.	15 mg/m3 TWA total dust, 5 mg/m3 TWA respirable fraction	N.E.
Petroleum distillates	N.E.	N.E.	N.E.	N.E.
Diethylene glycol dibenzoate	N.E.	N.E.	N.E.	N.E.
Titanium dioxide	10 mg/m3 TWA	N.E.	15 mg/m3 TWA total dust	N.E.
Quartz	0.025 mg/m3 TWA respirable fraction	N.E.	N.E.	N.E.

Further Advice: MEL = Maximum Exposure Limit OES = Occupational Exposure Standard SUP = Supplier's Recommendation
Sk = Skin Sensitizer N.E. = Not Established

Personal Protection



RESPIRATORY PROTECTION: No personal respiratory protective equipment normally required. National Institute for Occupational Safety and Health (NIOSH) has recommended that the permissible exposure limit be changed to 50 micrograms respirable free silica per cubic meter of air (0.05 mg/m³) as determined by a full shift sample up to 10-hour work shift.



SKIN PROTECTION: Rubber gloves.



EYE PROTECTION: Goggles or safety glasses with side shields.



OTHER PROTECTIVE EQUIPMENT: Not required under normal use.



HYGIENIC PRACTICES: Wash hands before breaks and at the end of workday. Remove and wash contaminated clothing before re-use.

9. Physical and Chemical Properties

Appearance:	White to Off-White	Physical State:	Paste
Odor:	Very Slight Ammonia	Odor Threshold:	Not Established
Density, g/cm³:	1.67 - 1.67	pH:	Between 7.0 and 12.0
Freeze Point, °C:	Not Established	Viscosity (mPa.s):	Not Established
Solubility in Water:	Not Established	Partition Coeff., n-octanol/water:	Not Established
Decomposition Temperature, °C:	Not Established	Explosive Limits, %:	N.I. - N.I.
Boiling Range, °C:	N.I. - N.I.	Auto-Ignition Temperature, °C	Not Established
Minimum Flash Point, °C:	93.3	Vapor Pressure, mmHg:	No Information
Evaporation Rate:	Slower Than n-Butyl Acetate	Flash Method:	Seta Closed Cup
Vapor Density:	Heavier Than Air	Flammability:	No Information
Combustibility:	Does not support combustion		

(See "Other information" Section for abbreviation legend)

(If product is an aerosol, the flash point stated above is that of the propellant.)

10. Stability and Reactivity

STABILITY: Stable under recommended storage conditions.

CONDITIONS TO AVOID: Excessive heat and freezing.

INCOMPATIBILITY: Incompatible with strong bases and oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS: Normal decomposition products, i.e., CO_x, NO_x.

11. Toxicological Information

EFFECT OF OVEREXPOSURE - INHALATION: Under normal use conditions, this product is not expected to cause adverse health effects. Inhalation of vapors in high concentration may cause mild irritation of respiratory system (nose, mouth, mucous membranes).

EFFECT OF OVEREXPOSURE - SKIN CONTACT: Under normal use conditions, this product is not expected to cause adverse

health effects. Prolonged or repeated contact with skin may cause mild irritation.

EFFECT OF OVEREXPOSURE - EYE CONTACT: Under normal use conditions, this product is not expected to cause adverse health effects. Direct eye contact may cause irritation.

EFFECT OF OVEREXPOSURE - INGESTION: Under normal use conditions, this product is not expected to cause adverse health effects. Single dose oral toxicity is very low. Amounts ingested incidental to industrial handling are not likely to cause injury; however, ingestion of large amounts may cause injury.

CARCINOGENICITY: No Information

EFFECT OF OVEREXPOSURE - CHRONIC HAZARDS: Repeated or prolonged exposure may cause irritation of eyes and skin. The International Agency for Research on Cancer (IARC) has determined that crystalline silica in the form of quartz or cristobalite that is inhaled from occupational sources is carcinogenic to humans (Group 1- carcinogenic to humans). Refer to IARC Monograph 68, Silica, Some Silicates and Organic Fibres (published in June 1997) in conjunction with the use of these materials. The National Toxicology Program (NTP) classifies respirable crystalline silica as "known to be a human carcinogen". Refer to the 9th Report on Carcinogens (2000). The American Conference of Governmental Industrial Hygienists (ACGIH) classifies crystalline silica, quartz, as a suspected human carcinogen (Group A2). Breathing dust containing respirable crystalline silica may not cause noticeable injury or illness even though permanent lung damage may be occurring. Inhalation of dust may have the following serious chronic health effects: Excessive inhalation of respirable dust can cause pneumoconiosis, a respiratory disease, which can result in delayed, progressive, disabling and sometimes fatal lung injury. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness and reduced pulmonary function. Smoking exacerbates this disease. Individuals with pneumoconiosis are predisposed to develop tuberculosis. There is some evidence that breathing respirable crystalline silica or the disease silicosis is associated with an increased incidence of significant disease endpoints such as scleroderma (an immune system disorder manifested by fibrosis of the lungs, skin and other internal organs) and kidney disease.

PRIMARY ROUTE(S) OF ENTRY: Inhalation, Skin Contact

Acute Toxicity Values

The acute effects of this product have not been tested. Data on individual components are tabulated below

<u>CAS-No.</u>	<u>Chemical Name</u>	<u>Oral LD50</u>	<u>Dermal LD50</u>	<u>Vapor LC50</u>
1317-65-3	Limestone	6450 mg/kg Rat	>2000 mg/kg	>20 mg/L
64741-88-4	Petroleum distillates	>5000 mg/kg Rat	>2000 mg/kg Rabbit	2.18 mg/L Rat
120-55-8	Diethylene glycol dibenzoate	2830 mg/kg Rat	2000 mg/kg Rabbit	> 200 mg/L Rat
13463-67-7	Titanium dioxide	>10000 mg/kg Rat	>5000 mg/kg Rabbit	>20 mg/L
14808-60-7	Quartz	500 mg/kg Rat	>2000 mg/kg	>20 mg/L

N.I. = No Information

12. Ecological Information

ECOLOGICAL INFORMATION: Ecological injuries are not known or expected under normal use.

13. Disposal Information

DISPOSAL INFORMATION: This product does not meet the definition of a hazardous waste according to U.S. EPA Hazardous Waste Management Regulation, 40 CFR Section 261. Dispose as hazardous waste according to all local, state, federal and provincial regulations. State and Local regulations/restrictions are complex and may differ from Federal regulations. Responsibility for proper waste disposal is with the owner of the waste.

14. Transport Information

SPECIAL TRANSPORT PRECAUTIONS: No Information

DOT UN/NA Number: N.A.
DOT Proper Shipping Name: Not Regulated.
DOT Technical Name: N.A.
DOT Hazard Class: N.A.
Hazard SubClass: No Information
Packing Group: N.A.

15. Regulatory Information

U.S. Federal Regulations:

CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Acute Health Hazard, Chronic Health Hazard

SARA SECTION 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

No Sara 313 components exist in this product.

TOXIC SUBSTANCES CONTROL ACT:

All ingredients in this product are either on TSCA inventory list, or otherwise exempt.

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA 12(b) components exist in this product.

CALIFORNIA PROPOSITION 65 CARCINOGENS AND REPRODUCTIONAL TOXINS

CALIFORNIA PROPOSITION 65: No Information

International Regulations: As follows -

CANADIAN WHMIS:

This SDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

WHMIS Class Consumer Commodity

16. Other Information

Revision Date: 6/19/2015 **Supersedes Date:** New MSDS
Reason for revision: HazCom2012/GHS Conversion
Datasheet produced by: Regulatory Department

HMIS Ratings:

Health:	1	Flammability:	0	Reactivity:	0	Personal Protection:	X
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VOC Less Water Less Exempt Solvent, g/L:39.2

VOC Material, g/L:28

VOC as Defined by California Consumer Product Regulation, Wt/Wt%:0.6

Text for GHS Hazard Statements shown in Section 3 describing each ingredient:

H270	May cause or intensify fire; oxidiser.
H302	Harmful if swallowed.
H312	Harmful in contact with skin.
H331	Toxic if inhaled.

Icons for GHS Pictograms shown in Section 3 describing each ingredient:

GHS03	
GHS06	
GHS07	

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

DAP believes the data and statements contained herein are accurate as of the date hereof. They are offered in good faith as typical values and not as a product specification. NO WARRANTY OF MERCHANTABILITY, WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, IS MADE WITH REGARD TO THE INFORMATION HEREIN PROVIDED OR THE PRODUCT TO WHICH THE INFORMATION REFERS. Since this document is intended only as a guide to the appropriate use and precautionary handling of the referenced product by a properly trained person, it is therefore the responsibility of the user to (i) review the recommendations with due consideration for the specific context of the intended use and (ii) determine if they are appropriate.



SAFETY DATA SHEET BOSTIK WHITE GLUE

1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

PRODUCT NAME	BOSTIK WHITE GLUE
PRODUCT NO.	803138
SUPPLIER	BOSTIK LIMITED COMMON ROAD STAFFORD STAFFORDSHIRE ST16 3EH +44 1785 272625 +44 1785 272650 (24 HOUR) sds.uk@bostik.com

2 HAZARDS IDENTIFICATION

Not regarded as a health or environmental hazard under current legislation.

3 COMPOSITION/INFORMATION ON INGREDIENTS

COMPOSITION COMMENTS

No hazardous materials present as defined by Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 (CHIP 3)

4 FIRST-AID MEASURES

GENERAL INFORMATION

General first aid, rest, warmth and fresh air.

INHALATION

Move the exposed person to fresh air at once. Get medical attention if any discomfort continues.

INGESTION

Do not induce vomiting. Get medical attention if any discomfort continues.

SKIN CONTACT

Remove affected person from source of contamination. Rinse the skin immediately with lots of water. Get medical attention if irritation persists after washing.

EYE CONTACT

Rinse the eye with water immediately. Continue to rinse for at least 15 minutes and get medical attention.

5 FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA

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

SPECIFIC HAZARDS

Fire or high temperatures create: Toxic gases/vapours/fumes of: Carbon dioxide (CO₂). Carbon monoxide (CO).

PROTECTIVE MEASURES IN FIRE

Wear self contained breathing apparatus

6 ACCIDENTAL RELEASE MEASURES

SPILL CLEAN UP METHODS

Non-hazardous substance. No specific clean-up procedure noted.

7 HANDLING AND STORAGE

USAGE PRECAUTIONS

Young children should be supervised when using this product and consideration of possible contact with young children should be given when using this product.

BOSTIK WHITE GLUE

STORAGE PRECAUTIONS

Store in tightly closed original container in a dry, cool and well-ventilated place. Keep in original container.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING MEASURES

All handling to take place in well-ventilated area.

HAND PROTECTION

N/A.

EYE PROTECTION

N/A.

OTHER PROTECTION

N/A.

HYGIENE MEASURES

Wash promptly if skin becomes wet or contaminated. Promptly remove any clothing that becomes contaminated. When using do not eat, drink or smoke. Wash at the end of each work shift and before eating, smoking and using the toilet. Use appropriate skin cream to prevent drying of skin. **DO NOT SMOKE IN WORK AREA!**

9 PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	Mobile Liquid		
COLOUR	White		
ODOUR	Sweetish		
SOLUBILITY	Soluble in water.		
RELATIVE DENSITY	1.1	VAPOUR PRESSURE	0.04 mmHg @ 21 °c
pH-VALUE, CONC. SOLUTION	3 - 5	FLASH POINT (°C)	> 100

10 STABILITY AND REACTIVITY

STABILITY

Stable under normal temperature conditions.

CONDITIONS TO AVOID

Avoid excessive heat for prolonged periods of time.

HAZARDOUS POLYMERISATION

Unknown.

MATERIALS TO AVOID

No incompatible groups noted.

HAZARDOUS DECOMPOSITION PRODUCTS

Fire creates: Carbon monoxide (CO). Carbon dioxide (CO₂).

11 TOXICOLOGICAL INFORMATION

HEALTH WARNINGS

Dust may irritate respiratory system. Serious long-term effects are not known to be related to this type of product.

Particles in the eyes may cause irritation and smarting. May cause discomfort if swallowed.

12 ECOLOGICAL INFORMATION

ECOTOXICITY

Not regarded as dangerous for the environment. However, contamination of the aquatic or terrestrial environments should be avoided

13 DISPOSAL CONSIDERATIONS

DISPOSAL METHODS

Dispose of waste and residues in accordance with local authority requirements. Recover and reclaim or recycle, if practical.

14 TRANSPORT INFORMATION

GENERAL

The product is not covered by international regulation on the transport of dangerous goods (IMDG, IATA, ADR/RID).

No transport warning sign required.

BOSTIK WHITE GLUE**15 REGULATORY INFORMATION**

RISK PHRASES

NC Not classified.

SAFETY PHRASES

S2 Keep out of the reach of children.
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

STATUTORY INSTRUMENTS

The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (S.I 2009 No. 716).

APPROVED CODE OF PRACTICE

Classification and Labelling of Substances and Preparations Dangerous for Supply.

GUIDANCE NOTES

Workplace Exposure Limits EH40. Introduction to Local Exhaust Ventilation HS(G)37. CHIP for everyone HSG(108).

16 OTHER INFORMATION

GENERAL INFORMATION

This product should be used as directed by Bostik Ltd. For further information consult the product data sheet or contact Technical Services.

INFORMATION SOURCES

This safety data sheet was compiled using current safety information supplied by distributor of raw materials.

REVISION COMMENTS

NOTE: Lines within the margin indicate significant changes from the previous revision. This safety data sheet supersedes all previous issues and users are cautioned to ensure that it is current. Destroy all previous data sheets and if in doubt contact Bostik Limited.

ISSUED BY

Approved LJ

REVISION DATE January 2011

REV. NO./REPL. SDS GENERATED 6

DATE June 2003

SAFETY DATA SHEET

Date of Preparation: 1/29/16

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6310055

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: 325 degrees F
EVAPORATION RATE: <1 (Ether=1)
WEIGHT PER GALLON: 7.91
VAPOR DENSITY: >1 (air=1)
pH LEVEL: N/E
PRODUCT APPEARANCE: Black Liquid
% VOLATILE BY VOLUME: N/E
% VOLATILE BY WEIGHT: N/E
VOC CONTENT: 240 g/L

SECTION 10: STABILITY/REACTIVITY

STABILITY: Stable.
HAZARDOUS POLYMERIZATION: Will not occur.
CONDITIONS AND MATERIALS TO AVOID: Oxidizing agents, strong acids, and strong alkalis.
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, oxides/compounds of nitrogen/sulfur and incomplete combustion products.

SECTION 11: TOXICOLOGICAL INFORMATION

EYE CONTACT: Direct contact may cause mild to moderate irritation. Product vapors/mists may also cause irritation.
SKIN CONTACT: Direct contact may cause slight skin irritation. Prolonged/repeated contact may result in irritation/dermatitis.
INHALATION: Exposure may cause irritation of the nose, throat, respiratory tract, and other mucous membranes. Exposure to excessive vapor concentrations may cause signs of transient central nervous system depression (headache, fatigue, drowsiness, dizziness, loss of coordination).
INGESTION: May result in irritation of the gastrointestinal tract. Ingestion of excessive quantities may result in symptoms of transient central nervous system depression as noted above.
SIGNS AND SYMPTOMS: Symptoms of eye irritation include tearing, reddening, and swelling. Symptoms of skin irritation include redness and swelling. Gastrointestinal irritation symptoms include nausea, vomiting, and abdominal discomfort. Symptoms of respiratory irritation include runny nose, sore throat, coughing, chest discomfort, shortness of breath, and reduced lung function. Symptoms of transient central nervous system depression include: headache, fatigue, drowsiness, dizziness, and loss of coordination.
AGGRAVATED MEDICAL CONDITIONS: Pre-existing skin, eye, and respiratory disorders may be aggravated by exposure to this product.
OTHER HEALTH EFFECTS: Some asphalts may possess weak carcinogenic activity. Occasional skin contact with petroleum asphalt is not expected to have serious health effects as long as good personal hygiene measures are followed.

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICITY: N/E
DEGRADABILITY: N/E
BIOACCUMULATIVE POTENTIAL: N/E
SOIL MOBILITY: N/E
OTHER ADVERSE EFFECTS: None Recognized

SECTION 13: WASTE DISPOSAL INFORMATION

WASTE DISPOSAL INFORMATION: Fuel blending/recycling facility. Product is a hazardous waste (D001).

SECTION 14: TRANSPORTATION INFORMATION

HAZARDOUS/NON-HAZARDOUS MATERIAL: Not regulated by DOT (Domestic Land Transportation).
UN NUMBER: None.
HAZARD CLASS: N/A
PACKING GROUP: N/A
UN PROPER SHIPPING NAME: N/A
ENVIRONMENTAL HAZARDS: None recognized.
BULK TRANSPORTATION INFORMATION: None.
SPECIAL PRECAUTIONS: None.

SECTION 15: REGULATORY INFORMATION

OTHER REGULATORY CONSIDERATIONS: None recognized.

SECTION 16: OTHER INFORMATION

PREPARATION DATE: 1/29/2016
PREPARED BY: Dave Carey

The information contained herein is based on the data available to us and is believed to be correct. However, we make no warranty, expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof. We assume no responsibility for injury from the use of this product described herein.

Safety Data Sheet



1. Identification

Product Name:	STRUST +SSPR 6PK GLOSS BLACK	Revision Date:	5/9/2017
Product Identifier:	7779830	Supersedes Date:	9/20/2016
Product Use/Class:	Topcoat/Aerosols		
Supplier:	Rust-Oleum Corporation 11 Hawthorn Parkway Vernon Hills, IL 60061 USA	Manufacturer:	Rust-Oleum Corporation 11 Hawthorn Parkway Vernon Hills, IL 60061 USA
Preparer:	Regulatory Department		
Emergency Telephone:	24 Hour Hotline: 847-367-7700		

2. Hazard Identification

Classification

Symbol(s) of Product



Signal Word

Danger

Possible Hazards

34% of the mixture consists of ingredient(s) of unknown acute toxicity.

GHS HAZARD STATEMENTS

Carcinogenicity, category 1B	H350	May cause cancer.
Compressed Gas	H280	Contains gas under pressure; may explode if heated.
Eye Irritation, category 2	H319	Causes serious eye irritation.
Flammable Aerosol, category 1	H222	Extremely flammable aerosol.
Germ Cell Mutagenicity, category 1B	H340	May cause genetic defects.
STOT, repeated exposure, category 2	H373	May cause damage to organs through prolonged or repeated exposure.
STOT, single exposure, category 3, NE	H336	May cause drowsiness or dizziness.

GHS LABEL PRECAUTIONARY STATEMENTS

P201	Obtain special instructions before use.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P211	Do not spray on an open flame or other ignition source.
P251	Do not pierce or burn, even after use.
P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P264	Wash hands thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
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.

P312

Call a POISON CENTER or doctor/physician if you feel unwell.

P337+P313

If eye irritation persists: Get medical advice/attention.

P403+P233

Store in a well-ventilated place. Keep container tightly closed.

P405

Store locked up.

P410+P403

Protect from sunlight. Store in a well-ventilated place.

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 and national regulations.

3. Composition/Information On Ingredients

HAZARDOUS SUBSTANCES

<u>Chemical Name</u>	<u>CAS-No.</u>	<u>Wt.% Range</u>	<u>GHS Symbols</u>	<u>GHS Statements</u>
Acetone	67-64-1	25-50	GHS02-GHS07	H225-319-332-336
Propane	74-98-6	10-25	GHS04	H280
n-Butane	106-97-8	2.5-10	GHS04	H280
n-Butyl Acetate	123-86-4	2.5-10	GHS02-GHS07	H226-336
Barium Sulfate	7727-43-7	2.5-10	Not Available	Not Available
Xylenes (o-, m-, p- isomers)	1330-20-7	2.5-10	GHS02-GHS07	H226-315-319-332
Dimethyl Carbonate	616-38-6	2.5-10	GHS02	H225
Naphtha, Petroleum, Hydrotreated Light	64742-49-0	2.5-10	GHS08	H304
Carbon Black	1333-86-4	1.0-2.5	Not Available	Not Available
Propylene Glycol Monobutyl Ether	5131-66-8	1.0-2.5	GHS07	H302-315-319
Ethylbenzene	100-41-4	1.0-2.5	GHS02-GHS07-GHS08	H225-304-332-351-373
Naphtha, Hydrotreated Heavy	64742-48-9	0.1-1.0	GHS08	H304-340-350

4. First-aid Measures

FIRST AID - EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes holding eyelids open. Get medical attention. Do NOT allow rubbing of eyes or keeping eyes closed.

FIRST AID - SKIN CONTACT: Wash skin with soap and water. Remove contaminated clothing. Get medical attention if irritation develops or persists.

FIRST AID - INHALATION: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention. Do NOT use mouth-to-mouth resuscitation. If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, get medical assistance immediately.

FIRST AID - INGESTION: Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. Get immediate medical attention. If swallowed, get medical attention.

5. Fire-fighting Measures

EXTINGUISHING MEDIA: Alcohol Film Forming Foam, Carbon Dioxide, Dry Chemical, Dry Sand, Water Fog

UNUSUAL FIRE AND EXPLOSION HAZARDS: FLASH POINT IS LESS THAN 20°F. EXTREMELY FLAMMABLE LIQUID AND VAPOR! Water spray may be ineffective. Closed containers may explode when exposed to extreme heat due to buildup of steam. Closed containers may explode when exposed to extreme heat. Vapors may form explosive mixtures with air. Vapors can travel to a source of ignition and flash back. Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Perforation of the pressurized container may cause bursting of the can. No unusual fire or explosion hazards noted.

SPECIAL FIREFIGHTING PROCEDURES: Water may be used to cool closed containers to prevent pressure buildup and possible autoignition or explosion. Full protective equipment including self-contained breathing apparatus should be used. Evacuate area and fight fire from a safe distance. Use water spray to keep fire-exposed containers cool. Containers may explode when heated.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Contain spilled liquid with sand or earth. DO NOT use combustible materials such as sawdust. Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Remove all sources of ignition, ventilate area and remove with inert absorbent and non-sparking tools. Dispose of according to local, state (provincial) and federal regulations. Do not incinerate closed containers. Ventilate area, isolate spilled material, and remove with inert absorbent. Dispose of contaminated absorbent, container, and unused contents in accordance with local, state, and federal regulations.

7. Handling and Storage

HANDLING: Wash thoroughly after handling. Wash hands before eating. Remove contaminated clothing and launder before reuse. Use only in a well-ventilated area. Use only with adequate ventilation. Follow all MSDS/label precautions even after container is emptied because it may retain product residues. Avoid breathing fumes, vapors, or mist. Avoid contact with eyes, skin and clothing.

STORAGE: Store in a dry, well ventilated place. Keep container tightly closed when not in use. Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Contents under pressure. Do not store above 120 ° F. Store large quantities in buildings designed and protected for storage of flammable aerosols. Keep away from heat, sparks, flame and sources of ignition. Contents under pressure. Do not expose to heat or store above 120 ° F. Avoid excess heat. Product should be stored in tightly sealed containers and protected from heat, moisture, and foreign materials.

8. Exposure Controls/Personal Protection

Chemical Name	CAS-No.	Weight % Less Than	ACGIH TLV- TWA	ACGIH TLV- STEL	OSHA PEL-TWA	OSHA PEL- CEILING
Acetone	67-64-1	30.0	250 ppm	500 ppm	1000 ppm	N.E.
Propane	74-98-6	20.0	N.E.	N.E.	1000 ppm	N.E.
n-Butane	106-97-8	10.0	N.E.	1000 ppm	N.E.	N.E.
n-Butyl Acetate	123-86-4	10.0	50 ppm	150 ppm	150 ppm	N.E.
Barium Sulfate	7727-43-7	10.0	5 mg/m3	N.E.	15 mg/m3	N.E.
Xylenes (o-, m-, p- isomers)	1330-20-7	10.0	100 ppm	150 ppm	100 ppm	N.E.
Dimethyl Carbonate	616-38-6	5.0	N.E.	N.E.	N.E.	N.E.
Naphtha, Petroleum, Hydrotreated Light	64742-49-0	5.0	N.E.	N.E.	N.E.	N.E.
Carbon Black	1333-86-4	5.0	3 mg/m3	N.E.	3.5 mg/m3	N.E.
Propylene Glycol Monobutyl Ether	5131-66-8	5.0	N.E.	N.E.	N.E.	N.E.
Ethylbenzene	100-41-4	5.0	20 ppm	N.E.	100 ppm	N.E.
Naphtha, Hydrotreated Heavy	64742-48-9	1.0	N.E.	N.E.	N.E.	N.E.

PERSONAL PROTECTION

ENGINEERING CONTROLS: Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof ventilation equipment. Provide general dilution of local exhaust ventilation in volume and pattern to keep TLV of hazardous ingredients below acceptable limits. Prevent build-up of vapors by opening all doors and windows to achieve cross-ventilation.

RESPIRATORY PROTECTION: A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use. A NIOSH/MSHA approved air purifying respirator with organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits.

SKIN PROTECTION: Use gloves to prevent prolonged skin contact. Use impervious gloves to prevent skin contact and absorption of this material through the skin. Nitrile or Neoprene gloves may afford adequate skin protection.

EYE PROTECTION: Use safety eyewear designed to protect against splash of liquids.

OTHER PROTECTIVE EQUIPMENT: Refer to safety supervisor or industrial hygienist for further guidance regarding types of personal protective equipment and their applications. Refer to safety supervisor or industrial hygienist for further information regarding personal protective equipment and its application.

HYGIENIC PRACTICES: Wash thoroughly with soap and water before eating, drinking or smoking. Remove contaminated clothing immediately and launder before reuse.

9. Physical and Chemical Properties

Appearance:	Aerosolized Mist	Physical State:	Liquid
Odor:	Solvent Like	Odor Threshold:	N.E.
Relative Density:	0.777	pH:	N.A.
Freeze Point, °C:	N.D.	Viscosity:	N.D.
Solubility in Water:	Slight	Partition Coefficient, n-octanol/ water:	N.D.
Decomposition Temp., °C:	N.D.	Explosive Limits, vol%:	0.9 - 13.0
Boiling Range, °C:	-37 - 232	Flash Point, °C:	-96
Flammability:	Supports Combustion	Auto-ignition Temp., °C:	N.D.
Evaporation Rate:	Faster than Ether	Vapor Pressure:	N.D.
Vapor Density:	Heavier than Air		

(See "Other information" Section for abbreviation legend)

10. Stability and Reactivity

CONDITIONS TO AVOID: Avoid temperatures above 120°F (49°C). Avoid contact with strong acid and strong bases. Avoid all possible sources of ignition.

INCOMPATIBILITY: Incompatible with strong oxidizing agents, strong acids and strong alkalies.

HAZARDOUS DECOMPOSITION: By open flame, carbon monoxide and carbon dioxide. When heated to decomposition, it emits acrid smoke and irritating fumes. Contains solvents which may form carbon monoxide, carbon dioxide, and formaldehyde.

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.

STABILITY: This product is stable under normal storage conditions.

11. Toxicological information

EFFECTS OF OVEREXPOSURE - EYE CONTACT: Causes Serious Eye Irritation

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: Substance may cause slight skin irritation. May cause skin irritation. Allergic reactions are possible. Prolonged or repeated contact may cause skin irritation.

EFFECTS OF OVEREXPOSURE - INHALATION: Harmful if inhaled. High gas, vapor, mist or dust concentrations may be harmful if inhaled. Avoid breathing fumes, spray, vapors, or mist. High vapor concentrations are irritating to the eyes, nose, throat and lungs. Prolonged or excessive inhalation may cause respiratory tract irritation.

EFFECTS OF OVEREXPOSURE - INGESTION: Harmful if swallowed. Aspiration hazard if swallowed; can enter lungs and cause damage.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion, and blurred vision) and/or damage. High concentrations may lead to central nervous system effects (drowsiness, dizziness, nausea, headaches, paralysis, and blurred vision) and/or damage. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Overexposure to xylene in laboratory animals has been associated with liver abnormalities, kidney, lung, spleen, eye and blood damage as well as reproductive disorders. Effects in humans, due to chronic overexposure, have included liver, cardiac abnormalities and nervous system damage. Contains carbon black. Chronic inflammation, lung fibrosis, and lung tumors have been observed in some rats experimentally exposed for long periods of time to excessive concentrations of carbon black and several insoluble fine dust particles. Tumors have not been observed in other animal species (i.e., mouse and hamster) under similar circumstances and study conditions. Epidemiological studies of North American workers show no evidence of clinically significant adverse health effects due to occupational exposure to carbon black.

Carbon black is listed as a Group 2B-"Possibly carcinogenic to humans" by IARC and is proposed to be listed as A4- "not classified as a human carcinogen" by the American Conference of Governmental Industrial Hygienists. Significant exposure is not anticipated during brush application or drying. Risk of overexposure depends on duration and level of exposure to dust from repeated sanding of surfaces or spray mist and the actual concentration of carbon black in the formula. IARC lists Ethylbenzene as a possible human carcinogen (group 2B).

PRIMARY ROUTE(S) OF ENTRY: Eye Contact, Ingestion, Inhalation, Skin Absorption, Skin Contact

ACUTE TOXICITY VALUES

The acute effects of this product have not been tested. Data on individual components are tabulated below:

<u>CAS-No.</u>	<u>Chemical Name</u>	<u>Oral LD50</u>	<u>Dermal LD50</u>	<u>Vapor LC50</u>
67-64-1	Acetone	5800 mg/kg Rat	>15700 mg/kg Rabbit	50.1 mg/L Rat
74-98-6	Propane	N.I.	N.I.	658 mg/L Rat

106-97-8	n-Butane	N.I.	N.I.	658 mg/L Rat
123-86-4	n-Butyl Acetate	10768 mg/kg Rat	>17600 mg/kg Rabbit	> 21 mg/L Rat
1330-20-7	Xylenes (o-, m-, p- isomers)	3500 mg/kg Rat	>4350 mg/kg Rabbit	29.08 mg/L Rat
616-38-6	Dimethyl Carbonate	13000 mg/kg Rat	>5000 mg/kg Rabbit	140 mg/L Rat
64742-49-0	Naphtha, Petroleum, Hydrotreated Light	>5000 mg/kg Rat	>3160 mg/kg Rabbit	>4951 mg/L Rat
1333-86-4	Carbon Black	>15400 mg/kg Rat	N.I.	N.I.
5131-66-8	Propylene Glycol Monobutyl Ether	1900 mg/kg Rat	N.I.	N.I.
100-41-4	Ethylbenzene	3500 mg/kg Rat	15400 mg/kg Rabbit	17.4 mg/L Rat
64742-48-9	Naphtha, Hydrotreated Heavy	>5000 mg/kg Rat	>3160 mg/kg Rabbit	N.I.

N.I. - No Information

12. Ecological Information

ECOLOGICAL INFORMATION: Product is a mixture of listed components. Product is a mixture of listed components.

13. Disposal Information

DISPOSAL INFORMATION: Dispose of material in accordance to local, state, and federal regulations and ordinances. Do not allow to enter waterways, wastewater, soil, storm drains or sewer systems.

14. Transport Information

	<u>Domestic (USDOT)</u>	<u>International (IMDG)</u>	<u>Air (IATA)</u>	<u>TDG (Canada)</u>
UN Number:	N.A.	1950	1950	N.A.
Proper Shipping Name:	Paint Products in Limited Quantities	Aerosols	Aerosols	Paint Products in Limited Quantities
Hazard Class:	N.A.	2.1	2.1	N.A.
Packing Group:	N.A.	N.A.	N.A.	N.A.
Limited Quantity:	Yes	Yes	Yes	Yes

15. Regulatory Information

U.S. Federal Regulations:

CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Fire Hazard, Pressure Hazard, Acute Health Hazard, Chronic Health Hazard

Sara Section 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

<u>Chemical Name</u>	<u>CAS-No.</u>
Xylenes (o-, m-, p- isomers)	1330-20-7
Dimethyl Carbonate	616-38-6
Ethylbenzene	100-41-4

Toxic Substances Control Act:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(b) if exported from the United States:

No TSCA 12(b) components exist in this product.

16. Other Information**HMIS RATINGS**

Health: 2* Flammability: 4 Physical Hazard: 0 Personal Protection: X

NFPA RATINGS

Health: 2 Flammability: 4 Instability: 0

VOLATILE ORGANIC COMPOUNDS, g/L: 530

SDS REVISION DATE: 5/9/2017

REASON FOR REVISION: Regulatory Formula Source Changed
Product Composition Changed
Substance and/or Product Properties Changed in Section(s):
02 - Hazard Identification
09 - Physical & Chemical Properties
16 - Other Information
Statement(s) Changed

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

Rust-Oleum Corporation believes, to the best of its knowledge, information and belief, the information contained herein to be accurate and reliable as of the date of this safety data sheet. However, because the conditions of handling, use, and storage of these materials are beyond our control, we assume no responsibility or liability for personal injury or property damage incurred by the use of these materials. Rust-Oleum Corporation makes no warranty, expressed or implied, regarding the accuracy or reliability of the data or results obtained from their use. All materials may present unknown hazards and should be used with caution. The information and recommendations in this material safety data sheet are offered for the users' consideration and examination. It is the responsibility of the user to determine the final suitability of this information and to comply with all applicable international, federal, state, and local laws and regulations.

SAFETY DATA SHEET

1. Identification

Material name: VULKEM 116 LV GRAY 30 CTG/CS

Material: 426712L 323

Recommended use and restriction on use

Recommended use: Sealant

Restrictions on use: Not known.

Manufacturer/Importer/Supplier/Distributor Information

Tremco U.S Sealants

3735 Green Road

Beachwood OH 44122

US

Contact person:

EH&S Department

Telephone:

216-292-5000

Emergency telephone number:

1-800-424-9300 (US); 1-613-996-6666 (Canada)

2. Hazard(s) identification

Hazard Classification

Health Hazards

Respiratory sensitizer	Category 1
Skin sensitizer	Category 1
Germ Cell Mutagenicity	Category 1B
Carcinogenicity	Category 1A

Unknown toxicity - Health

Acute toxicity, oral	34.06 %
Acute toxicity, dermal	41.27 %
Acute toxicity, inhalation, vapor	97.73 %
Acute toxicity, inhalation, dust or mist	99.12 %

Environmental Hazards

Acute hazards to the aquatic environment	Category 2
--	------------

Unknown toxicity - Environment

Acute hazards to the aquatic environment	78.43 %
Chronic hazards to the aquatic environment	100 %

Label Elements

Hazard Symbol:



Signal Word: Danger

Hazard Statement: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.
May cause genetic defects.
May cause cancer.
Toxic to aquatic life.

Precautionary Statement:

Prevention: Avoid breathing dust/fume/gas/mist/vapors/spray. [In case of inadequate ventilation] wear respiratory protection. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Avoid release to the environment.

Response: If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER/doctor. IF ON SKIN: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. If exposed or concerned: Get medical advice/attention. Specific treatment (see this label). Wash contaminated clothing before reuse.

Storage: Store locked up.

Disposal: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards which do not result in GHS classification: None.

3. Composition/information on ingredients

Mixtures

Chemical Identity	CAS number	Content in percent (%)*
Calcium Carbonate (Limestone)	1317-65-3	10 - 30%
Titanium dioxide	13463-67-7	3 - 7%
Polyethylene	9002-88-4	3 - 7%
Heavy aromatic naphtha	64742-94-5	1 - 5%
Aromatic petroleum distillates	64742-95-6	0.5 - 1.5%
1,2,4-Trimethylbenzene	95-63-6	0.5 - 1.5%
4,4'-Methylene bis(phenylisocyanate)	101-68-8	0.5 - 1.5%

Aluminum oxide	1344-28-1	0.1 - 1%
Polymethylene polyphenyl isocyanate	9016-87-9	0.1 - 1%
1,3,5-Trimethylbenzene	108-67-8	0.1 - 1%
Crystalline Silica (Quartz)/ Silica Sand	14808-60-7	0.1 - 1%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

- Ingestion:** Call a POISON CENTER/doctor/.../if you feel unwell. Rinse mouth.
- Inhalation:** Call a physician or poison control center immediately. If breathing stops, provide artificial respiration. Move to fresh air. If breathing is difficult, give oxygen.
- Skin Contact:** If skin irritation occurs: Get medical advice/attention. Destroy or thoroughly clean contaminated shoes. Immediately remove contaminated clothing and shoes and wash skin with soap and plenty of water. If skin irritation or an allergic skin reaction develops, get medical attention.
- Eye contact:** Any material that contacts the eye should be washed out immediately with water. If easy to do, remove contact lenses. If eye irritation persists: Get medical advice/attention.

Most important symptoms/effects, acute and delayed

Symptoms: May cause skin and eye irritation.

Indication of immediate medical attention and special treatment needed

Treatment: Symptoms may be delayed.

5. Fire-fighting measures

General Fire Hazards: No unusual fire or explosion hazards noted.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Use fire-extinguishing media appropriate for surrounding materials.

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

Special fire fighting procedures: No data available.

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

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: Ventilate closed spaces before entering them. Evacuate area. See Section 8 of the SDS for Personal Protective Equipment. Keep upwind. Keep unauthorized personnel away. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Methods and material for containment and cleaning up: Collect spillage in containers, seal securely and deliver for disposal according to local regulations.

Notification Procedures: In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

Environmental Precautions: Avoid release to the environment. Prevent further leakage or spillage if safe to do so.

7. Handling and storage

Precautions for safe handling: Do not handle until all safety precautions have been read and understood. Obtain special instructions before use. Use personal protective equipment as required. Do not breathe dust/fume/gas/mist/vapors/spray. Avoid contact with eyes, skin, and clothing. Wash hands thoroughly after handling. Ventilate well, avoid breathing vapors. Use approved respirator if air contamination is above accepted level. Use mechanical ventilation in case of handling which causes formation of dust.

Conditions for safe storage, including any incompatibilities: Store locked up.

