

Issue Date 2016.07.28

VaproBond™

**SECTION 1 – PRODUCT IDENTIFICATION**

**Product Name:** VaproBond™  
**Product Codes:** 60309800  
**Manufacture:** VAPROSHIELD, LLC  
 915 26<sup>TH</sup> Ave. NW, #C-5  
 Gig Harbor, WA 9335  
 866-731-7663  
**Contact Information:** 8:00 AM – 5:00 PM PST Monday-Friday 1-866-731-7663  
**Emergency Contact:** 24/7 INFOTRAC: 1-800-535-5053  
**Chemical Name:** Silicone Sealant  
**Chemical Family:** Silicone Sealant  
**Formula:** Mixture - N/A

**SECTION 2 - HAZARDS IDENTIFICATION**

**GLOBAL HARMONIZATION LABELING AND CLASSIFICATION:** This product has been classified per GHS Standards.

**Classification:** Acute Oral Toxicity Cat. 5, Acute Skin Toxicity Cat. 5, Skin Sensitization Cat. 1, Skin Irritation Cat. 3, Eye Irritation Cat. 3, Aquatic Acute Toxicity Cat. 3, Aquatic Chronic Toxicity Cat. 3

**Signal Word:** Warning Hazard Statement Codes: H303 + H313, H316 + H320, H317, H412

Precautionary Statement Codes: P261, P264, P272, P273, P280, P302 + P352, P321, P333 + P313, P362 + P364, P321, P403, P501

**Hazard Symbols/Pictogram:** GHS08



**EMERGENCY OVERVIEW:**

**PHYSICAL DESCRIPTION:** This product is a smooth paste with a mild, slightly solvent odor that comes in various colors.

**HEALTH HAZARDS:** CAUTION! May cause mild eye, and skin irritation, especially if exposure is prolonged. May be harmful if ingested. May cause skin sensitization in susceptible individuals.

**FLAMMABILITY HAZARD:** This product is combustible and can ignite if exposed to high temperature or direct flame.

**REACTIVITY HAZARD:** This product is not reactive.

**ENVIRONMENTAL HAZARD:** This product has not been tested for environmental impact. This product contains a compound that can cause chronic aquatic toxicity.

**HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS®)**

HMIS® is a registered trademark of the National Paint and Coatings Association.

<b>Health</b>	<b>2*</b>
<b>Flammability</b>	<b>1</b>
<b>Physical Hazard</b>	<b>0</b>

See Section 16 for definitions of ratings  
 0 = Minimal                      3 = Serious  
 1 = Slight                        4 = Severe  
 2 = Moderate                    \* = Chronic

**CANADIAN WHMIS CLASSIFICATION:** Class D2B. See Section 15 (Regulatory Information) for all classification details.

**U.S. OSHA REGULATORY STATUS:** This material has a classification under the Global Harmonization Standard, as applied under OSHA regulations, as given earlier in this Section.

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**SECTION 3 - COMPOSITION/INFORMATION**

Component	CAS-No.	Weight - %
Proprietary Silicone Polymer		20-40%
Synthetic Calcium Carbonate	1317-65-3	20-40%
Precipitated Limestone	471-34-1	15-30%
Methyl tris(methylethyl ketoximo)	22984-54-9	1-8%
Octamethylcyclotetrasiloxane	556-67-2	1-5%
Carbon Black	1333-86-4	1-3%
Water and other components. Each of the other components is present in less than 1 percent concentration (0.1% concentration for potential carcinogens, reproductive toxins, respiratory tract sensitizers, and mutagens).		Balance

**SECTION 4 - FIRST AID MEASURES**

**PROTECTION OF FIRST AID RESPONDERS:** Rescuers should not attempt to retrieve victims of exposure to this material without adequate personal protective equipment. Rescuers should be taken for medical attention, if necessary.

**DESCRIPTION OF FIRST AID MEASURES:** Remove victim(s) to fresh air, as quickly as possible. Only trained personnel should administer supplemental oxygen and/or cardio-pulmonary resuscitation, if necessary. Remove and isolate contaminated clothing and shoes. Seek immediate medical attention. Take copy of label and SDS to physician or other health professional with victim(s).

**INHALATION:** If dusts of this material are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions.

**SKIN EXPOSURE:** If the material contaminates the skin, immediately begin decontamination with running water. Minimum flushing is for 20 minutes. Do not interrupt flushing. Remove exposed or contaminated clothing, taking care not to contaminate eyes. Victim must seek immediate medical attention.

**EYE EXPOSURE:** If this product enters 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 20 minutes. Do not interrupt flushing.

**INGESTION:** If this material is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. DO NOT INDUCE VOMITING, unless directed by medical personnel. Have victim rinse mouth with water or give several cupfuls of water, if conscious. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or unable to swallow. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** Dermatitis or other pre-existing skin disorders may be aggravated by exposure to this product.

**INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT IF NEEDED:** Treat symptoms and eliminate exposure.

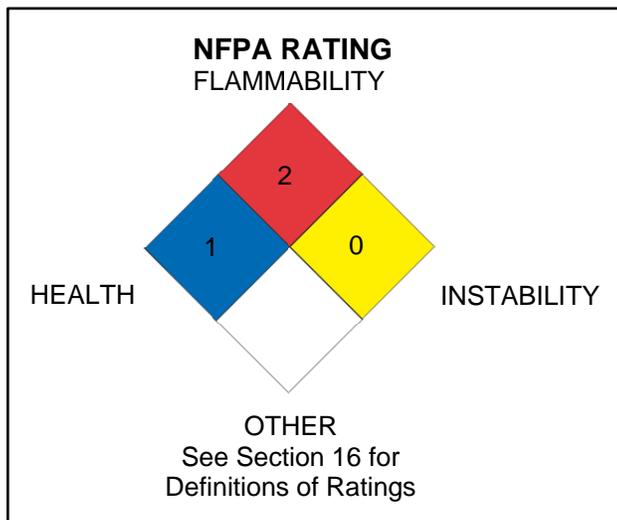
**SECTION 5 - FIRE-FIGHTING MEASURES**

**Flash point:** >104°C (>220°F)

**Auto ignition temperature:** Unknown

**Fire and Explosion Hazard:** This product is combustible and can be ignited when exposed to its flashpoint. This product contains methylpolysiloxanes which will likely generate formaldehyde at approximately 150°C (300°F) and above, in atmospheres which contain oxygen. Not sensitive to mechanical impact under normal conditions. Not sensitive to static discharge under normal conditions. Closed containers may develop pressure and rupture in event of fire.

**Firefighting Instructions:** Wear self-contained breathing apparatus and protective suit. Use extinguishing measures that are appropriate for any surrounding fires, including foam, halon, carbon dioxide and dry chemical. Move containers from fire area if it can be done without risk to personnel. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.



**SECTION 6 - ACCIDENTAL RELEASE MEASURES**

**PERSONAL PRECAUTIONS AND EMERGENCY PROCEDURES:** An accidental release can result in a fire. Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. Eliminate any possible sources of ignition, and provide maximum explosion-proof ventilation. Use only non-sparking tools and equipment during the response. The atmosphere must at least 19.5 percent Oxygen before non-emergency personnel can be allowed in the area without Self-Contained Breathing Apparatus and fire protection.