8. Exposure controls/personal protection

Control Parameters

Occupational Exposure Limits

Chemical Identity	type	Exposure Limit Values	Source
Calcium Carbonate (Limestone) - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Calcium Carbonate (Limestone) - Respirable fraction.	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Titanium dioxide	TWA	10 mg/m3	US. ACGIH Threshold Limit Values (2011)
Titanium dioxide - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Polyethylene - Inhalable particles.	TWA	10 mg/m3	US. ACGIH Threshold Limit Values (03 2015)
Polyethylene -	TWA	3 mg/m3	US. ACGIH Threshold Limit Values

Respirable particles.			(03 2015)
Polyethylene - Respirable fraction.	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Polyethylene - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	TWA	15 mg/m3	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
	TWA	50 millions of particles per cubic foot of air	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
Polyethylene - Respirable fraction.	TWA	5 mg/m3	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
	TWA	15 millions of particles per cubic foot of air	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
Heavy aromatic naphtha - Non-aerosol. - as total hydrocarbon vapor	TWA	200 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
Heavy aromatic naphtha	PEL	100 ppm 400 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
1,2,4-Trimethylbenzene	TWA	25 ppm	US. ACGIH Threshold Limit Values (2011)
4,4'-Methylene bis(phenylisocyanate)	TWA	0.005 ppm	US. ACGIH Threshold Limit Values (2011)
	Ceiling	0.02 ppm 0.2 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Aluminum oxide - Respirable fraction.	TWA	1 mg/m3	US. ACGIH Threshold Limit Values (2011)
	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Aluminum oxide - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Polymethylene polyphenyl isocyanate	TWA	0.005 ppm	US. ACGIH Threshold Limit Values (2011)
	Ceiling	0.02 ppm 0.2 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
1,3,5-Trimethylbenzene	TWA	25 ppm	US. ACGIH Threshold Limit Values (2011)
Crystalline Silica (Quartz)/ Silica Sand - Respirable fraction.	TWA	0.025 mg/m3	US. ACGIH Threshold Limit Values (2011)
Crystalline Silica (Quartz)/ Silica Sand - Respirable.	TWA	2.4 millions of particles per cubic foot of air	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)

	TWA	0.1 mg/m3	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
Crystalline Silica (Quartz)/ Silica Sand - Total dust.	TWA	0.3 mg/m3	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)

Chemical name	type	Exposure Limit Values	Source
Diisodecyl phthalate	TWAEV	5 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Calcium Carbonate (Limestone) - Total dust.	STEL	20 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)

Calcium Carbonate (Limestone) - Respirable fraction.	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Calcium Carbonate (Limestone) - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Titanium dioxide - Total dust.	TWA	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Titanium dioxide - Respirable fraction.	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Titanium dioxide	TWAEV	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Titanium dioxide - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Polyethylene - Respirable fraction.	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (05 2013)
Polyethylene - Total dust.	TWA	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (05 2013)
Polyethylene - Respirable particles.	TWAEV	3 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Polyethylene - Inhalable	TWAEV	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Polyethylene - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (11 2011)
Heavy aromatic naphtha - Non-aerosol. - as total hydrocarbon vapor	TWA	200 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (05 2013)
Heavy aromatic naphtha - Non-aerosol. - as total hydrocarbon vapor	TWAEV	200 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)

Heavy aromatic naphtha	TWA	400 ppm	1,590 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (11 2011)
1,2,4-Trimethylbenzene	TWA	25 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
1,2,4-Trimethylbenzene	TWAEV	25 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
1,2,4-Trimethylbenzene	TWA	25 ppm	123 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
4,4'-Methylene bis(phenylisocyanate)	CEILING	0.01 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.005 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
4,4'-Methylene bis(phenylisocyanate)	TWAEV	0.005 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	CEV	0.02 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
4,4'-Methylene bis(phenylisocyanate)	TWA	0.005 ppm	0.051 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Polymethylene polyphenyl isocyanate	TWA	0.005 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	CEILING	0.01 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.005 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	CEILING	0.01 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)

				as amended) (07 2007)
Polymethylene polyphenyl isocyanate	TWAEV	0.005 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	CEV	0.02 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Polymethylene polyphenyl isocyanate	TWA	0.005 ppm	0.051 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
1,3,5-Trimethylbenzene	TWA	25 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
1,3,5-Trimethylbenzene	TWAEV	25 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
1,3,5-Trimethylbenzene	TWA	25 ppm	123 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Crystalline Silica (Quartz)/ Silica Sand - Respirable fraction.	TWA		0.025 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Crystalline Silica (Quartz)/ Silica Sand - Respirable.	TWAEV		0.10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Crystalline Silica (Quartz)/ Silica Sand - Respirable dust.	TWA		0.1 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)

Appropriate Engineering Controls Mechanical ventilation or local exhaust ventilation may be required. Observe good industrial hygiene practices. Observe occupational exposure limits and minimize the risk of inhalation of dust.

Individual protection measures, such as personal protective equipment

General information: Use personal protective equipment as required.

Eye/face protection: Wear goggles/face shield.

Skin Protection

Hand Protection: Use suitable protective gloves if risk of skin contact.

Other: Wear chemical-resistant gloves, footwear, and protective clothing appropriate for the risk of exposure. Contact health and safety professional or manufacturer for specific information.

Respiratory Protection: 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. Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information.

Hygiene measures: Observe good industrial hygiene practices. Wash hands before breaks and immediately after handling the product. Contaminated work clothing should not be allowed out of the workplace. Avoid contact with skin.

9. Physical and chemical properties

Appearance

Physical state: solid

Form: Paste

Color: Gray

Odor: Mild

Odor threshold: No data available.

pH: No data available.

Melting point/freezing point: No data available.

Initial boiling point and boiling range: No data available.

Flash Point: 99 °C 210 °F(ISO 3679 (seta closed))

Evaporation rate: Slower than n-Butyl Acetate

Flammability (solid, gas): No

Upper/lower limit on flammability or explosive limits

Flammability limit - upper (%): No data available.

Flammability limit - lower (%): No data available.

Explosive limit - upper (%): No data available.

Explosive limit - lower (%): No data available.

Vapor pressure: No data available.

Vapor density: Vapors are heavier than air and may travel along the floor and in the bottom of containers.

Relative density: 1.16

Solubility(ies)

Solubility in water: Insoluble in water

Solubility (other): No data available.

Partition coefficient (n-octanol/water): No data available.

Auto-ignition temperature: No data available.

Decomposition temperature: No data available.

Viscosity: No data available.

10. Stability and reactivity

Reactivity: No data available.

Chemical Stability:	Material is stable under normal conditions.
Possibility of hazardous reactions:	No data available.
Conditions to avoid:	Avoid heat or contamination.
Incompatible Materials:	Alcohols. Amines. Strong acids. Avoid contact with oxidizing agents (e.g. nitric acid, peroxides and chromates). Strong bases. Water, moisture.
Hazardous Decomposition Products:	Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapors.

11. Toxicological information

Information on likely routes of exposure

Ingestion:	May be ingested by accident. Ingestion may cause irritation and malaise.
Inhalation:	In high concentrations, vapors, fumes or mists may irritate nose, throat and mucus membranes.
Skin Contact:	Causes mild skin irritation. May cause an allergic skin reaction.
Eye contact:	Eye contact is possible and should be avoided.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral Product:	ATEmix: 11,435.4 mg/kg
Dermal Product:	ATEmix: 21,029.43 mg/kg
Inhalation Product:	No data available.

Repeated dose toxicity Product:	No data available.
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Skin Corrosion/Irritation Product:	No data available.
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Specified substance(s): Titanium dioxide	in vivo (Rabbit): Experimental result, Supporting study
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Heavy aromatic naphtha	in vivo (Rabbit): Experimental result, Key study
Aromatic petroleum distillates	in vivo (Rabbit): Experimental result, Key study
1,2,4-Trimethylbenzene	in vivo (Rabbit): Read-across from supporting substance (structural analogue or surrogate), Key study
4,4'-Methylene bis(phenylisocyanate)	in vivo (Rabbit): Read-across based on grouping of substances (category approach), Key study
Aluminum oxide	in vivo (Rabbit): Experimental result, Key study
1,3,5-Trimethylbenzene	in vivo (Rabbit): Experimental result, Key study

Serious Eye Damage/Eye Irritation**Product:** No data available.**Specified substance(s):**

Titanium dioxide	in vivo (Rabbit, 24 hrs): Not irritating
Heavy aromatic naphtha	in vivo (Rabbit, 24 - 72 hrs): Not irritating
Aromatic petroleum distillates	in vivo (Rabbit, 24 - 72 hrs): Not irritating
1,2,4-Trimethylbenzene	in vivo (Rabbit, 30 min): Not irritating
4,4'-Methylene bis(phenylisocyanate)	in vivo (Rabbit, 24 - 72 hrs): Not irritating
Aluminum oxide	in vivo (Rabbit, 24 hrs): Not irritating

Respiratory or Skin Sensitization**Product:** May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause sensitization by inhalation.**Carcinogenicity****Product:** No data available.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

Titanium dioxide	Overall evaluation: Possibly carcinogenic to humans.
Crystalline Silica (Quartz)/ Silica Sand	Overall evaluation: Carcinogenic to humans.

US. National Toxicology Program (NTP) Report on Carcinogens:

Crystalline Silica (Quartz)/ Silica Sand	Known To Be Human Carcinogen.
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US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

No carcinogenic components identified

Germ Cell Mutagenicity

In vitro
Product: No data available.

In vivo
Product: No data available.

Reproductive toxicity
Product: No data available.

Specific Target Organ Toxicity - Single Exposure
Product: No data available.

Specific Target Organ Toxicity - Repeated Exposure
Product: No data available.

Aspiration Hazard
Product: No data available.

Other effects: No data available.

12. Ecological information

Ecotoxicity:

Acute hazards to the aquatic environment:

Fish
Product: No data available.

Specified substance(s):

1,2,4-Trimethylbenzene LC 50 (Fathead minnow (*Pimephales promelas*), 96 h): 7.19 - 8.28 mg/l Mortality

1,3,5-Trimethylbenzene LC 50 (Goldfish (*Carassius auratus*), 96 h): 9.89 - 15.05 mg/l Mortality

Aquatic Invertebrates

Product: No data available.

Specified substance(s):

1,2,4-Trimethylbenzene LC 50 (Scud (*Elasmopus pectinicus*), 24 h): 4.89 - 5.62 mg/l Mortality

1,3,5-Trimethylbenzene EC 50 (Water flea (*Daphnia magna*), 24 h): 50 mg/l Intoxication

Chronic hazards to the aquatic environment:

Fish

Product: No data available.

Specified substance(s):

Titanium dioxide ED 0 (*Phoxinus phoxinus*, 30 d): \geq 1,000 mg/l Experimental result, Supporting study
LC 10 (*Oncorhynchus mykiss*, 28 d): 0.981 mg/l Read-across from supporting substance (structural analogue or surrogate), Supporting study
LC 50 (*Oncorhynchus mykiss*, 28 d): 7.31 mg/l Read-across from supporting substance (structural analogue or surrogate), Supporting study
LC 1 (*Oncorhynchus mykiss*, 28 d): 0.191 mg/l Read-across from supporting substance (structural analogue or surrogate), Supporting study
LC 0 (*Coregonus autumnalis migratorius* G., 30 d): 3 mg/l Experimental result, Supporting study

Heavy aromatic naphtha NOAEL (*Oncorhynchus mykiss*, 28 d): 0.098 mg/l QSAR QSAR, Key study

Aromatic petroleum distillates LL 50 (*Pimephales promelas*, 14 d): 5.2 mg/l Experimental result, Supporting study
EC 50 (*Daphnia magna*, 21 d): 10 mg/l Other, Key study
NOAEL (*Pimephales promelas*, 14 d): 2.6 mg/l Experimental result, Supporting study
NOAEL (*Daphnia magna*, 21 d): 2.6 mg/l Other, Key study

Aluminum oxide NOAEL (*Pimephales promelas*, 28 d): 4.7 mg/l Experimental result, Weight of Evidence study
IC 25 (*Pimephales promelas*, 7 d): 11.59 mg/l Experimental result, Weight of Evidence study
LOAEL (*Salvelinus fontinalis*, 60 d): 0.35 mg/l Experimental result, Weight of Evidence study
NOAEL (*Pimephales promelas*, 7 d): 0.4 mg/l Read-across based on grouping of substances (category approach), Weight of Evidence study
NOAEL (*Pimephales promelas*, 7 d): \geq 0.831 mg/l Experimental result, Weight of Evidence study

Aquatic Invertebrates

Product: No data available.

Toxicity to Aquatic Plants

Product: No data available.

Persistence and Degradability

Biodegradation

Product: No data available.

BOD/COD Ratio

Product: No data available.

Bioaccumulative Potential

Bioconcentration Factor (BCF)

Product: No data available.

Partition Coefficient n-octanol / water (log K_{ow})

Product: No data available.

Mobility in Soil: No data available.

Other Adverse Effects: Toxic to aquatic organisms.

13. Disposal considerations

Disposal instructions: Dispose of waste at an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Contaminated Packaging: No data available.

14. Transport information

TDG:

Not Regulated

CFR / DOT:

Not Regulated

IMDG:

Not Regulated

15. Regulatory information

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

<u>Chemical Identity</u>	<u>Reportable quantity</u>
P-chlorobenzotrifluoride	De minimis concentration: 1.0% One-Time Export Notification only.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

<u>Chemical Identity</u>	<u>Reportable quantity</u>
4,4'-Methylene bis(phenylisocyanate)	5000 lbs.
Polymethylene polyphenyl isocyanate	5000 lbs.
2,4-Toluene diisocyanate	100 lbs.
Cumene	5000 lbs.
Xylene	100 lbs.
Toluene-2,6-Diisocyanate	100 lbs.
Ethylbenzene	1000 lbs.
Chromium	5000 lbs.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Delayed (Chronic) Health Hazard
Immediate (Acute) Health Hazards

SARA 302 Extremely Hazardous Substance

<u>Chemical Identity</u>	<u>Reportable quantity</u>	<u>Threshold Planning Quantity</u>
2,4-Toluene diisocyanate	100 lbs.	500 lbs.
Toluene-2,6-Diisocyanate	100 lbs.	100 lbs.

SARA 304 Emergency Release Notification

<u>Chemical Identity</u>	<u>Reportable quantity</u>
Diisodecyl phthalate	
4,4'-Methylene bis(phenylisocyanate)	5000 lbs.
Polymethylene polyphenyl isocyanate	5000 lbs.
2,4-Toluene diisocyanate	100 lbs.
Cumene	5000 lbs.
Xylene	100 lbs.
Toluene-2,6-Diisocyanate	100 lbs.
Ethylbenzene	1000 lbs.
Chromium	5000 lbs.

SARA 311/312 Hazardous Chemical

<u>Chemical Identity</u>	<u>Threshold Planning Quantity</u>
2,4-Toluene diisocyanate	500lbs
Toluene-2,6-Diisocyanate	100lbs
Calcium Carbonate (Limestone)	500 lbs
Titanium dioxide	500 lbs
Polyethylene	500 lbs
Heavy aromatic naphtha	500 lbs
Aromatic petroleum distillates	500 lbs
1,2,4-Trimethylbenzene	500 lbs
4,4'-Methylene bis(phenylisocyanate)	500 lbs
Aluminum oxide	500 lbs
Polymethylene polyphenyl isocyanate	500 lbs
1,3,5-Trimethylbenzene	500 lbs
Crystalline Silica (Quartz)/ Silica Sand	500 lbs

SARA 313 (TRI Reporting)

None present or none present in regulated quantities.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

<u>Chemical Identity</u>	<u>Reportable quantity</u>
Xylene	100 lbs.

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

<u>Chemical Identity</u>	<u>Reportable quantity</u>
2,4-Toluene diisocyanate	10000 lbs
Toluene-2,6-Diisocyanate	10000 lbs

US State Regulations**US. California Proposition 65**

This product contains chemical(s) known to the State of California to cause cancer and/or to cause birth defects or other reproductive harm.

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

<u>Chemical Identity</u>
Calcium Carbonate (Limestone)
Titanium dioxide
P-chlorobenzotrifluoride
Heavy aromatic naphtha
Crystalline Silica (Quartz)/ Silica Sand

US. Massachusetts RTK - Substance List

Chemical Identity

Calcium Carbonate (Limestone)
Titanium dioxide
Heavy aromatic naphtha
Crystalline Silica (Quartz)/ Silica Sand
2,4-Toluene diisocyanate
Toluene-2,6-Diisocyanate

US. Pennsylvania RTK - Hazardous Substances

Chemical Identity

Diisodecyl phthalate
Calcium Carbonate (Limestone)
Titanium dioxide
Heavy aromatic naphtha

US. Rhode Island RTK

Chemical Identity

Diisodecyl phthalate

Other Regulations:

Regulatory VOC (less water and exempt solvent):	38 g/l
VOC Method 310:	1.72 %

Inventory Status:

Australia AICS:	One or more components in this product are not listed on or exempt from the Inventory.
Canada DSL Inventory List:	All components in this product are listed on or exempt from the Inventory.
EINECS, ELINCS or NLP:	One or more components in this product are not listed on or exempt from the Inventory.
Japan (ENCS) List:	One or more components in this product are not listed on or exempt from the Inventory.
China Inv. Existing Chemical Substances:	One or more components in this product are not listed on or exempt from the Inventory.
Korea Existing Chemicals Inv. (KECI):	One or more components in this product are not listed on or exempt from the Inventory.
Canada NDSL Inventory:	One or more components in this product are not listed on or exempt from the Inventory.
Philippines PICCS:	One or more components in this product are not listed on or exempt from the Inventory.

US TSCA Inventory:	All components in this product are listed on or exempt from the Inventory.
New Zealand Inventory of Chemicals:	One or more components in this product are not listed on or exempt from the Inventory.
Japan ISHL Listing:	One or more components in this product are not listed on or exempt from the Inventory.
Japan Pharmacopoeia Listing:	One or more components in this product are not listed on or exempt from the Inventory.

16. Other information, including date of preparation or last revision
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Revision Date:	03/30/2016
Version #:	1.0
Further Information:	No data available.
Disclaimer:	For Industrial Use Only. Keep out of Reach of Children. The hazard information herein is offered solely for the consideration of the user, subject to their own investigation of compliance with applicable regulations, including the safe use of the product under every foreseeable condition.



Safety Data Sheet

1 – Product Identifier & Identity for the Chemical

Manufacturer: WD-40 Company Australia Pty Ltd Address: 41 Rawson Street (Level 2, Suite 23) Epping NSW, 2121, Australia Telephone: Information: +61 2 9868 2200 Emergency only: 1800 024 973 Poisons Information Centre: Australia: 13 11 26 New Zealand: 0800 764 766 New Zealand Contact Details: Name: Eproducts New Zealand Limited Address: 7D Orbit Drive Albany New Zealand Telephone: Information: 09 916 6750	Product Name: WD-40 Aerosol Chemical Name: Mixture Product Use: Lubricant, Penetrant, Drives Out Moisture, Removes and Protects Surfaces From Corrosion Restriction on Use: None Identified SDS Date Of Preparation: 23 July 2015
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2 – Hazards Identification

Classification of the Hazardous Chemical (in accordance with WHS Regulation)

Health	Environmental	Physical
Aspiration Toxicity Category 1 Eye Irritant Category 2A Skin Irritant Category 2	Aquatic Acute Toxicity Category 3 Aquatic Chronic Toxicity Category 3	Flammable Aerosol Category 1 Gas Under Pressure: Compressed Gas

Label Elements



Contains: Naphtha (petroleum), hydrodesulfurized heavy; 1,2,4-Trimethyl benzene; 1,3,5-Trimethyl benzene; Xylene, Mixed Isomers; and Surfactant

Danger!

H222 Extremely flammable aerosol.
H280 Contains gas under pressure: may explode if heated.
H304 May be fatal if swallowed and enters airways.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H412 Harmful to aquatic life with long lasting effects.

Prevention

P210 Keep away from heat, sparks, open flames and 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.

P264 Wash thoroughly after handling.

P273 Avoid release to the environment.

P280 Wear protective gloves and eye protection.

Response

P302+P352 IF ON SKIN: Wash with plenty of soap and water.

P332+P313 If skin irritation occurs: Get medical attention.

P362 Take off contaminated clothing and wash it before reuse.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337+P313 If eye irritation persists: Get medical attention.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor or physician.

P331 Do NOT induce vomiting.

Storage

P410+P412 Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F.

P403+P235 Store in a well-ventilated place. Keep cool.

P405 Store locked up.

Disposal

P501 Dispose of contents and container in accordance with local and national regulations.

Other Hazards that do not Result in Classification: None

3 - Composition/Information on Ingredients

Ingredient	CAS #	Weight Percent	Substance Classification
Naphtha (petroleum), hydrodesulfurized heavy	64742-82-1	>60%	Flam. Liq. Cat 3 (H226) Asp. Tox. Cat 1 (H304)
Distillates, Hydrotreated Heavy Paraffinic (contains <3% DMSO)	64742-54-7	10-20%	Not Hazardous
Non-Hazardous Ingredients	Mixture	>10%	Not Hazardous
1,2,4-Trimethyl benzene	95-63-6	<10%	Flam. Liq. Cat 3 (H226) Acute Tox. Cat 4 (H332) Eye Irrit. Cat 2 (H319) Skin Irrit. Cat 2 (H315) STOT SE Cat 3 (H335) Aq. Chronic Cat 2 (H411)
1,3,5-Trimethyl benzene	108-67-8	<10%	Flam. Liq. Cat 3 (H226) STOT SE Cat 3 (H335) Aq. Chronic Cat 2 (H411)
Xylene, Mixed Isomers	1330-20-7	<10%	Flam. Liq. Cat 3 (H226) Acute Tox. Cat 4 (H312) Acute Tox. Cat 4 (H332) Skin Irrit. Cat 2 (H315)
Carbon Dioxide	124-38-9	2-4%	Not Hazardous
Surfactant	Proprietary	<1%	Eye Dam. Cat 1 (H318) Skin Irrit. Cat 2 (H315)

See Section 16 for full text of GHS Classification and H phrases

4 – First Aid Measures

Ingestion (Swallowed): Aspiration Hazard. DO NOT induce vomiting. Call a Poisons Information Center (phone 13 11 26 from anywhere in Australia or 0800 764 766 in New Zealand) 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.

Most Important Symptoms: May cause eye, skin, and respiratory irritation. Prolonged skin contact may cause drying of the skin. Inhalation may cause headache, dizziness, nausea and other symptoms of central nervous system depression. Accidental ingestion may cause gastrointestinal effects with irritation, nausea, vomiting, dizziness, coma and death. Aspiration into the lungs during ingestion or vomiting may cause lung damage.

Indication of Immediate Medical Attention and Special Treatment, if Needed: Immediate medical attention is required for ingestion.

5 – Fire Fighting Measures

Suitable 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.

Specific Hazards Arising from the Chemical: Extremely flammable aerosol. Contents under pressure. Keep away from ignition source and open fire. 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. A vapor and air mixture can create an explosion hazard in confined spaces.

Special Protective Equipment and Precautions for Fire-Fighters: Firefighters should always wear positive pressure self-contained breathing apparatus and full protective clothing. Use shielding to protect against bursting containers. Cool fire-exposed containers with water.

6 – Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures: Wear appropriate protective clothing (see Section 8). Eliminate all sources of ignition and ventilate area.

Environmental Precautions: Avoid releases to the environment. Report spills to authorities as required.

Methods and Materials for Containment/Cleanup: 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.

7 – Handling and Storage

Precautions for Safe Handling: Avoid contact with eyes and skin. Avoid breathing vapors or aerosols. Intentional misuse by deliberately concentrating vapors and inhaling can be harmful or fatal. 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.

Conditions for Safe Storage, including any incompatibilities: Store in a cool, dry ventilated area away from incompatible materials. Protect from physical damage. Do not store in direct sunlight, near open flames or above temperatures greater than 50°C.

8 – Exposure Controls /Personal Protection

Chemical	Occupational Exposure Limits	Biological Limit Value
Naphtha (petroleum), hydrodesulfurized heavy	350 mg/m ³ TWA (manufacturer recommended) 5 mg/m ³ TWA AU OEL (as oil mist, refined mineral) 5 mg/m ³ TWA, 10 mg/m ³ STEL NZ OEL (as oil mist, mineral) 5 mg/m ³ TWA ACGIH TLV (inhalable) (as mineral oil)	None Established
Distillates, Hydrotreated Heavy Paraffinic	5 mg/m ³ TWA AU OEL (as oil mist, refined mineral) 5 mg/m ³ TWA, 10 mg/m ³ STEL NZ OEL (as oil mist, mineral) 5 mg/m ³ TWA ACGIH TLV (inhalable) (as mineral oil)	None Established
Non-Hazardous Ingredients	None Established	None Established
1,2,4-Trimethyl benzene	25 ppm TWA ACGIH TLV/AU/NZ OEL (as Trimethyl benzene, all isomers)	None Established
1,3,5-Trimethyl benzene	25 ppm TWA ACGIH TLV/AU/NZ OEL (as Trimethyl benzene, all isomers)	None Established
Xylene, Mixed Isomers	80 ppm TWA, 150 ppm STEL AU OEL 50 ppm TWA NZ OEL 100 ppm TWA, 150 ppm STEL ACGIH TLV	Methylhippuric acids in urine, End of shift, 1.5 g/g creatinine.
Carbon Dioxide	5000 ppm TWA, 30000 ppm STEL ACGIH TLV/AU/NZ OEL	None Established
Surfactant	None Established	None Established

The Following Controls are Recommended for Normal Consumer Use of this Product

Appropriate Engineering Controls: Use in a well-ventilated area.

Personal Protection:

Eye Protection: Avoid eye contact. Always spray product away from your face.

Skin Protection: Avoid prolonged or repeated 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

Appropriate Engineering Controls: Use adequate general and local exhaust ventilation to maintain exposure levels below that occupational exposure limits.

Personal Protection:

Eye Protection: Safety goggles recommended where eye contact is possible.

Skin Protection: Wear chemical resistant gloves.

Respiratory Protection: None required if ventilation is adequate. If the occupational exposure limits are exceeded, wear an approved respirator. Respirator selection and use should be based on contaminant type, form and concentration. Follow applicable regulations and good Industrial Hygiene practice.

Work/Hygiene Practices: Eye wash facilities should be available. Wash hands after handling.

Other Protective Equipment: None required.

9 – Physical and Chemical Properties

Appearance and Odor:	Aerosol spray. Pleasant odor.	Partition Coefficient of n-octanol/water:	Not determined
Odor Threshold:	Not determined	Auto-ignition temperature:	Not determined
pH:	Not determined	Decomposition Temperature:	Not determined
Melting/Freezing Point:	Not applicable	Viscosity:	Not determined
Boiling Point / Range:	162-192°C (324-378°F) (Concentrate)	Specific Heat Value:	Not determined
Flash Point:	41-42°C (106-108°F) (Concentrate)	Particle Size:	Not applicable
Evaporation Rate (Butyl Acetate = 1):	Not determined	VOC:	49.5%
Flammability (solid, gas):	Not applicable	Percent Volatile:	78%
Flammable Limits:	LEL 0.7% UEL 7.0% (Concentrate)	Saturated Vapor Concentration:	Not determined
Vapor Pressure:	724 kPa @ 21°C (69.8°F)	Release of invisible flammable vapors and gases:	Yes
Vapor Density (air = 1):	>1	Aerosol Protection Level (NFA 30B):	3
Relative Density (Water = 1):	Not determined	Solubility:	Insoluble in water

10 – Stability and Reactivity

Reactivity: Non-reactive

Chemical Stability: Stable under normal storage conditions.

Possibility of Hazardous Reactions: Will not occur.

Conditions to Avoid: Avoid extreme heat, flames and other sources of ignition. Avoid physical damage to aerosol can.

Incompatible Materials: Strong oxidizers.

Hazardous Decomposition Products: Carbon monoxide and carbon dioxide.

11 – Toxicological Information

Health Hazards:

Ingestion: Swallowing is an unlikely route of exposure for an aerosol product. Swallowing large amounts may produce 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.

Eye Contact: Liquid sprayed into eyes may cause irritation. May cause redness, stinging, swelling, and tearing.

Skin Contact: May produce mild irritation. Prolonged and/or repeated contact may cause defatting with possible dermatitis.

Inhalation: Mist or vapor can irritate the throat and lungs. 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.

Chronic Exposure: None known.

Medical Conditions Aggravated by Exposure: Preexisting eye, skin and respiratory conditions may be aggravated by exposure.

Acute Toxicity Values:

Naphtha (petroleum), hydrodesulfurized heavy: Oral rat LD50- >5000 mg/kg; Skin rabbit LD50- >3160 mg/kg.

Distillates, Hydrotreated Heavy Paraffinic: Oral rat LD50->15 gm/kg

Non-Hazardous Ingredients: No toxicity data available

1, 2, 4-Trimethyl benzene: Oral rat LD50 3400-6000 mg/kg; Skin rabbit LD50 - >3160 mg/kg

1, 3, 5-Trimethyl benzene: Inhalation rat LC50- 24000 mg/m³/4hr
Xylene, Mixed Isomers: Oral rat LD50 – 4300 mg/kg; Inhalation rat LC50 – 6350 ppm/4hr; Skin rabbit LD50- 1700 mg/kg
Surfactant: Oral rat LD50->3000 mg/kg

Skin Corrosion/Irritation: No data available for mixture. Based on the ingredients, 1, 2, 4-Trimethyl benzene and Xylene, this product is classified as a skin irritant.

Serious Eye Damage/Irritation: No data available for mixture. Based on the ingredients, 1, 2, 4-Trimethyl benzene and Surfactant, this product is classified as an eye irritant.

Respiratory or Skin Sensitization: This product is not expected to cause sensitization.

Germ Cell Mutagenicity: None of the components have been found to be mutagenic.

Carcinogenicity: None of the components are listed as a carcinogen or suspected carcinogen by IARC, NTP, ACGIH, US OSHA or the EU CLP.

Reproductive Toxicity: None of the components are known to cause adverse reproductive effects.

Specific Target Organ Toxicity:

Single Exposure: No data available.

Repeated Exposure: No data available.

Aspiration Hazard: No data available. Based on the ingredients, this product is expected to present an aspiration hazard and may be harmful if the contents are swallowed.

12 – Ecological Information

Ecotoxicity:

Naphtha (petroleum), hydrodesulfurized heavy: 96 hr LC50 Fathead minnow – 8.2 mg/L; 96 hr LC50 Crangon Crangon – 4.3 mg/L

1, 2, 4-Trimethyl benzene: 96 hr LC50 Fathead minnows – 7.72 mg/L; 48 hr EC50 Daphnia magna – 6.14 mg/L

1, 3, 5-Trimethyl benzene: 96 hr LC50 Goldfish - 12.52 mg/L; 48 hr LC50 Daphnia magna- 6.0 mg/L

Xylene, Mixed Isomers: 96 hr LC50 Goldfish- 36.81 mg/L; 96 hr LC50 Rainbow trout – 13.5 mg/L

This product has been classified as harmful to the aquatic environment with long lasting effects based on the components. Releases to the environment should be avoided.

Persistence and Degradability: No data available.

Bioaccumulative Potential: No data available.

Mobility in Soil: No data available.

Other Adverse Effects: None Known

13 - Disposal Considerations

Safe Handling and Disposal Method: Aerosol containers should not be punctured, compacted in home trash compactors or incinerated.

Disposal of Contaminated Packaging: Empty containers may be disposed of through normal waste management options.

Environmental Regulations: Dispose of all waste product, absorbents, and other materials in accordance with applicable Federal, state and local regulations.

14 – Transportation Information

IMDG Shipping Name: Aerosols

IMDG Hazard Class: 2.1

UN Number: UN1950

Marine Pollutant: No

IATA Shipping Name: Aerosols, Flammable

IATA Hazard Class: 2.1

UN Number: UN1950

ADG Shipping Name: Aerosols

ADG Hazard Class: 2.1

UN Number: UN1950

Hazchem (Emergency Action) Code: 2YE

Special Precautions for User: WD-40 Company 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.

15 – Regulatory Information

Montreal Protocol (Ozone Depleting Substances): None present

The Stockholm Convention (Persistent Organic Pollutants): None present

The Rotterdam Convention (Prior Informed Consent): Not applicable

Basel Convention: Not applicable

International Convention for the Prevention of Pollution from Ships (MARPOL): 1, 2, 4-Trimethyl benzene and 1, 3, 5-Trimethyl benzene are listed.

Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP): Not applicable

Australian Inventory of Chemical Substances: All of the components of this product are listed on the AICS inventory.

New Zealand:

HSNO Approval Number: HSR002515

Considered a Hazardous Substance according to the criteria of the New Zealand Hazardous Substances New Organisms legislation. Classified as Dangerous Good for transport purposes.

HSNO Hazard Classes: 2.1.2A, 6.1E, 6.3A, 6.4A, 9.1C, 9.1D

New Zealand Inventory: All the ingredients comply with the HSNO regulations.

16 – Other Information

REVISION DATE: 23 July 2015

SUPERSEDES: 11 July 2014

Prepared By: Industrial Health & Safety Consultants, Inc.

Full Text of GHS Classification and H Phrases from Section 3:

Acute Tox. Cat 4 Acute Toxicity Category 4

Aq. Chronic Cat 2 Aquatic Chronic Toxicity Category 2

Asp. Tox. Cat 1 Aspiration Toxicity Category 1

Eye Dam. Cat 1 Eye Damage Category 1

Eye Irrit. Cat 2 Eye Irritant Category 2

Flam. Liq. Cat 3 Flammable Liquid Category 3

Skin Irrit. Cat 2 Skin Irritant Category 2

STOT SE Cat 3 Specific Target Organ Toxicity Single Exposure Category 3

H226 Flammable liquid and vapor.

H304 May be fatal if swallowed and enters airways.

H312 Harmful in contact with skin.

H315 Causes skin irritation.

H318 Causes serious eye damage.

H319 Causes serious eye irritation.

H332 Harmful if inhaled.

Safety Data Sheet

Section 1: Identification

Product identifier

Product Name

- **Mechanical/Industrial/OEM - CT10101-6**

Synonyms

- Canadian Metal Building Insulation; CertaPro® AcoustaBlanket Black; CertaPro®AcoustaBoard™Black; CertaPro™ Board; Commercial Blanket Insulation; Crimp Wrap™; Crimp Wrap™ Crimped Pipe and Tank Wrap; HT Blanket; Insulation for Flex Duct; Marine Ductwrap; Metal Building Insulation 202 -96; OEM Acoustical Board Insulation; Quickwrap Ductwrap; Soft Touch™ Duct Wrap; ToughGard® BMC Liner Board; ToughGard® Duct Board; ToughGard® R Duct Liner (1/2"); ToughGard® Rigid Liner Board; ToughGard® T Duct Liner; ToughGard® T Textile Duct Liner; ToughGard® Ultra*Round Spiral Duct Liner; ToughGard® Ultra*Round® Spiral Duct Liner Insulation; Ultra* Duct™ Black Duct Board; Universal Blanket
- Product Literature Code: 30-36-045.

Relevant identified uses of the substance or mixture and uses advised against

- Recommended use**
- Acoustical & Thermal Insulation

Details of the supplier of the safety data sheet

Manufacturer

- CertainTeed Corporation
20 Moores Road
Malvern, PA 19355
United States
www.certainteed.com
CertainTeed-EHS@saint-gobain.com

Telephone (General) • 610-893-6000

Emergency telephone number

- Manufacturer**
- 800-424-9300 - CHEMTREC

Section 2: Hazard Identification

UN GHS Revision 3

According to: UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS): Third Revised Edition

Classification of the substance or mixture

- UN GHS**
- Not classified

Label elements

UN GHS

- Hazard statements** • No label element(s) required

Precautionary statements

Other hazards

- UN GHS**
- According to the Globally Harmonized Standard for Classification and Labeling (GHS) this product is considered not hazardous

United States (US)

According to: OSHA 29 CFR 1910.1200 HCS

Classification of the substance or mixture

OSHA HCS 2012 • Not classified

Label elements

OSHA HCS 2012

Hazard statements • No label element(s) required**Other hazards**

OSHA HCS 2012 • This product is not considered hazardous under the U.S. OSHA 29 CFR 1910.1200 Hazard Communication Standard.

Canada

According to: WHMIS

Classification of the substance or mixture

WHMIS • Not classified

Label elements

WHMIS

• No label element(s) required.

Other hazards

WHMIS

• In Canada, the product mentioned above is not considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

Section 3 - Composition/Information on Ingredients**Substances**

• Material does not meet the criteria of a substance.

Mixtures

Composition					
Chemical Name	Identifiers	%	LD50/LC50	Classifications According to Regulation/Directive	Comments
Fibre glass	CAS:65997-17-3 EC Number:266-046-0	60% TO 93%	NDA	UN GHS Revision 3: Not Classified OSHA HCS 2012: Not Classified	NDA
Phenol, polymer with formaldehyde and urea	CAS:25104-55-6	10% TO 30%	Ingestion/Oral- Rat LD50 • 7 g/kg	UN GHS Revision 3: Not Classified OSHA HCS 2012: Not Classified	NDA
Phenolic resin binder (cured)	NDA	< 25%	NDA	UN GHS Revision 3: Not Classified OSHA HCS 2012: Not Classified	NDA

Poly(oxy-1,2-ethanediyloxy-carbonyl-1,4-phenylenecarbonyl)	CAS: 25038-59-9	0% TO 5%	NDA	UN GHS Revision 3: Not Classified OSHA HCS 2012: Not Classified	NDA
Latex textile rubber polymer	NDA	0% TO 5%	NDA	UN GHS Revision 3: Not Classified OSHA HCS 2012: Not Classified	NDA
Cured polymer adhesive	NDA	1% TO 5%	NDA	UN GHS Revision 3: Not Classified OSHA HCS 2012: Not Classified	NDA
Antimony oxide	CAS: 1309-64-4 EC Number: 215-175-0 EU Index: 051-005-00-X	0% TO 5%	Ingestion/Oral-Rat LD50 • >34600 mg/kg	UN GHS Revision 3: Eye Irrit. 2; Skin Irrit. 2; Carc. 2; Repr. 2; Aquatic Chronic 1 OSHA HCS 2012: Eye Irrit. 2; Skin Irrit. 2; Carc. 2; Repr. 2	The Antimony Oxide is incorporated into an emulsion which is applied to the surface of the product and then cured, making the coating resistant to aging and to degradation. This cured coating does not represent an exposure risk. Antimony only applies to ToughGard® R Duct Liner.
Acrylic-based polymer	NDA	0% TO 5%	NDA	UN GHS Revision 3: Not Classified OSHA HCS 2012: Not Classified	NDA
Acetic acid, vinyl ester, polymer	NDA	0% TO 5%	NDA	UN GHS Revision 3: Not Classified OSHA HCS 2012: Not Classified	NDA
Hydrocarbon polymer	NDA	< 2%	NDA	UN GHS Revision 3: Not Classified OSHA HCS 2012: Not Classified	NDA
Carbon Black	CAS: 1333-86-4 EC Number: 215-609-9	< 0.04%	Ingestion/Oral-Rat LD50 • >15400 mg/kg Skin-Rabbit LD50 • >3 g/kg	OSHA HCS 2012: Exposure Limits	NDA

See Section 16 for full text of H-statements.

Section 4: First-Aid Measures

Description of first aid measures

Inhalation

- Remove to fresh air immediately and notify medical personnel and supervisor. Give artificial respiration if victim is not breathing. If breathing is difficult, give oxygen.

Skin

- After contact with skin, take off immediately all contaminated clothing and wash immediately with plenty of soap and water. If irritation develops and persists, get medical attention.

Eye

- Do not rub or scratch your eyes. Immediately flush eyes with plenty of water for at least 15 minutes and notify medical personnel and supervisor. If eye irritation persists: Get medical advice/attention.

Ingestion

- Consult a physician if unusual reaction is noted. Product is not intended nor is it likely to be ingested or eaten.

Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

Indication of any immediate medical attention and special treatment needed

Notes to Physician

- All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

Section 5: Fire-Fighting Measures

Extinguishing media

Suitable Extinguishing Media • Use any media suitable for the surrounding fires.

Unsuitable Extinguishing Media • None known.

Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards • Does not support combustion. These products contain a cured binder and various facings which contain retardant systems to reduce the possibility of fire. Use of plasma or other type of cutting tool may cause the release of toxic fumes and smoke. Facings on these products may burn. Do not leave facing exposed when working close to an open flame. If burned, the materials could release toxic fumes.

Hazardous Combustion Products • Does not support combustion. If burned, the materials could release toxic fumes and smoke. Combustion products may include oxides of carbon, sulfur and other potentially volatile organic compounds, oxides of arsenic, oxides of nitrogen, hydrogen chloride, antimony, bromide gas, hydrogen bromide, formaldehyde, and trace hydrogen cyanide.

Advice for firefighters

- Fire fighters should avoid inhaling any combustion products. Fire fighters should wear full-face, self contained breathing apparatus and impervious protective clothing.

Section 6 - Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

Personal Precautions • Avoid contact with skin and eyes during clean-up. Take proper precautions to minimize exposure by using appropriate personal protective equipment.

Emergency Procedures • Persons not wearing appropriate protective equipment should be excluded from area of spill until clean-up has been completed. Ventilate the contaminated area.

Environmental precautions

- Avoid run off to waterways and sewers.

Methods and material for containment and cleaning up

Containment/Clean-up Measures • Containment of this material should not be necessary. Remove sources of ignition. Collect dust or particulates using a vacuum cleaner with a HEPA filter. Avoid the generation of dusts during clean-up.

Reference to other sections

- Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

Section 7 - Handling and Storage

Precautions for safe handling

Handling

- Do not breathe dust from this material. Keep this product from heat, sparks, or open flame. Use this product with adequate ventilation. Always wash work clothes separately from other clothing. Wipe out the washer or sink to prevent loose glass

fibers from getting on other clothing. Wash thoroughly after handling. Use personal protective equipment as described in Section 8.

Conditions for safe storage, including any incompatibilities

Storage

- Store in a dry place and under cover to protect product.

Incompatible Materials or Ignition Sources

- Hydrofluoric acid.

Specific end use(s)

- Refer to Section 1.2 - Relevant identified uses.

Section 8 - Exposure Controls/Personal Protection

Control parameters

Exposure Limits/Guidelines						
	Result	ACGIH	Canada British Columbia	Canada Manitoba	Canada New Brunswick	Canada Northwest Territories
Antimony oxide	TWAs	0.5 mg/m ³ TWA (as Sb) <i>as Antimony compounds</i>	production, exposure by all routes should be carefully controlled to levels as low as possible	0.5 mg/m ³ TWA (as Sb) <i>as Antimony compounds</i>	0.5 mg/m ³ TWA (as Sb) <i>as Antimony compounds</i>	0.5 mg/m ³ TWA (as Sb) <i>as Antimony compounds</i>
	STELs	Not established	Not established	Not established	Not established	1.5 mg/m ³ STEL (as Sb) <i>as Antimony compounds</i>
Carbon Black (1333-86-4)	TWAs	3 mg/m ³ TWA (inhalable fraction)	3 mg/m ³ TWA (inhalable)	3 mg/m ³ TWA (inhalable fraction)	3.5 mg/m ³ TWA	3.5 mg/m ³ TWA
	STELs	Not established	Not established	Not established	Not established	7 mg/m ³ STEL
Fibre glass	TWAs	1 fiber/cm ³ TWA (respirable fibers: length >5 µm, aspect ratio ≥3:1, as determined by the membrane filter method at 400-450X magnification [4-mm objective], using phase-contrast illumination, listed under Synthetic vitreous fibers) <i>as Glass wool fiber</i>	1 fibre/cm ³ TWA (fibres >5 µm, with an aspect ratio of ≥3:1, as determined by the membrane filter method at 400-450 times magnification (4 mm objective), using phase-contrast illumination, listed under Synthetic vitreous fibres) <i>as Glass wool fiber</i>	1 fiber/cm ³ TWA (respirable fibers: length >5 µm, aspect ratio ≥3:1, as determined by the membrane filter method at 400-450X magnification [4-mm objective], using phase-contrast illumination, listed under Synthetic vitreous fibers) <i>as Glass wool fiber</i>	1 fibre/cm ³ TWA (fibres >5 µm with a diameter <3 µm, aspect ratio >5:1) <i>as Glass wool fiber</i>	1 fibre/cm ³ TWA (respirable fibres, listed under Synthetic vitreous fibres) <i>as Glass wool fiber</i>
	STELs	Not established	Not established	Not established	Not established	3 fibre/cm ³ STEL (respirable fibres, listed under Synthetic vitreous fibres) <i>as Glass wool fiber</i>
Exposure Limits/Guidelines (Con't.)						
	Result	Canada Nova Scotia	Canada Nunavut	Canada Ontario	Canada Quebec	Canada Yukon
		0.5 mg/m ³ TWA (as		production; exposure		0.5 mg/m ³ TWA (as

Antimony oxide	TWAs	Sb) <i>as Antimony compounds</i>	0.5 mg/m ³ TWA (production, handling and use, as Sb)	by all routes should be carefully controlled to levels as low as possible	0.5 mg/m ³ TWAEV (as Sb)	Sb) <i>as Antimony compounds</i>
	STELs	Not established	1.5 mg/m ³ STEL (production, handling and use, as Sb)	Not established	Not established	0.75 mg/m ³ STEL (as Sb) <i>as Antimony compounds</i>
Carbon Black (1333-86-4)	TWAs	3 mg/m ³ TWA (inhalable fraction)	3.5 mg/m ³ TWA	3 mg/m ³ TWA (inhalable)	3.5 mg/m ³ TWAEV	3.5 mg/m ³ TWA
	STELs	Not established	7 mg/m ³ STEL	Not established	Not established	7 mg/m ³ STEL
Fibre glass	TWAs	1 fiber/cm ³ TWA (respirable fibers: length >5 µm, aspect ratio >=3:1, as determined by the membrane filter method at 400-450X magnification [4-mm objective], using phase-contrast illumination, listed under Synthetic vitreous fibers) <i>as Glass wool fiber</i>	3 fibre/cm ³ TWA (with a diameter <=3.5 µm and a length >=10 µm); 5 mg/m ³ TWA (total mass) <i>as Glass wool fiber</i>	1 fibre/cm ³ TWA (fibres >5 µm in length and an aspect ratio >=3:1 as determined by the membrane filter method at 400-450 times magnification (4 -mm objective), using phase-contrast illumination, respirable, listed under Synthetic Vitreous Fibres (Man Made Mineral Fibres)) <i>as Glass wool fiber</i>	1 fibre/cm ³ TWAEV (respirable, listed under Fibres - Artificial Vitreous Mineral Fibres) <i>as Glass wool fiber</i>	30 mppcf TWA (dust or fibrous); 10 mg/m ³ TWA (dust or fibrous)

Exposure Limits/Guidelines (Con't.)

	Result	China	China Highly Toxic Goods	NIOSH	OSHA
Antimony oxide	STELs	1.5 mg/m ³ STEL (as Sb) <i>as Antimony compounds</i>	Not established	Not established	Not established
	TWAs	0.5 mg/m ³ TWA (as Sb) <i>as Antimony compounds</i>	0.5 mg/m ³ TWA <i>as Antimony compounds</i>	0.5 mg/m ³ TWA (as Sb) <i>as Antimony compounds</i>	0.5 mg/m ³ TWA (as Sb) <i>as Antimony compounds</i>
Carbon Black (1333-86-4)	STELs	8 mg/m ³ STEL (total dust)	Not established	Not established	Not established
	TWAs	4 mg/m ³ TWA (total dust)	Not established	3.5 mg/m ³ TWA; 0.1 mg/m ³ TWA (Carbon black in presence of Polycyclic aromatic hydrocarbons, as PAH)	3.5 mg/m ³ TWA
Fibre glass	TWAs	Not established	Not established	3 fiber/cm ³ TWA (fibers <= 3.5 µm in diameter and >= 10 µm in length); 5 mg/m ³ TWA (total) <i>as Glass wool fiber</i>	Not established

Exposure Control Notations

ACGIH

- Fibre glass as Glass wool fiber: **Carcinogens:** (A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans (listed under Synthetic vitreous fibers))
- Antimony oxide (1309-64-4): **Carcinogens:** (A2 - Suspected Human Carcinogen (production))

- Carbon Black (1333-86-4): **Carcinogens:** (A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans)

Exposure Limits Supplemental

- ACGIH**
- Antimony oxide (1309-64-4): **TLV Basis - Critical Effects:** (lung cancer (antimony trioxide production); pneumoconiosis (antimony trioxide production)) | **No Adopted Value:** (Exposure by all routes should be carefully controlled to levels as low as possible (production))
 - Antimony oxide as Antimony compounds: **TLV Basis - Critical Effects:** (skin and upper respiratory tract irritation)
 - Carbon Black (1333-86-4): **TLV Basis - Critical Effects:** (bronchitis)

Exposure controls

Engineering Measures/Controls

- Use general ventilation and use local exhaust, where possible, in confined or enclosed spaces. Avoid spread of fiber glass dust.

Personal Protective Equipment

Respiratory

- A properly fitted NIOSH (American National Institute For Occupational Safety And Health) approved disposable N 95 series dust respirator such as type 3M 8210 (formerly 8710) or 3M 8271 (formerly 9900) respirators should be used under any dust environment or during a process that generates dusts. Use respiratory protection in accordance with the respiratory protection program of your company, local regulations and OSHA regulations under 29 CFR 1910.134.

Eye/Face

- Safety glasses with side shields should be worn at a minimum. In dusty environments chemical goggles should be worn.

Skin/Body

- Work clothing sufficient to prevent all skin contact should be worn, such as coveralls, long sleeves and cap.

General Industrial Hygiene Considerations

- Use good industrial hygiene practices in handling this material. Availability of eye wash fountains are recommended. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco.

Environmental Exposure Controls

- Follow best practice for site management and disposal of waste. Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways.

Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene

STEL = Short Term Exposure Limits are based on 15-minute exposures

LLV = Limit Level Value is the exposure limit for 8-hour work day

TLV = Threshold Limit Value determined by the American Conference of Governmental Industrial Hygienists (ACGIH)

NIOSH = National Institute of Occupational Safety and Health

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

OSHA = Occupational Safety and Health Administration

Section 9 - Physical and Chemical Properties

Information on Physical and Chemical Properties

Material Description			
Physical Form	Solid	Appearance/Description	Yellow or black solid with faint resin odor.
Color	Yellow or black.	Odor	Faint resin odor.
Odor Threshold	Data lacking		
General Properties			
Boiling Point	> 2550 °F(> 1398.8889 °C)	Melting Point/Freezing Point	2550 °F(1398.8889 °C)
Decomposition Temperature	Data lacking	pH	Data lacking
Specific Gravity/Relative Density	Data lacking	Bulk Density	8 lb(s)/ft³
Water Solubility	Slightly Soluble	Viscosity	Data lacking
Explosive Properties	Data lacking	Oxidizing Properties:	Data lacking

Volatility

Vapor Pressure	Data lacking	Vapor Density	Data lacking
Evaporation Rate	Data lacking		

Flammability

Flash Point	Not relevant	UEL	Not relevant
LEL	Not relevant	Autoignition	Not relevant
Flammability (solid, gas)	Data lacking		

Environmental

Octanol/Water Partition coefficient	Data lacking		
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Section 10: Stability and Reactivity**Reactivity**

- No dangerous reaction known under conditions of normal use.

Chemical stability

- Stable under normal conditions of use.

Possibility of hazardous reactions

- Hazardous polymerization not indicated.

Conditions to avoid

- Keep away from heat, ignition sources and incompatible materials.

Incompatible materials

- Hydrofluoric acid.

Hazardous decomposition products

- Hazardous decomposition products may include oxides of carbon, sulfur and other potentially volatile organic compounds, oxides of arsenic, oxides of nitrogen, hydrogen chloride, antimony, bromide gas, hydrogen bromide, formaldehyde, and trace hydrogen cyanide.

Section 11 - Toxicological Information**Information on toxicological effects**

Components		
Fibre glass (60% TO 93%)	65997-17-3	Tumorigen / Carcinogen: Inhalation-Rat TClO • 5 mg/m ³ 7 Hour(s) 90 Week(s)-Intermittent; Tumorigenic: Carcinogenic by RTECS criteria; Blood: Leukemia
Phenol, polymer with formaldehyde and urea (10% TO 30%)	25104-55-6	Acute Toxicity: Ingestion/Oral-Rat LD50 • 7 g/kg
Antimony oxide (0% TO 5%)	1309-64-4	Irritation: Eye-Rabbit • 100 mg • Mild irritation; Multi-dose Toxicity: Inhalation-Rat TDLo • 4.2 mg/m ³ 1 Year(s)-Intermittent; <i>Lungs, Thorax, or Respiration: Fibrosing alveolitis;</i> Reproductive: Inhalation-Rat TClO • 82 µg/m ³ (1-21D preg); <i>Reproductive Effects: Effects on Fertility: Pre-implantation mortality; Reproductive Effects: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus);</i> Inhalation-Rat TClO • 270 µg/m ³ 24 Hour(s) (1-21D preg); <i>Reproductive Effects: Effects on Fertility: Pre-implantation mortality; Reproductive Effects: Effects on Fertility: Post-implantation mortality; Reproductive Effects: Effects on Embryo or Fetus: Fetal death;</i> Tumorigen / Carcinogen: Inhalation-Rat TClO • 4200 µg/m ³ 52 Week(s)-Intermittent; Tumorigenic: Carcinogenic by RTECS criteria; Lungs, Thorax, or Respiration: Tumors; Liver: Tumors; Inhalation-Rat TClO • 45 mg/m ³ 52 Week(s)-Intermittent; Tumorigenic: Carcinogenic by RTECS criteria; Lungs, Thorax, or Respiration: Tumors; Tumorigenic: Increased incidence of tumors in

susceptible strains

GHS Properties	Classification
Acute toxicity	UN GHS 3 • Data lacking OSHA HCS 2012 • Data lacking
Skin corrosion/Irritation	UN GHS 3 • Data lacking OSHA HCS 2012 • Data lacking
Serious eye damage/Irritation	UN GHS 3 • Data lacking OSHA HCS 2012 • Data lacking
Skin sensitization	UN GHS 3 • Data lacking OSHA HCS 2012 • Data lacking
Respiratory sensitization	UN GHS 3 • Data lacking OSHA HCS 2012 • Data lacking
Aspiration Hazard	UN GHS 3 • Data lacking OSHA HCS 2012 • Data lacking
Carcinogenicity	UN GHS 3 • Data lacking OSHA HCS 2012 • Data lacking
Germ Cell Mutagenicity	UN GHS 3 • Data lacking OSHA HCS 2012 • Data lacking
Toxicity for Reproduction	UN GHS 3 • Data lacking OSHA HCS 2012 • Data lacking
STOT-SE	UN GHS 3 • Data lacking OSHA HCS 2012 • Data lacking
STOT-RE	UN GHS 3 • Data lacking OSHA HCS 2012 • Data lacking

Route(s) of entry/exposure

- Inhalation, Skin, Eye, and Ingestion

Medical Conditions Aggravated by Exposure

- Pre-existing conditions which may be aggravated by mechanical irritants upon inhalation or skin contact.

Potential Health Effects**Inhalation****Acute (Immediate)**

- Temporary irritation of nose and throat may occur.

Chronic (Delayed)

- Use of these products has not been shown to cause cancer in humans. Fiber glass wool is a possible cancer hazard. Fiber glass wool has caused cancer in animals but has not produced cancer by inhalation in humans.

Skin**Acute (Immediate)**

- Temporary irritation of the skin may occur in some individuals.

Chronic (Delayed)

- No data available.

Eye**Acute (Immediate)**

- Temporary irritation or redness may occur.

Chronic (Delayed)

- No data available.

Ingestion**Acute (Immediate)**

- Ingestion of this product unlikely.

Chronic (Delayed)

- No data available

Carcinogenic Effects

- This product contains antimony trioxide which may cause cancer based on sufficient animal data. This product contains glass wool insulation fibers. Following a thorough

review of all the medical-scientific data available at a meeting in October 2001, the IARC panel lowered the classification for glass wool insulation fibers from a Group 2B classification ("possibly carcinogenic to humans") to a Group 3 classification ("not classifiable as to carcinogenicity to humans"). According to IARC, there is "no evidence of increased risks of lung cancer or of mesothelioma from occupational exposures during manufacturing of these materials, and inadequate evidence overall of any cancer risk." U.S., California and international authorities have all agreed that biosoluble and inhalable glass fibers should not be labeled as a possible cancer hazard. The U.S. National Toxicology Program ("NTP") and the California Office of Environmental Health Hazard Assessment ("OEHHA") actions mean that a cancer warning label for biosoluble fiber glass is no longer required under Federal or California Law.

Carcinogenic Effects			
	CAS	IARC	NTP
Antimony oxide	1309-64-4	Group 2B-Possible Carcinogen	Not Listed
Carbon Black	1333-86-4	Group 2B-Possible Carcinogen	Not Listed
Fibre glass as Glass wool fiber	NDA	Not Listed	Reasonably Anticipated to be Human Carcinogen

Key to abbreviations

LD = Lethal Dose

TC = Toxic Concentration

TD = Toxic Dose

Section 12 - Ecological Information

Toxicity

- Binder-coated fiber glass is hydrophobic, therefore, no adverse environmental effects would be expected if this product were accidentally released in the water or soil. No harm to fish or wildlife would be caused by this product.

Persistence and degradability

- No information available for the product.

Bioaccumulative potential

- No information available for the product.

Mobility in Soil

- No information available for the product.

Other adverse effects

Potential Environmental Effects

- No environmental effects expected.

Section 13 - Disposal Considerations

Waste treatment methods

Product waste

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

Packaging waste

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

Section 14 - Transport Information

	UN number	UN proper shipping name	Transport hazard class(es)	Packing group	Environmental hazards
DOT	Not Applicable	Not Regulated	Not Applicable	Not Applicable	NDA
TDG	Not Applicable	Not Regulated	Not Applicable	Not Applicable	NDA

Special precautions for user • None specified.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code • Data lacking.

Section 15 - Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture

SARA Hazard Classifications • None

State Right To Know		
Component	CAS	PA
Antimony oxide	1309-64-4	Yes
Carbon Black	1333-86-4	Yes
Fibre glass	65997-17-3	No
Phenol, polymer with formaldehyde and urea	25104-55-6	No
Poly(oxy-1,2-ethanediyloxycarbonyl-1,4-phenylenecarbonyl)	25038-59-9	No

Inventory						
Component	CAS	Canada DSL	Canada NDSL	China	Korea KECL	TSCA
Antimony oxide	1309-64-4	Yes	No	Yes	Yes	Yes
Carbon Black	1333-86-4	Yes	No	Yes	Yes	Yes
Fibre glass	65997-17-3	Yes	No	Yes	Yes	Yes
Phenol, polymer with formaldehyde and urea	25104-55-6	Yes	No	Yes	Yes	Yes
Poly(oxy-1,2-ethanediyloxycarbonyl-1,4-phenylenecarbonyl)	25038-59-9	Yes	No	Yes	Yes	Yes

Canada

Labor

Canada - WHMIS - Classifications of Substances

• Phenol, polymer with formaldehyde and urea	25104-55-6	Not Listed
• Poly(oxy-1,2-ethanediyloxycarbonyl-1,4-phenylenecarbonyl)	25038-59-9	Not Listed
• Carbon Black	1333-86-4	D2A (In certain cases, this classification does not apply. For more information, consult the section Substance Specific Issues - Carbon Black, non-respirable on Health Canada's

		WHMIS Division website.)
• Antimony oxide	1309-64-4	D2A
• Fibre glass	65997-17-3	Not Listed

Canada - WHMIS - Ingredient Disclosure List

• Phenol, polymer with formaldehyde and urea	25104-55-6	Not Listed
• Poly(oxy-1,2-ethanedioxydicarbonyl-1,4-phenylenecarbonyl)	25038-59-9	Not Listed
• Carbon Black	1333-86-4	1 %
• Antimony oxide	1309-64-4	1 %
• Fibre glass	65997-17-3	Not Listed

Environment**Canada - CEPA - Priority Substances List**

• Phenol, polymer with formaldehyde and urea	25104-55-6	Not Listed
• Poly(oxy-1,2-ethanedioxydicarbonyl-1,4-phenylenecarbonyl)	25038-59-9	Not Listed
• Carbon Black	1333-86-4	Not Listed
• Antimony oxide	1309-64-4	Not Listed
• Fibre glass	65997-17-3	Not Listed

China**Environment****China - Ozone Depleting Substances - First Schedule**

• Phenol, polymer with formaldehyde and urea	25104-55-6	Not Listed
• Poly(oxy-1,2-ethanedioxydicarbonyl-1,4-phenylenecarbonyl)	25038-59-9	Not Listed
• Carbon Black	1333-86-4	Not Listed
• Antimony oxide	1309-64-4	Not Listed
• Fibre glass	65997-17-3	Not Listed

China - Ozone Depleting Substances - Second Schedule

• Phenol, polymer with formaldehyde and urea	25104-55-6	Not Listed
• Poly(oxy-1,2-ethanedioxydicarbonyl-1,4-phenylenecarbonyl)	25038-59-9	Not Listed
• Carbon Black	1333-86-4	Not Listed
• Antimony oxide	1309-64-4	Not Listed
• Fibre glass	65997-17-3	Not Listed

China - Ozone Depleting Substances - Third Schedule

• Phenol, polymer with formaldehyde and urea	25104-55-6	Not Listed
• Poly(oxy-1,2-ethanedioxydicarbonyl-1,4-phenylenecarbonyl)	25038-59-9	Not Listed
• Carbon Black	1333-86-4	Not Listed
• Antimony oxide	1309-64-4	Not Listed
• Fibre glass	65997-17-3	Not Listed

Other**China - Annex I & II - Controlled Chemicals Lists**

• Phenol, polymer with formaldehyde and urea	25104-55-6	Not Listed
• Poly(oxy-1,2-ethanedioxydicarbonyl-1,4-phenylenecarbonyl)	25038-59-9	Not Listed
• Carbon Black	1333-86-4	Not Listed
• Antimony oxide	1309-64-4	Not Listed
• Fibre glass	65997-17-3	Not Listed

China - Dangerous Goods List

• Phenol, polymer with formaldehyde and urea	25104-55-6	Not Listed
• Poly(oxy-1,2-ethanedioxydicarbonyl-1,4-phenylenecarbonyl)	25038-59-9	Not Listed
• Carbon Black	1333-86-4	Not Listed

• Antimony oxide	1309-64-4	Not Listed
• Fibre glass	65997-17-3	Not Listed

United States

Labor

U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals

• Phenol, polymer with formaldehyde and urea	25104-55-6	Not Listed
• Poly(oxy-1,2-ethanedioxydicarbonyl-1,4-phenylenecarbonyl)	25038-59-9	Not Listed
• Carbon Black	1333-86-4	Not Listed
• Antimony oxide	1309-64-4	Not Listed
• Fibre glass	65997-17-3	Not Listed

U.S. - OSHA - Specifically Regulated Chemicals

• Phenol, polymer with formaldehyde and urea	25104-55-6	Not Listed
• Poly(oxy-1,2-ethanedioxydicarbonyl-1,4-phenylenecarbonyl)	25038-59-9	Not Listed
• Carbon Black	1333-86-4	Not Listed
• Antimony oxide	1309-64-4	Not Listed
• Fibre glass	65997-17-3	Not Listed

Environment

U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants

• Phenol, polymer with formaldehyde and urea	25104-55-6	Not Listed
• Poly(oxy-1,2-ethanedioxydicarbonyl-1,4-phenylenecarbonyl)	25038-59-9	Not Listed
• Carbon Black	1333-86-4	Not Listed
• Antimony oxide	1309-64-4	Not Listed
• Fibre glass	65997-17-3	Not Listed

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

• Phenol, polymer with formaldehyde and urea	25104-55-6	Not Listed
• Poly(oxy-1,2-ethanedioxydicarbonyl-1,4-phenylenecarbonyl)	25038-59-9	Not Listed
• Carbon Black	1333-86-4	Not Listed
• Antimony oxide	1309-64-4	1000 lb final RQ; 454 kg final RQ
• Fibre glass	65997-17-3	Not Listed

U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities

• Phenol, polymer with formaldehyde and urea	25104-55-6	Not Listed
• Poly(oxy-1,2-ethanedioxydicarbonyl-1,4-phenylenecarbonyl)	25038-59-9	Not Listed
• Carbon Black	1333-86-4	Not Listed
• Antimony oxide	1309-64-4	Not Listed
• Fibre glass	65997-17-3	Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs

• Phenol, polymer with formaldehyde and urea	25104-55-6	Not Listed
• Poly(oxy-1,2-ethanedioxydicarbonyl-1,4-phenylenecarbonyl)	25038-59-9	Not Listed
• Carbon Black	1333-86-4	Not Listed
• Antimony oxide	1309-64-4	Not Listed
• Fibre glass	65997-17-3	Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs

• Phenol, polymer with formaldehyde and urea	25104-55-6	Not Listed
• Poly(oxy-1,2-ethanedioxydicarbonyl-1,4-phenylenecarbonyl)	25038-59-9	Not Listed
• Carbon Black	1333-86-4	Not Listed
• Antimony oxide	1309-64-4	Not Listed

• Fibre glass	65997-17-3	Not Listed
U.S. - CERCLA/SARA - Section 313 - Emission Reporting		
• Phenol, polymer with formaldehyde and urea	25104-55-6	Not Listed
• Poly(oxy-1,2-ethanediyloxycarbonyl-1,4-phenylenecarbonyl)	25038-59-9	Not Listed
• Carbon Black	1333-86-4	Not Listed
• Antimony oxide	1309-64-4	Not Listed
• Fibre glass	65997-17-3	Not Listed
U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing		
• Phenol, polymer with formaldehyde and urea	25104-55-6	Not Listed
• Poly(oxy-1,2-ethanediyloxycarbonyl-1,4-phenylenecarbonyl)	25038-59-9	Not Listed
• Carbon Black	1333-86-4	Not Listed
• Antimony oxide	1309-64-4	Not Listed
• Fibre glass	65997-17-3	Not Listed

United States - California

Environment

U.S. - California - Proposition 65 - Carcinogens List

• Phenol, polymer with formaldehyde and urea	25104-55-6	Not Listed
• Poly(oxy-1,2-ethanediyloxycarbonyl-1,4-phenylenecarbonyl)	25038-59-9	Not Listed
• Carbon Black	1333-86-4	carcinogen, 2/21/2003 (airborne, unbound particles of respirable size)
• Antimony oxide	1309-64-4	carcinogen, 10/1/1990
• Fibre glass	65997-17-3	Not Listed

U.S. - California - Proposition 65 - Developmental Toxicity

• Phenol, polymer with formaldehyde and urea	25104-55-6	Not Listed
• Poly(oxy-1,2-ethanediyloxycarbonyl-1,4-phenylenecarbonyl)	25038-59-9	Not Listed
• Carbon Black	1333-86-4	Not Listed
• Antimony oxide	1309-64-4	Not Listed
• Fibre glass	65997-17-3	Not Listed

U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)

• Phenol, polymer with formaldehyde and urea	25104-55-6	Not Listed
• Poly(oxy-1,2-ethanediyloxycarbonyl-1,4-phenylenecarbonyl)	25038-59-9	Not Listed
• Carbon Black	1333-86-4	Not Listed
• Antimony oxide	1309-64-4	Not Listed
• Fibre glass	65997-17-3	Not Listed

U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)

• Phenol, polymer with formaldehyde and urea	25104-55-6	Not Listed
• Poly(oxy-1,2-ethanediyloxycarbonyl-1,4-phenylenecarbonyl)	25038-59-9	Not Listed
• Carbon Black	1333-86-4	Not Listed
• Antimony oxide	1309-64-4	Not Listed
• Fibre glass	65997-17-3	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Female

• Phenol, polymer with formaldehyde and urea	25104-55-6	Not Listed
• Poly(oxy-1,2-ethanediyloxycarbonyl-1,4-phenylenecarbonyl)	25038-59-9	Not Listed
• Carbon Black	1333-86-4	Not Listed
• Antimony oxide	1309-64-4	Not Listed
• Fibre glass	65997-17-3	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Male

• Phenol, polymer with formaldehyde and urea	25104-55-6	Not Listed
• Poly(oxy-1,2-ethanediyloxycarbonyl-1,4-phenylenecarbonyl)	25038-59-9	Not Listed
• Carbon Black	1333-86-4	Not Listed
• Antimony oxide	1309-64-4	Not Listed
• Fibre glass	65997-17-3	Not Listed

United States - Pennsylvania**Labor****U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List**

• Phenol, polymer with formaldehyde and urea	25104-55-6	Not Listed
• Poly(oxy-1,2-ethanediyloxycarbonyl-1,4-phenylenecarbonyl)	25038-59-9	Not Listed
• Carbon Black	1333-86-4	Not Listed
• Antimony oxide	1309-64-4	Not Listed
• Fibre glass	65997-17-3	Not Listed

U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances

• Phenol, polymer with formaldehyde and urea	25104-55-6	Not Listed
• Poly(oxy-1,2-ethanediyloxycarbonyl-1,4-phenylenecarbonyl)	25038-59-9	Not Listed
• Carbon Black	1333-86-4	Not Listed
• Antimony oxide	1309-64-4	Not Listed
• Fibre glass	65997-17-3	Not Listed

Other Information

- WARNING: This product contains a chemical known to the State of California to cause cancer.

Section 16 - Other Information**Relevant Phrases (code & full text)**

- H351 - Suspected of causing cancer.

Revision Date

- 06/July/2016

Preparation Date

- 04/June/2013

Disclaimer/Statement of Liability

- Reasonable care has been taken in the preparation of this information, but the supplier gives no warranty of merchantability or of fitness for a particular purpose. Any product purchased is sold on the assumption the purchaser will make his own tests to determine the quality and suitability of the product. Supplier expressly disclaims any and all liability for incidental and/or consequential property damage arising out of the use of this product. No information provided shall be deemed to be a recommendation to use any product in conflict with any existing patent rights. Read the Safety Data Sheet before handling product.

Key to abbreviations

NDA = No Data Available

1: Identification

PRODUCT IDENTIFICATION:	Fiberglass building insulation products—cured batts, rolls, and board; laminated cured insulation products; fiberglass cured blowing wool insulation (Supercube II®, Supercube HD, Shake & Rake)
COMPANY:	Knauf Insulation 979 Batesville Rd. Suite B Greer, SC 29651 800-609-8373
CONTACT:	Health, Safety and Environment 517-630-2072
24-HOUR EMERGENCY RESPONSE INFORMATION:	Chemtrec 1-800-424-9300

2: Hazard Identification


WARNING

Eye, skin and respiratory tract irritant.

Hazard Statement

Inhalation: Fiberglass wool may cause mechanical irritation of the upper respiratory tract.

Skin Contact: Direct contact with the skin may cause mechanical irritation.

Eye Contact: Direct contact with the eyes may cause mechanical irritation.

3: Composition/Information On Ingredients

INGREDIENTS	HAZARD	CAS NO.	%	TLV*
Fibrous Glass	Nuisance Dust	65997-17-3	90-100%	1 f/cc
Cured Organic Binding Material	N/A	25104-55-6	10-0%	
Formaldehyde		50-00-0	<0.01%	
Phenol		108-95-2	0.02%	
Ammonia		7664-41-7	0.03%	
Dedusting Oil	N/A	N/A	<1%	

*The TWA TLV of 1 f/cc is a protection standard voluntarily adopted by the fiberglass industry and is a recommendation of ACGIH and California's ACAC.

Adhesives used to adhere facings include:

Kraft/Foil Faced products:

Mineral Oil, white	Mild Irritant	8042-47-5	5-10
Wax, polyethylene	Mild Irritant	9002-88-4	1-5
Waxes, paraffin	Mild Irritant	8002-74-2	1-5

Vinyl faced laminated products:

Aluminum nitrate -9-hydrate	Mild Irritant	7784-27-2	1-5
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4: First Aid Measures

Skin Contact: Do not rub. Wash with soap and water. Use skin cream to sooth irritation. Wash clothes separately. A shower after work is recommended. Irritation typically will not persist if good personal hygiene habits are followed.

Eye Contact: Flush with running water for at least 15 minutes. Using sterile eye wash, flush foreign bodies from eyes.

Inhalation: Remove from exposure.

If irritation persists in any of these situations, a physician should be consulted.

5: Fire-Fighting Measures

Flash Point: N/A

Flammability Limits: N/A

Auto-Ignition Temperance: N/A

Extinguishing Media: Water, foam, dry chemical

Special Fire-fighting Procedure: None

Unusual Fire Hazards: Fiberglass insulation is a non-flammable product. The kraft and foil facing and packaging material will burn; caution should be used when working close to the facing or packaged material with open flame. Chemicals in adhesives, facings or plastic packaging products that do not present a health hazard under normal conditions may be released during a fire. Toxic fumes and gases that may result from incomplete combustion include carbon monoxide, hydrogen chloride and low-level cyanides. In case of overexposure, remove to fresh air. If breathing is difficult, administer oxygen and consult a physician.

6: Accidental Release Measures

Cleanup: Avoid dust-generating means of clean-up.

7: Handling And Storage

Store faced or packaged material away from sources of ignition and have fire-fighting equipment available.

8: Exposure Controls/Personal Protection

Exposure Limits: Inhalation. Fiberglass wool may cause mechanical irritation of the upper respiratory tract. Use of a 2-strap NIOSH-Approved N-95 Filtering Facepiece respirator such as a 3M model 8210 or equivalent is recommended when handling loose-fill, when exposure is unknown or when fibers exceed the TLV of 1 f/cc. Operations which generate high airborne fiber concentrations (over 10 times the TLV) require additional respiratory protection.

Skin Contact: Direct contact with the skin may cause mechanical irritation. Long sleeves, loose fitting clothing, gloves, and eye protection are recommended. If irritation occurs, wash exposed areas with soap and water after handling. Wash clothes separately and rinse out washer after each use. Following a thorough review of all the medical data available, the International Agency for Research on Cancer (IARC) has classified glass wool insulation as Group #3, "not classifiable as to carcinogenicity to humans." IARC has stated there is "no evidence of increased risks of lung cancer or of mesothelioma... from occupational exposures during the manufacture of these materials, and inadequate evidence overall of any cancer risk."

Ingredients	OSHA Permissible Exposure Levels
Fibrous Glass	TWA (Total Dust) = 15 mg/m ³ TWA (Respirable Dust) = 5 mg/m ³
Cured Organic Binding Material	N/A
Formaldehyde	TWA=1 ppm (.5 ppm Action Level)
Phenol	TWA=5 ppm, 19 mg/m ³ (skin)
Ammonia	TWA 50 ppm, 35 mg/m ³
Dedusting Oil	N/A

Adhesives used to adhere facings include:

Kraft/Foil Faced products:

Mineral Oil, white	TWA Mist = 5 mg/m ³
Wax, polyethylene	TWA (fume) = 2 mg/m ³
Waxes, paraffin	TWA (fume) = 2 mg/m ³ and hydrocarbons

Vinyl faced laminated products:

Aluminum nitrate -9-hydrate	N/A
-----------------------------	-----

9: Accidental Release Measures

Boiling Point (°f): N/A	Specific Gravity (H₂O) = 1: 2.6
Vapor Pressure (mm Hg.): N/A	Percent Volatile By Volume: <1%
Vapor Density (Air=1): N/A	Solubility in Water: None
Evaporation Rate: N/A	

Appearance and Odor: Resilient or solid structure containing glass fibers and binding materials used as blankets, boards, or loose-fill insulation. May have slight binder odor.

10: Stability And Reactivity

Stability: Stable **Incompatibility:** None **Hazardous Polymerization:** Will not occur

11: Toxicological Information

Data not available.

12: Ecological Information

This material is not regulated under hazardous waste regulations.

13: Disposal Considerations

Dispose of scrap material according to federal, state and local regulations.

14: Transport Information

Reference Bill of Lading

15: Regulatory Information

SARA Title III, SECTION 313: Our finished insulation products contain the following amounts of "Toxic Chemicals," as defined by the Superfund Amendments and Reauthorization Act (SARA, Title III) of 1986:

<u>Chemical Name</u>	<u>Cas No.</u>	<u>Percent by Weight</u>
Formaldehyde	50-00-0	<0.01%
Phenol	108-95-2	0.02%
Ammonia	7664-41-7	0.03%

16: Other Information

The information provided in this SDS is accurate to the best of Knauf Insulation's knowledge and is provided in good faith. No warranty is given with respect to its accuracy and/or reliability. The information relates only to the particular product and not to the product when used in combination with any other materials. It is the user's responsibility to take proper precautions when using this product and ensure its own compliance with applicable local, state and federal laws and regulations.

Revised September 2014

SAFETY DATA SHEET

AMGFlex (IAQ), HPD Flex Duct (Commercial)



Section 1. Identification

GHS product identifier : AMGFlex (IAQ), HPD Flex Duct (Commercial)
Product code : Not available.
Other means of identification : Flexible Duct
Product code : Not available.
Product type : Solid.

Identified uses

Flexible Duct for the residential and manufactured home marketplace for the HVAC industry.