**PERSONAL PROTECTIVE EQUIPMENT:** Responders should wear the level of protection appropriate to the type of chemical released, the amount of the material spilled, and the location where the incident has occurred.  
**Small Spills:** For releases of 1 drum or less, Level D Protective Equipment (gloves, chemical resistant apron, boots, and eye protection) should be worn.  
**Large Spills:** Minimum Personal Protective Equipment should be rubber gloves, rubber boots, face shield, and Tyvek suit. Minimum level of personal protective equipment for releases in which the level of oxygen is less than 19.5% or is unknown must be **Level B: triple-gloves (rubber gloves and nitrile gloves over latex gloves), chemical resistant suit, fire-retardant clothing and boots, hard hat, and Self-Contained Breathing Apparatus.**

**METHODS FOR CLEAN-UP AND CONTAINMENT:**

**All Spills:** Access to the spill area should be restricted. Spread should be limited by gently covering the spill with polypads. Scrape up or pick-up spilled material, placing in suitable containers. Absorb any residual on appropriate material, such as sand. All contaminated absorbents and other materials should be placed in an appropriate container and seal. Do not mix with wastes from other materials. Dispose of in accordance with applicable Federal, State, and local procedures (see Section 13, Disposal Considerations). Dispose of recovered material and report spill per regulatory requirements. Remove all residue before decontamination of spill area. Clean spill area with soap and copious amounts of water.

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**SECTION 6 - ACCIDENTAL RELEASE MEASURES (Continued)**

**ENVIRONMENTAL PRECAUTIONS:** Minimize use of water to prevent environmental contamination. Prevent spill or rinsate from contaminating storm drains, sewers, soil or groundwater. Place all spill residues in a suitable container and seal. Do not discharge effluent containing this product into streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and when the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA.

**OTHER INFORMATION:** U.S. regulations may require reporting of spills of this material that reach surface waters if a sheen is formed. If necessary, the toll-free phone number for the US Coast Guard National Response Center is 1-800-424-8802.

**REFERENCE TO OTHER SECTIONS:** See information in Section 8 (Exposure Controls – Personal Protection) and Section 13 (Disposal Considerations) for additional information.

**SECTION 7 - HANDLING AND STORAGE**

**PRECAUTIONS FOR SAFE HANDLING:** As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat or drink while handling this material. Avoid contact with eyes, skin, and clothing. Avoid breathing fumes, dusts, vapors or mist. Do not taste or swallow. Use only with adequate ventilation. Keep away from heat and flame. In the event of a spill, follow practices indicated in Section 6: ACCIDENTAL RELEASE MEASURES.

**CONDITIONS FOR SAFE STORAGE:** This product is stable under ordinary conditions of handling, use and storage. Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Store away from incompatible materials (see Section 10: STABILITY AND REACTIVITY). Keep container tightly closed when not in use. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged. To prolong shelf life, store at temperatures below 26°C (80°F).

**PRODUCT END USE:** This product is used as a sealant. Follow all industry standards for use of this product.

**SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Personal Protection Equipment**

**Respiratory Protection:** Respiratory protection should not be required under normal use and handling. Use with adequate ventilation to ensure exposure levels are maintained below the limits provided below. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

**Exposure Guidelines:** Exposure Limit Values

Chemical Name	Guideline	Value
Calcium Carbonate, Natural & Synthetic	PEL (OSHA)	5 mg/m <sup>3</sup> 8 hr. TWA Respirable fraction 15 mg/m <sup>3</sup> 8 hr. TWA Total dust
	REL (NIOSH)	5 mg/m <sup>3</sup> 8 hr. TWA Respirable fraction 10 mg/m <sup>3</sup> 8 hr. TWA Total dust
Carbon Black	TLV (ACGIH)	3.5 mg/m <sup>3</sup> 8 hr. TWA Respirable fraction
	PEL (OSHA)	15 mg/m <sup>3</sup> 8 hr. TWA Total dust
	REL (NIOSH)	3.5 mg/m <sup>3</sup> (0.1 in the presence of PAHs, as PAHs: 10-hr TWA)
	MAK (DFG)	As inhalable dust
Octamethylcyclotetrasiloxane	NE	NE
Methyl tris(methylethyl ketoximo)	NE	NE
Proprietary Silicone Polymer	NE	NE

NE = Not Established. See Section 16 for Definitions of Terms Used.

## SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION (Continued)

**PERSONAL PROTECTIVE EQUIPMENT (PPE):** *The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132, including the Respiratory Protection Standard (29 CFR 1910.134), Eye Protection Standard 29 CFR 1910.13, the Hand Protection Standard 29 CFR 1910.138, and the Foot Protection Standard 29 CFR 1910.136), equivalent standards of Canada (including the Canadian CSA Respiratory Standard Z94.4-93-02, the CSA Eye Protection Standard Z94.3-M1982, Industrial Eye and Face Protectors and the Canadian CSA Foot Protection Standard Z195-M1984, Protective Footwear). Please reference applicable regulations and standards for relevant details.*

**Eye/Face Protection:** Use approved safety goggles or safety glasses. If necessary, refer to appropriate regulations and standards.

**Skin Protection:** Wear chemical impervious gloves (e.g., Nitrile or Neoprene). Use triple gloves for spill response. If necessary, refer to appropriate regulations and standards.

**Body Protection:** Use body protection appropriate for task (e.g., lab coat, coveralls, Tyvek suit). If necessary, refer to the OSHA Technical Manual (Section VII: Personal Protective Equipment) or appropriate Standards of Canada. If a hazard of injury to the feet exists due to falling objects, rolling objects, where objects may pierce the soles of the feet or where employee's feet may be exposed to electrical hazards, use foot protection, as described in appropriate regulations and standards.

**Respiratory Protection:** If vapors from this product are created during use, use appropriate respiratory protection. If necessary, use only respiratory protection authorized in appropriate regulations. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under appropriate regulations and standards.

## SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

**Form:** Smooth paste

**Molecular Weight:** Mixture

**Odor:** Mildly solvent-like

**Specific Gravity:** 1.6

**Relative Vapor Density:** (air = 1): Heavier than air

**Solubility in Water:** Insoluble

**Melting/Freezing Point/range:** Not available

**VOC (less water & exempt):** 80 g/L

**Flash Point:** >104°C (>220°F)

**pH:** Not available

**Flammable Limits (in air by volume, %):** **Lower:** Not established; **Upper:** Not established

**Coefficient of Oil/Water Distribution (Partial Coefficient):** Not established

**How To Detect This Substance (Identifying Properties):** The appearance of this product may act as an identifying property in the event of an accidental release.

**Color:** Black

**Molecular Formula:** Mixture

**Odor Threshold:** Not available

**Vapor Pressure, mm Hg @20°C:** Not established

**Evaporation Rate (BuAc = 1):** <1

**Other Solubilities:** Not available

**Boiling Point:** Not established

**Weight % VOC:** <5%

**Autoignition Temperature:** Not established

## SECTION 10 – STABILITY AND REACTIVITY

**CHEMICAL STABILITY:** Stable under normal circumstances of use and handling. Methylethyl Ketoxime is generated during curing.

**CONDITIONS TO AVOID:** Avoid contact with incompatible chemicals and exposure to extreme temperatures.

**INCOMPATIBLE MATERIALS:** This product is not compatible with strong acids and oxidizers and may have some compatibility with aluminum, ammonium salts and mercury/hydrogen mixtures, potassium chlorate, nitrogen tetroxide, tetranitromethane, silver perchlorate, sulfur dichloride, sulfuric acid, uranium hexafluoride.

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## SECTION 10 – STABILITY AND REACTIVITY (Continued)

### HAZARDOUS DECOMPOSITION PRODUCTS:

**Combustion:** Thermal decomposition of this product can generate dusts, irritating fumes, and toxic gases (e.g., calcium, carbon, nitrogen and silicone oxides, aldehydes, formaldehyde, various hydrocarbons).

**Hydrolysis:** Methylene ketoxime.

**POSSIBILITY OF HAZARDOUS REACTIONS/POLYMERIZATION:** This product is not expected to undergo hazardous polymerization, decomposition, condensation, or self-reactivity.