Supplier's details : QuietFlex Manufacturing Company L.P.
4518 Brittmoore Rd.
Houston, Texas 77041
Tel : (713) 849-2163
Toll Free : 1-877-694-3669
Fax : (713) 849-0753
Web site: <http://www.quietflex.com>

Emergency telephone number (with hours of operation) : CANUTEC: +1-613-996-6666 or *666 (cellular)
CHEMTREC, U.S. : 1-800-424-9300 International: +1-703-527-3887
24/7

Section 2. Hazards identification

OSHA/HCS status : While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Classification of the substance or mixture : Not classified.

GHS label elements

Signal word : No signal word.
Hazard statements : No known significant effects or critical hazards.
Precautionary statements
Prevention : Not applicable.
Response : Not applicable.
Storage : Not applicable.
Disposal : Not applicable.

Hazards not otherwise classified (HNOC) : None known.



Section 3. Composition/information on ingredients

Substance/mixture : Mixture
Other means of identification : Flexible Duct

CAS number/other identifiers

Ingredient name	CAS number	%
Antimony trioxide	1309-64-4	0.1 - 1

Antimony trioxide is an ingredient found in the adhesive used to CONSTRUCT the outer jacket of our Flexible Duct products. Antimony trioxide and other glue chemicals are APPLIED between TWO IMPERVIOUS PET films during the curing process. The final product is the outer jacket, a solid, which will not cause exposure to Antimony Trioxide. The adhesive ENCAPSULATED BETWEEN THE FILMS BECOMES A CURED SOLID AND PROVIDES NO PATH FOR OCCUPATIONAL EXPOSURE TO ANTIMONY TRIOXIDE.

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. Get medical attention if irritation occurs.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Skin contact** : Flush contaminated skin with plenty of water. Get medical attention if symptoms occur.
- Ingestion** : Wash out mouth with water. 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. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Dusts and fibers form of this product may cause temporary mechanical irritation to the eyes.
- Inhalation** : Dusts and fibers form of this product may cause temporary mechanical irritation to the nose, throat and respiratory track.
- Skin contact** : Dusts and fibers form of this product may cause temporary mechanical irritation and redness to the skin.
- Ingestion** : Ingestion of this product is unlikely; however, ingestion may cause gastrointestinal irritation.

Over-exposure signs/symptoms

- Eye contact** : No known significant effects or critical hazards.
- 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.

Section 4. First aid measures

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

- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No special protection is required.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use dry chemical, CO₂, water spray (fog) or foam.
- Unsuitable extinguishing media** : None known.

Specific hazards arising from the chemical : These products may be combusted by remaining in contact with flame. If flame source is stationary these products will shrink away and self-extinguish. If these products remain in contact with a flame they may continue to burn slowly, dropping flaming liquid which may spread the fire.

Hazardous thermal decomposition products : Decomposition products may include the following materials: carbon dioxide, carbon monoxide, nitrogen oxides, organic acids, aldehydes and alcohols.

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** : 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 : Pick up large pieces and dispose as listed in Section 13 of this SDS.

Methods and materials for containment and cleaning up

- Spill** : Pick up large pieces. Vacuum dusts and loose fibers. If sweeping is necessary, use dust suppressant such as water. Do not dry sweep dust. Never use compressed air for clean-up. Dispose of via 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).
- 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.
- Storage** : Storage should be in accordance with packaging directions, if any. Material should be stored in a dry place and kept in its original packaging until use.

- 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 in original packaging until ready for use.

Section 8. Exposure controls/personal protection

Control parameters

- Occupational exposure limits** : The Occupational Safety and Health Administration (OSHA) have not adopted specific exposure standards for fiber glass. Fiber glass is treated as a nuisance dust and is regulated by OSHA as a particulate not otherwise regulated (total dust) shown in CFR 1910.1000 Table Z-3.

Ingredient name	Exposure limits
Antimony trioxide	ACGIH TLV (United States, 3/2015). TWA: 0.5 mg/m ³ , (as Sb) 8 hours. OSHA PEL (United States, 2/2013). TWA: 0.5 mg/m ³ , (as Sb) 8 hours. NIOSH REL (United States, 10/2013). TWA: 0.5 mg/m ³ , (as Sb) 10 hours. OSHA PEL 1989 (United States, 3/1989). TWA: 0.5 mg/m ³ , (as Sb) 8 hours.

Antimony trioxide is an ingredient found in the adhesive used to CONSTRUCT the outer jacket of our Flexible Duct products. Antimony trioxide and other glue chemicals are APPLIED between TWO IMPERVIOUS PET films during the curing process. The final product is the outer jacket, a solid, which will not cause exposure to Antimony Trioxide. The adhesive ENCAPSULATED BETWEEN THE FILMS BECOMES A CURED SOLID AND PROVIDES NO PATH FOR OCCUPATIONAL EXPOSURE TO ANTIMONY TRIOXIDE.

- Appropriate engineering controls** : Good general ventilation should be sufficient to control worker exposure to airborne dust.

- Environmental exposure controls** : Pick up solid pieces and dispose of as listed in Section 13.

Individual protection measures

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling products, before eating, smoking and using the lavatory and at the end of the working period. 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 possible insulation dusts.
- Skin protection**
- Hand protection** : Cotton or leather gloves should be worn to protect against mechanical abrasion. Use caution when handling the inner Core as the taped ends may come loose during handling exposing the wire used to construct the inner Core.
- Body protection** : Wear a cap, a loose-fitting long sleeved shirt and long pants to protect skin from mechanical irritation. Exposed skin areas should be washed with soap and water after handling or working with fiberglass.

Section 8. Exposure controls/personal protection

- Other skin protection** : Clothing should be washed separately from other cloths, and the washer should be rinsed thoroughly (run empty for a wash cycle). This will help reduce the chances of fiber glass being transferred to other clothing.
- Respiratory protection** : A respirator is not needed under normal and intended conditions of use.

Section 9. Physical and chemical properties

Appearance

- Physical state** : Solid. [Flexible duct.]
- Color** : Silver, blue, green.
- Odor** : Not available.
- Odor threshold** : Not available.
- pH** : Not applicable.
- Melting point** : Not available.
- Boiling point** : Not applicable.
- Flash point** : Not applicable.
- Evaporation rate** : Not applicable.
- Flammability (solid, gas)** : Non-flammable.
- Lower and upper explosive (flammable) limits** : Not available.
- Vapor pressure** : Not applicable.
- Vapor density** : Not applicable.
- Relative density** : Not applicable.
- Solubility** : Negligible in water.
- Partition coefficient: n-octanol/water** : Not available.
- Auto-ignition temperature** : Not available.
- Decomposition temperature** : Not available.
- Viscosity** : Not applicable.
- Volatility** : Not available.
- VOC (w/w)** : 0 % (w/w)

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 under normal conditions.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- Conditions to avoid** : Keep away from heat, direct sunlight and flames.
- Incompatible materials** : None.
- 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

There is no data available.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Antimony trioxide	Eyes - Mild irritant	Rabbit	-	100 mg	-

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Dust from this product is a mechanical irritant; which means that it may cause irritation or scratchiness of the throat and/or itching and redness of the eyes and skin.

Sensitization

There is no data available.

Carcinogenicity

Classification

Product/ingredient name	OSHA	IARC	NTP	ACGIH	EPA	NIOSH
Glass, oxide, chemicals	-	3	-	A4	-	-
Antimony trioxide	-	2B	-	A2	-	-

Specific target organ toxicity (single exposure)

There is no data available.

Specific target organ toxicity (repeated exposure)

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** : Dusts and fibers form of this product may cause temporary mechanical irritation to the eyes.
- Inhalation** : Dusts and fibers form of this product may cause temporary mechanical irritation to the nose, throat and respiratory track.
- Skin contact** : Dusts and fibers form of this product may cause temporary mechanical irritation and redness to the skin.
- Ingestion** : Ingestion of this product is unlikely; however, ingestion may cause gastrointestinal irritation.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : No known significant effects or critical hazards.
- 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

Section 11. Toxicological information

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.

Carcinogenicity : No known significant effects or critical hazards.

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.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

There is no data available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Antimony trioxide	Acute EC50 730 µg/L Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 740 µg/L Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Acute EC50 560 mg/L Fresh water	Crustaceans - Cypris subglobosa	48 hours
	Acute EC50 423450 to 496000 µg/L Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 >530 mg/L Fresh water	Fish - Lepomis macrochirus - Young of the year	96 hours
	Chronic NOEC 200 µg/L Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours

Antimony trioxide is an ingredient found in the adhesive used to CONSTRUCT the outer jacket of our Flexible Duct products. Antimony trioxide and other glue chemicals are APPLIED between TWO IMPERVIOUS PET films during the curing process. The final product is the outer jacket, a solid, which will not cause exposure to Antimony Trioxide. The adhesive ENCAPSULATED BETWEEN THE FILMS BECOMES A CURED SOLID AND PROVIDES NO PATH FOR OCCUPATIONAL EXPOSURE TO ANTIMONY TRIOXIDE.

Persistence and degradability

There is no data available.

Bioaccumulative potential

There is no data available.

Mobility in soil

Soil/water partition coefficient (K_{oc}) : There is no data available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : This product is not expected to be a hazardous waste when it is disposed of according to the U.S. Environmental Protection Agency (EPA). 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.

Section 14. Transport information

	DOT	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.
Additional information	-	-	-

AERG : Not applicable.

Special precautions for user : These products are not classified as dangerous goods according to international transport regulations.

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) PAIR**: N,N'-ethylenebis(3,4,5,6-tetrabromophthalimide)
TSCA 8(a) CDR Exempt/Partial exemption: Not determined
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: Antimony trioxide; Zinc distearate; Silver
Clean Water Act (CWA) 311: Antimony trioxide

Antimony trioxide and N,N'-ethylenebis(3,4,5,6-tetrabromophthalimide) are ingredients found in the adhesive used to CONSTRUCT the outer jacket of our Flexible Duct products. Antimony trioxide and other glue chemicals are APPLIED between TWO IMPERVIOUS PET films during the curing process. The final product is the outer jacket, a solid, which will not cause occupational exposure or environmental release of these chemicals into the environment under normal conditions of use.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

Clean Air Act Section 602 Class I Substances : Not listed

Section 15. Regulatory information

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Not applicable.

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Antimony trioxide	0.1 - 1	No.	No.	No.	Yes.	Yes.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Antimony trioxide	1309-64-4	0.1 - 1
Supplier notification	Antimony trioxide	1309-64-4	0.1 - 1

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 : The following components are listed: Glass, oxide, chemicals

New York : The following components are listed: Antimony trioxide

New Jersey : The following components are listed: Antimony trioxide

Pennsylvania : The following components are listed: Antimony trioxide

California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause cancer.

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Antimony trioxide	Yes.	No.	No.	No.
Crystalline silica, quartz	Yes.	No.	No.	No.

Section 16. Other information

History

Date of issue mm/dd/yyyy : 07/15/2015

Version : 1

Prepared by : KMK Regulatory Services Inc.

Section 16. Other information

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

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.

Safety Data Sheet

Iron Metal



SECTION 1: IDENTIFICATION

Product Name: Iron Metal

CAS No.: 7439-89-6

Chemical Formula: Fe

Other Names: Iron, Fe, Iron Pellets, Iron Tablets

Intended Use / Restrictions on Use:

For professional/industrial use only.

Contact Information:

Greenwich Metals, Inc.

165 West Putnam Ave.

Greenwich, CT 06830

Phone: 203-622-4848

Emergency Contact:

Chemtrec – call 1-800-424-9300

SECTION 2: HAZARDS IDENTIFICATION

Classification:

Not a hazardous substance according to the GHS classification system.

Label Elements:

Hazard Pictograms: None

Signal Word: None

Hazard Statements: None

Precautionary Statements: None

Other Hazards: None

Unknown Acute Toxicity Statement:

Not Applicable

SECTION 3: COMPOSITION

Name: Iron Metal

Synonyms: Iron, Fe, Iron Pellets, Iron Tablets

Chemical Name	CAS Number	% by Weight
Iron (Fe)	7439-89-6	>99.0

Mixture:

Not applicable

SECTION 4: FIRST AID MEASURES

Required Treatment:

After inhalation, move to fresh air and rest in a position comfortable for breathing.

After skin contact, wash skin thoroughly.

After eye contact, remove contact lenses if applicable and flush eyes with water for at least 15 minutes.

After ingestion, do not induce vomiting. Rinse mouth with water. Call poison control center or doctor.

Important Symptoms & Effects, Acute & Delayed:

No information available. If feeling un-well after exposure, consult with a doctor.

Indication of Medical Attention:

If any acute or chronic symptoms arise or if feeling unwell after exposure, seek medical advice.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing Techniques/Equipment:

Use extinguishing media appropriate for surrounding environment. Do not use water on molten metal.

Chemical Hazards from Fire:

Iron oxides

Special Equipment and Precautions for Firefighters:

Exercise caution. If entering fire area, wear proper protective equipment including respiratory protection if necessary.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Emergency Procedures/Personal Protection:

Avoid dust formation. Avoid breathing fumes and dust.
Evacuate all unnecessary personnel.

Protective Equipment:

Use appropriate personal protection equipment (PPE), as listed in section 8.

Methods of Containment & Cleanup:

Sweep up and shovel without creating dust. Keep in closed containers for disposal.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling:

When solid, practice good industrial hygiene and safety procedures. Do not allow dust or powder to accumulate on equipment or building surfaces. Clean exposed areas.

Precautions for Safe Storage:

Store in cool, dry and well ventilated location. Seal containers. Keep away from incompatible materials such as oxidizing agents and water.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Control Parameters:

Iron has no occupational exposure limits. Iron products (such as iron oxide) do have exposure limits. Please refer to the proper SDS for information.

Engineering Controls:

Ensure adequate ventilation. Ensure national/local regulations are observed.

Personal Protective Equipment:

Protective goggles, gloves and clothing. If insufficient ventilation, wear respiratory protection.

Materials for Protective Clothing: Wear chemically resistant materials and fabrics.

Hand Protection: Wear chemically resistant gloves. If working with molten or hot material, wear thermally resistant gloves.

Eye Protection: Chemical goggles or safety glasses should be worn at all times. For furnace work, wear a face shield or safety glasses.

Respiratory Protection: If exposure limits are exceeded or irritation is experienced, NIOSH approved respiratory protection should be worn.

Thermal Hazard Protection: For furnace work, fire retardant clothing, gloves, and safety shoes should be worn.

Consumer Exposure Controls: Do not eat, drink, or smoke during use.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid (Metal)

Color: Grey/Silver

Taste: N/A

Molecular Weight: 55.85 g/mol

Odor: N/A

Odor Threshold: N/A

pH: N/A

Melting Point: 1,535 °C (2,795 °F)

Boiling Point: 2,750 °C (4,982 °F)

Boiling Range: N/A

Flash Point: N/A

Evaporation Rate: N/A

Flammability: N/A

Upper/Lower Flammability Limits: N/A

Vapor Pressure: N/A

Vapor Density: N/A

Relative Density: 7.86 g/mL at 25 °C

Solubility: Insoluble in water

Partition Coefficient: N/A

Auto-ignition Temperature: N/A

Decomposition Temperature: N/A

Viscosity: N/A

SECTION 10: STABILITY AND REACTIVITY

Reactivity: No data available.

Stability: Stable under proper handling and storage conditions.

Hazardous Reactions: No data available.

Conditions to Avoid: Avoid incompatible materials, dust generation.

Incompatible Materials: Strong oxidizing agents.

Hazardous Decomposition Products: No data available.

SECTION 11: TOXICOLOGICAL INFORMATION

Routes of Exposure

Inhalation of dust, fumes. Skin contact through physical contact. Eye contact through physical contact or dust and fumes. Ingestion through contamination of skin/surfaces.

Chronic and Acute Related Symptoms/Effects:

Inhalation of fumes or dust can cause respiratory irritation. Skin contact with molten metal can cause burns. Dust or fumes can cause eye irritation. Chronic ingestion can cause weight loss.

Measures of Toxicology:

Acute Toxicity: Not Classified

Skin Corrosion/Irritation: Not Classified

Serious Eye Damage/ Irritation: Not Classified

Respiratory or Skin Sensitization: Not Classified

Germ Cell Mutagenicity: Not Classified

Reproductive Toxicity: Not Classified

Carcinogenic Information: IARC Group: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity: No data available

Persistence and Degradability: No data available

Bioaccumulative Potential: No data available

Mobility in Soil: No data available

Other Adverse Effects:

Prevent entry to sewers and public waterways. Avoid release to the environment. Ensure accordance with national and local regulations.

SECTION 13: DISPOSAL CONSIDERATIONS

Dispose of waste in accordance with all local, regional, national, and international regulations.

SECTION 14: TRANSPORTATION INFORMATION

Not a dangerous good.

Transport Special Precautions: Keep dry.

SECTION 15: REGULATORY INFORMATION**US Federal Regulations:**

SARA Section 302 – None

SARA Section 311/312 Hazard Classes – None

SARA Section 313 Emissions Reporting – None

US State Regulations:

California – Prop. 65 – Non-carcinogenic

Pennsylvania – Right To Know List

New Jersey – Right To Know List

SECTION 16: OTHER INFORMATION

Date of Preparation: 05/31/15

Prepared in accordance with OSHA HCS 29 CFR 1910.1200.

Greenwich Metals, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. GREENWICH METALS, INC. MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, GREENWICH METALS, INC. WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.

Safety Data Sheet: Copper

Section 1: Product Identification

Manufacturer/Supplier:

Wolverine Tube, Inc.
2100 Market Street NE
Decatur, AL 35601
(800) 633-3972

Recommended Use and Restrictions:

Solid copper, various forms and uses. Manufacture of articles.

Emergency Information:

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300
International CHEMTREC, call: 1-703-527-3887




GHS Product Identifier: Copper

Other Means of ID: Cu, Copper Dust, Copper Fume

Section 2: Hazard Identification

Classification: Copper and copper alloys are considered an “article” and are not hazardous in its solid form. However, certain processes such as cutting, milling, grinding, melting and welding could result in some serious hazardous materials being emitted. The GHS classification below pertains to these emitted products during these processes.

Signal Word, Hazard Statements & Symbols: WARNING

Symbols	Hazard	GHS Classification	Hazard Statements
	STOT (repeated exposure)	Category – 2	Causes damage to lungs, kidney and blood through prolonged or repeated exposure.
	Skin Irritation	Category – 2	Causes skin irritation.
	Acute Toxicity – Inhalation	Category – 4	Harmful if inhaled.
	Acute Toxic to Aquatic Life	Category – 1	Very toxic to aquatic life.
	Chronic Toxic to Aquatic Life	Category – 1	Very toxic to aquatic life with long lasting effects.
N/A	Eye Irritation	Category – 2B	Causes eye irritations.

Notes:

STOT – Specific Target Organ Toxicity

Precautionary Statements

Prevention:

Do not breathe dust/fume/gas/vapor/spray. Use in a well-ventilated area. Avoid generating dust. Dusts and fines from processing may be ignitable. Use personal protective equipment as required. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Contaminated work clothing should not be allowed out of the workplace.

First Aid Response:

EYES: Flush eyes with plenty of water for at least 15 minutes. Seek medical attention if eye irritation persists.
SKIN: Wash affected area with mild soap and water. Seek medical attention if skin irritation persists.
INHALATION: Remove individual to fresh air. Check for clear airway, breathing and presence of pulse. If necessary administer CPR. Consult a physician immediately.
INGESTION: Dust may irritate mouth and gastrointestinal tract. If ingested, seek medical attention.

Storage:

Store away from strong acids, alkalis and oxidizers. Store away from mercury, acetylene and halogens. Store in accordance with federal, state and local regulations.

Disposal: Copper should be recycled whenever possible. Otherwise, dispose of in accordance with applicable federal, state and local regulations.

Section 3: Composition and Information on Ingredients

Composition:

Name:	CAS #	% by Weight
Copper	7440-50-8	100

Section 4: First Aid Measures

Eye Contact: Check for and remove any contact lenses. Do not use eye ointment. Seek medical attention immediately.

Skin Contact: After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient (moisturizing cream or lotion). If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Ingestion: Do not induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Important Symptoms and Effects: Copper and copper alloys as sold and shipped is not likely to present acute or chronic health effects. However, during processing (cutting, milling, grinding, melting or welding) emitted byproducts may cause irritations, difficulty breathing, coughing or wheezing. May cause allergic skin reactions.

Section 5: Fire and Explosion Data

Suitable Extinguishing Media: Non-flammable. Not applicable for solid product. Use Class D extinguishing agents or sand on fires involving dusts or fines. Use extinguishers appropriate for surrounding materials. DO NOT use water on molten metal. DO NOT use water on dust, powder or fume fires.

Specific Hazards: Dusts from grinding operations may burn if they are ignited. Dust, powder and fumes are flammable when exposed to flame or by chemical reaction with oxidizing agents.

Hazardous Combustion Products: At temperatures above the melting point, fumes containing copper oxides and smaller amounts of other alloying elements (if present) may be liberated.

Special Protective Equipment and Precautions for Firefighters: Firefighters should wear self-contained NIOSH-approved breathing apparatus and full protective clothing.

Explosion Data: Molten metal in contact with water may be explosive.

Section 6: Accidental Release Measures

Personal Precautions, PPE and Emergency Procedures: Not applicable to copper in solid state. Avoid dust formation. Ensure adequate ventilation. Clean-up personnel should be protected against contact with eyes and skin protection.

Environmental Precautions: Not applicable to copper in solid state. Do not flush into surface water or sanitary sewer system.

Methods and Materials for Containment and Clean-up: Solid metal does not pose any problems. Dust spills should be cleaned up avoiding dust generation. Wash down with water if in contact with acids. Avoid inhalation of dusts. Collect scrap copper for recycling.

Section 7: Handling and Storage

Precautions:

Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not breathe dust. Avoid contact with eyes. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If you feel unwell, seek medical attention and show the label when possible.

Storage:

Keep container dry. Keep in a cool place. Ground all equipment containing material. Keep container tightly closed. Keep in a cool well-ventilated place.

Incompatibilities:

Combustible materials should be stored away from extreme heat and away from strong oxidizing agents.

Section 8: Exposure Controls and Personal Protection

Control Parameters: The exposure limit for copper dusts and fumes has been established as follows in the table below. All OEL values are established as 8-hour Time Weighted Average (TWA) concentrations unless otherwise noted.

Chemical Name	CAS Number	OSHA PEL	ACGIH TLV	NIOSH REL
Copper	7440-50-8	1 mg/m ³ (dust) 0.1 mg/m ³ (fume)	1 mg/m ³ (dust) 0.2 mg/m ³ (fume)	1 mg/m ³ (dust) 0.1 mg/m ³ (fume)

Appropriate Engineering Controls: Provide general or local exhaust ventilation to minimize airborne concentrations during milling, grinding, melting and welding operations.

Individual Protective Measures: Dependent upon process being performed on material. Each operation must be addressed for suitable equipment.

Gloves: As required.

Clothing: N/A

Eyes: Safety glasses or goggles.

Footwear: N/A

Respirator: If concentrations exceed established limits use NIOSH/MSHA approved particulate respirator when generating dust or fume.

Other: With molten metal, use full body cover clothing suitably treated to prevent burns.

Section 9: Chemical and Physical Properties

Physical State:	Solid	Other Information:	Not Applicable
Odor:	Not Applicable	Appearance:	Reddish metallic solid
pH:	Not Applicable	Odor Threshold:	Not Applicable
Boiling Point:	2595°C (4703°F)	Melting Point:	1083°C (1981°F)
Evaporation Rate:	Not Applicable	Flash Point:	N/A
UFL%:	Not Applicable	Flammability:	Not Flammable
Vapor Pressure:	Not Applicable	LFL%:	Not Applicable
Relative Density:	8.94	Vapor Density:	Not Applicable
Solubility:	Not Soluble	Specific Gravity:	No Data
Auto-Ignition Temp:	Not Applicable	Partition Coefficient:	No Data
Viscosity:	Not Applicable	Decomposition Temperature:	No Data

Section 10: Stability and Reactivity Data

Stability: The product is stable. Copper and its alloys are stable under normal storage and handling conditions.

Possibility of Hazardous Reactions: Hazardous polymerization cannot occur.

Conditions to Avoid: Reacts violently with hydrogen peroxide and other oxidizers. Reaction with acids could produce noxious gases. In contact with acids, hydrogen gas may evolve. Avoid dust formation. Molten metal can react violently with water or moisture.

Incompatible Materials: Yes, strong acids, alkalis and oxidizers. Also, mercury, acetylene and halogens.

Hazardous Decomposition: None.

Section 11: Toxicological Data

LD₅₀ Oral: No Data
LD₅₀ Dermal: No Data
LD₅₀ Inhalation: No Data
Other: No Data

Likely Routes of Entry: None for copper and alloys in their natural solid form. Inhalation of metal particulate or elemental oxide fumes generated during welding, burning, grinding or machining may pose acute or chronic health effects. In finely divided form, skin contact may produce localized irritation and/or contact dermatitis.

Eyes: High concentrations of dust may cause irritation to the eyes. Fumes can cause eye irritation.

Skin: May cause skin irritations. Prolonged skin contact with coated copper may cause skin irritation in sensitive individuals. Workers with anemia, kidney damage, digestive, respiratory, nervous system, pregnant women and fertile females warrant particular attention.

Inhalation: Dust may irritate the nose and throat. If heated, copper fumes may cause metal fume fever, a delayed, benign, transient flu-like condition.

Symptoms related to Product Characteristics: None for copper and alloys in their natural solid state.

Effects of Acute Exposure to Material: Can cause metal fume fever, a metallic taste in the mouth, dryness or irritation of the throat, and coughing. After 4-48 hours symptoms can include sweating, shivering, headache, fever, muscle aches, nausea, vomiting, weakness and tiredness.

STOT (Single Exposure): Causes damage to organs (kidneys, respiratory system).

STOT (Repeated Exposure): Respiratory system. Skin irritation. Reproductive system.

Mutagenicity: Suspected of causing genetic effects.

Carcinogenicity:

IARC: N/A

EPA-D (Not classifiable as to human carcinogenicity).

LD₅₀: Not established

LC₅₀: Not established

Section 12: Ecological Data

Ecotoxicity: No data available for copper and alloys in their natural solid state. However, individual components of the material have been found to be toxic to the environment. Metal dusts may migrate to soil and groundwater and be ingested by wildlife.

Component	Toxicity to Fish	Toxicity to Algae	Toxicity to Microorganisms
Copper	LC ₅₀ Fathead Minnow 96 hr. 0.0068-0.0156 mg/L	EC ₅₀ Freshwater Algae 72 hr. 0.0426-0.0535 mg/L	EC ₅₀ Water Flea 48 hr. 0.03 mg/L

Persistence and Degradability: No Data

Bioaccumulative Potential: No Data

Mobility in Soil: No Data

Other Adverse Effects: None Known.

Section 13: Disposal Information

Waste Disposal Methods: Recover copper for recycling.

Container Cleaning and Disposal: Dispose of in accordance with applicable federal, provincial/state and local regulations.

Section 14: Transport Information

General Shipping Information: Material not regulated for shipping.

Shipping Name and Description: N/A

UN Number: N/A

Hazard Class: N/A

Packing Group/Risk Group: N/A

Transport Regulations: Canadian Transportation of Dangerous Goods Regulations (TDG) March 2011.
US Department of Transport (DOT) Hazardous Materials shipping information (Title 49 – Transportation March 2011).

Section 15: Other Regulatory Information

Regulatory Information: The components of this material are subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA – October 2006), as follows:

Chemical Name	SARA 302 (40 CFR 355, App. A)	SARA 304 (40 CFR Table 302.4)	SARA 313 (40 CFR 372.65)	CERCLA Reportable Quantities
Copper	No	No	Yes	5,000 pounds

SARA Threshold Planning Quantity: There are no specific Threshold Planning Quantities for the material. The default Federal SDS submission and inventory requirement filing threshold of 10,000 lb. (4,540 kg) therefore applies, per 40 CFR 370.20.

CERCLA Reportable Quantity (RQ): 5,000 lb.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 05/11/2015 09:00

Last Updated: 05/18/2015 09:00

The information contained herein is believed to be accurate but is not warranted to be so. All hazard classifications involve data and interpretations that may vary from company to company. They are intended only for rapid, general identification of the magnitude of a specific hazard. To deal adequately with the safe handling of this product, all the information contained in this SDS must be considered and reasonable safety precautions followed. The information contained in the Safety Data Sheet is based on the individual properties of the components of the mixture. Terrell Technical Services, Inc. has compiled the information and recommendations contained in this Safety Data Sheet from sources believed to be reliable and to represent the most reasonable current opinion on the subject when the SDS was prepared. No warranty, guarantee, or representation is made as to the correctness or sufficiency of the information. The user of this product must decide for itself what specific safety measures are necessary to safely use this product, either alone or in combination with other products.

No warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Terrell Technical Services, Inc., assumes no responsibility for personal injury or property damage to vendors, users, or third parties caused by the material. Such vendees or users assume all risks associated with the use of the material. Any questions regarding this product should be directed to the manufacturer of the product as described in Section 1.

SAFETY DATA SHEET (SDS)

According to 1907/2006/EC, Article 31

Printing Date 04/25/2017

Version number 2

Reviewed on 04/25/2017

1 PRODUCT AND COMPANY IDENTIFICATION**Trade name: Lead (Pb) Alloy Solder Bar****Relevant identified uses of the substance or mixture and uses advised against**

No further relevant information available.

1.3 Details of the supplier of the safety data sheet**Manufacturer/Supplier:**

Kester Inc.
800 West Thorndale Avenue
Itasca, IL 60143 USA
Tel (630) 616-4000
Tel International 00 1 630 616-4000

ITW Specialty Materials (Suzhou) Co., Ltd.
Heng Qiao Road
Wujiang Economic Development Zone
Suzhou, Jiangsu 215200 China
Tel +86 512 82060808

Kester GmbH
Ganghofer Strasse 45
D-82216 Gernlinden Germany
Tel +49 (0) 8142 4785 0

Information department: Product Compliance: EHS_Kester@kester.com**1.4 Emergency telephone number:**

CHEMTREC 24-Hour Emergency Response Telephone Number : (800) 424-9300

CHEMTREC 24-Hour Emergency Response (Outside US & Canada) Telephone Number : (703) 527-3887

2 HAZARDS IDENTIFICATION**2.1 Classification of the substance or mixture****Classification according to Regulation (EC) No 1272/2008**

GHS08 Health hazard

Carc. 2 H351 Suspected of causing cancer.

Repr. 1 H360 May damage fertility or the unborn child.

STOT RE 2 H373 May cause damage to organs through prolonged or repeated exposure.



GHS07

Acute Tox. 4 H302 Harmful if swallowed.

Acute Tox. 4 H332 Harmful if inhaled.

2.2 Label elements**Labelling according to Regulation (EC) No 1272/2008**

The product is classified and labeled according to the CLP regulation.

(Contd. on page 2)

US

SAFETY DATA SHEET (SDS)
According to 1907/2006/EC, Article 31

Printing Date 04/25/2017

Version number 2

Reviewed on 04/25/2017

Trade name: **Lead (Pb) Alloy Solder Bar**

(Contd. of page 1)

Hazard pictograms



GHS07 GHS08

Signal word Danger

Hazard-determining components of labeling:

LEAD (Pb)

Hazard statements

- H302+H332 Harmful if swallowed or if inhaled.
- H351 Suspected of causing cancer.
- H360 May damage fertility or the unborn child.
- H373 May cause damage to organs through prolonged or repeated exposure.

Precautionary statements

- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P270 Do not eat, drink or smoke when using this product.
- P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
- P302+P352 IF ON SKIN: Wash with plenty of soap and water.
- P405 Store locked up.
- P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard description:

WHMIS Symbols



Classification system:

NFPA ratings (scale 0 - 4)



Health = 2
Fire = 0
Reactivity = 0

HMIS-ratings (scale 0 - 4)



Health = *1
Fire = 0
Reactivity = 0

2.3 Other hazards

Results of PBT and vPvB assessment

PBT: Not applicable.
vPvB: Not applicable.

3 COMPOSITION OF MIXTURE

Description: Mixture of the substances listed below with nonhazardous additions.

(Contd. on page 3)

SAFETY DATA SHEET (SDS)
According to 1907/2006/EC, Article 31

Printing Date 04/25/2017

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Reviewed on 04/25/2017

Trade name: Lead (Pb) Alloy Solder Bar

(Contd. of page 2)

CAS No.	Description		% Range
CAS: 7439-92-1 EINECS: 231-100-4	LEAD (Pb)	☠ Carc. 2, H351; Repr. 1B, H360; STOT RE 2, H373 ⚠ Acute Tox. 4, H302; Acute Tox. 4, H332	30-100%
CAS: 7440-31-5 EINECS: 231-141-8	TIN (Sn)		5-100%

4 FIRST AID MEASURES

4.1 Description of first aid measures

General information:

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

Follow general first aid procedures.

After inhalation:

In case of unconsciousness place patient stably in side position for transportation.

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.

Supply fresh air; consult doctor in case of complaints.

After skin contact: Immediately wash with water and soap and rinse thoroughly.

After eye contact: Rinse opened eye for several minutes under running water.

After swallowing: Seek immediate medical advice.

4.2 Most important symptoms and effects, both acute and delayed No further relevant information available.

4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available.

5 FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing agents:

CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

5.2 Special hazards arising from the substance or mixture In case of fire, the following can be released:

5.3 Advice for firefighters

Protective equipment: No special measures required.

6 ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures Ensure adequate ventilation

6.2 Environmental precautions: Do not allow to enter sewers/ surface or ground water.

6.3 Methods and material for containment and cleaning up:

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

6.4 Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

Protective Action Criteria for Chemicals

PAC-1:

CAS: 7439-92-1	LEAD (Pb)	0.15 mg/m3
CAS: 7440-31-5	TIN (Sn)	6 mg/m3

PAC-2:

CAS: 7439-92-1	LEAD (Pb)	120 mg/m3
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(Contd. on page 4)

SAFETY DATA SHEET (SDS)
According to 1907/2006/EC, Article 31

Printing Date 04/25/2017

Version number 2

Reviewed on 04/25/2017

Trade name: Lead (Pb) Alloy Solder Bar

CAS: 7440-31-5 TIN (Sn)		(Contd. of page 3) 67 mg/m3
PAC-3:		
CAS: 7439-92-1	LEAD (Pb)	700 mg/m3
CAS: 7440-31-5	TIN (Sn)	400 mg/m3

7 HANDLING AND STORAGE

7.1 Precautions for safe handling Thorough dusting.
Information about protection against explosions and fires: No special measures required.

7.2 Conditions for safe storage, including any incompatibilities
Storage:
Requirements to be met by storerooms and receptacles: Store in a cool location.
Information about storage in one common storage facility: Not required.
Further information about storage conditions: Keep receptacle tightly sealed.

7.3 Specific end use(s) No further relevant information available.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Additional information about design of technical systems: No further data; see item 7.

8.1 Control parameters

Components with limit values that require monitoring at the workplace:

CAS: 7439-92-1 LEAD (Pb)

PEL	Long-term value: 0.05* mg/m ³ *see 29 CFR 1910.1025
REL	Long-term value: 0.05* mg/m ³ *8-hr TWA ;See PocketGuide App.C
TLV	Long-term value: 0.05* mg/m ³ *and inorganic compounds, as Pb; BEI

CAS: 7440-31-5 TIN (Sn)

PEL	Long-term value: 2 mg/m ³ metal
REL	Long-term value: 2 mg/m ³
TLV	Long-term value: 2 mg/m ³ metal

Additional information:
PEL = Permissible Exposure Limit (OSHA)
TLV= Threshold Limit Value (ACGIH)
OSHA= Occupational Safety and Health Administration
ACGIH= American Conference of Governmental Industrial Hygienists

8.2 Exposure controls

Personal protective equipment:
General protective and hygienic measures:
The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Wash hands before breaks and at the end of work.

Breathing equipment:
Not necessary if room is well-ventilated.
Use suitable respiratory protective device in case of insufficient ventilation.

SAFETY DATA SHEET (SDS)
According to 1907/2006/EC, Article 31

Printing Date 04/25/2017

Version number 2

Reviewed on 04/25/2017

Trade name: Lead (Pb) Alloy Solder Bar

(Contd. of page 4)

Protection of hands:



Protective gloves

Material of gloves:

Nitrile rubber, NBR

Natural rubber, NR

Penetration time of glove material:

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye protection:



Safety glasses

9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

General Information

Appearance:

Form: Solid material

Color: Silver grey

Odor: Odorless

pH-value: Not applicable.

Change in condition

Melting point/Melting range: Undetermined.

Boiling point/Boiling range: 1740 °C (3164 °F)

Flash point: > 100 °C (> 212 °F)

Flammability (solid, gaseous): Not determined.

Auto igniting: Product is not selfigniting.

Danger of explosion: Product does not present an explosion hazard.

Vapor pressure: Not applicable.

Density at 20 °C (68 °F): 8.45 g/cm³ (70.515 lbs/gal)

Vapor density: Not applicable.

Solubility in / Miscibility with

Water: Insoluble.

Solvent content:

Organic solvents: 0.0 %

Solids content: 100.0 %

10 STABILITY AND REACTIVITY

10.1 Reactivity No further relevant information available.

(Contd. on page 6)

SAFETY DATA SHEET (SDS)
According to 1907/2006/EC, Article 31

Printing Date 04/25/2017

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Trade name: Lead (Pb) Alloy Solder Bar

(Contd. of page 5)

10.2 Chemical stability

Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.

10.3 Possibility of hazardous reactions No dangerous reactions known.

10.4 Conditions to avoid No further relevant information available.

10.5 Incompatible materials: No further relevant information available.

10.6 Hazardous decomposition products: No dangerous decomposition products known.

11 TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity:

Harmful if swallowed or if inhaled.

LD/LC50 values that are relevant for classification:

CAS: 7439-92-1 LEAD (Pb)

Oral	LD50	500 mg/kg (ATE)
Inhalative	LC50/4 h	1.5 mg/l (ATE)

Primary irritant effect:

on the skin: Based on available data, the classification criteria are not met.

on the eye: Based on available data, the classification criteria are not met.

Sensitization: Based on available data, the classification criteria are not met.

Additional toxicological information:

Carcinogenic categories

IARC (International Agency for Research on Cancer)

CAS: 7439-92-1 LEAD (Pb)	2B
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NTP (National Toxicology Program)

CAS: 7439-92-1 LEAD (Pb)	R
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OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients is listed.

12 ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity: No further relevant information available.

Additional ecological information:

General notes:

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

12.5 Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

13 DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Recommendation:

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

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SAFETY DATA SHEET (SDS)
According to 1907/2006/EC, Article 31

Printing Date 04/25/2017

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Trade name: Lead (Pb) Alloy Solder Bar

(Contd. of page 6)

Uncleaned packagings:

Recommendation: Disposal must be made according to official regulations.

14 TRANSPORT INFORMATION

14.1 UN-Number
DOT, ADR, ADN, IMDG, IATA Not applicable

14.2 UN proper shipping name
DOT, ADR, ADN, IMDG, IATA Not applicable

14.3 Transport hazard class(es)
DOT, ADR, ADN, IMDG, IATA Class Not applicable

14.4 Packing group
DOT, IMDG, IATA Not applicable

14.6 Special precautions for user Not applicable.

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code UN "Model Regulation": Not applicable.

15 REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

All ingredients are listed on the following Government Inventories:

- China: Inventory of Existing Chemical Substances in China (IECSC)
- Korea: Korea Existing Chemicals List (ECL)
- Europe: European Inventory of Existing Commercial Chemical Substances (EINECS)
- Japan: Inventory of Existing and New Chemical Substances (ENCS)
- Philippines: Philippine Inventory of Chemicals and Chemical Substances (PICCS)
- USA: TSCA (Toxic Substances Control Act) TSCA Inventory of Chemical Substances

USA The following information relates to product regulation specific to the USA.

SARA (Superfund Amendments and Reauthorization Act)

Section 355 (extremely hazardous substances):

None of the ingredient is listed.

Section 313 (Specific toxic chemical listings):

CAS: 7439-92-1 | LEAD (Pb)

Chemicals known to cause cancer:

LEAD (Pb)

Chemicals known to cause reproductive toxicity:

LEAD (Pb)

Carcinogenic categories

EPA (Environmental Protection Agency)

CAS: 7439-92-1 | LEAD (Pb)

B2

NIOSH-Ca (National Institute for Occupational Safety and Health)

None of the ingredients is listed.

(Contd. on page 8)

SAFETY DATA SHEET (SDS)
According to 1907/2006/EC, Article 31

Printing Date 04/25/2017

Version number 2

Reviewed on 04/25/2017

Trade name: Lead (Pb) Alloy Solder Bar

(Contd. of page 7)

CANADA:

Workplace Hazardous Materials Identification (WHMIS):

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulation (CPR) and the Safety Data Sheet (SDS) contains all of the information required by the CPR.

Labelling according to Regulation (EC) No 1272/2008

The product is classified and labeled according to the CLP regulation.

Hazard pictograms



GHS07 GHS08

Signal word Danger

Hazard-determining components of labeling:

LEAD (Pb)

Hazard statements

H302+H332 Harmful if swallowed or if inhaled.

H351 Suspected of causing cancer.

H360 May damage fertility or the unborn child.

H373 May cause damage to organs through prolonged or repeated exposure.

Precautionary statements

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P270 Do not eat, drink or smoke when using this product.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.

P302+P352 IF ON SKIN: Wash with plenty of soap and water.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 OTHER INFORMATION

The information contained herein is based on data considered accurate and is offered solely for information, consideration and investigation. Kester extends no warranties, makes no representations and assumes no responsibility as to the accuracy, completeness or suitability of this data for any purchaser's use. The data on this Material Safety Data Sheet relates only to this product and does not relate to use with any other material or in any process. All chemical products should be used only by, or under the direction of, technically qualified personnel who are aware of the hazards involved and the necessity for reasonable care in handling. Hazard communication regulations require that employees must be trained on how to use a Material Safety Data Sheet as a source for hazard information.

Department issuing Safety Data Sheet (SDS): Product Compliance / EHS Department

Contact: EHS_Kester@kester.com

Date of preparation / last revision 04/25/2017 / 1

Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

WHMIS: Workplace Hazardous Materials Information System (Canada)

LC50: Lethal concentration, 50 percent

(Contd. on page 9)
US

SAFETY DATA SHEET (SDS)

According to 1907/2006/EC, Article 31

Printing Date 04/25/2017

Version number 2

Reviewed on 04/25/2017

Trade name: Lead (Pb) Alloy Solder Bar

(Contd. of page 8)

LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Acute Tox. 4: Acute toxicity – Category 4
Carc. 2: Carcinogenicity – Category 2
Carc. 2: Carcinogenicity – Category 2
Repr. 1: Reproductive toxicity – Category 1
Repr. 1B: Reproductive toxicity – Category 1B
STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2

* **Data compared to the previous version altered.**

-US-



United States Steel Corporation

Galvanized (Hot Dipped) Sheet – Carbon Steel
Safety Data Sheet (SDS)

USS IHS Number: 1650
(Replaces USS Code Number: 3C012)

Locations: Irvin, Fairfield, Gary, Granite City, Great Lakes, Hamilton

Section 1 – Identification

1(a) Product Identifier Used on Label: Galvanized (Hot Dipped) Sheet – Carbon Steel

1(b) Other Means of Identification: Galvannealed (Hot Dipped) Sheet – Carbon Steel, ACRYZINC Sheet – Carbon Steel

1(c) Recommended Use of the Chemical and Restrictions on Use: None

1(d) Name, Address, and Telephone Number:

United States Steel Corporation Phone number : (412) 433-6840 (8:00 am to 5:00 pm)
600 Grant Street, Room 1662 FAX: (412) 433-5019
Pittsburgh, PA 15219-2800

1(e) Emergency Phone Number: 1-800-262-8200 (CHEMTREC)

Section 2 – Hazard(s) Identification

2(a) Classification of the Chemical: As sold, this product, **Galvanized (Hot Dipped) Sheet – Carbon Steel** is not hazardous according to the criteria specified in REACH [REGULATION (EC) No 1907/2006] and CLP [REGULATION (EC) No 1272/2008]. Under 29 CFR 1910.1200 Hazard Communication Standard, steel products are considered mixtures due to further processing which may produce dusts and or fume. The categories of Health Hazards as defined in “GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS (GHS), Third revised edition ST/SG/AC.10/30/Rev. 3” United Nations, New York and Geneva, 2009 have been evaluated. Refer to Section 3, 8 and 11 for additional information. Precautionary Statement/Emergency Overview: This formed solid metal product poses little or no immediate health or fire hazard. When product is subjected to welding, burning, melting, sawing, brazing, grinding or other similar processes, potentially hazardous airborne particulate and fumes may be generated.

2(b) Signal Word, Hazard Statement(s), Symbols and Precautionary Statement(s):

Hazard Symbol	Hazard Classification	Signal Word	Hazard Statement(s)	Precautionary Statement(s)
	Carcinogenicity-2 Toxic to Reproduction - 2 Single Target Organ Toxicity (STOT) Repeat Exposure - 1	Danger	Suspected of causing cancer. Suspected of damaging fertility or the unborn child. Causes damage to lungs through prolonged or repeated inhalation exposure.	Do not breathe dusts / fume / spray. Wear protective gloves / protective clothing / eye protection / face protection. Contaminated work clothing must not be allowed out of the workplace.
	Acute Toxicity-Oral 4 Skin Sensitization - 1 STOT Single Exposure - 3		Harmful if swallowed. May cause an allergic skin reaction. May cause respiratory irritation.	Use only outdoors or in well ventilated areas. Wash thoroughly after handling. Obtain special instructions before use.
NA	Eye Irritation - 2B		Causes eye irritation.	Do not handle until all safety precautions have been read and understood. Do not eat, drink or smoke when using this product. If inhaled: Remove person to fresh air and keep comfortable for breathing. If exposed, concerned or feel unwell: Get medical advice/attention. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If on skin: Wash with plenty of water. If irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse. Dispose of contents in accordance with federal, state and local regulations.

2(c) Hazards Not Otherwise Classified: None Known

2(d) Unknown Acute Toxicity Statement (mixture): None Known

Galvanized (Hot Dipped) Sheet – Carbon Steel

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Section 3 – Composition/Information on Ingredients

3(a-c) Chemical Name, Common Name (synonyms), CAS Number and Other Identifiers, and Concentration:

Chemical Name	CAS Number	EC Number	% weight
Iron	7439-89-6	231-096-4	>95
Manganese	7439-96-5	231-105-1	≤2.0
Nickel	7440-02-0	231-111-4	≤0.2

Metallic Coating			
Iron	7439-89-6	231-096-4	≤0.8
Zinc	7440-66-6	231-175-3	0.15 – 9.1

EC- European Community

CAS- Chemical Abstract Service

Section 4 – First-aid Measures

4(a) Description of Necessary Measures: If exposed, concerned or feel unwell: Get medical advice/attention.

- **Inhalation:** Galvanized (Hot Dipped) Sheet – Carbon Steel as sold/shipped is not a likely form of exposure. However during further processing (welding, grinding, burning, etc.). If inhaled: Remove person to fresh air and keep comfortable for breathing. If exposed, concerned or feel unwell: Get medical advice/attention.
- **Eye Contact:** This product as sold/shipped is not a likely form of exposure. However during further processing (welding, grinding, burning, etc.). 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 advice attention. If exposed, concerned or feel unwell: Get medical advice/attention.
- **Skin Contact:** If on skin: Wash thoroughly after handling. Wash with plenty of water. If irritation or rash occurs: Get medical advice/attention. Take off and wash contaminated clothing before reuse.
- **Ingestion:** This product as sold/shipped is not a likely form of exposure. However during further processing (welding, grinding, burning, etc.). If swallowed: Call a poison center/doctor if you feel unwell. Rinse mouth. If exposed, concerned or feel unwell: Get medical advice/attention.

4(b) Most Important Symptoms/Effects, Acute and Delayed (chronic):

- **Inhalation:** This product as sold/shipped is not likely to present an acute or chronic health effect.
- **Eye:** This product as sold/shipped is not likely to present an acute or chronic health effect.
- **Skin:** This product as sold/shipped is not likely to present an acute or chronic health effect.
- **Ingestion:** This product as sold/shipped is not likely to present an acute or chronic health effect.

4(c) Immediate Medical Attention and Special Treatment: None Known

Section 5 – Fire-fighting Measures

5(a) Suitable (and unsuitable) Extinguishing Media: Not applicable for Galvanized (Hot Dipped) Sheet – Carbon Steel as sold/shipped. Use extinguishers appropriate for surrounding materials.

5(b) Specific Hazards Arising From the Chemical: Not applicable for this product as sold/shipped. When burned, toxic smoke and vapor may be emitted.

Section 6 - Accidental Release Measures

6(a) Personal Precautions, Protective Equipment and Emergency Procedures: Not applicable for Galvanized (Hot Dipped) Sheet – Carbon Steel as sold/shipped. For spills involving finely divided particles, clean-up personnel should be protected against contact with eyes and skin. If material is in a dry state, avoid inhalation of dust.

6(b) Methods and Materials for Containment and Clean Up: Not applicable for this product as sold/shipped. Fine, dry material should be removed by vacuuming or wet sweeping methods to prevent spreading of dust. Avoid using compressed air. Do not release into sewers or waterways. Collect material in appropriate, labeled containers for recovery or disposal in accordance with federal, state, and local regulations. Follow applicable OSHA regulations (29 CFR 1910.120) and all other pertinent state and federal requirements.

Section 7 - Handling and Storage

7(a) Precautions for Safe Handling: Not applicable for Galvanized (Hot Dipped) Sheet – Carbon Steel as sold/shipped, however further processing (welding, burning, grinding, etc.) with the potential for generating high concentrations of airborne particulates should be evaluated and controlled as necessary. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Practice good housekeeping. Avoid breathing metal fumes and/or dust. Do not eat, drink or smoke when using this product.

7(b) Conditions for Safe Storage, Including any Incompatibilities: Store away from acids and incompatible materials.

Galvanized (Hot Dipped) Sheet – Carbon Steel

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Section 8 - Exposure Controls / Personal Protection

8(a) Occupational Exposure Limits (OELs): Galvanized (Hot Dipped) Sheet – Carbon Steel as sold/shipped in its physical form does not present an inhalation, ingestion or contact hazard, nor would any of the following exposure data apply. However, operations such as high temperature (burning, welding), sawing, brazing, machining and grinding may produce fumes and/or particulates. The following exposure limits are offered as reference, for an experience industrial hygienist to review.

Ingredients	8(a) OSHA PEL ¹	ACGIH TLV ²	NIOSH REL ³	IDLH ⁴
Iron	10 mg/m ³ (as iron oxide fume)	5.0 mg/m ³ (as iron oxide dust and fume)	5.0 mg/m ³ (as iron oxide dust and fume)	2,500 mg Fe/m ³
Manganese	“C” 5.0 mg/m ³ (as Fume & Mn compounds)	0.2 mg/m ³	“C” 5.0 mg/m ³ 1.0 mg/m ³ (as fume) “STEL” 3.0 mg/m ³	500 mg Mn/m ³
Nickel	1.0 mg/m ³ (as Ni metal & insoluble compounds)	1.5 mg/m ³ (as inhalable fraction ⁵ Ni metal) 0.2 mg/m ³ (as inhalable fraction Ni inorganic only insoluble and soluble compounds)	0.015 mg/m ³ (as Ni metal & insoluble and soluble compounds)	10 mg/m ³ (as Ni)

NE - None Established

1. OSHA PELs (Permissible Exposure Limits) are 8-hour TWA (time-weighted average) concentrations unless otherwise noted. A (“C”) designation denotes a ceiling limit, which should not be exceeded during any part of the working exposure unless otherwise noted. An Action level (AL) is used by OSHA and NIOSH to express a health or physical hazard. They indicate the level of a harmful or toxic substance/activity, which requires medical surveillance, increased industrial hygiene monitoring, or biological monitoring. Action Levels are generally set at one half of the PEL but the actual level may vary from standard to standard. The intent is to identify a level at which the vast majority of randomly sampled exposures will be below the PEL.
2. Threshold Limit Values (TLV) established by the American Conference of Governmental Industrial Hygienists (ACGIH) are 8-hour TWA concentrations unless otherwise noted. ACGIH TLVs are for guideline purposes only and as such are not legal, regulatory limits for compliance purposes. A Short Term Exposure Limit (STEL) is defined as the maximum concentration to which workers can be exposed for a short period of time (15 minutes) for only four times throughout the day with at least one hour between exposures.
3. The National Institute for Occupational Safety and Health Recommended Exposure Limits (NIOSH-REL) - Compendium of Policy and Statements. NIOSH, Cincinnati, OH (1992). NIOSH is the federal agency designated to conduct research relative to occupational safety and health. As is the case with ACGIH TLVs, NIOSH RELs are for guideline purposes only and as such are not legal, regulatory limits for compliance purposes.
4. The “immediately dangerous to life or health air concentration values (IDLHs)” are used by NIOSH as part of the respirator selection criteria and were first developed in the mid-1970s by NIOSH. The Documentation for Immediately Dangerous to Life or Health Concentrations (IDLHs) is a compilation of the rationale and sources of information used by NIOSH during the original determination of 387 IDLHs and their subsequent review and revision in 1994.
5. Inhalable fraction. The concentration of inhalable particulate for the application of this TLV is to be determined from the fraction passing a size-selector with the characteristics defined in the ACGIH 2013 TLVs[®] and BEIs[®] (Biological Exposure Indices) Appendix D, paragraph A.

8(b) Appropriate Engineering Controls: Use controls as appropriate to minimize exposure to metal fumes and dusts during handling operations. Provide general or local exhaust ventilation systems to minimize airborne concentrations. Local exhaust is necessary for use in enclosed or confined spaces. Provide sufficient general/local exhaust ventilation in pattern/volume to control inhalation exposures below current exposure limits.

8(c) Individual Protection Measures:

- **Respiratory Protection:** Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, use only a NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. Concentration in air of the various contaminants determines the extent of respiratory protection needed. Half-face, negative-pressure, air-purifying respirator equipped with P100 filter is acceptable for concentrations up to 10 times the exposure limit. Full-face, negative-pressure, air-purifying respirator equipped with P100 filter is acceptable for concentrations up to 50 times the exposure limit. Protection by air-purifying negative-pressure and powered air respirators is limited. Use a positive-pressure-demand, full-face, supplied air respirator or self-contained breathing apparatus (SCBA) for concentrations above 50 times the exposure limit. If exposure is above the IDLH (Immediately dangerous to life or health) for any of the constituents, or there is a possibility of an uncontrolled release or exposure levels are unknown, then use a positive-demand, full-face, supplied air respirator with escape bottle or SCBA.

Warning! Air-purifying respirators both negative-pressure, and powered-air do not protect workers in oxygen-deficient atmospheres.

- **Eyes:** Wear appropriate eye protection to prevent eye contact. For operations, which result in elevating the temperature of the product to or above its melting point or result in the generation of airborne particulates, use safety glasses to prevent eye contact. Contact lenses should not be worn where industrial exposures to this material are likely. Use safety glasses or goggles as required for welding, burning, sawing, brazing, grinding or machining operations.
- **Skin:** Wear appropriate personal protective clothing to prevent skin contact. Cut resistant gloves and sleeves should be worn when working with steel products. For operations, which result in elevating the temperature of the product to or above its melting point or result in the generation of airborne particulates, use protective clothing, and gloves to prevent skin contact. Protective gloves should be worn as required for welding, burning or handling operations. Contaminated work clothing must not be allowed out of the workplace.
- **Other protective equipment:** An eyewash fountain and deluge shower should be readily available in the work area.

Section 9 - Physical and Chemical Properties

<p>9(a) Appearance (physical state, color, etc.): Metallic Gray, Odorless</p> <p>9(b) Odor: NA</p> <p>9(c) Odor Threshold: NA</p> <p>9(d) pH: NA</p>	<p>9(j) Upper/lower Flammability or Explosive Limits: NA</p> <p>9(k) Vapor Pressure: NA</p> <p>9(l) Vapor Density (Air = 1): NA</p> <p>9(m) Relative Density: 7.85 g/cc Coating: 7.14 g/cc</p>
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Galvanized (Hot Dipped) Sheet – Carbon Steel

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Section 9 - Physical and Chemical Properties (continued)

9(e) Melting Point/Freezing Point: ~2750 °F (~1510 C), **Coating:** ~2750 °F(~1510 C) **9(n) Solubility(ies):** Insoluble

9(f) Initial Boiling Point and Boiling Range: **Coating:** ~1700 °F(~927 C) **9(o) Partition Coefficient n-octanol/water:** ND

9(g) Flash Point: NA **9(p) Auto-ignition Temperature:** NA

9(h) Evaporation Rate: NA **9(q) Decomposition Temperature:** ND

9(i) Flammability (solid, gas): Non-flammable, non-combustible **9(r) Viscosity:** NA

NA - Not Applicable
ND - Not Determined for product as a whole

Section 10 - Stability and Reactivity

10(a) Reactivity: Not Determined (ND)

10(b) Chemical Stability: Steel products are stable under normal storage and handling conditions.

10(c) Possibility of Hazardous Reaction: None Known







10(d) Conditions to Avoid: Storage with strong acids or calcium hypochlorite.

10(e) Incompatible Materials: Will react with strong acids to form hydrogen. Iron oxide dusts in contact with calcium hypochlorite evolve oxygen and may cause an explosion.

10(f) Hazardous Decomposition Products: Thermal oxidative decomposition of steel products can produce fumes containing oxides of iron and manganese as well as other alloying elements.

Section 11 - Toxicological Information

11(a-e) Information on toxicological effects: The following toxicity data has been determined for **Galvanized (Hot Dipped) Sheet – Carbon Steel** as a mixture when further processed using the information available for its components applied to the guidance on the preparation of an SDS under the GHS requirements of OSHA and the EU CPL:

Hazard Classification	Hazard Category		Hazard Symbols	Signal Word	Hazard Statement
	EU	OSHA			
Acute Toxicity Hazard (covers Categories 1-5)	NA*	4 ^a		Warning	Harmful if swallowed.
Eye Damage/ Irritation (covers Categories 1, 2A and 2B)	NA*	2B ^c	No Pictogram	Warning	Causes eye irritation.
Skin/Dermal Sensitization (covers Category 1)	1	1 ^d		Warning	May cause an allergic skin reaction.
Carcinogenicity (covers Categories 1A, 1B and 2)	2	2 ^g		Warning	Suspected of causing cancer.
Toxic to Reproduction (covers Categories 1A, 1B and 2)	NA*	2 ^h		Warning	Suspected of damaging fertility or the unborn child.
Specific Target Organ Toxicity (STOT) Following Single Exposure (covers Categories 1-3)	NA*	3 ⁱ		Warning	May cause respiratory irritation.
STOT following Repeated Exposure (covers Categories 1 and 2)	1	1 ^j		Danger	Causes damage to lungs through prolonged or repeated inhalation exposure.

* Not Applicable

Toxicological data listed below are presented regardless to classification criteria. Individual hazard classification categories where the toxicological information has met or exceeded a classification criteria threshold are listed above.

a. No LC₅₀ or LD₅₀ has been established for **Galvanized (Hot Dipped) Sheet – Carbon Steel**. The following data has been determined for the components:

- **Iron:** Rat LD₅₀ =98.6 g/kg (REACH)
Rat LD₅₀ =1060 mg/kg (IUCLID)
Rat LD₅₀ =984 mg/kg (IUCLID)
Rabbit LD₅₀ =890 mg/kg (IUCLID)
Guinea Pig LD₅₀ =20 g/kg (TOXNET)
Human LD_{LO} =77 g/kg (IUCLID)
- **Nickel:** LD₅₀ >9000 mg/kg (Oral/Rat); NOAEC >10.2 mg/1 (Inhalation/Rat)
- **Manganese:** Rat LD₅₀ > 2000 mg/kg (REACH)
Rat LD₅₀ > 9000 mg/kg (NLM Toxnet)

b. No Skin (Dermal) Irritation data available for **Galvanized (Hot Dipped) Sheet – Carbon Steel** as a mixture or its components.

Section 11 - Toxicological Information (continued)

11(a-e) Information on toxicological effects (continued):

- c. No Eye Irritation data available for **Galvanized (Hot Dipped) Sheet – Carbon Steel** as a mixture. The following Eye Irritation information was found for the components:
- **Iron:** Causes eye irritation.
 - **Nickel:** Slight eye irritation from particulate abrasion only.
- d. No Skin (Dermal) Sensitization data available for **Galvanized (Hot Dipped) Sheet – Carbon Steel** as a mixture. The following Skin (Dermal) Sensitization information was found for the components:
- **Nickel:** May cause allergic skin sensitization.
- e. No Respiratory Sensitization data available for **Galvanized (Hot Dipped) Sheet – Carbon Steel** as a mixture or its components.
- f. No Germ Cell Mutagenicity data available for **Galvanized (Hot Dipped) Sheet – Carbon Steel** as a mixture. The following Mutagenicity and Genotoxicity information was found for the components:
- **Iron:** IUCLID has found some positive and negative findings in vitro.
 - **Nickel:** EU RAR has found positive results in vitro and in vivo but insufficient data for classification.
- g. Carcinogenicity: IARC, NTP, and OSHA do not list **Galvanized (Hot Dipped) Sheet – Carbon Steel** as carcinogens. The following Carcinogenicity information was found for the components:
- **Welding Fumes - IARC Group 2B carcinogen**, a mixture that is possibly carcinogenic to humans.
 - **Nickel and certain nickel compounds – Group 2B - metallic nickel Group 1 - nickel compounds** ACGIH confirmed human carcinogen. Nickel – EURAR Insufficient evidence to conclude carcinogenic potential in animals or humans; suspect carcinogen classification Category 2 Suspected of causing cancer.
- h. No Toxic to Reproduction data available for **Galvanized (Hot Dipped) Sheet – Carbon Steel** as a mixture. The following Toxic to Reproductive information was found for the components:
- **Nickel:** Effects on fertility.
- i. No Specific Target Organ Toxicity (STOT) following a Single Exposure data available for **Galvanized (Hot Dipped) Sheet – Carbon Steel** as a mixture. The following STOT following a Single Exposure data was found for the components:
- **Iron:** Irritating to respiratory tract.
- j. No Specific Target Organ Toxicity (STOT) following Repeated Exposure data was available for **Galvanized (Hot Dipped) Sheet – Carbon Steel** as a whole. The following STOT following Repeated Exposure data was found for the components:
- **Nickel:** Rat 4 wk inhalation LOEL 4 mg/m³ Lung and Lymph node histopathology. Rat 2 yr inhalation LOEL 0.1 mg/ m³ Pigment in kidney, effects on hematopoiesis spleen and bone marrow and adrenal tumor. Rat 13 Week Inhalation LOAEC 1.0 mg/m³ Lung weights, and Alveolar histopathology.
 - **Manganese:** Inhalation of metal fumes - Degenerative changes in human brain; Behavioral: Changes in motor activity and muscle weakness (Whitlock *et al.*, 1966).

The above toxicity information was determined from available scientific sources to illustrate the prevailing posture of the scientific community. The scientific resources includes: The American Conference of Governmental Industrial Hygienist (ACGIH) Documentation of the Threshold Limit Values (TLVs) and Biological Exposure indices (BEIs) with Other Worldwide Occupational Exposure Values 2009, The International Agency for Research on Cancer (IARC), The National Toxicology Program (NTP) updated documentation, the World Health Organization (WHO) and other available resources, the International Uniform Chemical Information Database (IUCLID), European Union Risk Assessment Report (EU-RAR), Concise International Chemical Assessment Documents (CICAD), European Union Scientific Committee for Occupational Exposure Limits (EU-SCOEL), Agency for Toxic Substances and Disease Registry (ATSDR), Hazardous Substance Data Bank (HSDB), and International Programme on Chemical Safety (IPCS).

The following health hazard information is provided regardless to classification criteria and is based on the individual component(s) and potential resultant components from further processing:

Acute Effects by component:

- **Iron and oxides:** Iron is harmful if swallowed, causes skin irritation, and causes eye irritation. Contact with iron oxide has been reported to cause skin irritation and serious eye damage.
- **Manganese and oxides:** Manganese and Manganese oxide are harmful if swallowed.
- **Nickel and oxides:** Nickel may cause allergic skin sensitization. Nickel oxide may cause an allergic skin.

Delayed (chronic) Effects by component:

- **Iron and oxides:** Chronic inhalation of excessive concentrations of iron oxide fumes or dusts may result in the development of a benign pneumoconiosis, called siderosis, which is observable as an X-ray change. No physical impairment of lung function has been associated with siderosis. Inhalation of excessive concentrations of ferric oxide may enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens. Iron oxide is listed as a Group 3 (not classifiable) carcinogen by the International Agency for Research on Cancer (IARC).
- **Manganese and oxides:** Chronic exposure to high concentrations of manganese fumes and dusts may adversely affect the central nervous system with symptoms including languor, sleepiness, weakness, emotional disturbances, spastic gait, mask-like facial expression and paralysis. Animal studies indicate that manganese exposure may increase susceptibility to bacterial and viral infections. Occupational overexposure (Manganese) is a progressive, disabling neurological syndrome that typically begins with relatively mild symptoms and evolves to include altered gait, fine tremor, and sometimes, psychiatric disturbances. May cause damage to lungs with repeated or prolonged exposure. Neurobehavioral alterations in worker populations exposed to MnO including: speed and coordination of motor function are especially impaired.
- **Nickel and oxides:** Exposure to nickel dusts and fumes can cause sensitization dermatitis, respiratory irritation, asthma, pulmonary fibrosis, edema, and may cause nasal or lung cancer in humans. Causes damage to lungs through prolonged or repeated inhalation exposure. IARC lists nickel and certain nickel compounds as Group 2B carcinogens (sufficient animal data). ACGIH 2013 TLVs® and BEIs® lists insoluble nickel compounds as confirmed human carcinogens. Suspected of damaging the unborn child.

Galvanized (Hot Dipped) Sheet – Carbon Steel

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Section 12 - Ecological Information

12(a) Ecotoxicity (aquatic & terrestrial): No Data Available for **Galvanized (Hot Dipped) Sheet – Carbon Steel** as sold/shipped. However, individual components of the product when processed have been found to be toxic to the environment. Metal dusts may migrate into soil and groundwater and be ingested by wildlife as follows:

- **Iron Oxide:** LC₅₀: >1000 mg/L; Fish 48 h-EC₅₀ > 100 mg/L (Currenta, 2008k); 96 h-LC₀ ≥ 50,000 mg/l. Test substance: Bayferrox 130 red (95 – 97% Fe₂O₃; < 4% SiO₂ and Al₂O₃) (Bayer, 1989a).
- **Nickel Oxide:** IUCLID found LC₅₀ in fish, invertebrates and algae > 100 mg/l.

12(b) Persistence & Degradability: No Data Available

12(c) Bioaccumulative Potential: No Data Available

12(d) Mobility (in soil): No data available for **Galvanized (Hot Dipped) Sheet – Carbon Steel** as sold/shipped. However, individual components of the product have been found to be absorbed by plants from soil.

12(e) Other adverse effects: None Known

Additional Information:

Hazard Category: Not Reported

Signal Word: No Signal Word

Hazard Symbol: No Symbol

Hazard Statement: No Statement

Section 13 - Disposal Considerations

Disposal: **Galvanized (Hot Dipped) Sheet – Carbon Steel** should be recycled whenever possible. Product dusts and fumes from processing operations should also be recycled, or classified by a competent environmental professional and disposed of in accordance with applicable federal, state or local regulations.

Container Cleaning and Disposal: Follow applicable federal, state and local regulations. Observe safe handling precautions. European Waste Catalogue (EWC): 16-01-17 (ferrous metals), 12-01-99 (wastes not otherwise specified), 16-03 (off specification batches and unused products), or 15-01-04 (metallic packaging).

Please note this information is for Galvanized (Hot Dipped) Sheet – Carbon Steel in its original form. Any alterations can void this information.

Section 14 - Transport Information

14 (a-g) Transportation Information:

US Department of Transportation (DOT) under 49 CFR 172.101 **does not** regulate **Galvanized (Hot Dipped) Sheet – Carbon Steel** as a hazardous material. All federal, state, and local laws and regulations that apply to the transport of this type of material must be adhered to.

<p>Shipping Name: Not Applicable (NA) Shipping Symbols: NA Hazard Class: NA UN No.: NA Packing Group: NA DOT/ IMO Label: NA Special Provisions (172.102): NA</p>	<p>Packaging Authorizations a) Exceptions: NA b) Group: NA c) Authorization: NA</p>	<p>Quantity Limitations a) Passenger, Aircraft, or Railcar: NA b) Cargo Aircraft Only: NA Vessel Stowage Requirements a) Vessel Stowage: NA b) Other: NA DOT Reportable Quantities: NA</p>
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International Maritime Dangerous Goods (IMDG) and the Regulations Concerning the International Carriage of Dangerous Goods by Rail (RID) classification, packaging and shipping requirements follow the US DOT Hazardous Materials Regulation.

Regulations Concerning the International Carriage of Dangerous Goods by Road (ADR) **does not** regulate **Galvanized (Hot Dipped) Sheet – Carbon Steel** as a hazardous material.

<p>Shipping Name: Not Applicable (NA) Classification Code: NA UN No.: NA Packing Group: NA ADR Label: NA Special Provisions: NA Limited Quantities: NA</p>	<p>Packaging a) Packing Instructions: NA b) Special Packing Provisions: NA c) Mixed Packing Provisions: NA</p>	<p>Portable Tanks & Bulk Containers a) Instructions: NA b) Special Provisions: NA</p>
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International Air Transport Association (IATA) **does not** regulate **Galvanized (Hot Dipped) Sheet – Carbon Steel** as a hazardous material.

<p>Shipping Name: Not Applicable (NA) Class/Division: NA Hazard Label (s): NA UN No.: NA Packing Group: NA Excepted Quantities (EQ): NA</p>	<p>Passenger & Cargo Aircraft Limited Quantity (EQ) Pkg Inst: NA Max Net Qty/Pkg: NA</p>	<p>Cargo Aircraft Only Pkg Inst: NA Pkg Inst: NA Max Net Qty/Pkg: NA</p>	<p>Special Provisions: NA ERG Code: NA</p>
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Pkg Inst – Packing Instructions

Max Net Qty/Pkg – Maximum Net Quantity per Package

ERG – Emergency Response Drill Code

Transport Dangerous Goods (TDG) Classification: **Galvanized (Hot Dipped) Sheet – Carbon Steel** does not have a TDG classification.

Galvanized (Hot Dipped) Sheet – Carbon Steel

USS IHS No.: 1650

Rev. 4/14

Section 15 - Regulatory Information

Regulatory Information: The following listing of regulations relating to a U. S. Steel product may not be complete and should not be solely relied upon for all regulatory compliance responsibilities. This product and/or its constituents are subject to the following regulations:

SARA Potential Hazard Categories: Immediate Acute Health Hazard; Delayed Chronic Health Hazard

Section 313 Supplier Notification: The product, **Galvanized (Hot Dipped) Sheet – Carbon Steel** contains 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:

CAS #	Chemical Name	Percent by Weight
7439-96-5	Manganese	2.0 max
7440-02-0	Nickel	0.2 max

State Regulations: The product, **Galvanized (Hot Dipped) Sheet – Carbon Steel** as a whole is not listed in any state regulations. However, individual components of the product are listed in various state regulations:

California Prop. 65: Contains elements known to the State of California to cause cancer or reproductive toxicity. This includes nickel.

Other Regulations:

WHMIS Classification (Canadian): The product, **Galvanized (Hot Dipped) Sheet – Carbon Steel** is not listed as a whole. However individual components are listed.

Ingredients	WHMIS Classification
Manganese	B4, D2A
Nickel	D2B

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.

Section 16 - Other Information

Prepared By: United States Steel Corporation

Revision History:

4/1/2014 - Update to OSHA HAZ COM 2012

12/16/10 – Update of content and format to comply with GHS. Replaces USS Code 3C012

8/1/1985 - Original

Expiration Date: 4/01/17

Additional Information:

Hazardous Material Identification System (HMIS) Classification

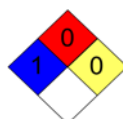
Health Hazard	1
Fire Hazard	0
Physical Hazard	0

HEALTH= 1, Denotes possible chronic hazard if airborne dusts or fumes are generated Irritation or minor reversible injury possible.

FIRE= 0, Materials that will not burn.

PHYSICAL HAZARD= 0, Materials that are normally stable, even under fire conditions, and will not react with water, polymerize, decompose, condense, or self-react. Non-explosives.

National Fire Protection Association (NFPA)



HEALTH = 1, Exposure could cause irritation but only minor residual injury even if no treatment is given.

FIRE = 0, Materials that will not burn.

INSTABILITY = 0, Normally stable, even under fire exposure conditions, and are not reactive with water.

ABBREVIATIONS/ACRONYMS:

ACGIH	American Conference of Governmental Industrial Hygienists
BEIs	Biological Exposure Indices
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CNS	Central Nervous System
GI, GIT	Gastro-Intestinal, Gastro-Intestinal Tract
HMIS	Hazardous Materials Identification System
IARC	International Agency for Research on Cancer
LC50	Median Lethal Concentration
LD50	Median Lethal Dose
LD_{Lo}	Lowest Dose to have killed animals or humans
LEL	Lower Explosive Limit
LOEL	Lowest Observed Effect Level
LOAEC	Lowest Observable Adverse Effect Concentration
µg/m³	microgram per cubic meter of air

NIF	No Information Found
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
ORC	Organization Resources Counselors
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
PNOR	Particulate Not Otherwise Regulated
PNOC	Particulate Not Otherwise Classified
PPE	Personal Protective Equipment
ppm	parts per million
RCRA	Resource Conservation and Recovery Act
RTECS	Registry of Toxic Effects of Chemical Substances
SARA	Superfund Amendment and Reauthorization Act
SCBA	Self-contained Breathing Apparatus
SDS	Safety Data Sheet
STEL	Short-term Exposure Limit

Galvanized (Hot Dipped) Sheet – Carbon Steel

USS IHS No.: 1650

Rev. 4/14

Section 16 - Other Information (continued)

ABBREVIATIONS/ACRONYMS:

mg/m³	milligram per cubic meter of air	TLV	Threshold Limit Value
Mppcf	million particles per cubic foot	TWA	Time-weighted Average
MSHA	Mine Safety and Health Administration	UEL	Upper Explosive Limit
NFPA	National Fire Protection Association		

Disclaimer: This information is taken from sources or based upon data believed to be reliable. However, United States Steel Corporation makes no warranty as to the absolute correctness or sufficiency of any of the foregoing or that additional or other measures may not be required under particular conditions.



SAFETY DATA SHEET

1. Identification

Product identifier BernzOmatic Plumbing Solder, Silver-bearing plumbing solder

Other means of identification

SDS number WC035

Recommended use Plumbing

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer/Supplier Worthington Cylinder Corporation

Address 1690 Lowery Street, Winston-Salem, NC 27101
United States

Contact person Melissa Grimes

E-mail address melissa.grimes@worthingtonindustries.com

Telephone number 1-336-831-8601

Emergency telephone number 1-703-527-3887 International / CHEMTREC 1-800-424-9300 Domestic

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards Not classified.

Environmental hazards Hazardous to the aquatic environment, acute Category 1 hazard

OSHA defined hazards Not classified.

Label elements

Hazard symbol None.

Signal word None.

Hazard statement Very toxic to aquatic life.

Precautionary statement

Prevention Avoid release to the environment.

Response Collect spillage.