## SECTION 11 – TOXICOLOGY INFORMATION

**POTENTIAL HEALTH EFFECTS:** The most significant routes of occupational exposure are inhalation and contact with skin and eyes. The symptoms of exposure to this product are as follows:

**Contact with Skin or Eyes:** Contact may mildly irritate the skin and cause redness and discomfort. Prolonged or repeated skin contact may cause dermatitis (dry, red skin). Eye contact may cause redness, pain, and tearing. Skin contact may cause sensitization and allergic reaction in susceptible individuals. Symptoms may include redness, itching and rash.

**Skin Absorption:** Prolonged skin contact may cause adverse systemic effect by skin absorption as described under ingestion or inhalation, as well as sensitization and allergic reaction to the skin.

**Ingestion:** If the product is swallowed, it can irritate the mouth, throat, and other tissues of the gastro-intestinal system and may cause nausea, vomiting, and diarrhea. Ingestion of large amounts may be harmful and cause systemic toxicity.

**Inhalation:** Exposure to vapors of this product generated during curing, or dust of this product generated during use after curing may mildly irritate the respiratory tract and cause coughing and sneezing. Vapors or fumes when used in an enclosed space, if heated or during curing may cause irritation of the respiratory system, symptoms include nose irritation, dry or sore or burning throat, runny nose, shortness of breath.

**Injection:** Accidental injection of this product (e.g. puncture with a contaminated object) may cause burning, redness, and swelling in addition to the wound.

**TARGET ORGANS:** Acute: Skin, eyes. Chronic: Skin.

**CHRONIC EFFECTS:** Prolonged or repeated skin contact may cause dermatitis (dry, red skin), sensitization to the skin.

**SECTION 11 – TOXICOLOGY INFORMATION (Continued)**

**TOXICITY DATA:** There are currently no toxicity data available for this product; the following toxicology information is available for components greater than 1% in concentration

**CALCIUM CARBONATE, NATURAL:**

TDLo (Intravenous-Rat) 30 mg/kg: Vascular: BP lowering not characterized in autonomic section; Lungs, Thorax, or Respiration: changes in lung weight; Blood: other changes

TCLo (Inhalation-Rat) 84 mg/m<sup>3</sup>/4 hours/40 weeks-intermittent: Lungs, Thorax, or Respiration: fibrosis (interstitial); Liver: other changes; Kidney/Ureter/Bladder: other changes

TCLo (Inhalation-Rat) 250 mg/m<sup>3</sup>/2 hours/24 weeks-intermittent: Lungs, Thorax, or Respiration: fibrosis, focal (pneumoconiosis)

**CALCIUM CARBONATE, SYNTHETIC:**

Standard Draize Test (Skin-Rabbit) 500 mg/24 hours: Moderate

Standard Draize Test (Eye-Rabbit) 750 µg/24 hours: Severe

TDLo (Oral-Human) 4.08 gm/kg/30 days-intermittent: Vascular: BP elevation not characterized in autonomic section; Gastrointestinal: changes in structure or function of endocrine pancreas; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

LD<sub>50</sub> (Oral-Rat) 6450 mg/kg

TDLo (Oral-Rat) 60 gm/kg: Gastrointestinal: hypermotility, diarrhea, other changes

TDLo (Oral-Rat) 10 mg/kg: Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

**OCTAMETHYLCYCLOTETRAILOXANE:**

Standard Draize Test (Skin-Rabbit) 500 mg/24 hours: Mild

Standard Draize Test (Eye-Rabbit) 500 mg/24 hours: Mild

LC<sub>50</sub> (Inhalation-Rat) 36 gm/m<sup>3</sup>/4 hours: Behavioral: excitement; Lungs, Thorax, or Respiration: dyspnea Skin and Appendages: hair

LD<sub>50</sub> (Oral-Rat) 1540 mg/kg: Behavioral: tremor

LD<sub>50</sub> (Skin-Rat) 1770 mg/kg: Behavioral: tremor; Gastrointestinal: changes in structure or function of salivary glands; Liver: other changes

LD<sub>50</sub> (Skin-Rabbit) 794 µL/kg: Kidney/Ureter/Bladder: hematuria

TCLo (Inhalation-Rat) 700 ppm/6 hours: Endocrine: changes in gonadotropins

TCLo (Inhalation-Rat) 300 ppm/6 hours/13 weeks-intermittent: Liver: changes in liver weight

TCLo (Inhalation-Rat) 700 ppm/6 hours/4 weeks-intermittent: Liver: changes in liver weight; Nutritional and Gross Metabolic: weight loss or decreased weight gain; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: cytochrome oxidases (including oxidative phosphorylation)

TCLo (Inhalation-Rat) 70 ppm/6 hours/4 weeks-intermittent: Liver: other changes, changes in liver weight; Endocrine: changes in thyroid weight

TCLo (Inhalation-Rat) 35 ppm/6 hours/91 days-intermittent: Blood: changes in serum composition (e.g. TP, bilirubin, cholesterol); Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: multiple enzyme effects

TCLo (Inhalation-Rat) 488 ppm/6 hours/91 days-intermittent: Lungs, Thorax, or Respiration: other changes; Blood: normocytic anemia; Related to Chronic Data: changes in testicular weight

TCLo (Inhalation-Rat) 488 ppm/6 hours/91 days-intermittent: Liver: changes in liver weight; Kidney/Ureter/Bladder: changes in kidney weight; Endocrine: changes in thymus weight

TCLo (Inhalation-Rat) 898 ppm/6 hours/91 days-intermittent: Lungs, Thorax, or Respiration: other changes; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: multiple enzyme effects, Metabolism (Intermediary): lipids including transport

TCLo (Inhalation-Rat) 898 ppm/6 hours/91 days-intermittent: Endocrine: changes in adrenal weight; Related to Chronic Data: death Related to Chronic Data: changes in ovarian weight

TCLo (Inhalation-Rat) 700 ppm/104 weeks-intermittent: Liver: changes in liver weight; Kidney/Ureter/Bladder: other changes, changes in kidney weight

TCLo (Inhalation-Rat) 700 ppm/104 weeks-intermittent: Nutritional and Gross Metabolic: weight loss or decreased weight gain; Related to Chronic Data: death

TCLo (Inhalation-Rat) 700 ppm/52 weeks-intermittent: Liver: other changes

TCLo (Inhalation-Rat) 30 ppm/26 weeks-intermittent: Liver: changes in liver weight

TCLo (Inhalation-Rat) 150 ppm/104 weeks-intermittent: Kidney/Ureter/Bladder: other changes, changes in kidney weight

TCLo (Inhalation-Rat) 700 ppm/52 weeks-intermittent: Kidney/Ureter/Bladder: other changes, changes in kidney weight

TCLo (Inhalation-Rat) 700 ppm/104 weeks-intermittent: Reproductive: Maternal Effects: uterus, cervix, vagina; Tumorigenic effects: uterine tumors; Related to Chronic Data: changes in uterine weight

TCLo (Inhalation-Rat) 700 ppm/52 weeks-intermittent: Sense Organs and Special Senses (Olfaction): effect, not otherwise specified; Skin and Appendages: primary irritation (after topical exposure)

TCLo (Inhalation-Rat) 700 ppm/13 weeks-intermittent: Blood: changes in other cell count (unspecified)

TCLo (Inhalation-Rat) 150 ppm/52 weeks-intermittent: Liver: changes in liver weight

TCLo (Inhalation-Rat) 700 ppm/3 days-intermittent: Endocrine: estrogenic; Related to Chronic Data: changes in uterine weight

TCLo (Inhalation-Rat) 700 ppm/6 hours/3 days-intermittent: Endocrine: changes in luteinizing hormone; Reproductive: Maternal Effects: oogenesis

TCLo (Inhalation-Rat) 700 ppm/16 hours/3 days-intermittent: Endocrine: estrogenic; Reproductive: Maternal Effects: uterus, cervix, vagina; Related to Chronic Data: changes in uterine weight

TCLo (Inhalation-Rat) 700 ppm/35 days-intermittent: Endocrine: estrogenic; Reproductive: Maternal Effects: oogenesis, ovaries, fallopian tubes

TCLo (Inhalation-Rat) 698 ppm/6 hours/47 days-intermittent: Endocrine: changes in adrenal weight; Nutritional and Gross Metabolic: weight loss or decreased weight gain

TCLo (Inhalation-Rat) 696 ppm/6 hours/6 days-intermittent: Nutritional and Gross Metabolic: weight loss or decreased weight gain

TCLo (Inhalation-Rat) 700 ppm/6 hours/3 days-intermittent: Nutritional and Gross Metabolic: weight loss or decreased weight gain

TCLo (Inhalation-Rat) 500 ppm/6 hours/16 weeks-intermittent: Related to Chronic Data: death

TCLo (Inhalation-Rat) 700 ppm/6 hours/84 days-intermittent: Behavioral: food intake (animal); Nutritional and Gross Metabolic: weight loss or decreased weight gain

TCLo (Inhalation-Rat) 700 ppm/6 hours/1 week-intermittent: Kidney/Ureter/Bladder: changes in kidney weight; Nutritional and Gross Metabolic: weight loss or decreased weight gain

TCLo (Inhalation-Rat) 300 ppm/6 hours/70 days-intermittent: Liver: changes in liver weight

TCLo (Inhalation-Rat) 700 ppm/6 hours/70 days-intermittent: Endocrine: changes in pituitary weight

TCLo (Inhalation-Rat) 500 ppm/6 hours/96 days-intermittent: Liver: changes in liver weight

TCLo (Inhalation-Rat) 700 ppm/6 hours/96 days-intermittent: Lungs, Thorax, or Respiration: other changes

TCLo (Inhalation-Rat) 696 ppm/6 days-intermittent: Related to Chronic Data: changes in ovarian weight

TCLo (Inhalation-Rat) 500 ppm: male 70 day(s) pre-mating female 70 day(s) pre-mating: 3 week(s) post-birth: Reproductive: Effects on Newborn: live birth index (measured after birth)

TCLo (Inhalation-Rat) 301 ppm: female 28 day(s) pre-mating 19 day(s) after conception: Reproductive: Maternal Effects: oogenesis

TCLo (Inhalation-Rat) 503 ppm: female 28 day(s) pre-mating 19 day(s) after conception: Reproductive: Fertility: pre-implantation mortality (e.g. reduction in number of implants per female; total number of implants per corpora lutea); Effects on Embryo or Fetus: fetal death

TCLo (Inhalation-Rat) 698 ppm: female 28 day(s) pre-mating 19 day(s) after conception: Reproductive: Effects on Embryo or Fetus: fetotoxicity (except death, e.g., stunted fetus)

TCLo (Inhalation-Rat) 696 ppm: female 3 day(s) pre-mating 3 day(s) after conception: Reproductive: Maternal Effects: oogenesis; Fertility: pre-implantation mortality (e.g. reduction in number of implants per female; total number of implants per corpora lutea); Effects on Embryo or Fetus: fetal death

TCLo (Inhalation-Rat) 700 ppm: female 1 day(s) pre-mating: Reproductive: Fertility: female fertility index (e.g. # females pregnant per # sperm positive females; # females pregnant per # females mated)

TCLo (Inhalation-Rat) 700 ppm: female 3 day(s) pre-mating 3 day(s) after conception: Reproductive: Maternal Effects: ovaries, fallopian tubes; Effects on Embryo or Fetus: fetotoxicity (except death, e.g., stunted fetus)

TCLo (Inhalation-Rat) 700 ppm: male 70 day(s) pre-mating female 70 day(s) pre-mating lactating female 4 day(s) post-birth: Reproductive: Fertility: pre-implantation mortality (e.g. reduction in number of implants per female; total number of implants per corpora lutea); Specific Developmental Abnormalities: urogenital system

TCLo (Inhalation-Rat) 700 ppm: multi-generations: Reproductive: Effects on Newborn: viability index (e.g., # alive at day 4 per # born alive); Specific Developmental Abnormalities: urogenital system; Effects on Newborn: growth statistics (e.g.%, reduced weight gain)

TCLo (Inhalation-Rat) 700 ppm: multi-generations: Reproductive: Specific Developmental Abnormalities: respiratory system; Effects on Newborn: behavioral

TCLo (Inhalation-Rat) 70 ppm: male 70 day(s) pre-mating female 70 day(s) pre-mating 1-22 day(s) after conception: Reproductive: Fertility: litter size (e.g. # fetuses per litter; measured before birth)

TCLo (Inhalation-Rat) 70 ppm: male 70 day(s) pre-mating: Reproductive: Paternal Effects: spermatogenesis (incl. genetic material, sperm morphology, motility, and count)

TCLo (Inhalation-Rat) 300 ppm: Multi-generations: Reproductive: Specific Developmental Abnormalities: hepatobiliary system, urogenital system

TCLo (Inhalation-Rat) 500 ppm: male 70 day(s) pre-mating female 70 day(s) pre-mating lactating female 4 day(s) post-birth: Reproductive: Effects on Newborn: viability index (e.g., # alive at day 4 per # born alive)

TCLo (Inhalation-Mouse) 697 ppm/6 hours/28 days-intermittent: 697 ppm/6 hours/28 days-intermittent: Liver: changes in liver weight

TCLo (Inhalation-Mouse) 697 ppm/6 hours/28 days-intermittent: Liver: changes in liver weight

TDLo (Oral-Rat) 4200 mg/kg/14 days-intermittent: Liver: changes in liver weight; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: hepatic microsomal mixed oxidase (dealkylation, hydroxylation, etc.)

TDLo (Oral-Mouse) 750 mg/kg/3 days-intermittent: Endocrine: estrogenic; Related to Chronic Data: changes in uterine weight

TDLo (Unreported-Mouse) 100 mg/kg: Endocrine: other changes

TDLo (Unreported-Mouse) 250 mg/kg: Reproductive: Maternal Effects: uterus, cervix, vagina

TDLo (Unreported-Mouse) 1000 mg/kg: Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: other oxidoreductases

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**SECTION 11 – TOXICOLOGY INFORMATION (Continued)**

**CARCINOGENIC POTENTIAL:** The following table summarizes the carcinogenicity listing for the components of this product. “NO” indicates that the substance is not considered to be or suspected to be a carcinogen by the listed agency, see section 16 for definitions of other ratings.

Chemical	EPA	IARC	NTP	NIOSH	ACGIH	OSHA	Prop 65
Calcium Carbonate (Natural & Synthetic)	No	No	No	No	No	No	No
Carbon Black	No	2B	No	Ca	A3	No	Yes (airborne, unbound particles of respirable size)
Methyl tris(methylethyl ketoximo)	No	No	No	No	No	No	No
Octamethylcyclotetrasiloxane	No	No	No	No	No	No	No
Proprietary Silicone Polymer	No	No	No	No	No	No	No

IARC Group 2B: Possibly carcinogenic to humans. NIOSH-Ca: Potential occupational carcinogen, with no further categorization. ACGIH TLV-A3: Confirmed Animal Carcinogen with Unknown Relevance to Humans.

**IRRITANCY OF PRODUCT:** This product may mildly irritate contaminated tissue, especially if contact is prolonged. Eye irritation may be more pronounced. Inhalation of fumes can cause irritation of the respiratory system.

**SENSITIZATION TO THE PRODUCT:** This product may cause skin sensitization and allergic reaction in susceptible individuals.

**TOXICOLOGICAL SYNERGISTIC PRODUCTS:** None known.

**REPRODUCTIVE TOXICITY INFORMATION:** This product has not been tested for reproductive toxicity. The following information is available for some components.