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.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Tin	7440-31-5	90 - 100
Copper	7440-50-8	1 - 10
Silver	7440-22-4	< 1

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Inhalation Immediately remove from further exposure. Get immediate medical assistance. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. Give supplemental oxygen, if available. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

Skin contact	Remove contaminated clothes and rinse skin thoroughly with water for at least 15 minutes. If skin rash or an allergic skin reaction develops, get medical attention.
Eye contact	Rinse immediately with plenty of water for at least 15 minutes. Remove any contact lenses. Get medical attention if irritation develops or persists.
Ingestion	Immediately rinse mouth and drink a cupful of water. Never give anything by mouth to a victim who is unconscious or is having convulsions. Only induce vomiting at the instruction of medical personnel. Get medical attention immediately.
Most important symptoms/effects, acute and delayed	Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the eye, mucous membranes and respiratory tract. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Symptoms may include redness, edema, drying, defatting and cracking of the skin. Symptoms may include coughing, difficulty breathing and shortness of breath. Overexposure to copper fumes may cause fever, chills, congestion and headaches.
Indication of immediate medical attention and special treatment needed	Treat symptomatically. Exposure may aggravate pre-existing respiratory disorders. Symptoms may be delayed.
General information	Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media	Extinguish with foam, carbon dioxide or dry powder.
Unsuitable extinguishing media	Do not use water or halogenated extinguishing media.
Specific hazards arising from the chemical	Fire or high temperatures create: Metal oxides.
Special protective equipment and precautions for firefighters	Use protective equipment appropriate for surrounding materials.
Fire-fighting equipment/instructions	Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Move containers from fire area if you can do it without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	Solid metal is not flammable; however, finely divided metallic dust or powder may form an explosive mixture with air.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Avoid inhalation of dust from the spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Wear protective clothing as described in Section 8 of this SDS.
Methods and materials for containment and cleaning up	Stop leak if you can do so without risk. For a dry material spill, use a HEPA (high efficiency particle air) vacuum to collect material and place in a sealable container for disposal. Avoid dust formation. Recover and recycle, if practical. Keep out of water supply. Local authorities should be advised if significant spillages cannot be contained.
Environmental precautions	Prevent further leakage or spillage if safe to do so. Do not contaminate water. If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

7. Handling and storage

Precautions for safe handling	Wear appropriate personal protective equipment (See Section 8). Keep formation of airborne dusts to a minimum. Provide appropriate exhaust ventilation at places where dust is formed. Avoid inhalation of dust and fumes. Avoid contact with skin and eyes. Do not get this material on clothing. Do not eat, drink or smoke when using the product. Wash thoroughly after handling. Avoid release to the environment.
Conditions for safe storage, including any incompatibilities	Any surface that comes in contact with molten metal must be preheated or specially coated and rust free. Inadvertent contaminants to product such as moisture, ice, snow, grease, or oil can cause an explosion when charged to a molten metal bath or metal furnace (preheating metal will remove moisture from product). Store in tightly closed original container in a dry, cool and well-ventilated place. Store in a closed container away from incompatible materials. Keep out of reach of children. Keep away from food, drink and animal feedingstuffs.

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
Copper (CAS 7440-50-8)	PEL	1 mg/m ³ 0.1 mg/m ³	Dust and mist. Fume.
Silver (CAS 7440-22-4)	PEL	0.01 mg/m ³	
Tin (CAS 7440-31-5)	PEL	2 mg/m ³	

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m ³ 0.2 mg/m ³	Dust and mist. Fume.
Silver (CAS 7440-22-4)	TWA	0.1 mg/m ³	Dust and fume.
Tin (CAS 7440-31-5)	TWA	2 mg/m ³	

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	1 mg/m ³	Dust and mist.
Silver (CAS 7440-22-4)	TWA	0.01 mg/m ³	Dust.
Tin (CAS 7440-31-5)	TWA	2 mg/m ³	

Biological limit values	No biological exposure limits noted for the ingredient(s).
Exposure guidelines	No exposure standards allocated.
Appropriate engineering controls	Provide adequate ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of dust. Keep melting/soldering temperatures as low as possible to minimize the generation of fume. Shower, hand and eye washing facilities near the workplace are recommended.
Individual protection measures, such as personal protective equipment	
Eye/face protection	Wear safety glasses with side shields (or goggles). Wear a face shield when working with molten material.
Skin protection	
Hand protection	When handling hot material, use heat resistant gloves.
Other	Chemical resistant clothing is recommended. Heat resistant/insulated gloves and clothing are recommended when working with molten material.
Respiratory protection	Use a respirator when local exhaust or ventilation is not adequate to keep exposures below the OEL. In a confined space a supplied respirator may be required. Selection and use of respiratory protective equipment should be in accordance with OSHA General Industry Standard 29 CFR 1910.134; or in Canada with CSA Standard Z94.4. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits.
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	Silver to silver-gray metallic metal.
Physical state	Solid.
Form	Wire.
Color	Silver to gray.
Odor	Odorless.
Odor threshold	Not available.
pH	Not applicable
Melting point/freezing point	Not available.
Initial boiling point and boiling range	440.96 - 482 °F (227.2 - 250 °C)
Flash point	Not available.

Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Vapor pressure	Not applicable
Vapor density	Not available.
Relative density	7.38
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not applicable

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	Hazardous polymerization does not occur.
Conditions to avoid	Contact with incompatible materials. Avoid molten metal contact with water.
Incompatible materials	Chlorine. Turpentine. Magnesium. Acetylene Gas.
Hazardous decomposition products	Toxic metal oxides are emitted when heated above the melting point.

11. Toxicological information

Information on likely routes of exposure

Ingestion	Ingestion of dusts generated during working operations may cause nausea and vomiting. Copper poisoning can result in hemolytic anemia and kidney, liver and spleen damage.
Inhalation	May cause respiratory tract irritation. Lung damage and possible pulmonary edema can result from dust exposure. Inhalation of powder or fumes may cause metal fume fever.
Skin contact	May cause skin irritation. Hot or molten material may produce thermal burns.
Eye contact	Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the eyes.

Symptoms related to the physical, chemical and toxicological characteristics	Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the eye, mucous membranes and respiratory tract. Contact with molten material may cause thermal burns. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Symptoms may include redness, edema, drying, defatting and cracking of the skin. Symptoms may include coughing, difficulty breathing and shortness of breath. Overexposure to copper fumes may cause fever, chills, congestion and headaches.
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Information on toxicological effects

Acute toxicity	High concentrations of freshly formed fumes/dusts of metal oxides can produce symptoms of metal fume fever. When heated, the vapors/fumes given off may cause respiratory tract irritation. Overexposure of Tin can cause irritation of the eyes, skin, mucous membranes, and respiratory system. Acute overexposure to Copper dust/fume can cause irritation of the eyes, nose, throat, and skin and under severe fume overexposure can cause metal fume fever with flu-like symptoms such as sweet metal taste, dry throat, coughing, fever and chills, tight chest, dyspnea, headache, blurred vision, back pain, nausea, vomiting, fatigue. Symptoms usually disappear within 24 hours. Copper may cause skin and hair discoloration. Inhalation of copper dusts may change the gums and mucous lining of the mouth which is generally attributable to localized tissue effect rather than general toxicity.
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Components	Species	Test Results
Silver (CAS 7440-22-4)		
Acute		
<i>Oral</i>		
LD50	Rat	> 5000 mg/kg
Skin corrosion/irritation	Not classified.	
Serious eye damage/eye irritation	Elevated temperatures or mechanical action may form dust and fumes which may be irritating to the eye.	
Respiratory or skin sensitization		
Respiratory sensitization	Not classified.	
Skin sensitization	No sensitizing effects known.	
Germ cell mutagenicity	Not classified.	
Carcinogenicity	Not classifiable as to carcinogenicity to humans.	
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)		
Not listed.		
Reproductive toxicity	Not classified.	
Specific target organ toxicity - single exposure	Not classified.	
Specific target organ toxicity - repeated exposure	Not classified.	
Aspiration hazard	Due to the physical form of the product it is not an aspiration hazard.	
Chronic effects	Prolonged and repeated overexposure to dust and fumes can lead to benign pneumoconiosis (stannosis). Overexposure to Tin can result in benign pneumoconiosis (stannous). This form of pneumoconiosis produces progressive x-ray changes of the lungs as long as exposure exists, but there is no distinctive fibrosis, no evidence of disability and no special complicating factors. Ingestion of silver may cause a permanently benign bluish gray discoloration to the skin (argyria).	

12. Ecological information

Ecotoxicity Alloys in massive forms present a limited hazard for the environment. Very toxic to aquatic life.

Components	Species	Test Results
Copper (CAS 7440-50-8)		
Aquatic		
Crustacea	EC50	Water flea (<i>Daphnia obtusa</i>) 0.0076 - 0.026 mg/l, 48 hours
Fish	LC50	Bony fish superclass (<i>Osteichthyes</i>) 0.0051 - 0.015 mg/l, 96 hours
Silver (CAS 7440-22-4)		
Aquatic		
Crustacea	EC50	Water flea (<i>Daphnia magna</i>) 0.0002 mg/l, 48 hours
Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>) 0.0019 - 0.003 mg/l, 96 hours
Persistence and degradability	The product is not biodegradable.	
Bioaccumulative potential	No data available.	
Mobility in soil	Alloys in massive forms are not mobile in the environment.	
Other adverse effects	None known.	

13. Disposal considerations

Disposal instructions	Dispose in accordance with all applicable regulations.
Local disposal regulations	Dispose of in accordance with local regulations.
Hazardous waste code	Product contains silver a hazardous waste constituent regulated under 40 CFR 261.24.
Waste from residues / unused products	Dispose of in accordance with local regulations. Scrapped material should be sent for refining to recover precious metal content. Solid metal and alloys in the form of particles may be reactive. Its hazardous characteristics, including fire and explosion, should be determined prior to disposal.
Contaminated packaging	Dispose of in accordance with local regulations.

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 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.

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)

Copper (CAS 7440-50-8)	LISTED
Silver (CAS 7440-22-4)	LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Copper	7440-50-8	1 - 10

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 (SDWA) Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

Copper (CAS 7440-50-8)
Silver (CAS 7440-22-4)
Tin (CAS 7440-31-5)

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

Copper (CAS 7440-50-8)
Silver (CAS 7440-22-4)
Tin (CAS 7440-31-5)

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

Copper (CAS 7440-50-8)
Silver (CAS 7440-22-4)
Tin (CAS 7440-31-5)

US. Rhode Island RTK

Copper (CAS 7440-50-8)

Silver (CAS 7440-22-4)

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.

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)	Yes
Canada	Domestic 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)	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
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 07-August-2014

Revision date -

Version # 01

HMIS® ratings Health: 1
Flammability: 0
Physical hazard: 0

Disclaimer All information in this Material Safety Data Sheet is believed to be accurate and reliable. However, no guarantee or warranty of any kind is made with regard to the accuracy of information or the suitability of the recommendations contained herein. It is the user's responsibility to assess the safety and toxicity of this product under their own conditions of use and to comply with all applicable laws and regulations.

Stainless Steel

SDS Revision Date: 01/14/2016

1. Identification**1.1. Product identifier**

Product Identity Stainless Steel Grades: 16 - 6, 21 - 6 - 9, 303, 304 - 304L, 305, 309 - 309S, 31

Alternate Names Stainless Steel Grades: 16 - 6, 21 - 6 - 9, 303, 304 - 304L, 305, 309 - 309S, 310 - 310S, 316 - 316L, 317 - 317L, 321, 347 - 348, 403, 405, 410, 416, 430, 446, MSDS # : 500

1.2. Relevant identified uses of the substance or mixture and uses advised against

Intended use See Technical Data Sheet.

Application Method See Technical Data Sheet.

1.3. Details of the supplier of the safety data sheet

Company Name TW Metals Company, Inc.
The Arboretum 760 Constitution Drive
Exton PA 19341

Emergency

CHEMTREC (USA) (800) 424-9300

2. Hazard(s) identification**2.1. Classification of the substance or mixture**

Acute Tox. 5;H303 May be harmful if swallowed. (Not adopted by US OSHA)

Eye Irrit. 2;H319 Causes serious eye irritation.

Skin Sens. 1;H317 May cause an allergic skin reaction.

Resp. Sens. 1;H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Carc. 2;H351 Suspected of causing cancer.

STOT RE 1;H372 Causes damage to organs through prolonged or repeated exposure. Specific Target Organs: (lungs)

2.2. Label elements

Using the Toxicity Data listed in section 11 and 12 the product is labeled as follows.

Stainless Steel

SDS Revision Date: 01/14/2016

**Danger**

H303 May be harmful if swallowed.

H317 May cause an allergic skin reaction.

H319 Causes serious eye irritation.

H334 May cause allergic or asthmatic symptoms or breathing difficulties if inhaled.

H351 Suspected of causing cancer.

H372 Causes damage to organs through prolonged or repeated exposure.

[Prevention]:

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P261 Avoid breathing dust / fume / gas / mist / vapors / spray.

P264 Wash thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P272 Contaminated work clothing should not be allowed out of the workplace.

P280 Wear protective gloves / eye protection / face protection.

P285 In case of inadequate ventilation wear respiratory protection.

[Response]:

P302+352 IF ON SKIN: Wash with plenty of soap and water.

P304+312 IF INHALED: Call a POISON CENTER or doctor / physician if you feel unwell.

P305+351+338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do - continue rinsing.

P308+313 IF exposed or concerned: Get medical advice / attention.

P314 Get Medical advice / attention if you feel unwell.

P321 Specific treatment (see information on this label).

P333+313 If skin irritation or a rash occurs: Get medical advice / attention.

P337+313 If eye irritation persists: Get medical advice / attention.

P341 If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.

P342+311 If experiencing respiratory symptoms: Call a POISON CENTER or doctor / physician.

P363 Wash contaminated clothing before reuse.

[Storage]:

P405 Store locked up.

[Disposal]:

Stainless Steel

SDS Revision Date: 01/14/2016

P501 Dispose of contents / container in accordance with local / national regulations.

3. Composition/information on ingredients

This product contains the following substances that present a hazard within the meaning of the relevant State and Federal Hazardous Substances regulations.

Ingredient/Chemical Designations	Weight %	GHS Classification	Notes
Iron CAS Number: 0007439-89-6	50 - 75	Not Classified	[1]
Chromium compounds (as Cr (III)) CAS Number: 0007440-47-3	10 - 25	Skin Sens. 1;H317 Resp. Sens. 1;H334 Eye Irrit. 2;H319 Aquatic Chronic 4;H413	[1][2]
Nickel CAS Number: 0007440-02-0	10 - 25	Carc. 2;H351 STOT RE 1;H372 Skin Sens. 1;H317 Aquatic Chronic 3;H412	[1][2]
Manganese compounds (as Mn) CAS Number: 0007439-96-5	5 - 10	Not Classified	[1][2]
Copper CAS Number: 0007440-50-8	1 - 5	Not Classified	[1][2]
Molybdenum CAS Number: 0007439-98-7	1 - 5	Not Classified	[1][2]
Aluminum (Al) CAS Number: 0007429-90-5	1 - 5	Flam. Sol. 1;H228 WaterReact. 2;H261	[1][2]
Silicon CAS Number: 0007440-21-3	1 - 5	Not Classified	[1][2]
Calcium CAS Number: 0007440-70-2	1 - 5	WaterReact. 2;H261	[1]
Cobalt compounds (as Co) CAS Number: 0007440-48-4	0.10 - 1.0	Resp. Sens. 1;H334 Skin Sens. 1;H317 Aquatic Chronic 4;H413	[1][2]

In accordance with paragraph (i) of §1910.1200, the specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

[1] Substance classified with a health or environmental hazard.

[2] Substance with a workplace exposure limit.

[3] PBT-substance or vPvB-substance.

*The full texts of the phrases are shown in Section 16.

4. First aid measures

4.1. Description of first aid measures

General

In all cases of doubt, or when symptoms persist, seek medical attention.
Never give anything by mouth to an unconscious person.

Stainless Steel

SDS Revision Date: 01/14/2016

Inhalation	Remove to fresh air, keep patient warm and at rest. If breathing is irregular or stopped, give artificial respiration. If unconscious place in the recovery position and obtain immediate medical attention. Give nothing by mouth.
Eyes	Immediately flush the eyes with large amounts of water for at least 15 minutes, alternately lifting the upper and lower eyelids. After 5 minutes, if appropriate, remove contact lenses and continue flushing the eyes for an additional 15 minutes. Call a physician at once.
Skin	Remove contaminated clothing. Wash skin thoroughly with soap and water or use a recognized skin cleanser.
Ingestion	Do not induce vomiting. Get medical attention.

4.2. Most important symptoms and effects, both acute and delayed

Overview	<p>Stainless steel products in their solid state present no inhalation, ingestion or contact health hazard. However, inhaling dusts, fumes or mists which may be generated during certain manufacturing procedures (burning, melting, welding, sawing, brazing, grinding and machining) may be hazardous to your health. Dusts may also be irritating to the unprotected skin or eyes.</p> <p>ACUTE EFFECTS: Excessive exposure to dusts / fumes may cause irritation of eyes, nose or throat. Inhalation of dusts / fumes may result in metal fume fever (metallic taste in mouth, dryness and irritation of throat, chills and fever).</p> <p>CHRONIC EFFECTS: Prolonged inhalation of fumes or dusts may cause a variety of adverse health effects to the respiratory system, including (but not necessarily limited to) lesions of the mucous membrane, bronchitis, pneumonia and cancers of the nasal cavity and respiratory tract.</p> <p>POTENTIAL HEALTH EFFECTS/MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Any pre-existing chronic respiratory condition (asthma, chronic bronchitis, emphysema).</p> <p>ROUTES OF ENTRY: Inhalation (dusts / fumes / mists), Contact with Skin and Eyes (dusts / mists), Ingestion (dusts).</p> <p>Possible cancer hazard. Contains an ingredient which may cause cancer based on animal data (See Section 3 and Section 15 for each ingredient). Risk of cancer depends on duration and level of exposure.</p> <p>See section 2 for further details.</p>
Inhalation	May cause allergy or asthma symptoms of breathing difficulties if inhaled.
Eyes	Causes serious eye irritation.
Skin	May cause an allergic skin reaction.
Ingestion	May be harmful if swallowed. (Not adopted by US OSHA)

5. Fire-fighting measures**5.1. Extinguishing media**

Use what is appropriate for surrounding fire.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition: No hazardous decomposition data available.

Avoid breathing dust / fume / gas / mist / vapors / spray.

5.3. Advice for fire-fighters

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Nonflammable at low temperatures, but will burn at high temperatures.

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6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Put on appropriate personal protective equipment (see section 8).

6.2. Environmental precautions

Do not allow spills to enter drains or waterways.

Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

6.3. Methods and material for containment and cleaning up

No special procedures needed.

7. Handling and storage

7.1. Precautions for safe handling

Minimize activities which may generate dusts, mists or fumes. Keep areas well ventilated. Use suitable equipment to move materials.

See section 2 for further details. - [Prevention]:

7.2. Conditions for safe storage, including any incompatibilities

Handle containers carefully to prevent damage and spillage.

Incompatible materials: Strong Acids (such as Sulfuric, Hydrochloric, Nitric).

See section 2 for further details. - [Storage]:

7.3. Specific end use(s)

No data available.

8. Exposure controls and personal protection

8.1. Control parameters

Exposure

CAS No.	Ingredient	Source	Value
0007429-90-5	Aluminum (Al)	OSHA	TWA 15 mg/m3 (total) TWA 5 mg/m3 (resp)
		ACGIH	TWA: 1.0 mg/m3 Revised 2008,
		NIOSH	TWA 10 mg/m3 (total) TWA 5 mg/m3 (resp)
		Supplier	No Established Limit

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0007439-89-6	Iron	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit
0007439-96-5	Manganese compounds (as Mn)	OSHA	C 5 mg/m ³ *See specific listings for specific compounds.
		ACGIH	TWA: 0.2 mg/m ³ R
		NIOSH	TWA 1 mg/m ³ ST 3 mg/m ³ *See specific listings for specific compounds.
		Supplier	No Established Limit
0007439-98-7	Molybdenum	OSHA	TWA 15 mg/m ³ [*Note: The PEL also applies to other insoluble molybdenum compounds (as Mo).]
		ACGIH	TWA: 0.5 mg/m ³ (soluble) TWA: 3 mg/m ³ (insoluble respirable) 10 mg/m ³ (insoluble inhalable)
		NIOSH	no established RELs
		Supplier	No Established Limit
0007440-02-0	Nickel	OSHA	TWA 1 mg/m ³ [*Note: The PEL does not apply to Nickel carbonyl.]
		ACGIH	Insoluble TWA: 0.05 mg/m ³ A1, 1, (I) Soluble TWA: 0.05 mg/m ³ A1, 1, 2B, (I)
		NIOSH	Ca TWA 0.015 mg/m ³ [*Note: The REL does not apply to Nickel carbonyl.]
		Supplier	No Established Limit
0007440-21-3	Silicon	OSHA	TWA 15 mg/m ³ (total) TWA 5 mg/m ³ (resp)
		ACGIH	No Established Limit
		NIOSH	TWA 10 mg/m ³ (total) TWA 5 mg/m ³ (resp)
		Supplier	No Established Limit
0007440-47-3	Chromium compounds (as Cr (III))	OSHA	TWA 1 mg/m ³ [*Note: The PEL also applies to insoluble chromium salts.]
		ACGIH	TWA: 0.5 mg/m ³ (III)
		NIOSH	TWA 0.5 mg/m ³
		Supplier	No Established Limit
0007440-48-4	Cobalt compounds (as Co)	OSHA	TWA 0.1 mg/m ³
		ACGIH	TWA: 0.02 mg/m ³ 2B
		NIOSH	TWA 0.05 mg/m ³
		Supplier	No Established Limit
0007440-50-8	Copper	OSHA	TWA 1 mg/m ³ [*Note: The PEL also applies to other copper compounds (as Cu) except copper fume.]
		ACGIH	TWA: 0.2 mg/m ³ (fume) 1 mg/m ³ (dusts and mists)
		NIOSH	TWA 1 mg/m ³ [*Note: The REL also applies to other copper compounds (as Cu) except Copper fume.]
		Supplier	No Established Limit
0007440-70-2	Calcium	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit

The exposure limits for nuisance dust are: OSHA PEL: 15 mg/m³ (50 mppcf*) TWA, ACGIH 10 mg/m³.

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Carcinogen Data

CAS No.	Ingredient	Source	Value
0007429-90-5	Aluminum (Al)	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0007439-89-6	Iron	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0007439-96-5	Manganese compounds (as Mn)	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0007439-98-7	Molybdenum	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0007440-02-0	Nickel	OSHA	Select Carcinogen: Yes
		NTP	Known: Yes; Suspected: Yes
		IARC	Group 1: No; Group 2a: No; Group 2b: Yes; Group 3: No; Group 4: No;
0007440-21-3	Silicon	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0007440-47-3	Chromium compounds (as Cr (III))	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: Yes; Group 4: No;
0007440-48-4	Cobalt compounds (as Co)	OSHA	Select Carcinogen: Yes
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: Yes; Group 3: No; Group 4: No;
0007440-50-8	Copper	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0007440-70-2	Calcium	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;

8.2. Exposure controls

Respiratory

Wear NIOSH approved dust / mist / fume respirator when welding or burning this metal.

Eyes

Face shields (welding or burning), Safety glasses (cutting or grinding).

Skin

Use appropriate protective clothing such as welding aprons and gloves when welding or burning.

Engineering Controls

Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and any vapor below occupational exposure limits suitable respiratory protection must be worn.

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Other Work Practices Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

See section 2 for further details. - [Prevention]:

9. Physical and chemical properties

Appearance	Metal Solid
Odor	Odorless
Odor threshold	Not determined
pH	Not Measured
Melting point / freezing point	Not Measured
Initial boiling point and boiling range	NA
Flash Point	Nonflammable
Evaporation rate (Ether = 1)	Not Measured
Flammability (solid, gas)	Not Applicable
Upper/lower flammability or explosive limits	Lower Explosive Limit: Not Measured Upper Explosive Limit: Not Measured
Vapor pressure (Pa)	NA
Vapor Density	NA
Specific Gravity	7.45- 8.02
Solubility in Water	Insoluble
Partition coefficient n-octanol/water (Log Kow)	Not Measured
Auto-ignition temperature	NA
Decomposition temperature	Not Measured
Viscosity (cSt)	Not Measured

9.2. Other information

No other relevant information.

10. Stability and reactivity**10.1. Reactivity**

Hazardous Polymerization will not occur.

10.2. Chemical stability

Stable under normal circumstances.

10.3. Possibility of hazardous reactions

No data available.

10.4. Conditions to avoid

No data available.

10.5. Incompatible materials

Strong Acids (such as Sulfuric, Hydrochloric, Nitric).

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10.6. Hazardous decomposition products

No hazardous decomposition data available.

11. Toxicological information

Acute toxicity

Ingredient	Oral LD50, mg/kg	Skin LD50, mg/kg	Inhalation Vapor LC50, mg/L/4hr	Inhalation Dust/Mist LC50, mg/L/4hr	Inhalation Gas LC50, ppm
Iron - (7439-89-6)	30,000.00, Rat - Category: NA	No data available	No data available	No data available	No data available
Chromium compounds (as Cr (III)) - (7440-47-3)	422.00, Rat - Category: 4	No data available	No data available	No data available	No data available
Nickel - (7440-02-0)	No data available	No data available	No data available	No data available	No data available
Manganese compounds (as Mn) - (7439-96-5)	9,000.00, Rat - Category: NA	500.00, Rabbit - Category: 3	19.00, Rat - Category: 4	No data available	No data available
Copper - (7440-50-8)	2,500.00, Rat - Category: 5	>2,000.00, Rat - Category: 5	No data available	5.11, Rat - Category: NA	No data available
Molybdenum - (7439-98-7)	No data available	No data available	No data available	No data available	No data available
Aluminum (Al) - (7429-90-5)	No data available	No data available	No data available	No data available	No data available
Silicon - (7440-21-3)	No data available	No data available	No data available	No data available	No data available
Calcium - (7440-70-2)	No data available	No data available	No data available	No data available	No data available
Cobalt compounds (as Co) - (7440-48-4)	6,171.00, Rat - Category: NA	No data available	No data available	No data available	No data available

Note: When no route specific LD50 data is available for an acute toxin, the converted acute toxicity point estimate was used in the calculation of the product's ATE (Acute Toxicity Estimate).

Classification	Category	Hazard Description
Acute toxicity (oral)	5	May be harmful if swallowed. (Not adopted by US OSHA)
Acute toxicity (dermal)	---	Not Applicable
Acute toxicity (inhalation)	---	Not Applicable
Skin corrosion/irritation	---	Not Applicable
Serious eye damage/irritation	2	Causes serious eye irritation.
Respiratory sensitization	1	May cause allergy or asthma symptoms of breathing difficulties if inhaled.

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Skin sensitization	1	May cause an allergic skin reaction.
Germ cell mutagenicity	---	Not Applicable
Carcinogenicity	2	Suspected of causing cancer.
Reproductive toxicity	---	Not Applicable
STOT-single exposure	---	Not Applicable
STOT-repeated exposure	1	Causes damage to organs through prolonged or repeated exposure.
Aspiration hazard	---	Not Applicable

12. Ecological information

12.1. Toxicity

Toxic to aquatic life

Aquatic Ecotoxicity

Ingredient	96 hr LC50 fish, mg/l	48 hr EC50 crustacea, mg/l	ErC50 algae, mg/l
Iron - (7439-89-6)	Not Available	Not Available	Not Available
Chromium compounds (as Cr (III)) - (7440-47-3)	77.50, Pimephales promelas	1.20, Daphnia magna	580.00 (72 hr), Chlorella pyrenoidosa
Nickel - (7440-02-0)	Not Available	Not Available	Not Available
Manganese compounds (as Mn) - (7439-96-5)	40.00, Daphnia magna	Not Available	Not Available
Copper - (7440-50-8)	0.0103, Pimephales promelas	0.0025, Daphnia magna	0.018 (72 hr), Pseudokirchneriella subcapitata
Molybdenum - (7439-98-7)	Not Available	Not Available	Not Available
Aluminum (Al) - (7429-90-5)	Not Available	Not Available	Not Available
Silicon - (7440-21-3)	Not Available	Not Available	Not Available
Calcium - (7440-70-2)	Not Available	Not Available	Not Available
Cobalt compounds (as Co) - (7440-48-4)	100.00, Danio rerio	Not Available	0.05 (72 hr), Pseudokirchneriella subcapitata

12.2. Persistence and degradability

There is no data available on the preparation itself.

12.3. Bioaccumulative potential

Not Measured

12.4. Mobility in soil

No data available.

12.5. Results of PBT and vPvB assessment

This product contains no PBT/vPvB chemicals.

12.6. Other adverse effects

No data available.

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13. Disposal considerations

13.1. Waste treatment methods

Observe all federal, state and local regulations when disposing of this substance.

14. Transport information

	DOT (Domestic Surface Transportation)	IMO / IMDG (Ocean Transportation)	ICAO/IATA
14.1. UN number	Not Applicable	Not Regulated	Not Regulated
14.2. UN proper shipping name	Not Regulated	Not Regulated	Not Regulated
14.3. Transport hazard class(es)	DOT Hazard Class: Not Applicable	IMDG: Not Applicable Sub Class: Not Applicable	Air Class: Not Applicable
14.4. Packing group	Not Applicable	Not Applicable	Not Applicable
14.5. Environmental hazards			
IMDG	Marine Pollutant: Yes;		
14.6. Special precautions for user	No further information		

15. Regulatory information

Regulatory Overview	The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented.
Toxic Substance Control Act (TSCA)	All components of this material are either listed or exempt from listing on the TSCA Inventory.
WHMIS Classification	D2A
US EPA Tier II Hazards	<p>Fire: No</p> <p>Sudden Release of Pressure: No</p> <p>Reactive: No</p> <p>Immediate (Acute): Yes</p> <p>Delayed (Chronic): Yes</p>
EPCRA 311/312 Chemicals and RQs (lbs):	
	Chromium compounds (as Cr (III)) (5,000.00)
	Copper (5,000.00)
	Nickel (100.00)
EPCRA 302 Extremely Hazardous:	
	Phosphorus

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EPCRA 313 Toxic Chemicals:

Aluminum (Al)
Chromium compounds (as Cr (III))
Cobalt compounds (as Co)
Copper
Manganese compounds (as Mn)
Nickel

Proposition 65 - Carcinogens (>0.0%):

Cobalt compounds (as Co)
Nickel

Proposition 65 - Developmental Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Female Repro Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Male Repro Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

New Jersey RTK Substances (>1%):

Aluminum (Al)
Calcium
Chromium compounds (as Cr (III))
Copper
Manganese compounds (as Mn)
Molybdenum
Nickel
Silicon

Pennsylvania RTK Substances (>1%):

Aluminum (Al)
Calcium
Chromium compounds (as Cr (III))
Copper
Manganese compounds (as Mn)
Molybdenum
Nickel
Silicon

16. Other information

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The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed 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 our products. Customers/users of this product must comply with all applicable health and safety laws, regulations, and orders.

The full text of the phrases appearing in section 3 is:

H228 Flammable solid.

H261 In contact with water releases flammable gases.

H317 May cause an allergic skin reaction.

H319 Causes serious eye irritation.

H334 May cause allergic or asthmatic symptoms or breathing difficulties if inhaled.

H351 Suspected of causing cancer.

H372 Causes damage to organs through prolonged or repeated exposure.

H412 Harmful to aquatic life with long lasting effects.

H413 May cause long lasting harmful effects to aquatic life.

The information contained herein is furnished without warranty of any kind. The above information is believed to be correct but does not purport to be all inclusive and should be used only as a guide. Users should make independent determinations of the suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers.

End of Document



SAFETY DATA SHEET

1. Product And Company Identification

SDS ID: SDS 501
 PRODUCT NAME: Prestone® Antifreeze/Coolant
 PRODUCT NUMBER: AF2000X, AF2000L, AF2050, AF2055, 72025, 71605, 71621, PRES04C, AF2000UK, AF2000PL, AF2000-1KL, AF2000LRU, AF2000RU, 65069, AF2000/GF, AF2000/GFC, AF2055/GF, AF2000-1KL/GF, AF2000/GXF, AF2000/GXF-HT, 71621/GF, 71621/GFC, 71621/GFC3
 FORMULA NUMBER: YA956BY, YA956BY-B, YA956BY-ED, YA956BY-ED-B, YA-956BY-GLY, YA-992

MANUFACTURER: Prestone Products Corporation
 Danbury, CT 06810-5109

CANADIAN OFFICE: FRAM Group (Canada), Inc.
 Mississauga, Ontario L5L 3S6

MEDICAL EMERGENCIES AND ALL OTHER INFORMATION PHONE NUMBER:

(800)890-2075 (in the US)
 (800)668-9349 (in Canada)

TRANSPORTATION EMERGENCY PHONE NUMBER (Chemical Spills and Transport Accidents only):

CHEMTREC 1-800-424-9300 (in the US)
 CANUTEC (613)996-6666 (in Canada)

SDS DATE OF PREPARATION/REVISION: 09/24/15

PRODUCT USE: Automobile Antifreeze – consumer product
 RESTRICTIONS ON USE: None identified

2. Hazards Identification

GHS/HAZCOM 2012 Classification:

Health	Physical
Acute Toxicity Category 4 (oral) Specific Target Organ Toxicity – Repeated Exposure Category 2 Toxic to Reproduction Category 2	Not Hazardous

Label Elements

WARNING!
 H302 Harmful if swallowed.
 H361d Suspected of damaging the unborn child.
 H373 May cause damage to kidneys through prolonged or repeated exposure.

Prevention:
 P201 Obtain special instructions before use.
 P202 Do not handle until all safety precautions have been read and understood.
 P260 Do not breathe mist or vapors.
 P264 Wash exposed skin thoroughly after handling.
 P270 Do not eat, drink, or smoke when using this product.



P280 Wear protective gloves.

Response:

P301 + P312 IF SWALLOWED: Call a POISON CENTER or physician if you feel unwell.

P330 Rinse mouth.

P308 + P313 IF exposed or concerned: Get medical advice.

Disposal:

P405 Store locked up.

P501 Dispose of contents and container in accordance with local and national regulations.

3. Composition/Information On Ingredients

Component	CAS No.	Amount
Ethylene Glycol	107-21-1	75-95%
2-Ethyl Hexanoic Acid, Sodium Salt	19766-89-3	1-5%
Neodecanoic Acid, Sodium Salt	31548-27-3	1-5%
Diethylene Glycol	111-46-6	0-5%

The exact concentrations are a trade secret.

4. First Aid Measures

INHALATION: Remove the victim to fresh air. If breathing has stopped administer artificial respiration. If breathing is difficult, have medical personnel administer oxygen. Get medical attention.

SKIN CONTACT: Remove contaminated clothing. Immediately wash contacted area thoroughly with soap and water. If irritation persists, get medical attention.

EYE CONTACT: Immediately flush eyes with large amounts of water for 15 minutes. Get medical attention if irritation persists.

INGESTION: Seek immediate medical attention. Immediately call local poison control center or go to an emergency department. Never give anything by mouth to or induce vomiting in an unconscious or drowsy person.

MOST IMPORTANT SYMPTOMS: May cause eye irritation. Inhalation of mists may cause nose and throat irritation and nervous system effects. Ingestion may cause abdominal discomfort or pain, nausea, vomiting, dizziness, drowsiness, malaise, blurring of vision, irritability, back pain, decrease in urine output, kidney failure, and central nervous system effects.

INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT, IF NEEDED: Seek immediate medical attention for large ingestions.

NOTES TO PHYSICIAN: The principal toxic effects of ethylene glycol, when swallowed, are kidney damage and metabolic acidosis. The combination of metabolic acidosis, an osmol gap and oxalate crystals in the urine is evidence of ethylene glycol poisoning. Pulmonary edema with hypoxemia has been described in a number of patients following poisoning with ethylene glycol. Respiratory support with mechanical ventilation may be required. There may be cranial nerve involvement in the late stages of toxicity from swallowed ethylene glycol. In particular, effects have been reported involving the seventh, eighth, and ninth cranial nerves, presenting with bilateral facial paralysis, diminished hearing and dysphagia.

Ethanol is antidotal and its early administration may block the formation of nephrotoxic metabolites of ethylene glycol in the liver. The objective is to rapidly achieve and maintain a blood ethanol level of approximately 100 mg/dl by giving a loading dose of ethanol followed by a maintenance dose. Intravenous administration of ethanol is the preferred route. Ethanol blood levels should be checked frequently. Hemodialysis may be required. 4-Methyl pyrazole (Fomepizole®), a potent inhibitor of alcohol dehydrogenase, has been used therapeutically to decrease the metabolic consequences of ethylene glycol poisoning. Fomepizole® is easier to use clinically than ethanol, does not cause CNS depression or hypoglycemia and requires less



monitoring than ethanol. Additional therapeutic modalities which may decrease the adverse consequences of ethylene glycol metabolism are the administration of both thiamine and pyridoxine. As there are complicated and serious overdoses, we recommend you consult with the toxicologists at your poison control center.

5. Firefighting Measures

SUITABLE EXTINGUISHING MEDIA: For large fires, use alcohol type or all-purpose foams. For small fires, use water spray, carbon dioxide or dry chemical.

SPECIFIC HAZARDS ARISING FROM THE CHEMICAL: A solid stream of water or foam directed into hot, burning liquid can cause frothing. Burning may produce carbon monoxide and carbon dioxide.

SPECIAL FIRE FIGHTING PROCEDURES: Do not spray pool fires directly. Firefighters should wear positive pressure self-contained breathing apparatus and full protective clothing for fires in areas where chemicals are used or stored.

6: Accidental Release Measures

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES: Wear appropriate protective clothing and equipment (See Section 8).

METHODS AND MATERIALS FOR CONTAINMENT/CLEANUP: Collect with absorbent material and place in appropriate, labeled container for disposal or, if permitted flush spill area with water.

7. Handling and Storage

PRECAUTIONS FOR SAFE HANDLING:

Harmful or Fatal if Swallowed. Do not drink antifreeze or solution. Avoid eye and prolonged or repeated skin contact. Avoid breathing vapors or mists. Wash exposed skin thoroughly with soap and water after use. Do not store in opened or unlabeled containers. Keep container away from open flames and excessive heat. Do not reuse empty containers unless properly cleaned. Empty containers retain product residue and may be dangerous. Do not cut, weld, drill, etc. containers, even empty.

Sudden release of hot organic chemical vapors or mists from process equipment operating at elevated temperature and pressure, or sudden ingress of air into vacuum equipment, may result in ignitions without any obvious ignition sources. Published "autoignition" or "ignition" temperatures cannot be treated as safe operating temperatures in chemical processes without analysis of the actual process conditions. Use of this product in elevated temperature applications should be thoroughly evaluated to assure safe operating conditions.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES: Store away from excessive heat and oxidizers.

NFPA CLASSIFICATION: III B

8. Exposure Controls / Personal Protection

EXPOSURE GUIDELINES

CHEMICAL	EXPOSURE LIMIT
Ethylene Glycol (as aerosol)	100 mg/m ³ Ceiling ACGIH TLV
2-Ethyl Hexanoic Acid, Sodium Salt	None Established
Neodecanoic Acid, Sodium Salt	None Established
Diethylene Glycol	10 mg/m ³ TWA AIHA WEEL



VENTILATION: Use general ventilation or local exhaust as required to maintain exposures below the occupational exposure limits.

RESPIRATORY PROTECTION: For operations where the TLV is exceeded a NIOSH approved respirator with organic vapor cartridges and dust/mist prefilters or supplied air respirator is recommended. Equipment selection depends on contaminant type and concentration. Select and use in accordance with 29 CFR 1910.134 and good industrial hygiene practice. For firefighting, use self-contained breathing apparatus.

GLOVES: Chemical resistant gloves such as neoprene or PVC where contact is possible.

EYE PROTECTION: Splash-proof goggles.

OTHER PROTECTIVE EQUIPMENT/CLOTHING: Appropriate protective clothing as needed to minimize skin contact.

9. Physical and Chemical Properties

APPEARANCE:	Yellow liquid	ODOR:	Characteristic odor
ODOR THRESHOLD:	None	pH:	8.7-9.2
MELTING/FREEZING POINT:	-34°F (-36.6°C) – -36°F (-37.7°C)	BOILING POINT/RANGE:	327°F (164°C) – 340°F (171.1°C)
FLASH POINT:	254 °F (123 °C) TOC >230 °F (>110 °C) Setflash	EVAPORATION RATE:	Not determined
FLAMMABILITY (SOLID, GAS)	Not Applicable	FLAMMABILITY LIMITS:	LEL: Not determined UEL: Not determined
VAPOR PRESSURE:	<0.06 mm Hg @20°C	VAPOR DENSITY:	2.1
RELATIVE DENSITY:	1.07-1.14	SOLUBILITIES	Water: Complete
PARTITION COEFFICIENT (n-octanol/water)	Not determined	AUTOIGNITION TEMPERATURE:	Not determined
DECOMPOSITION TEMPERATURE:	Not determined	VISCOSITY:	Not determined

10. Stability and Reactivity

REACTIVITY: Normally unreactive

CHEMICAL STABILITY: Stable

POSSIBILITY OF HAZARDOUS REACTIONS: Reaction with strong oxidizers will generate heat.

CONDITIONS TO AVOID: None known

INCOMPATIBLE MATERIALS: Avoid strong bases at high temperatures, strong acids, strong oxidizing agents, and materials reactive with hydroxyl compounds.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide.

11. Toxicological Information

POTENTIAL HEALTH EFFECTS:

ACUTE HAZARDS:

INHALATION: May cause irritation of the nose and throat with headache, particularly from mists. High vapor concentrations caused, for example, by heating the material in an enclosed and poorly ventilated workplace, may produce nausea, vomiting,



headache, dizziness and irregular eye movements.

SKIN CONTACT: No evidence of adverse effects from available information.

EYE CONTACT: Liquid, vapors or mist may cause discomfort in the eye with persistent conjunctivitis, seen as slight excess redness or conjunctiva. Serious corneal injury is not anticipated.

INGESTION: May cause abdominal discomfort or pain, nausea, vomiting, dizziness, drowsiness, malaise, blurring of vision, irritability, back pain, decrease in urine output, kidney failure, and central nervous system effects, including irregular eye movements, convulsions and coma. Cardiac failure and pulmonary edema may develop. Severe kidney damage which may be fatal may follow the swallowing of ethylene glycol. A few reports have been published describing the development of weakness of the facial muscles, diminishing hearing, and difficulty with swallowing, during the late stages of severe poisoning.

CHRONIC EFFECTS: Prolonged or repeated inhalation exposure may produce signs of central nervous system involvement, particularly dizziness and jerking eye movements. Prolonged or repeated skin contact may cause skin sensitization and an associated dermatitis in some individuals. Ethylene glycol has been found to cause birth defects in laboratory animals. The significance of this finding to humans has not been determined. 2-Ethyl Hexanoic Acid, Sodium Salt is suspected of causing developmental effects based on animal data.

CARCINOGENICITY LISTING: None of the components of these products is listed as a carcinogen or suspected carcinogen by IARC, NTP, ACGIH or OSHA.

ACUTE TOXICITY VALUES:

Ethylene Glycol: LD50 Oral Rat: 4700 mg/kg
LD50 Skin Rabbit: 9530 mg/kg

Diethylene Glycol: LD50 Oral Rat: 12,565 mg/kg
LD50 Skin Rabbit: 11,890 mg/kg

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH: Ethylene glycol has been shown to produce dose-related teratogenic effects in rats and mice when given by gavage or in drinking water at high concentrations or doses. Also, in a preliminary study to assess the effects of exposure of pregnant rats and mice to aerosols at concentrations 150, 1,000 and 2,500 mg/m³ for 6 hours a day throughout the period of organogenesis, teratogenic effects were produced at the highest concentrations, but only in mice. The conditions of these latter experiments did not allow a conclusion as to whether the developmental toxicity was mediated by inhalation of aerosol, percutaneous absorption of ethylene glycol from contaminated skin, or swallowing of ethylene glycol as a result of grooming the wetted coat. In a further study, comparing effects from high aerosol concentration by whole-body or nose-only exposure, it was shown that nose-only exposure resulted in maternal toxicity (1,000 and 2,500 mg/m³) and developmental toxicity in with minimal evidence of teratogenicity (2,500 mg/m³). The no-effects concentration (based on maternal toxicity) was 500 mg/m³. In a further study in mice, no teratogenic effects could be produced when ethylene glycol was applied to the skin of pregnant mice over the period of organogenesis. The above observations suggest that ethylene glycol is to be regarded as an animal teratogen; there is currently no available information to suggest that ethylene glycol caused birth defects in humans. Cutaneous application of ethylene glycol is ineffective in producing developmental toxicity; exposure to high aerosol concentration is only minimally effective in producing developmental toxicity; the major route for producing developmental toxicity is perorally.

Two chronic feeding studies, using rats and mice, have not produced any evidence that ethylene glycol causes dose-related increases in tumor incidence or a different pattern of tumors compared with untreated controls. The absence of carcinogenic potential for ethylene glycol has been supported by numerous invitro genotoxicity studies showing that it does not produce mutagenic or clastogenic effects. This product contains less than 0.3% tolytriazole which has demonstrates mutagenic activity in a bacterial test system. A correlation has been established between mutagenic activity and carcinogenic activity for many chemicals. Tolytriazole has not been identified as a carcinogen or probable carcinogen by NTP, IARC or OSHA.

In a study of Wistar rats, adverse developmental results were reported at a dose of 100 mg / kg of body weight for 2-Ethyl Hexanoic Acid, Sodium Salt.



12. Ecological Information

ECOTOXICITY:

Ethylene Glycol: LC50 Fathead Minnow <10,000 mg/L/96 hr.
EC50 Daphnia Magna 100,000 mg/L/48 hr.
Bacterial (Pseudomonas putida): 10,000 mg/l
Protozoa (Entosiphon sulcatum and Uronema parduczi; Chatton-Lwoff) : >10,000 mg/l
Algae (Microcystis aeruginosa): 2,000 mg/l
Green algae (Scenedesmus quadricauda) : >10,000 mg/l
Diethylene Glycol: LC50 western mosquitofish >32,000 mg/L/96 hr.

PERSISTENCE AND DEGRADABILITY:

Ethylene Glycol is readily biodegradable (97-100% in 2-12 days). Diethylene glycol is readily biodegradable (>70% in 19 days).

BIOACCUMULATIVE POTENTIAL:

Ethylene glycol: A BCF of 10, reported for ethylene glycol in fish, Golden ide (Leuciscus idus melanotus), after 3 days of exposure suggests the potential for bio concentration in aquatic organisms is low.
Diethylene glycol: An estimated BCF of 3 suggests the potential for bio concentration in aquatic organisms is low.

MOBILITY IN SOIL: Ethylene glycol and diethylene glycol are highly mobile in soil.

OTHER ADVERSE EFFECTS: None known

13. Disposal Considerations

Dispose of product in accordance with all local, state/provincial and federal regulations.

14. Transport Information

U.S. DOT HAZARD CLASSIFICATION: Not Regulated (unless package contains a reportable quantity)

Note: IF A SHIPMENT OF A REPORTABLE QUANTITY (5,260 LBS/553 GAL.) IN A SINGLE PACKAGE IS INVOLVED, THE FOLLOWING INFORMATION APPLIES:

PROPER SHIPPING NAME: RQ, Environmentally hazardous substance, liquid, n.o.s. (Ethylene glycol)

UN NUMBER: UN3082

PACKING GROUP: III

LABELS REQUIRED: Class 9

DOT MARINE POLLUTANTS: This product does not contain Marine Pollutants as defined in 49 CFR 171.8.

IMDG CODE SHIPPING CLASSIFICATION: Not Regulated

CANADIAN TDG CLASSIFICATION: Not Regulated

15. Regulatory Information

EPA SARA 311/312 HAZARD CLASSIFICATION: Acute health, chronic health

EPA SARA 313: This Product Contains the Following Chemicals Subject to Annual Release Reporting Requirements Under SARA Title III, Section 313 (40 CFR 372):

Ethylene Glycol	107-21-1	75-95%
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PROTECTION OF STRATOSPHERIC OZONE: This product is not known to contain or to have been manufactured with ozone depleting substances as defined in 40 CFR Part 82, Appendix A to Subpart A.

CERCLA SECTION 103: Spills of this product over the RQ (reportable quantity) must be reported to the National Response Center. The RQ for this product, based on the RQ for Ethylene Glycol (95% maximum) of 5,000 lbs, is 5,260 lbs. Many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.

CALIFORNIA PROPOSITION 65: This product contains the following chemicals known to the State of California to cause cancer or reproductive toxicity (birth defects):

Ethylene Glycol	107-21-1	75-95%	Developmental
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EPA TSCA INVENTORY: All of the components of this material are listed on or exempt from the Toxic Substances Control Act (TSCA) Chemical Substances Inventory.

CANADIAN ENVIRONMENTAL PROTECTION ACT: All of the ingredients are listed on or exempt from the Canadian Domestic Substances List.

EUROPEAN INVENTORY OF EXISTING COMMERCIAL CHEMICAL SUBSTANCES (EINECS): All of the ingredients are listed on or exempt from the EINECS inventory.

JAPAN: All of the ingredients of this product are listed on or exempt from the Japanese Existing and New Chemical Substances (MITI) List.

AUSTRALIA: All of the ingredients of this product are listed on or exempt from the Australian Inventory of Chemical Substances.

KOREA: All of the ingredients of this product are listed on or exempt from the Korean Existing Chemical List (KECL).

PHILIPPINES: All of the ingredients of this product are listed on or exempt from the Philippine Inventory of Chemical and Chemical Substance (PICCS)

CHINA: All of the ingredients of this product are listed on or exempt from the Inventory of Existing Chemical Substance in China (IECSC).

16. Other Information

NFPA RATING (NFPA 704) - FIRE: 1 HEALTH: 2 INSTABILITY: 0

REVISION SUMMARY: Section 15: Chemical inventories, California Proposition 65.

SDS Date of Preparation/Revision: September 24, 2015

This SDS is directed to professional users and bulk handlers of the product. Consumer products are labeled in accordance with Federal Hazardous Substances Act regulations.

While Prestone Products Corporation believes that the data contained herein are factual and the opinions expressed are those of qualified experts regarding the results of the tests conducted, the data are not to be taken as a warranty or representation for which Prestone Products Corporation assumes legal responsibility. They are offered solely for your consideration, investigation and verification. Any use of these data and information must be determined by the user to be in accordance with applicable federal, state and local laws and regulations.



If more information is needed, please contact:

Prestone Products Corporation
69 Eagle Road
Danbury CT 06810
(800) 890-2075

SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: MOBIL GEO 15W-40
Product Description: Base Oil and Additives
Product Code: 20152040G510, 445049-00, 97BP76
Intended Use: Natural gas engine oil

COMPANY IDENTIFICATION

Supplier: EXXON MOBIL CORPORATION
22777 Springwoods Village Parkway
Spring, TX 77253 USA

24 Hour Health Emergency 609-737-4411
Transportation Emergency Phone 800-424-9300 or 703-527-3887 CHEMTREC
Product Technical Information 800-662-4525
MSDS Internet Address www.exxon.com, www.mobil.com

SECTION 2 HAZARDS IDENTIFICATION

This material is not hazardous according to regulatory guidelines (see (M)SDS Section 15).

Other hazard information:

HAZARD NOT OTHERWISE CLASSIFIED (HNOC): None as defined under 29 CFR 1910.1200.

PHYSICAL / CHEMICAL HAZARDS

No significant hazards.

HEALTH HAZARDS

High-pressure injection under skin may cause serious damage. Excessive exposure may result in eye, skin, or respiratory irritation.

ENVIRONMENTAL HAZARDS

No significant hazards.

NFPA Hazard ID:	Health: 0	Flammability: 1	Reactivity: 0
HMIS Hazard ID:	Health: 0	Flammability: 1	Reactivity: 0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary

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from person to person.

SECTION 3	COMPOSITION / INFORMATION ON INGREDIENTS
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This material is defined as a mixture.

Hazardous Substance(s) or Complex Substance(s) required for disclosure

Name	CAS#	Concentration*	GHS Hazard Codes
BRANCHED ALKYLPHENOL AND CALCIUM BRANCHED ALKYLPHENOL (74499-35-7 & 132752-19-3)	POLYMER	0.1 - < 0.25%	H314(1A), H360(1B)(F), H400(M factor 10), H410(M factor 10)
CALCIUM LONG CHAIN ALKARYL SULFONATE	CONFIDENTIAL	0.1 - < 1%	H317, H413
PHENOL, DODECYL-, SULFURIZED, CALCIUM SALTS	68855-45-8	1 - < 5%	H413
POLYOLEFIN POLYAMINE SUCCINIMIDE	84605-20-9	1 - < 5%	H413
ZINC ALKYLDITHIOPHOSPHATE	68649-42-3	0.1 - < 1%	H318, H401, H411

* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

As per paragraph (i) of 29 CFR 1910.1200, formulation is considered a trade secret and specific chemical identity and exact percentage (concentration) of composition may have been withheld. Specific chemical identity and exact percentage composition will be provided to health professionals, employees, or designated representatives in accordance with applicable provisions of paragraph (i).

SECTION 4	FIRST AID MEASURES
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INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5	FIRE FIGHTING MEASURES
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EXTINGUISHING MEDIA

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Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Hazardous Combustion Products: Aldehydes, Incomplete combustion products, Oxides of carbon, Smoke, Fume, Sulfur oxides

FLAMMABILITY PROPERTIES

Flash Point [Method]: >200°C (392°F) [ASTM D-92]

Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0

Autoignition Temperature: N/D

SECTION 6

ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

PROTECTIVE MEASURES

Avoid contact with spilled material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

For emergency responders: Respiratory protection: respiratory protection will be necessary only in special cases, e.g., formation of mists. Half-face or full-face respirator with filter(s) for dust/organic vapor or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to hydrocarbons are recommended. Gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do it without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material;

however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). When the material is handled in bulk, an electrical spark could ignite any flammable vapors from liquids or residues that may be present (e.g., during switch-loading operations). Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

Static Accumulator: This material is a static accumulator.

STORAGE

The type of container used to store the material may affect static accumulation and dissipation. Do not store in open or unlabelled containers. Keep away from incompatible materials.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits/standards for materials that can be formed when handling this product: When mists/aerosols can occur the following are recommended: 5 mg/m³ - ACGIH TLV (inhalable fraction), 5 mg/m³ - OSHA PEL.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

No biological limits allocated.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

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Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

Specific Hygiene Measures: 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. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9	PHYSICAL AND CHEMICAL PROPERTIES
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Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

Physical State: Liquid

Color: Amber

Odor: Characteristic

Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 °C): 0.883

Flammability (Solid, Gas): N/A

Flash Point [Method]: >200°C (392°F) [ASTM D-92]

Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0

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Autoignition Temperature: N/D

Boiling Point / Range: > 316°C (601°F)

Decomposition Temperature: N/D

Vapor Density (Air = 1): > 2 at 101 kPa

Vapor Pressure: < 0.013 kPa (0.1 mm Hg) at 20 °C

Evaporation Rate (n-butyl acetate = 1): N/D

pH: N/A

Log Pow (n-Octanol/Water Partition Coefficient): > 3.5

Solubility in Water: Negligible

Viscosity: 100 cSt (100 mm²/sec) at 40 °C | 14.4 cSt (14.4 mm²/sec) at 100°C [ASTM D 445]

Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: N/D

Melting Point: N/A

Pour Point: -24°C (-11°F)

DMSO Extract (mineral oil only), IP-346: < 3 %wt

SECTION 10	STABILITY AND REACTIVITY
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REACTIVITY: See sub-sections below.

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

SECTION 11	TOXICOLOGICAL INFORMATION
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INFORMATION ON TOXICOLOGICAL EFFECTS

Hazard Class	Conclusion / Remarks
Inhalation	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Irritation: No end point data for material.	Negligible hazard at ambient/normal handling temperatures.
Ingestion	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin Corrosion/Irritation: No end point data for material.	Negligible irritation to skin at ambient temperatures. Based on assessment of the components.
Eye	
Serious Eye Damage/Irritation: No end point	May cause mild, short-lasting discomfort to eyes. Based on

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data for material.	assessment of the components.
Sensitization	
Respiratory Sensitization: No end point data for material.	Not expected to be a respiratory sensitizer.
Skin Sensitization: No end point data for material.	Not expected to be a skin sensitizer. Based on assessment of the components.
Aspiration: Data available.	Not expected to be an aspiration hazard. Based on physico-chemical properties of the material.
Germ Cell Mutagenicity: No end point data for material.	Not expected to be a germ cell mutagen. Based on assessment of the components.
Carcinogenicity: No end point data for material.	Not expected to cause cancer. Based on assessment of the components.
Reproductive Toxicity: No end point data for material.	Not expected to be a reproductive toxicant. Based on assessment of the components.
Lactation: No end point data for material.	Not expected to cause harm to breast-fed children.
Specific Target Organ Toxicity (STOT)	
Single Exposure: No end point data for material.	Not expected to cause organ damage from a single exposure.
Repeated Exposure: No end point data for material.	Not expected to cause organ damage from prolonged or repeated exposure. Based on assessment of the components.

OTHER INFORMATION

For the product itself:

Component concentrations in this formulation would not be expected to cause skin sensitization, based on tests of the components, this formulation, or similar formulations.

Contains:

Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitizing in test animals.

Tetrapropenyl phenol (TPP). TPP was tested in a rat oral gavage one-generation reproductive toxicity study and a rat dietary two-generation reproductive toxicity study. Results from the one-generation study included reduced ovary weights and changes in male reproductive accessory organs. Results from the two-generation study included prolonged estrous cyclicity, reduced ovary weights, accelerated sexual maturation, decreased mean live litter size, decreased fertility rates, hypospermia, and reduced weights of male reproductive accessory organs. A classification threshold for reproductive effects of 1.5 wt% TPP was derived by the supplier based on the NOAEL (15 mg/kg/day) from the rat dietary two-generation study and was confirmed in supporting studies with other substances containing TPP as an impurity.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC
2 = NTP SUS

3 = IARC 1
4 = IARC 2A

5 = IARC 2B
6 = OSHA CARC

SECTION 12

ECOLOGICAL INFORMATION

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The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Not expected to be harmful to aquatic organisms.

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land.
Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component -- Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

NOTE: One or more components of this material contain an impurity (branched alkylphenol) that is highly toxic to aquatic organisms. The components containing the impurity were tested by the supplier and found to be no more than minimally toxic to aquatic organisms.

SECTION 13

DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products. Protect the environment. Dispose of used oil at designated sites. Minimize skin contact. Do not mix used oils with solvents, brake fluids or coolants.

REGULATORY DISPOSAL INFORMATION

RCRA Information: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. **DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION.**

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THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14	TRANSPORT INFORMATION
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LAND (DOT): Not Regulated for Land Transport

LAND (TDG): Not Regulated for Land Transport

SEA (IMDG): Not Regulated for Sea Transport according to IMDG-Code

Marine Pollutant: No

AIR (IATA): Not Regulated for Air Transport

SECTION 15	REGULATORY INFORMATION
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OSHA HAZARD COMMUNICATION STANDARD: This material is not considered hazardous in accordance with OSHA HazCom 2012, 29 CFR 1910.1200.

Listed or exempt from listing/notification on the following chemical inventories: AICS, DSL, IECSC, KECI, PICCS, TCSI, TSCA

Special Cases:

Inventory	Status
ENCS	Restrictions Apply

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302

SARA (311/312) REPORTABLE HAZARD CATEGORIES: None.

SARA (313) TOXIC RELEASE INVENTORY: This material contains no chemicals subject to the supplier notification requirements of the SARA 313 Toxic Release Program.

The following ingredients are cited on the lists below:

Chemical Name	CAS Number	List Citations
ZINC ALKYL DITHIOPHOSPHATE	68649-42-3	15, 19
ZINC ALKYL DITHIOPHOSPHATE	68649-42-3	15, 19

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL

6 = TSCA 5a2

11 = CA P65 REPRO

16 = MN RTK

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2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16

OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):

H314(1): Causes severe skin burns and eye damage; Skin Corr/Irritation, Cat 1
H314(1A): Causes severe skin burns and eye damage; Skin Corr/Irritation, Cat 1A
H314(1B): Causes severe skin burns and eye damage; Skin Corr/Irritation, Cat 1B
H314(1C): Causes severe skin burns and eye damage; Skin Corr/Irritation, Cat 1C
H315: Causes skin irritation; Skin Corr/Irritation, Cat 2
H317: May cause allergic skin reaction; Skin Sensitization, Cat 1
H318: Causes serious eye damage; Serious Eye Damage/Irr, Cat 1
H319(2A): Causes serious eye irritation; Serious Eye Damage/Irr, Cat 2A
H360(1B)(F): May damage fertility; Repro Tox, Cat 1B (Fertility)
H400: Very toxic to aquatic life; Acute Env Tox, Cat 1
H401: Toxic to aquatic life; Acute Env Tox, Cat 2
H410: Very toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 1
H411: Toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 2
H413: May cause long lasting harmful effects to aquatic life; Chronic Env Tox, Cat 4

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:

Composition: Component Table information was modified.
Section 09: Boiling Point C(F) information was modified.
Section 09: Flash Point C(F) information was modified.
Section 09: n-Octanol/Water Partition Coefficient information was modified.
Section 09: Vapor Pressure information was added.
Section 09: Vapor Pressure information was deleted.
Section 09: Viscosity information was modified.
Section 11: Other Health Effects Header information was modified.
Section 11: Other Health Effects information was added.
Section 15: National Chemical Inventory Listing information was modified.
Section 15: Special Cases Table information was modified.
Section 16: HCode Key information was modified.

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Product Name: MOBIL GEO 15W-40
Revision Date: 28 Apr 2017
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affiliates in which they directly or indirectly hold any interest.

Internal Use Only

MHC: 0B, 0B, 0, 0, 0, 0

PPEC: A

DGN: 7096777XUS (1015991)

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SAFETY DATA SHEET

SDS ID NO.: 0162MAR019
Revision Date: 05/22/2015

1. IDENTIFICATION

Product Name: Marathon Petroleum Multipower-3 15W-40 Motor Oil
Synonym: Multipower-3 15W-40 Motor Oil; Multipower-3 15W-40 Heavy Duty Motor Oil
Chemical Family: Motor/Lube Oil
Recommended Use: Engine Oil.
Use Restrictions: All others.

Supplier Name and Address:
MARATHON PETROLEUM COMPANY LP
539 South Main Street
Findlay, OH 45840

SDS information: 1-419-421-3070

Emergency Telephone: 1-877-627-5463

2. HAZARD IDENTIFICATION

Classification

OSHA Regulatory Status

This chemical is considered hazardous according to the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Serious eye damage/eye irritation	Category 2A
-----------------------------------	-------------

Hazards Not Otherwise Classified (HNOC)

Not applicable

Label elements

EMERGENCY OVERVIEW

Warning

Causes serious eye irritation



Appearance Brown Liquid

Physical State Liquid

Odor Petroleum

Precautionary Statements - Prevention

Wash hands and any possibly exposed skin thoroughly after handling
Wear eye/face protection

Precautionary Statements - 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

Precautionary Statements - Storage

Not applicable

Precautionary Statements - Disposal

Not applicable

Additional Information

Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Motor oil is a complex mixture of highly refined lubricating oil base stocks and additives.

Composition Information:

Name	CAS Number	Weight %
Phosphorodithioic acid, mixed O,O-bis(sec-Bu and isooctyl) esters, zinc salts	113706-15-3	1-5
Dinonyl diphenylamine	36878-20-3	1-5
Butene, homopolymer	9003-29-6	1-5
Amines, polyethylenepoly-, reaction products with succinic anhydride polyisobutenyl derivs.	84605-20-9	1-5

4. FIRST AID MEASURES

First Aid Measures

General advice

In case of accident or if you feel unwell, seek medical advice immediately (show directions for use or safety data sheet if possible).

Inhalation:

Remove to fresh air and keep at rest in a position comfortable for breathing. If symptoms occur get medical attention.

Skin Contact:

Wash skin with plenty of soap and water. If irritation or other symptoms occur get medical attention. Wash contaminated clothing and clean shoes before reuse.

Eye Contact:

Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Gently remove contacts while flushing. Get medical attention.

Ingestion:

Rinse mouth out with water. If spontaneous vomiting occurs, keep head below hips, or if patient is lying down, turn body and head to side to prevent aspiration and monitor for breathing difficulty. Never give anything by mouth to an unconscious person. Keep affected person warm and at rest. If symptoms develop, seek medical attention.

Most important signs and symptoms, both short-term and delayed with overexposure

Adverse Effects:

Causes eye irritation. Symptoms may include redness, itching, and inflammation. May cause skin irritation and/or dermatitis. Preexisting skin conditions and/or respiratory disorders may be aggravated by exposure to this product.

Indication of any immediate medical attention and special treatment needed

NOTES TO PHYSICIAN: Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

For small fires, Class B fire extinguishing media such as CO₂, dry chemical, foam (AFFF/ATC) or water spray can be used. For large fires, water spray, fog or foam (AFFF/ATC) can be used. Firefighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.

Unsuitable extinguishing media

Do not use a solid water stream as it may scatter and spread fire.

Specific hazards arising from the chemical

The product is not combustible per the OSHA Hazard Communication Standard, but will ignite and burn at temperatures exceeding the flash point.

Hazardous combustion products

Smoke, carbon monoxide, and other products of incomplete combustion.

Explosion data

Sensitivity to Mechanical Impact No.

Sensitivity to Static Discharge No.

Special protective equipment and precautions for firefighters

Avoid using straight water streams. Water spray and foam (AFFF/ATC) must be applied carefully to avoid frothing and from as far a distance as possible. Avoid excessive water spray application. Use water spray to cool exposed surfaces from as far a distance as possible. Keep run-off water out of sewers and water sources.

NFPA: Health 1 Flammability 1 Instability 0 Special Hazards -

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Keep public away. Isolate and evacuate area. Shut off source if safe to do so.

Protective Equipment: Use personal protection measures as recommended in Section 8.

Emergency Procedures: Advise authorities and National Response Center (800-424-8802) if the product has entered a water course or sewer. Notify local health and pollution control agencies, if appropriate.

Environmental precautions: Avoid release to the environment. Avoid subsoil penetration.

Methods and materials for containment: Prevent further leakage or spillage if safe to do so.

Methods and materials for cleaning up: Use suitable absorbent materials such as vermiculite, sand, or clay to clean up residual liquids. Recover and return free product to proper containers.

7. HANDLING AND STORAGE

Safe Handling Precautions: Avoid contact with skin, eyes and clothing. Do not swallow. Avoid breathing vapors or mists. Use good personal hygiene practices. Wash thoroughly after handling. Use personal protection measures as recommended in Section 8. Do not cut, drill, grind or weld on empty containers since explosive residues may remain. Refer to applicable EPA, OSHA, NFPA and consistent state and local requirements.

Lifetime, continuous skin contact with used motor oils has caused skin cancer in laboratory tests. In testing, thorough washing has been found to prevent the development of skin cancer from used motor oil exposure. Avoid excessive skin contact. Exercise good personal hygiene including the removal and washing of soiled clothing and destroy used motor oil contaminated leather shoes/boots.

Storage Conditions: Store in properly closed containers that are appropriately labeled and in a cool, well-ventilated area. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Store away from incompatible materials.

Incompatible materials Strong oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Name	ACGIH TLV	OSHA PELs:	OSHA - Vacated PELs	NIOSH IDLH
Phosphorodithioic acid, mixed O,O-bis(sec-Bu and isoocetyl) esters, zinc salts 113706-15-3	-	-	-	-
Dinonyl diphenylamine 36878-20-3	-	-	-	-
Butene, homopolymer 9003-29-6	-	-	-	-
Amines, polyethylenepoly-, reaction products with succinic anhydride polyisobutenyl deriv. 84605-20-9	-	-	-	-

Notes: The manufacturer has voluntarily elected to provide exposure limits contained in OSHA's 1989 air contaminants standard in its SDSs, even though certain of those exposure limits were vacated in 1992.

Engineering measures: Local or general exhaust required when using at elevated temperatures that generate vapors or mists.

Personal protective equipment

Eye protection: Use goggles or face-shield if the potential for splashing exists.

Skin and body protection: Wear neoprene, nitrile or PVA gloves to prevent skin contact. Glove suitability is based on workplace conditions and usage. Contact the glove manufacturer for specific advice on glove selection and breakthrough times. Wear appropriate protective clothing.

Respiratory protection: Use an approved organic vapor chemical cartridge or supplied air respirators when material produces vapors that exceed permissible exposure limits or excessive vapors are generated. Observe respirator assigned protection factors (APFs) criteria cited in federal OSHA 29 CFR 1910.134. Self-contained breathing apparatus should be used for fire fighting.

Hygiene measures: Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Liquid
Appearance	Brown Liquid
Color	Brown
Odor	Petroleum
Odor Threshold	No available data.

<u>Property</u>	<u>Values (Method)</u>
Melting Point / Freezing Point	No available data.
Initial Boiling Point / Boiling Range	No available data.
Flash Point	> 220 °C / > 428 °F (Cleveland Open-Cup)
Evaporation Rate	No available data.
Flammability (solid, gas)	Not applicable.
Flammability Limit in Air (%)	
Upper Flammability Limit:	No available data.
Lower Flammability Limit:	No available data.
Vapor Pressure	No available data.
Vapor Density	No available data.
Specific Gravity / Relative Density	0.86-0.875
Water Solubility	No available data.
Solubility in other solvents	No available data.
Partition Coefficient	No available data.
Decomposition temperature:	No available data.
pH:	No available data.
Autoignition Temperature	No available data.
Kinematic Viscosity	82 mm ² /s @ 40°C / 104°F
Dynamic Viscosity	No available data.
Explosive Properties	No available data.
Softening Point	No available data.
VOC Content (%)	1.7 (w/w)
Density	No available data.
Bulk Density	Not applicable.

10. STABILITY AND REACTIVITY

<u>Reactivity</u>	The product is non-reactive under normal conditions.
<u>Chemical stability</u>	Stable under recommended storage conditions.
<u>Possibility of hazardous reactions</u>	None under normal processing.
<u>Hazardous polymerization</u>	Will not occur.
<u>Conditions to avoid</u>	Sources of heat or ignition.
<u>Incompatible materials</u>	Strong oxidizing agents.
<u>Hazardous decomposition products</u>	None known under normal conditions of use.

11. TOXICOLOGICAL INFORMATION

Potential short-term adverse effects from overexposures

Inhalation	Overheating may produce vapors which may cause respiratory irritation, dizziness and nausea.
Eye contact	Irritating to eyes. May cause reddening and tearing.

Skin contact May cause skin irritation. Prolonged or repeated exposure may cause dermatitis, folliculitis or oil acne.

Ingestion May cause irritation of the mouth, throat and gastrointestinal tract.

Acute Toxicological data

Name	Oral LD50	Dermal LD50	Inhalation LC50
Phosphorodithioic acid, mixed O,O-bis(sec-Bu and isoocetyl) esters, zinc salts 113706-15-3	-	-	-
Dinonyl diphenylamine 36878-20-3	-	-	-
Butene, homopolymer 9003-29-6	-	-	-
Amines, polyethylenepoly-, reaction products with succinic anhydride polyisobutenyl derivs. 84605-20-9	-	-	-

Delayed and immediate effects as well as chronic effects from short and long-term exposure

This product is considered to have a low order of acute and chronic oral and dermal toxicity.

USED MOTOR OIL: Lifetime, continuous skin contact with used motor oils has caused skin cancer in laboratory tests. The combustion process produces compounds (polycyclic aromatic hydrocarbons) in motor oils that increase with use and are responsible for the cancer induction. Thorough washing has been found to prevent the development of skin cancer on animals from used motor oil exposure.

ZDDP: Zinc dialkyldithiophosphate (ZDDP) additives are primarily eye and/or skin irritants or corrosives with low acute toxicity via oral, dermal, and inhalation routes of exposure and are not skin sensitizers. In laboratory repeat dose studies by the dermal and oral routes, ZDDPs cause effects only at high doses, primarily due to irritation, in a manner similar to other irritating materials. The weight-of- evidence of genotoxicity testing indicates that ZDDPs are not mutagenic and do not cause larger chromosomal effects.

Adverse effects related to the physical, chemical and toxicological characteristics

Signs & Symptoms Causes eye irritation. Symptoms may include redness, itching, and inflammation. Contact may cause skin dermatitis and/or irritation. Repeated or prolonged skin contact may cause drying, reddening, itching and cracking.

Sensitization Not expected to be a skin or respiratory sensitizer.

Mutagenic effects None known.

Carcinogenicity Cancer designations are listed in the table below.

Name	ACGIH (Class)	IARC (Class)	NTP	OSHA
Phosphorodithioic acid, mixed O,O-bis(sec-Bu and isoocetyl) esters, zinc salts 113706-15-3	Not Listed	Not Listed	Not Listed	Not Listed
Dinonyl diphenylamine 36878-20-3	Not Listed	Not Listed	Not Listed	Not Listed
Butene, homopolymer 9003-29-6	Not Listed	Not Listed	Not Listed	Not Listed

Amines, polyethylenepoly-, reaction products with succinic anhydride polyisobutenyl derivs. 84605-20-9	Not Listed	Not Listed	Not Listed	Not Listed
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Reproductive toxicity None known.

Specific Target Organ Toxicity (STOT) - single exposure Not classified.

Specific Target Organ Toxicity (STOT) - repeated exposure Not classified.

Aspiration hazard Not classified.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Used motor and/or lube oils can be toxic to birds and fish.

Name	Algae/aquatic plants	Fish	Toxicity to Microorganisms	Crustacea
Phosphorodithioic acid, mixed O,O-bis(sec-Bu and isooctyl) esters, zinc salts 113706-15-3	-	-	-	-
Dinonyl diphenylamine 36878-20-3	-	-	-	-
Butene, homopolymer 9003-29-6	-	-	-	-
Amines, polyethylenepoly-, reaction products with succinic anhydride polyisobutenyl derivs. 84605-20-9	-	-	-	-

Persistence and degradability Not expected to be readily biodegradable.

Bioaccumulation Contains component(s) with the potential to bioaccumulate.

Mobility in soil No information available.

Other adverse effects No information available.

13. DISPOSAL CONSIDERATIONS

Description of Waste Residues

No information available.

Safe Handling of Wastes

Handle in accordance with applicable local, state, and federal regulations. Use personal protection measures as required.

Disposal of Wastes / Methods of Disposal

The user is responsible for determining if any discarded material is a hazardous waste (40 CFR 262.11). Dispose of in accordance with federal, state and local regulations.

Methods of Contaminated Packaging Disposal

Empty containers should be completely drained and then discarded or recycled, if possible. Do not cut, drill, grind or weld on empty containers since explosive residues may be present. Dispose of in accordance with federal, state and local regulations.

14. TRANSPORT INFORMATION

DOT (49 CFR 172.101):

UN Proper shipping name:	Not Regulated
UN/Identification No:	Not applicable
Transport Hazard Class(es):	Not applicable
Packing group:	Not applicable

TDG (Canada):

UN Proper shipping name:	Not Regulated
UN/Identification No:	Not applicable
Transport Hazard Class(es):	Not applicable
Packing group:	Not applicable

15. REGULATORY INFORMATION

US Federal Regulatory Information:

US TSCA Chemical Inventory Section 8(b): This product and/or its components are listed on the TSCA Chemical Inventory.

EPA Superfund Amendment & Reauthorization Act (SARA):

SARA Section 302: This product may contain component(s) that have been listed on EPA's Extremely Hazardous Substance (EHS) List:

Name	CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs
Phosphorodithioic acid, mixed O,O-bis(sec-Bu and isooctyl) esters, zinc salts	NA
Dinonyl diphenylamine	NA
Butene, homopolymer	NA
Amines, polyethylenepoly-, reaction products with succinic anhydride polyisobutenyl derivs.	NA

SARA Section 304: This product may contain component(s) identified either as an EHS or a CERCLA Hazardous substance which in case of a spill or release may be subject to SARA reporting requirements:

Name	CERCLA/SARA - Hazardous Substances and their Reportable Quantities
Phosphorodithioic acid, mixed O,O-bis(sec-Bu and isooctyl) esters, zinc salts	NA
Dinonyl diphenylamine	NA
Butene, homopolymer	NA
Amines, polyethylenepoly-, reaction products with succinic anhydride polyisobutenyl derivs.	NA

SARA: The following EPA hazard categories apply to this product:

Acute Health Hazard

SARA Section 313: This product may contain component(s), which if in exceedance of the de minimus threshold, may be subject to the reporting requirements of SARA Title III Section 313 Toxic Release Reporting (Form R).

Name	CERCLA/SARA 313 Emission reporting:
Phosphorodithioic acid, mixed O,O-bis(sec-Bu and isooctyl) esters, zinc salts	None
Dinonyl diphenylamine	None
Butene, homopolymer	None

Amines, polyethylenepoly-, reaction products with succinic anhydride polyisobutenyl derivs.	None
---	------

State and Community Right-To-Know Regulations:

The following component(s) of this material are identified on the regulatory lists below:

Phosphorodithioic acid, mixed O,O-bis(sec-Bu and isooctyl) esters, zinc salts

- Louisiana Right-To-Know: Not Listed.
- California Proposition 65: Not Listed.
- New Jersey Right-To-Know: Not Listed.
- Pennsylvania Right-To-Know: Not Listed.
- Massachusetts Right-To Know: Not Listed.
- Florida Substance List: Not Listed.
- Rhode Island Right-To-Know: Not Listed.
- Michigan Critical Materials Register List: Not Listed.
- Massachusetts Extraordinarily Hazardous Substances: Not Listed.
- California - Regulated Carcinogens: Not Listed.
- Pennsylvania RTK - Special Hazardous Substances: Not Listed.
- New Jersey - Special Hazardous Substances: Not Listed.
- New Jersey - Environmental Hazardous Substances List: Not Listed.
- Illinois - Toxic Air Contaminants: Not Listed.
- New York - Reporting of Releases Part 597 - List of Hazardous Substances: Not Listed.