**Mutagenicity:** The components of this product are not reported to produce mutagenic effects in humans. Animal or microorganism data for components are as follows: Titanium dioxide was not mutagenic to *Salmonella typhimurium* TA1535, TA1537, TA1538, TA97, TA98 or TA100 or to *Escherichia coli* WP2, either in the presence or absence of an exogenous metabolic system from the livers of uninduced and Aroclor-induced rats, mice and Syrian hamsters. Positive results for Carbon Black have been obtained in somatic cells following live animal inhalation exposure.

**Embryotoxicity:** The components of this product are not reported to produce embryotoxic effects in humans.

**Teratogenicity:** The components of this product are not reported not expected to produce teratogenic effects in humans.

**Reproductive Toxicity:** The components of this product are not reported to produce reproductive toxicity in humans.

**BIOLOGICAL EXPOSURES INDICES (BEIs):** Currently, the no BEI’s have been established for components.

**SECTION 12: ECOLOGICAL INFORMATION**

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

**MOBILITY:** This product has not been tested for mobility in soil.

**PERSISTENCE AND BIODEGRADABILITY:** This product has not been tested for persistence or biodegradability.

**BIO-ACCUMULATION POTENTIAL:** This product has not been tested for bio-accumulation potential. A BCF of 12,400 was measured for the Octamethylcyclotetrasiloxane component using fathead minnows which were exposed to a concentration of 0.5 µg/L of Octamethylcyclotetrasiloxane for approximately 28 days. According to a classification scheme, this BCF suggests the potential for bioconcentration in aquatic organisms is very high

**ECOTOXICITY:** This product has not been tested for aquatic or animal toxicity. The following data is available.

**OCTAMETHYLCYCLOTETRAILOXANE:**

LC50 (*Oncorhynchus mykiss* Rainbow trout) 14 days = 10 µg/L

LC50 (*Lepomis macrochirus* Bluegill) 96 hours = > 1000 mg/L

LC50 (*Brachydanio rerio* Zebra danio) 96 hours = >500 mg/L

**OTHER ADVERSE EFFECTS:** This material is not expected to have any ozone depletion potential.

**ENVIRONMENTAL EXPOSURE CONTROLS:** Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways.

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### SECTION 13: DISPOSAL CONSIDERATIONS

**PREPARING WASTES FOR DISPOSAL:** As supplied, this product would not be a hazardous waste as defined by U.S. federal regulation (40 CFR 261) if discarded or disposed. State and local regulations may differ from federal regulations. The generator of the waste is responsible for proper waste determination and management.

**U.S. EPA WASTE NUMBER:** Not applicable.

### SECTION 14: TRANSPORTATION INFORMATION

**U.S. DEPARTMENT OF TRANSPORTATION:** This product is NOT classified as Dangerous Goods, per U.S. DOT regulations, under 49 CFR 172.101.

**TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS:** This product is NOT classified as Dangerous Goods, per regulations of Transport Canada.

**INTERNATIONAL AIR TRANSPORT ASSOCIATION SHIPPING INFORMATION (IATA):** This product is NOT classified as dangerous goods, per the International Air Transport Association.

**INTERNATIONAL MARITIME ORGANIZATION SHIPPING INFORMATION (IMO):** This product is NOT classified as dangerous goods, per the International Maritime Organization.

### SECTION 15: REGULATORY INFORMATION

#### U.S. REGULATIONS:

**U.S. SARA Reporting Requirements:** No 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.

**U.S. SARA Hazard Categories (Section 311/312, 40 CFR 370-21):** ACUTE: Yes; CHRONIC: Yes; FIRE: No; REACTIVE: No; SUDDEN RELEASE: No

**U.S. TSCA Inventory Status:** All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

**U.S. CERCLA Reportable Quantity (RQ):** Not applicable.

**U.S. Clean Air Act (CA 112r) Threshold Quantity (TQ):** Not applicable.

**Other U.S. Federal Regulations:** Not applicable.

**California Safe Drinking Water and Toxic Enforcement Act (Proposition 65):** No component is on the California Proposition 65 lists.

#### CANADIAN REGULATIONS:

**Canadian DSL/NDSL Inventory Status:** The components of this product are listed on the DSL Inventory.

**Canadian Environmental Protection Act (CEPA) Priorities Substances Lists:** Not applicable.

**Canadian WHMIS Regulations:** This product is classified as a Controlled Product, Hazard Class D2B (Immediate Acute Toxicity/Irritation & Sensitization) as per the Controlled Product Regulations.



#### MEXICAN REGULATIONS:

**Mexican Workplace Regulations (NOM-018-STPS-2000):** This product is not classified as hazardous.

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## SECTION 16: OTHER INFORMATION

**WARNINGS (per ANSI Z129.1):** WARNING! COMBUSTIBLE LIQUID. MAY CAUSE EYE AND SKIN IRRITATION. MAY CAUSE SKIN SENSITIZATION AND ALLERGIC REACTION IN SUSCEPTIBLE INDIVIDUALS. CONTAINS COMPOUND THAT MAY CAUSE CHRONIC AQUATIC ADVERSE EFFECTS. Avoid contact with eyes, skin, and clothing. Avoid breathing fumes, dusts, vapors or mist. Do not taste or swallow. Wash thoroughly after handling. Keep container tightly closed. Use only with adequate ventilation. Keep away from heat and flame. Wear gloves, eye protection, respiratory protection, and appropriate body protection. **FIRST-AID:** In case of contact, immediately flush skin and eyes with plenty of water. Remove contaminated clothing and shoes. Get medical attention if irritation develops or persists. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, do not induce vomiting. Get medical attention. **IN CASE OF FIRE:** Use water fog, foam, dry chemical, or CO<sub>2</sub>. **IN CASE OF SPILL:** Absorb spilled product with polypads or other suitable absorbing material. Place all spill residue in an appropriate container and seal. Dispose of in accordance with U.S. Federal, State, and local hazardous waste disposal regulations and those of Canada.

**GLOBAL HARMONIZATION LABELING AND CLASSIFICATION:** Classified in accordance with the Global Harmonization Standard.

**Classification:** Acute Oral Toxicity Category 5, Acute Dermal Toxicity Category 5, Skin Irritation Category 3, Eye Irritation Category 2B, Skin Sensitization Category 1B, Aquatic Acute Toxicity Category 3, Aquatic Chronic Toxicity Category 3

**Signal Word:** Warning

**Hazard Statements:** H303 + H313: May be harmful if swallowed or in contact with skin. H316: Causes mild skin irritation. H320: Causes eye irritation. H317: May cause an allergic skin reaction. H412: Harmful to aquatic life with long-lasting effects.

**Precautionary Statements:**

**Prevention:** P261: Avoid breathing fume. P264: Wash thoroughly after handling. P272: Contaminated work clothing should not be allowed out of the workplace. P273: Avoid release to the environment. P280: Wear protective gloves/protective clothing/eye protection/face protection.

**Response:** P302 + P352: IF ON SKIN: Wash with plenty of soap and water. P333 + P313: If skin irritation or rash occurs: Get medical advice/attention. P362 + P364: Take off contaminated clothing and wash it before reuse. P321: Specific treatment (remove from exposure and treat symptoms). Refer to other portions of precautionary text on this label, SDS or other product information sheets, as appropriate.

**Storage:** P403: Store in a well-ventilated place.

**Disposal:** P501: Dispose of contents/containers in accordance with all local, regional, national and international regulations.

**Hazard Symbols/Pictogram:** GHS08

### DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

The information presented in this Material Safety Data Sheet is presented in good faith based on data believed to be accurate as of the date this Material Safety Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. In no case shall the descriptions, information, data or designs provided be considered a part of our terms and conditions of sale.

All materials may present hazards and should be used with caution. Because many factors may affect processing or application/use, we recommend that you make tests to determine the suitability of a product for your particular purpose prior to use. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices or applicable federal, state, or local laws or regulations. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.

**REFERENCES AND DATA SOURCES:** Contact the supplier for information.

**METHODS OF EVALUATING INFORMATION FOR THE PURPOSE OF CLASSIFICATION:** Bridging principles were used to classify this product.

**REVISION DETAILS:** June 2016: Up-date due to change in formulation.

**DATE OF PRINTING** June 2, 2016

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## DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a SDS. Some of these, which are commonly used, include the following:

### KEY ACRONYMS:

**CHEMTREC:** Chemical Transportation Emergency Center, a 24-hour emergency information and/or emergency assistance to emergency responders.

**CEILING LEVEL:** The concentration that shall not be exceeded during any part of the working exposure.

**DFG MAKs:** Federal Republic of Germany Maximum Concentration Values in the workplace. Exposure limits are given as TWA (Time-Weighted Average) or PEAK (short-term exposure) values.

**DFG MAK Germ Cell Mutagen Categories:** **1:** Germ cell mutagens that have been shown to increase the mutant frequency in the progeny of exposed humans. **2:** Germ cell mutagens that have been shown to increase the mutant frequency in the progeny of exposed mammals. **3A:** Substances that have been shown to induce genetic damage in germ cells of human of animals, or which produce mutagenic effects in somatic cells of mammals *in vivo* and have been shown to reach the germ cells in an active form. **3B:** Substances that are suspected of being germ cell mutagens because of their genotoxic effects in mammalian somatic cell *in vivo*; in exceptional cases, substances for which there are no *in vivo* data, but that are clearly mutagenic *in vitro* and structurally related to known *in vivo* mutagens. **4:** Not applicable (Category 4 carcinogenic substances are those with non-genotoxic mechanisms of action. By definition, germ cell mutagens are genotoxic. Therefore, a Category 4 for germ cell mutagens cannot apply. At some time in the future, it is conceivable that a Category 4 could be established for genotoxic substances with primary targets other than DNA [e.g. purely aneugenic substances] if research results make this seem sensible.) **5:** Germ cell mutagens, the potency of which is considered to be so low that, provided the MAK value is observed, their contribution to genetic risk for humans is expected not to be significant.

**DFG MAK Pregnancy Risk Group Classification:** **Group A:** A risk of damage to the developing embryo or fetus has been unequivocally demonstrated. Exposure of pregnant women can lead to damage of the developing organism, even when MAK and BAT (Biological Tolerance Value for Working Materials) values are observed. **Group B:** Currently available information indicates a risk of damage to the developing embryo or fetus must be considered to be probable. Damage to the developing organism cannot be excluded when pregnant women are exposed, even when MAK and BAT values are observed. **Group C:** There is no reason to fear a risk of damage to the developing embryo or fetus when MAK and BAT values are observed. **Group D:** Classification in one of the groups A–C is not yet possible because, although the data available may indicate a trend, they are not sufficient for final evaluation.

**IDLH:** Immediately Dangerous to Life and Health. This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury.

**LOQ:** Limit of Quantitation.

**NE:** Not Established. When no exposure guidelines are established, an entry of NE is made for reference.

**NIC:** Notice of Intended Change.

**NIOSH CEILING:** The exposure that shall not be exceeded during any part of the workday. If instantaneous monitoring is not feasible, the ceiling shall be assumed as a 15-minute TWA exposure (unless otherwise specified) that shall not be exceeded at any time during a workday.

**NIOSH RELs:** NIOSH's Recommended Exposure Limits.

**PEL:** OSHA's Permissible Exposure Limits. This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "vacated 1989 PEL" is placed next to the PEL that was vacated by Court Order.

**SKIN:** Used when there is a danger of cutaneous absorption.

**STEL:** Short Term Exposure Limit, usually a 15-minute time-weighted average (TWA) exposure that should not be exceeded at any time during a workday, even if the 8-hr TWA is within the TLV-TWA, PEL-TWA or REL-TWA.

**TLV:** Threshold Limit Value. An airborne concentration of a substance that represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour.

**TWA:** Time Weighted Average exposure concentration for a conventional 8-hr (TLV, PEL) or up to a 10-hr (REL) workday and a 40-hr workweek.

**WEEL:** Workplace Environmental Exposure Limits from the AIHA.

### HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS:

This rating system was developed by the National Paint and Coating Association and has been adopted by industry to identify the degree of chemical hazards.

**HEALTH HAZARD: 0** Minimal Hazard: No significant health risk, irritation of skin or eyes not anticipated. *Skin Irritation:* Essentially non-irritating. Mechanical irritation may occur. PII or Draize = 0. *Eye Irritation:* Essentially non-irritating, minimal effects clearing in < 24 hours. Mechanical irritation may occur. Draize = 0. *Oral Toxicity LD<sub>50</sub> Rat:* > 5000 mg/kg. *Dermal Toxicity LD<sub>50</sub> Rat or Rabbit:* > 2000 mg/kg. *Inhalation Toxicity 4-hrs LC<sub>50</sub> Rat:* > 20 mg/L. 1 Slight Hazard: Minor reversible injury may occur; may irritate the stomach if swallowed; may defat the skin and exacerbate existing dermatitis. *Skin Irritation:* Slightly or mildly irritating. PII or Draize > 0 < 5. *Eye Irritation:* Slightly to mildly irritating, but reversible within 7 days. Draize > 0 ≤ 25. *Oral Toxicity LD<sub>50</sub> Rat:* > 500–5000 mg/kg. *Dermal Toxicity LD<sub>50</sub> Rat or Rabbit:* > 1000–2000 mg/kg. *Inhalation Toxicity LC<sub>50</sub> 4-hrs Rat:* > 2–20 mg/L. 2 Moderate Hazard: Temporary or transitory injury may occur; prolonged exposure may affect the CNS. *Skin Irritation:* Moderately irritating; primary irritant; sensitizer. PII or Draize ≥ 5, with no destruction of dermal tissue. *Eye Irritation:* Moderately to severely irritating; reversible corneal opacity; corneal involvement or irritation clearing in 8–21 days. Draize = 26–100, with reversible effects. *Oral Toxicity LD<sub>50</sub> Rat:* > 50–500 mg/kg. *Dermal Toxicity LD<sub>50</sub> Rat or Rabbit:* > 200–1000 mg/kg. *Inhalation Toxicity LC<sub>50</sub> 4-hrs Rat:* > 0.5–2 mg/L. 3 Serious Hazard: Major injury likely unless prompt action is taken and medical treatment is given; high level of toxicity; corrosive. *Skin Irritation:* Severely irritating and/or corrosive; may cause destruction of dermal tissue, skin burns, and dermal necrosis. PII or Draize > 5–8, with destruction of tissue. *Eye Irritation:* Corrosive, irreversible destruction of ocular tissue; corneal involvement or irritation persisting for more than 21 days. Draize > 80 with effects irreversible in 21 days. *Oral Toxicity LD<sub>50</sub> Rat:* > 1–50 mg/kg. *Dermal Toxicity LD<sub>50</sub> Rat or Rabbit:* > 20–200 mg/kg. *Inhalation Toxicity LC<sub>50</sub> 4-hrs Rat:* > 0.05–0.5 mg/L. 4 Severe Hazard: Life-threatening; major or permanent damage may result from single or repeated exposure; extremely toxic; irreversible injury may result from brief contact. *Skin Irritation:* Not appropriate. Do not rate as a 4, based on skin irritation alone. *Eye Irritation:* Not appropriate. Do not rate as a 4, based on eye irritation alone. *Oral Toxicity*

*LD<sub>50</sub> Rat:* ≤ 1 mg/kg. *Dermal Toxicity LD<sub>50</sub> Rat or Rabbit:* ≤ 20 mg/kg. *Inhalation Toxicity LC<sub>50</sub> 4-hrs Rat:* ≤ 0.05 mg/L.