Dinonyl diphenylamine

- Louisiana Right-To-Know: Not Listed.
- California Proposition 65: Not Listed.
- New Jersey Right-To-Know: Not Listed.
- Pennsylvania Right-To-Know: Not Listed.
- Massachusetts Right-To Know: Not Listed.
- Florida Substance List: Not Listed.
- Rhode Island Right-To-Know: Not Listed.
- Michigan Critical Materials Register List: Not Listed.
- Massachusetts Extraordinarily Hazardous Substances: Not Listed.
- California - Regulated Carcinogens: Not Listed.
- Pennsylvania RTK - Special Hazardous Substances: Not Listed.
- New Jersey - Special Hazardous Substances: Not Listed.
- New Jersey - Environmental Hazardous Substances List: Not Listed.
- Illinois - Toxic Air Contaminants: Not Listed.
- New York - Reporting of Releases Part 597 - List of Hazardous Substances: Not Listed.

Butene, homopolymer

- Louisiana Right-To-Know: Not Listed.
- California Proposition 65: Not Listed.
- New Jersey Right-To-Know: Not Listed.
- Pennsylvania Right-To-Know: Not Listed.
- Massachusetts Right-To Know: Not Listed.
- Florida Substance List: Not Listed.
- Rhode Island Right-To-Know: Not Listed.
- Michigan Critical Materials Register List: Not Listed.
- Massachusetts Extraordinarily Hazardous Substances: Not Listed.
- California - Regulated Carcinogens: Not Listed.
- Pennsylvania RTK - Special Hazardous Substances: Not Listed.
- New Jersey - Special Hazardous Substances: Not Listed.
- New Jersey - Environmental Hazardous Substances List: Not Listed.
- Illinois - Toxic Air Contaminants: Not Listed.

New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed.
Amines, polyethylenepoly-, reaction products with succinic anhydride polyisobutenyl derivs.	
Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Not Listed.
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed.
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Not Listed.
New Jersey - Environmental Hazardous Substances List:	Not Listed.
Illinois - Toxic Air Contaminants	Not Listed.
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed.

Canada DSL/NDSL Inventory: This product and/or its components are listed either on the Domestic Substances List (DSL) or are exempt.

Canadian Regulatory Information: "This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the (M)SDS contains all the information required by the Controlled Products Regulations."

Name	Canada - WHMIS: Classifications of Substances:	Canada - WHMIS: Ingredient Disclosure:
Phosphorodithioic acid, mixed O,O-bis(sec-Bu and isoocetyl) esters, zinc salts	D2B	1%
Butene, homopolymer	Uncontrolled product according to WHMIS classification criteria	



NOTE: Not Applicable.

16. OTHER INFORMATION

Prepared By Toxicology and Product Safety
Revision Date: 05/22/2015

Revision Note:
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 is intended as guidance for safe handling, use, processing, storage, transportation, accidental release, clean-up and disposal and is not 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.

Safety Data Sheet



SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

CHEVRON and TEXACO MID-GRADE UNLEADED GASOLINES

Product Use: Fuel

Product Number(s): 201001, 204041, 204044, 204063, 204096, 204278, 204312, 204313, 204753 [See Section 16 for Additional Product Numbers]

Synonyms: Calco Mid-Grade Unleaded Gasoline, Chevron Mid-Grade Unleaded Gasoline, Chevron Plus Unleaded Gasoline, Texaco Power Plus Gasoline

Company Identification

Chevron Products Company
6001 Bollinger Canyon Rd.
San Ramon, CA 94583
United States of America

Transportation Emergency Response

CHEMTREC: (800) 424-9300 or (703) 527-3887

Health Emergency

Chevron Emergency Information Center: Located in the USA. International collect calls accepted. (800) 231-0623 or (510) 231-0623

Product Information

Product Information: (800) 582-3835
SDS Requests: lubemsds@chevron.com

SPECIAL NOTES: This MSDS applies to: all motor gasoline.

SECTION 2 HAZARDS IDENTIFICATION

CLASSIFICATION: Flammable liquid: Category 1. Aspiration toxicant: Category 1. Carcinogen: Category 1A. Target organ toxicant (repeated exposure): Category 1. Eye irritation: Category 2A. Germ Cell Mutagen: Category 1B. Skin irritation: Category 2. Reproductive toxicant (developmental): Category 2. Target organ toxicant (central nervous system): Category 3. Acute aquatic toxicant: Category 2. Chronic aquatic toxicant: Category 2.



Signal Word: Danger

Physical Hazards: Extremely flammable liquid and vapor.

Health Hazards: May be fatal if swallowed and enters airways. May cause genetic defects. May cause cancer. Causes skin irritation. Causes serious eye irritation. Suspected of damaging the unborn child. May cause drowsiness or dizziness.

Target Organs: Causes damage to organs (Blood/Blood Forming Organs) through prolonged or repeated exposure.

Environmental Hazards: Toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS:

General: Keep out of reach of children. Read label before use.

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. Ground/bond container and receiving equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use explosion-proof electrical/ventilating/lighting/equipment. Do not breathe dust/fume/gas/mist/vapours/spray. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection. Use personal protective equipment as required. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Avoid release to the environment.

Response: IF exposed or concerned: Get medical advice/attention. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a poison center or doctor/physician if you feel unwell. 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 advice/attention. IF ON SKIN (or hair): Take off immediately all contaminated clothing and wash it before reuse. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse. IF SWALLOWED: Immediately call a poison center or doctor/physician. Do NOT induce vomiting. In case of fire: Use media specified in the SDS to extinguish. Specific treatment (see Notes to Physician on this label). Collect spillage.

Storage: Store in a well-ventilated place. Keep cool. Keep container tightly closed. Store locked up.

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

HAZARDS NOT OTHERWISE CLASSIFIED: Not Applicable

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
Gasoline	86290-81-5	100 %vol/vol
Toluene (methylbenzene)	108-88-3	1 - 35 %vol/vol
Xylene (contains o-, m-, & p- xylene isomers in varying amounts)	1330-20-7	1 - 15 %vol/vol
Pentane, 2,2,4-trimethyl- (Isooctane)	540-84-1	1 - 13 %vol/vol
Butane	106-97-8	1 - 12 %vol/vol
Ethanol	64-17-5	0 - 10 %vol/vol
Benzene	71-43-2	0.1 - 4.9 %vol/vol
Hexane	110-54-3	1 - 5 %vol/vol
Heptane	142-82-5	1 - 4 %vol/vol
Ethyl benzene	100-41-4	0.1 - 3 %vol/vol
Cyclohexane	110-82-7	1 - 3 %vol/vol
Naphthalene	91-20-3	0.1 - 2 %vol/vol
Methylcyclohexane	108-87-2	1 - 2 %vol/vol

Motor gasoline is considered a mixture by EPA under the Toxic Substances Control Act (TSCA). The refinery streams used to blend motor gasoline are all on the TSCA Chemical Substances Inventory. The appropriate CAS number for refinery blended motor gasoline is 86290-81-5. The product specifications of motor gasoline sold in your area will depend on applicable Federal and State regulations.

SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye: Flush eyes with water immediately while holding the eyelids open. Remove contact lenses, if worn, after initial flushing, and continue flushing for at least 15 minutes. Get immediate medical attention.

Skin: Wash skin with water immediately and remove contaminated clothing and shoes. Get medical attention if any symptoms develop. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

Ingestion: If swallowed, get immediate medical attention. Do not induce vomiting. Never give anything by mouth to an unconscious person.

Inhalation: Move the exposed person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if breathing difficulties continue or if any other symptoms develop.

Most important symptoms and effects, both acute and delayed

IMMEDIATE HEALTH EFFECTS

Eye: Contact with the eyes causes severe irritation. Symptoms may include pain, tearing, reddening, swelling and impaired vision.

Skin: Contact with the skin causes irritation. Skin contact may cause drying or defatting of the skin. Symptoms may include pain, itching, discoloration, swelling, and blistering. Contact with the skin is not expected to cause an allergic skin response.

Ingestion: Highly toxic; may be fatal if swallowed. Because of its low viscosity, this material can directly enter the lungs, if swallowed, or if subsequently vomited. Once in the lungs it is very difficult to remove and can cause severe injury or death. May be irritating to mouth, throat, and stomach. Symptoms may include pain, nausea, vomiting, and diarrhea.

Inhalation: Excessive or prolonged breathing of this material may cause central nervous system effects. Central nervous system effects may include headache, dizziness, nausea, vomiting, weakness, loss of coordination, blurred vision, drowsiness, confusion, or disorientation. At extreme exposures, central nervous system effects may include respiratory depression, tremors or convulsions, loss of consciousness, coma or death.

DELAYED OR OTHER HEALTH EFFECTS:

Reproduction and Birth Defects: Contains material that may cause harm to the unborn child if inhaled above the recommended exposure limit.

Cancer: Prolonged or repeated exposure to this material may cause cancer. Gasoline has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Whole gasoline exhaust has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Contains benzene, which has been classified as a carcinogen by the National Toxicology Program (NTP) and a Group 1 carcinogen (carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Contains naphthalene, which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC). Contains ethylbenzene which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Genetic Toxicity: Contains material that may cause heritable genetic damage based on animal data.

Target Organs: Contains material that may cause damage to the following organ(s) following repeated inhalation at concentrations above the recommended exposure limit: Blood/Blood Forming Organs Risk depends on duration and level of exposure. See Section 11 for additional information.

Indication of any immediate medical attention and special treatment needed

Note to Physicians: Ingestion of this product or subsequent vomiting may result in aspiration of light hydrocarbon liquid, which may cause pneumonitis.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Dry Chemical, CO2, AFFF Foam or alcohol resistant foam.

Unusual Fire Hazards: See Section 7 for proper handling and storage.

PROTECTION OF FIRE FIGHTERS:

Fire Fighting Instructions: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective Measures: Eliminate all sources of ignition in the vicinity of the spill or released vapor. If this material is released into the work area, evacuate the area immediately. Monitor area with combustible gas indicator.

Spill Management: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. All equipment used when handling the product must be grounded. A vapor suppressing foam may be used to reduce vapors. Use clean non-sparking tools to collect absorbed material. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.

Reporting: Report spills to local authorities and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required.

SECTION 7 HANDLING AND STORAGE

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

Precautionary Measures: This product presents an extreme fire hazard. Liquid very quickly evaporates, even at low temperatures, and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Never siphon gasoline by mouth.

Do not store in open or unlabeled containers. READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Do not breathe vapor or fumes. Wash thoroughly after handling. Keep out of the reach of children.

Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and

use appropriate mitigating procedures.

Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

General Storage Information: DO NOT USE OR STORE near heat, sparks, flames, or hot surfaces . USE AND STORE ONLY IN WELL VENTILATED AREA. Keep container closed when not in use.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION
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GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS:

Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below the recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Eye/Face Protection: Wear protective equipment to prevent eye contact. Selection of protective equipment may include safety glasses, chemical goggles, face shields, or a combination depending on the work operations conducted.

Skin Protection: Wear protective clothing to prevent skin contact. Selection of protective clothing may include gloves, apron, boots, and complete facial protection depending on operations conducted. Suggested materials for protective gloves include: Chlorinated Polyethylene (or Chlorosulfonated Polyethylene), Nitrile Rubber, Polyurethane, Viton.

Respiratory Protection: Determine if airborne concentrations are below the recommended occupational exposure limits for jurisdiction of use. If airborne concentrations are above the acceptable limits, wear an approved respirator that provides adequate protection from this material, such as: Air-Purifying Respirator for Organic Vapors.

When used as a fuel, this material can produce carbon monoxide in the exhaust. Determine if airborne concentrations are below the occupational exposure limit for carbon monoxide. If not, wear an approved positive-pressure air-supplying respirator.

Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Agency	TWA	STEL	Ceiling	Notation
Gasoline	ACGIH	300 ppm (weight)	500 ppm (weight)	--	A3
Toluene (methylbenzene)	ACGIH	20 ppm (weight)	--	--	--
Toluene (methylbenzene)	OSHA Z-2	200 ppm (weight)	--	300 ppm (weight)	--
Xylene (contains o-, m-, & p- xylene isomers in varying amounts)	ACGIH	100 ppm (weight)	150 ppm (weight)	--	--
Xylene (contains o-, m-, & p- xylene isomers in varying amounts)	OSHA Z-1	435 mg/m3	--	--	--
Pentane, 2,2,4-trimethyl- (Isooctane)	OSHA Z-1	2350 mg/m3	--	--	--
Pentane, 2,2,4-trimethyl- (Isooctane)	ACGIH	300 ppm (weight)	--	--	--
Butane	ACGIH	--	1000 ppm (weight)	--	--
Ethanol	ACGIH	1000 ppm (weight)	--	--	A4 A3
Ethanol	OSHA Z-1	1900 mg/m3	--	--	--
Benzene	ACGIH	.5 ppm (weight)	2.5 ppm (weight)	--	Skin A1 Skin
Benzene	OSHA SRS	1 ppm (weight)	5 ppm (weight)	--	--
Benzene	OSHA Z-2	10 ppm (weight)	--	25 ppm (weight)	--
Benzene	CVX	1 ppm (weight)	5 ppm (weight)	--	--
Hexane	ACGIH	50 ppm (weight)	--	--	Skin
Hexane	OSHA Z-1	1800 mg/m3	--	--	--
Heptane	ACGIH	400 ppm (weight)	500 ppm (weight)	--	--
Heptane	OSHA Z-1	2000 mg/m3	--	--	--
Ethyl benzene	ACGIH	20 ppm (weight)	--	--	A3
Ethyl benzene	OSHA Z-1	435 mg/m3	--	--	--
Cyclohexane	ACGIH	100 ppm (weight)	--	--	--
Cyclohexane	OSHA Z-1	1050 mg/m3	--	--	--

Naphthalene	ACGIH	10 ppm (weight)	15 ppm	--	Skin A3
Naphthalene	OSHA Z-1	50 mg/m3	--	--	--
Methylcyclohexane	ACGIH	400 ppm (weight)	--	--	--
Methylcyclohexane	OSHA Z-1	2000 mg/m3	--	--	--

Consult local authorities for appropriate values.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

Color: Colorless to yellow

Physical State: Liquid

Odor: Petroleum odor

Odor Threshold: No data available

pH: Not Applicable

Vapor Pressure: 5 psi - 15 psi (Typical) @ 37.8 °C (100 °F)

Vapor Density (Air = 1): 3 - 4 (Typical)

Initial Boiling Point: 27.2°C (81°F) - 204.4°C (400°F) (Typical)

Solubility: Insoluble in water; miscible with most organic solvents.

Freezing Point: Not Applicable

Melting Point: Not Applicable

Specific Gravity: 0.70 g/ml - 0.80 g/ml @ 15.6°C (60.1°F) (Typical)

Viscosity: <1 SUS @ 37.8°C (100°F)

Evaporation Rate: No data available

Decomposition temperature: No data available

Octanol/Water Partition Coefficient: 2 - 7

FLAMMABLE PROPERTIES:

Flammability (solid, gas): No Data Available

Flashpoint: (Tagliabue Closed Cup ASTM D56) < -45 °C (< -49 °F)

Autoignition: > 280 °C (> 536 °F)

Flammability (Explosive) Limits (% by volume in air): Lower: 1.4 Upper: 7.6

SECTION 10 STABILITY AND REACTIVITY

Reactivity: May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Incompatibility With Other Materials: Not applicable

Hazardous Decomposition Products: None known (None expected)
Hazardous Polymerization: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Serious Eye Damage/Irritation: The eye irritation hazard is based on evaluation of data for product components.

Skin Corrosion/Irritation: For a 4-hour exposure, the Primary Irritation Index (PII) in rabbits is: 4.8/8.0.

Skin Sensitization: This material did not cause skin sensitization reactions in a Buehler guinea pig test.

Acute Dermal Toxicity: LD50: >3.75 g/kg (rabbit).

Acute Oral Toxicity: LD50: >5 ml/kg (rat).

Acute Inhalation Toxicity: 4 hour(s) LD50: >20000 mg/m3 (rat).

Acute Toxicity Estimate: Not Determined

Germ Cell Mutagenicity: The hazard evaluation is based on data for components or a similar material.

Carcinogenicity: The hazard evaluation is based on data for components or a similar material. Gasoline has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Whole gasoline exhaust has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Contains benzene, which has been classified as a carcinogen by the National Toxicology Program (NTP) and a Group 1 carcinogen (carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Contains naphthalene, which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC). Contains ethylbenzene which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Reproductive Toxicity: The hazard evaluation is based on data for components or a similar material.

Specific Target Organ Toxicity - Single Exposure: The hazard evaluation is based on data for components or a similar material.

Specific Target Organ Toxicity - Repeated Exposure: The hazard evaluation is based on data for components or a similar material.

ADDITIONAL TOXICOLOGY INFORMATION:

Gasolines are highly volatile and can produce significant concentrations of vapor at ambient temperatures. Gasoline vapor is heavier than air and at high concentrations may accumulate in confined spaces to present both safety and health hazards. When vapor exposures are low, or short duration and infrequent, such as during refueling and tanker loading/unloading, neither total hydrocarbon nor components such as benzene are likely to result in any adverse health effects. In situations such as accidents or spills where exposure to gasoline vapor is potentially high, attention should be paid to potential toxic effects of specific components. Information about specific components in gasoline can be found in Sections 2/3, 8 and 15 of this MSDS. More detailed information on the health hazards of specific gasoline components can be obtained calling the Chevron Emergency Information Center (see Section 1 for phone numbers).

Pathological misuse of solvents and gasoline, involving repeated and prolonged exposure to high concentrations of vapor is a significant exposure on which there are many reports in the medical literature. As with other solvents, persistent abuse involving repeated and prolonged exposures to high concentrations of vapor has been reported to result in central nervous system damage and eventually, death. In a study in which ten human volunteers were exposed for 30 minutes to approximately 200, 500 or 1000 ppm concentrations of gasoline vapor, irritation of the eyes was the only significant effect observed, based on both subjective and objective assessments.

Lifetime inhalation of wholly vaporized unleaded gasoline at 2056 ppm has caused increased liver tumors in female mice and kidney cancer in male rats. In their 1988 review of carcinogenic risk from gasoline, The International Agency for Research on Cancer (IARC) noted that, because published epidemiology studies did not include any exposure data, only occupations where gasoline exposure may have occurred were reviewed. These included gasoline service station attendants and automobile mechanics. IARC also noted that there was no opportunity to separate effects of combustion products from those of gasoline itself. Although IARC allocated gasoline a final overall classification of Group 2B, i.e. possibly carcinogenic to humans, this was based on limited evidence in experimental animals plus supporting evidence including the presence in gasoline of benzene. The actual evidence for carcinogenicity in humans was considered inadequate.

MUTAGENICITY: Gasoline was not mutagenic, with or without activation, in the Ames assay (*Salmonella typhimurium*), *Saccharomyces cerevisiae*, or mouse lymphoma assays. In addition, point mutations were not induced in human lymphocytes. Gasoline was not mutagenic when tested in the mouse dominant lethal assay. Administration of gasoline to rats did not cause chromosomal aberrations in their bone marrow cells.

EPIDEMIOLOGY: To explore the health effects of workers potentially exposed to gasoline vapors in the marketing and distribution sectors of the petroleum industry, the American Petroleum Institute sponsored a cohort mortality study (Publication 4555), a nested case-control study (Publication 4551), and an exposure assessment study (Publication 4552). Histories of exposure to gasoline were reconstructed for cohort of more than 18,000 employees from four companies for the time period between 1946 and 1985. The results of the cohort mortality study indicated that there was no increased mortality from either kidney cancer or leukemia among marketing and marine distribution employees who were exposed to gasoline in the petroleum industry, when compared to the general population. More importantly, based on internal comparisons, there was no association between mortality from kidney cancer or leukemia and various indices of gasoline exposure. In particular, neither duration of employment, duration of exposure, age at first exposure, year of first exposure, job category, cumulative exposure, frequency of peak exposure, nor average intensity of exposure had any effect on kidney cancer or leukemia mortality. The results of the nested case-control study confirmed the findings of the original cohort study. That is, exposure to gasoline

at the levels experienced by this cohort of distribution workers is not a significant risk factor for leukemia (all cell types), acute myeloid leukemia, kidney cancer or multiple myeloma.

This product contains ethylbenzene.

BIRTH DEFECTS AND REPRODUCTION: Ethylbenzene is not expected to cause birth defects or other developmental effects based on well-conducted studies in rabbits and rats sponsored by NIOSH. Other studies in rats and mice which reported urinary tract malformations have many deficiencies and have limited usefulness in evaluating human risk. Reproductive effects are not expected based on a NIOSH study of fertility, and lack of effects observed for sperm counts and motility, estrous cycle and pathology of reproductive organs following repeated exposures. **HEARING:** Statistically significant losses in outer hair cells (OHCs) were observed in rats exposed to ≥ 200 ppm ethylbenzene, 6 hours/day, 6 days/week for 13 weeks, after an 8-week recovery period. Following longer exposure, inner hair cells losses were also observed in rats exposed to ≥ 600 ppm ethylbenzene, but only occasionally in rats exposed to 400 ppm. The Lowest Observed Adverse Effect Level in rats (LOAEL) was 200 ppm for losses of OHCs. Guinea pigs exposed to ethylbenzene at 2,500 ppm, 6 hours/day for 5 days did not show auditory deficits or losses in OHCs. The concentration of ethylbenzene used in the JP-8 study was approximately 10 ppm. **GENETIC TOXICITY:** Ethylbenzene tested negative in the bacterial mutation test, Chinese Hamster Ovary (CHO) cell in vitro assay, sister chromatid exchange assay and an unscheduled DNA synthesis assay. Conflicting results have been reported for the mouse lymphoma cell assay. Increased micronuclei were reported in an in vitro Syrian hamster embryo cell assay; however, two in vivo micronuclei studies in mice were negative. In Syrian hamster embryo cells in vitro, cell transformation was observed at 7 days of incubation but not at 24 hours. Based on these results, ethylbenzene is not expected to be mutagenic or clastogenic. **CARCINOGENICITY:** In studies conducted by the National Toxicology Program, rats and mice were exposed to ethylbenzene at 25, 250 and 750 ppm for six hours per day, five days per week for 103 weeks. In rats exposed to 750 ppm, the incidence of kidney tubule hyperplasia and tumors was increased. Testicular tumors develop spontaneously in nearly all rats if allowed to complete their natural life span; in this study, the development of these tumors appeared to be enhanced in male rats exposed to 750 ppm. In mice, the incidences of lung tumors in males and liver tumors in females exposed to 750 ppm were increased as compared to control mice but were within the range of incidences observed historically in control mice. Other liver effects were observed in male mice exposed to 250 and 750 ppm. The incidences of hyperplasia were increased in the pituitary gland in female mice at 250 and 750 ppm and in the thyroid in male and female mice at 750 ppm.

This product contains toluene.

GENERAL TOXICITY: The primary effects of exposure to toluene in animals and humans are on the central nervous system. Solvent abusers, who typically inhale high concentrations (thousands of ppm) for brief periods of time, in addition to experiencing respiratory tract irritation, often suffer permanent central nervous system effects that include tremors, staggered gait, impaired speech, hearing and vision loss, and changes in brain tissue. Death in some solvent abusers has been attributed to cardiac arrhythmias, which appear to be have been triggered by epinephrine acting on solvent sensitized cardiac tissue. Although liver and kidney effects have been seen in some solvent abusers, results of animal testing with toluene do not support these as primary target organs.

HEARING: Humans who were occupationally exposed to concentrations of toluene as low as 100 ppm for long periods of time have experienced hearing deficits. Hearing loss, as demonstrated using behavioral

and electrophysiological testing as well as by observation of structural damage to cochlear hair cells, occurred in experimental animals exposed to toluene. It also appears that toluene exposure and noise may interact to produce hearing deficits.

COLOR VISION: In a single study of workers exposed to toluene at levels under 50 ppm, small decreases in the ability to discriminate colors in the blue-yellow range have been reported for female workers. This effect, which should be investigated further, is very subtle and would not likely have been noticed by the people tested.

REPRODUCTIVE/DEVELOPMENTAL TOXICITY: Toluene may also cause mental and/or growth retardation in the children of female solvent abusers who directly inhale toluene (usually at thousands of ppm) when they are pregnant. Toluene caused growth retardation in rats and rabbits when administered at doses that were toxic to the mothers. In rats, concentrations of up to 5000 ppm did not cause birth defects. No effects were observed in the offspring at doses that did not intoxicate the pregnant animals. The exposure level at which no effects were seen (No Observed Effect Level, NOEL) is 750 ppm in the rat and 500 ppm in the rabbit.

This product contains xylene.

ACUTE TOXICITY: The primary effects of exposure to xylene in animals and humans are on the central nervous system. In addition, in some individuals, xylene exposure can sensitize cardiac tissue to epinephrine which may precipitate fatal ventricular fibrillation. **DEVELOPMENTAL TOXICITY:** Xylene has been reported to cause developmental toxicity in rats and mice exposed by inhalation during pregnancy. The effects noted consisted of delayed development and minor skeletal variations. In addition, when pregnant mice were exposed by ingestion to a level that killed nearly one-third of the test group, lethality (resorptions) and malformations (primarily cleft palate) occurred. Since xylene can cross the placenta, it may be appropriate to prevent exposure during pregnancy. **GENETIC TOXICITY/CARCINOGENICITY:** Xylene was not genotoxic in several mutagenicity testing assays including the Ames test. In a cancer study sponsored by the National Toxicology Program (NTP), technical grade xylene gave no evidence of carcinogenicity in rats or mice dosed daily for two years. **HEARING:** Mixed xylenes have been shown to cause measurable hearing loss in rats exposed to 800 ppm in the air for 14 hours per day for six weeks. Exposure to 1450 ppm xylene for 8 hours caused hearing loss while exposure to 1700 ppm for 4 hours did not. Although no information is available for lower concentrations, other chemicals that cause hearing loss in rats at relatively high concentrations do not cause hearing loss in rats at low concentrations. Worker exposure to xylenes at the permissible exposure limit (100 ppm, time-weighted average) is not expected to cause hearing loss.

This product contains naphthalene.

GENERAL TOXICITY: Exposure to naphthalene has been reported to cause methemoglobinemia and/or hemolytic anemia, especially in humans deficient in the enzyme glucose-6-phosphate dehydrogenase. Laboratory animals given repeated oral doses of naphthalene have developed cataracts.

REPRODUCTIVE TOXICITY AND BIRTH DEFECTS: Naphthalene did not cause birth defects when administered orally to rabbits, rats, and mice during pregnancy, but slightly reduced litter size in mice at dose levels that were lethal to the pregnant females. Naphthalene has been reported to cross the human placenta. **GENETIC TOXICITY:** Naphthalene caused chromosome aberrations and sister chromatid exchanges in Chinese hamster ovary cells, but was not a mutagen in several other in-vitro tests. **CARCINOGENICITY:** In a study conducted by the National Toxicology Program (NTP), mice exposed

to 10 or 30 ppm of naphthalene by inhalation daily for two years had chronic inflammation of the nose and lungs and increased incidences of metaplasia in those tissues. The incidence of benign lung tumors (alveolar/bronchiolar adenomas) was significantly increased in the high-dose female group but not in the male groups. In another two-year inhalation study conducted by NTP, exposure of rats to 10, 30, and 60 ppm naphthalene caused increases in the incidences of a variety of nonneoplastic lesions in the nose. Increases in nasal tumors were seen in both sexes, including olfactory neuroblastomas in females at 60 ppm and adenomas of the respiratory epithelium in males at all exposure levels. The relevance of these effects to humans has not been established. No carcinogenic effect was reported in a 2-year feeding study in rats receiving naphthalene at 41 mg/kg/day.

This product contains cyclohexane.

Cyclohexane primarily affects the central nervous systems of laboratory animals and humans. Acute or prolonged inhalation of cyclohexane at levels below the recommended exposure limits does not result in toxic effects while acute exposures to levels above these recommended limits can cause reversible central nervous system depression. Prolonged exposures of laboratory animals to high levels (up to low thousands of parts per million) have also caused reversible effects which included hyperactivity, diminished response to stimuli, and adaptive liver changes while very high levels (high thousands of parts per million) were fatal. No developmental effects were seen in rats or rabbits following exposures of up to 7000 ppm cyclohexane. No reproductive effects occurred in rats, although postnatal pup growth was reduced at 7000 ppm in a similar manner as observed in the parental animals. Cyclohexane has not been shown to be mutagenic in several in vitro and in vivo assays and has not produced tumors in several dermal application long-term bioassays. Based on these results and the lack of any mutagenic or genotoxic metabolites, cyclohexane is not expected to be mutagenic or genotoxic. Following dermal exposure, cyclohexane is rapidly absorbed, metabolized, and excreted.

This product contains ethanol (ethyl alcohol).

Chronic ingestion of ethanol can damage the liver, nervous system and heart. Chronic heavy consumption of alcoholic beverages has been associated with an increased risk of cancer. Ingestion of ethanol during pregnancy can cause human birth defects such as fetal alcohol syndrome. This product contains butane. An atmospheric concentration of 100,000 ppm (10%) butane is not noticeably irritating to the eyes, nose or respiratory tract, but will produce slight dizziness in a few minutes of exposure. No chronic systemic effect has been reported from occupational exposure.

This product contains benzene.

GENETIC TOXICITY/CANCER: Repeated or prolonged breathing of benzene vapor has been associated with the development of chromosomal damage in experimental animals and various blood diseases in humans ranging from aplastic anemia to leukemia (a form of cancer). All of these diseases can be fatal. In some individuals, benzene exposure can sensitize cardiac tissue to epinephrine which may precipitate fatal ventricular fibrillation.

REPRODUCTIVE/DEVELOPMENTAL TOXICITY: No birth defects have been shown to occur in pregnant laboratory animals exposed to doses not toxic to the mother. However, some evidence of fetal toxicity such as delayed physical development has been seen at such levels. The available information on the effects of benzene on human pregnancies is inadequate but it has been established that benzene can cross the human placenta.

OCCUPATIONAL: The OSHA Benzene Standard (29 CFR 1910.1028) contains detailed requirements for training, exposure monitoring, respiratory protection and medical surveillance triggered by the exposure level. Refer to the OSHA Standard before using this product.

This product contains n-hexane.

TARGET ORGAN TOXICITY: Prolonged or repeated ingestion, skin contact or breathing of vapors of n-hexane has been shown to cause peripheral neuropathy. Recovery ranges from no recovery to complete recovery depending upon the severity of the nerve damage. Exposure to 1000 ppm n-hexane for 18 hr/day for 61 days has been shown to cause testicular damage in rats. However, when rats were exposed to higher concentrations for shorter daily periods (10,000 ppm for 6 h/day, 5 days/wk for 13 weeks), no testicular lesions were seen.

CARCINOGENICITY: Chronic exposure to commercial hexane (52% n-hexane) at a concentration of 9000ppm was not carcinogenic to rats or to male mice, but did result in an increased incidence of liver tumors in female mice. No carcinogenic effects were observed in female mice exposed to 900 or 3000 ppm hexane or in male mice. The relevance for humans of these hexane-induced mouse liver tumors is questionable.

GENETIC TOXICITY: n-Hexane caused chromosome aberrations in bone marrow of rats, but was negative in the AMES and mouse lymphoma tests.

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY

This material is expected to be toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment.

48 hour(s) LC50: 3.0 mg/l (Daphnia magna)
96 hour(s) LC50: 1.8 mg/l (Mysidopsis bahia)
96 hour(s) LC50: 8.3 mg/l (Cyprinodon variegatus)
96 hour(s) LC50: 2.7 mg/l (Oncorhynchus mykiss)

MOBILITY

No data available.

PERSISTENCE AND DEGRADABILITY

This material is expected to be readily biodegradable. Following spillage, the more volatile components of gasoline will be rapidly lost, with concurrent dissolution of these and other constituents into the water. Factors such as local environmental conditions (temperature, wind, mixing or wave action, soil type, etc), photo-oxidation, biodegradation and adsorption onto suspended sediments, can contribute to the weathering of spilled gasoline.

The aqueous solubility of non-oxygenated unleaded gasoline, based on analysis of benzene, toluene, ethylbenzene+xylenes and naphthalene, is reported to be 112 mg/l. Solubility data on individual gasoline

constituents also available.

POTENTIAL TO BIOACCUMULATE

Bioconcentration Factor: No data available.

Octanol/Water Partition Coefficient: 2 - 7

SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by international, country, or local laws and regulations. Check governmental regulations and local authorities for approved disposal of this material.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT Shipping Description: UN1203, GASOLINE, 3, II; **OPTIONAL DISCLOSURE:** UN1203, GASOLINE, 3, II, MARINE POLLUTANT (GASOLINE)

IMO/IMDG Shipping Description: UN1203, GASOLINE, 3, II, FLASH POINT SEE SECTION 5 OR 9, MARINE POLLUTANT (GASOLINE)

ICAO/IATA Shipping Description: UN1203, GASOLINE, 3, II

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code:
Not applicable

SECTION 15 REGULATORY INFORMATION

EPCRA 311/312 CATEGORIES:	1. Immediate (Acute) Health Effects:	YES
	2. Delayed (Chronic) Health Effects:	YES
	3. Fire Hazard:	YES
	4. Sudden Release of Pressure Hazard:	NO
	5. Reactivity Hazard:	NO

REGULATORY LISTS SEARCHED:



01-1=IARC Group 1	03=EPCRA 313
01-2A=IARC Group 2A	04=CA Proposition 65
01-2B=IARC Group 2B	05=MA RTK
02=NTP Carcinogen	06=NJ RTK
	07=PA RTK

The following components of this material are found on the regulatory lists indicated.

Cyclohexane	05, 06, 07
Heptane	05, 06, 07
Methylcyclohexane	05, 06, 07
Pentane, 2,2,4-trimethyl- (Isooctane)	05, 06, 07
Naphthalene	01-2B, 02, 04, 05, 06, 07
Butane	05, 06, 07
Ethanol	01-1, 02, 04, 05, 06, 07
Gasoline	01-2B, 07
Ethyl benzene	01-2B, 03, 04, 05, 06, 07
Toluene (methylbenzene)	04, 05, 06, 07
Benzene	01-1, 02, 03, 04, 05, 06, 07
Hexane	05, 06, 07
Xylene (contains o-, m-, & p- xylene isomers in varying amounts)	03, 05, 06, 07

CERCLA REPORTABLE QUANTITIES(RQ)/EPCRA 302 THRESHOLD PLANNING QUANTITIES(TPQ):

Component	Component RQ	Component TPQ	Product RQ
Benzene	10 lbs	None	186 lbs
Cyclohexane	1000 lbs	None	34188 lbs
Ethyl benzene	1000 lbs	None	34964 lbs
Hexane	5000 lbs	None	129149 lbs
Naphthalene	100 lbs	None	4000 lbs
Pentane, 2,2,4-trimethyl- (Isooctane)	1000 lbs	None	6270 lbs
Toluene (methylbenzene)	1000 lbs	None	2627 lbs
Xylene (contains o-, m-, & p- xylene isomers in varying amounts)	100 lbs	None	649 lbs

CHEMICAL INVENTORIES:

All components comply with the following chemical inventory requirements: AICS (Australia), DSL (Canada), EINECS (European Union), ENCS (Japan), IECSC (China), KECI (Korea), PICCS (Philippines), TSCA (United States).

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 1 Flammability: 3 Reactivity: 0

HMIS RATINGS: Health: 2* Flammability: 3 Reactivity: 0

(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

Additional Product Number(s): 201003, 201004, 201006, 201007, 201008, 201010, 201011, 201018, 201021, 201025, 201031, 201032, 201033, 201034, 201036, 201037, 201038, 201041, 201043, 201046, 201048, 201064, 201208, 201210, 201211, 201212, 201230, 201231, 201232, 201260, 201261, 201262, 201271, 201272, 201273, 201280, 201281, 201282, 201288, 201290, 201291, 201292, 201851, 201852, 201858, 201859, 201860, 204004, 204005, 204012, 204013, 204024, 204025, 204048, 204049, 204072, 204073, 204090, 204091, 204106, 204107, 204118, 204119, 204142, 204143, 204166, 204167, 204190, 204191, 204202, 204203, 204209, 204214, 204215, 204226, 204227, 204250, 204251, 204274, 204275, 204292, 204293, 204325, 204326, 204360, 204361, 204366, 204367, 204372, 204373, 204378, 204379, 204384, 204385, 204390, 204391, 204396, 204397, 204402, 204403, 204408, 204409, 204414, 204415, 204420, 204421, 204426, 204427, 204432, 204433, 204438, 204439, 204468, 204469, 204486, 204487, 204504, 204505, 204522, 204523, 204540, 204541, 204558, 204559, 204576, 204577, 204594, 204595, 204612, 204613, 204630, 204631, 204648, 204649, 204666, 204667, 204692, 204693, 204698, 204699, 204704, 204705, 204710, 204711, 204723, 204724, 204729, 204730

REVISION STATEMENT:

SECTION 01 - Product Code(s) information was modified.

SECTION 05 - Extinguishing Media information was modified.

SECTION 08 - Occupational Exposure Limit Table information was modified.

SECTION 16 - HMIS Rating information was modified.

SECTION 16 - NFPA Rating information was modified.

Revision Date: October 04, 2016

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit
GHS - Globally Harmonized System	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Governmental Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	SDS - Safety Data Sheet
HMIS - Hazardous Materials Information System	NFPA - National Fire Protection Association (USA)
DOT - Department of Transportation (USA)	NTP - National Toxicology Program (USA)

IARC - International Agency for Research on Cancer	OSHA - Occupational Safety and Health Administration
NCEL - New Chemical Exposure Limit	EPA - Environmental Protection Agency
SCBA - Self-Contained Breathing Apparatus	

Prepared according to the 29 CFR 1910.1200 (2012) by Chevron Energy Technology Company, 6001 Bollinger Canyon Road, San Ramon, CA 94583.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.