**FLAMMABILITY HAZARD: 0** Minimal Hazard: Materials that will not burn in air when exposure to a temperature of 815.5°C (1500°F) for a period of 5 minutes. 1 Slight Hazard: Materials that must be pre-heated before ignition can occur. Material requires considerable pre-heating, under all ambient temperature conditions before ignition and combustion can occur. This usually includes the following: Materials that will burn in air when exposed to a temperature of 815.5°C (1500°F) for a period of 5 minutes or less; Liquids, solids and semisolids having a flash point at or above 93.3°C (200°F) (i.e. OSHA Class IIIB); and Most ordinary combustible materials (e.g. wood, paper, etc.). 2 Moderate Hazard: Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur. Materials in this degree would not, under normal conditions, form hazardous atmospheres in air, but under high ambient temperatures or moderate heating may release vapor in sufficient quantities to produce hazardous atmospheres with air. This usually includes the following: Liquids having a flash-point at or above 37.8°C (100°F); Solid materials in the form of course dusts that may burn rapidly but that generally do not form explosive atmospheres; Solid materials in a fibrous or shredded form that may burn rapidly and create flash fire hazards (e.g. cotton, sisal, hemp); and Solids and semisolids (e.g. viscous and slow flowing asphalt) that readily give off flammable vapors.

3 Serious Hazard: Liquids and solids that can be ignited under almost all ambient temperature conditions. Materials in this degree produce hazardous atmospheres with air under almost all ambient temperatures, or, unaffected by ambient temperature, are readily ignited under almost all conditions. This usually includes the following: Liquids having a flash point below 22.8°C (73°F) and (73°F) and below 37.8°C (100°F) (i.e. OSHA Class IB and IC); Materials that on account of their physical form or environmental conditions can form explosive mixtures with air and are readily dispersed in air (e.g., dusts of combustible solids, mists or droplets of flammable liquids); and Materials that burn extremely rapidly, usually by reason of self-contained oxygen (e.g. dry nitrocellulose and many organic peroxides). 4 Severe Hazard: Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air, and that will burn readily. This usually includes the following: Flammable gases; Flammable cryogenic materials; Any liquid or gaseous material that is liquid while under pressure and has a flash point below 22.8°C (73°F) and a boiling point below 37.8°C (100°F) (i.e. OSHA Class IA); and Materials that ignite spontaneously when exposed to air at a temperature of 54.4°C (130°F) or below (pyrophoric).

**PHYSICAL HAZARD: 0** *Water Reactivity:* Materials that do not react with water. *Organic Peroxides:* Materials that are normally stable, even under fire conditions and will not react with water. *Explosives:* Substances that are Non-Explosive. *Compressed Gases:* No Rating. *Pyrophorics:* No Rating. *Oxidizers:* No 0 rating. *Unstable Reactives:* Substances that will not polymerize, decompose, condense, or self-react. 1 *Water Reactivity:* Materials that change or decompose upon exposure to moisture. *Organic Peroxides:* Materials that are normally stable, but can become unstable at high temperatures and pressures. These materials may react with water, but will not release energy violently. *Explosives:* Division 1.5 & 1.6 explosives. Substances that are very insensitive explosives or that do not have a mass explosion hazard. *Compressed Gases:* Pressure below OSHA definition. *Pyrophorics:* No Rating. *Oxidizers:* Packaging Group III oxidizers; Solids: any material that in either concentration tested, exhibits a mean burning time less than or equal to the mean burning time of a 3:7 potassium bromate/cellulose mixture and the criteria for Packing Group I and II are not met. Liquids: any material that exhibits a mean pressure rise time less than or equal to the pressure rise time of a 1:1 nitric acid (65%)/cellulose mixture and the criteria for Packing Group I and II are not met. *Unstable Reactives:* Substances that may decompose, condense, or self-react, but only under conditions of high temperature and/or pressure and have little or no potential to cause significant heat generation or explosion hazard. Substances that readily undergo hazardous polymerization in the absence of inhibitors. 2 *Water Reactivity:* Materials that may react violently with water. *Organic Peroxides:* Materials that, in themselves, are normally unstable and will readily undergo violent chemical change, but will not detonate. These materials may also react violently with water. *Explosives:* Division 1.4 explosives. Explosive substances where the explosive effects are largely confined to the package and no projection of fragments of appreciable size or range are expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package. *Compressed Gases:* Pressurized and meet OSHA definition but < 514.7 psi absolute at 21.1°C (70°F) [500 psig]. *Pyrophorics:* No Rating. *Oxidizers:* Packing Group II oxidizers. Solids: any material that, either in concentration tested, exhibits a mean burning time of less than or equal to the mean burning time of a 2:3 potassium bromate/cellulose mixture and the criteria for Packing Group I are not met. Liquids: any material that exhibits a mean pressure rise time less than or equal to the pressure rise of a 1:1 aqueous sodium chlorate solution (40%)/cellulose mixture and the criteria for Packing Group I are not met. *Reactives:* Substances that may polymerize, decompose, condense, or self-react at ambient temperature and/or pressure, but have a low potential (or low risk) for significant heat generation or explosion. Substances that readily form peroxides upon exposure to air or oxygen at room temperature. 3 *Water Reactivity:* Materials that may form explosive reactions with water. *Organic Peroxides:* Materials that are capable of detonation or explosive reaction, but require a strong initiating source or must be heated under confinement before initiation; or materials that react explosively with water. *Explosives:* Division 1.3 explosives. Explosive substances that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but do not have a mass explosion hazard. *Compressed Gases:* Pressure ≥ 514.7 psi absolute at 21.1°C (70°F) [500 psig]. *Pyrophorics:* No Rating. *Oxidizers:* Packing Group I oxidizers. Solids: any material that, in either concentration tested, exhibits a mean burning time less than the mean burning time of a 3:2 potassium bromate/cellulose mixture. Liquids: any material that spontaneously ignites when mixed with cellulose in a 1:1 ratio, or which exhibits a mean pressure rise time less than the pressure rise time of a 1:1 perchloric acid (50%)/cellulose mixture. *Unstable Reactives:* Substances that may polymerize, decompose, condense, or self-react at ambient temperature and/or pressure and have a moderate potential (or moderate risk) to cause significant heat generation or explosion. 4 *Water Reactivity:* Materials that react explosively with water without requiring heat or confinement. *Organic Peroxides:* Materials that are readily capable of detonation or explosive decomposition at normal temperature and pressures. *Explosives:* Division 1.1 & 1.2 explosives. Explosive substances that have a mass explosion hazard or have a projection hazard. J: A mass explosion is one that affects almost the entire load instantaneously. *Compressed Gases:* No Rating. *Pyrophorics:* Add to the definition of Flammability 4. *Oxidizers:* No 4 rating. *Unstable Reactives:* Substances that may polymerize, decompose, condense, or self-react at ambient temperature and/or pressure and have a high potential (or high risk) to cause significant heat generation or explosion. *Pyrophorics:* Add to the definition of Flammability 4. *Oxidizers:* No 4 rating. *Unstable Reactives:* Substances that may polymerize, decompose, condense, or self-react at ambient temperature and/or pressure and have a high potential (or high risk) to cause significant heat generation or explosion.

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## DEFINITIONS OF TERMS (Continued)

### HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD

#### RATINGS (continued):

**PHYSICAL HAZARD (continued): 0 (continued):** A mass explosion is one that affects almost the entire load instantaneously. *Compressed Gases:* No Rating. *Pyrophorics:* Add to the definition of Flammability 4. *Oxidizers:* No 4 rating. *Unstable Reactives:* Substances that may polymerize, decompose, condense, or self-react at ambient temperature and/or pressure and have a high potential (or high risk) to cause significant heat generation or explosion. *Pyrophorics:* Add to the definition of Flammability 4. *Oxidizers:* No 4 rating. *Unstable Reactives:* Substances that may polymerize, decompose, condense, or self-react at ambient temperature and/or pressure and have a high potential (or high risk) to cause significant heat generation or explosion.

#### NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS

**HEALTH HAZARD: 0** Materials that, under emergency conditions, would offer no hazard beyond that of ordinary combustible materials. Gases and vapors with an LC<sub>50</sub> for acute inhalation toxicity greater than 10,000 ppm. Dusts and mists with an LC<sub>50</sub> for acute inhalation toxicity greater than 200 mg/L. Materials with an LD<sub>50</sub> for acute dermal toxicity greater than 2000 mg/kg. Materials with an LD<sub>50</sub> for acute oral toxicity greater than 2000 mg/kg. Materials essentially non-irritating to the respiratory tract, eyes, and skin. **1** Materials that, under emergency conditions, can cause significant irritation. Gases and vapors with an LC<sub>50</sub> for acute inhalation toxicity greater than 5,000 ppm but less than or equal to 10,000 ppm. Dusts and mists with an LC<sub>50</sub> for acute inhalation toxicity greater than 10 mg/L but less than or equal to 200 mg/L. Materials with an LD<sub>50</sub> for acute dermal toxicity greater than 1000 mg/kg but less than or equal to 2000 mg/kg. Materials that slightly to moderately irritate the respiratory tract, eyes and skin. Materials with an LD<sub>50</sub> for acute oral toxicity greater than 500 mg/kg but less than or equal to 2000 mg/kg. **2** Materials that, under emergency conditions, can cause temporary incapacitation or residual injury. Gases with an LC<sub>50</sub> for acute inhalation toxicity greater than 3,000 ppm but less than or equal to 5,000 ppm. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than one-fifth its LC<sub>50</sub> for acute inhalation toxicity, if its LC<sub>50</sub> is less than or equal to 5000 ppm and that does not meet the criteria for either degree of hazard 3 or degree of hazard 4. Dusts and mists with an LC<sub>50</sub> for acute inhalation toxicity greater than 2 mg/L but less than or equal to 10 mg/L. Materials with an LD<sub>50</sub> for acute dermal toxicity greater than 200 mg/kg but less than or equal to 1000 mg/kg. Compressed liquefied gases with boiling points between -30°C (-22°F) and -55°C (-66.5°F) that cause severe tissue damage, depending on duration of exposure. Materials that are respiratory irritants. Materials that cause severe, but reversible irritation to the eyes or are lachrymators. Materials that are primary skin irritants or sensitizers. Materials whose LD<sub>50</sub> for acute oral toxicity is greater than 50 mg/kg but less than or equal to 500 mg/kg. **3** Materials that, under emergency conditions, can cause serious or permanent injury. Gases with an LC<sub>50</sub> for acute inhalation toxicity greater than 1,000 ppm but less than or equal to 3,000 ppm. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater its LC<sub>50</sub> for acute inhalation toxicity, if its LC<sub>50</sub> is less than or equal to 3000 ppm and that does not meet the criteria for degree of hazard 4. Dusts and mists with an LC<sub>50</sub> for acute inhalation toxicity greater than 0.5 mg/L but less than or equal to 2 mg/L. Materials with an LD<sub>50</sub> for acute dermal toxicity greater than 40 mg/kg but less than or equal to 200 mg/kg. Materials that are corrosive to the respiratory tract. Materials that are corrosive to the eyes or cause irreversible corneal opacity. Materials corrosive to the skin. Cryogenic gases that cause frostbite and irreversible tissue damage. Compressed liquefied gases with boiling points below -55°C (-66.5°F) that cause frostbite and irreversible tissue damage. Materials with an LD<sub>50</sub> for acute oral toxicity greater than 5 mg/kg but less than or equal to 50 mg/kg. **4** Materials that, under emergency conditions, can be lethal. Gases with an LC<sub>50</sub> for acute inhalation toxicity less than or equal to 1,000 ppm. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than ten times its LC<sub>50</sub> for acute inhalation toxicity, if its LC<sub>50</sub> is less than or equal to 1000 ppm. Dusts and mists whose LC<sub>50</sub> for acute inhalation toxicity is less than or equal to 0.5 mg/L. Materials whose LD<sub>50</sub> for acute dermal toxicity is less than or equal to 40 mg/kg. Materials whose LD<sub>50</sub> for acute oral toxicity is less than or equal to 5 mg/kg.

**FLAMMABILITY HAZARD: 0** Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand. Materials that will not burn in air when exposed to a temperature of 816°C (1500°F) for a period of 5 minutes in according with Annex D of NFPA 704. **1** Materials that must be preheated before ignition can occur. Materials in this degree require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur. Materials that will burn in air when exposed to a temperature of 816°C (1500°F) for a period of 5 minutes in according with Annex D of NFPA 704. Liquids, solids, and semisolids having a flash point at or above 93.4°C (200°F) (i.e. Class IIIB liquids). Liquids with a flash point greater than 35°C (95°F) that do not sustain combustion when tested using the *Method of Testing for Sustained Combustibility*, per 49 CFR 173, Appendix H or the UN *Recommendations on the Transport of Dangerous Goods, Model Regulations* (current edition) and the related *Manual of Tests and Criteria* (current edition). Liquids with a flash point greater than 35°C (95°F) in a water-miscible solution or dispersion with a water non-combustible liquid/solid content of more than 85% by weight. Liquids that have no fire point when tested by ASTM D 92, *Standard Test Method for Flash and Fire Points by Cleveland Open Cup*, up to the boiling point of the liquid or up to a temperature at which the sample being tested shows an obvious physical change. Combustible pellets with a representative diameter of greater than 2 mm (10 mesh). Most ordinary combustible materials. Solids containing greater than 0.5% by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent. **2** Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur. Materials in this degree would not under normal conditions form hazardous atmospheres with air, but under high ambient temperatures or under moderate heating could release vapor in sufficient quantities to produce hazardous atmospheres with air. Liquids having a flash point at or above 37.8°C (100°F) and below 93.4°C (200°F) (i.e. Class II and Class IIIA liquids.) Solid materials in the form of powders or coarse dusts of representative diameter between 420 microns (40 mesh) and 2 mm (10 mesh) that burn rapidly but that generally do not form explosive mixtures with air. Solid materials in fibrous or shredded form that burn rapidly and create flash fire hazards, such as cotton, sisal, and hemp. Solids and semisolids that readily give off flammable vapors. Solids containing greater than 0.5% by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent. **3** Liquids and solids that can be ignited under almost all ambient temperature conditions. Materials in this degree produce hazardous atmospheres with air under almost all ambient temperatures or, though unaffected by ambient temperatures, are readily ignited under almost all conditions. Liquids having a flash point below 22.8°C (73°F) and having a boiling point at or above 37.8°C (100°F) and those liquids having a flash point at or above 22.8°C (73°F) and below 37.8°C (100°F) (i.e. Class IB and IC liquids). Materials that on account of their physical form or environmental conditions can form explosive mixtures with air

and are readily dispersed in air. Flammable or combustible dusts with representative diameter less than 420 microns (40 mesh). Materials that burn with extreme rapidity, usually by reason of self-contained oxygen (e.g. dry nitrocellulose and many organic peroxides). Solids containing greater than 0.5% by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent. **4** Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air and will burn readily. Flammable gases. Flammable cryogenic materials. Any liquid or gaseous materials that is liquid while under pressure and has a flash point below 22.8°C (73°F) and a boiling point below 37.8°C (100°F) (i.e. Class IA liquids). Materials that ignite when exposed to air, Solids containing greater than 0.5% by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent. **INSTABILITY HAZARD: 0** Materials that in themselves are normally stable, even under fire conditions. Materials that have an instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) below 0.01 W/mL. Materials that do not exhibit an exotherm at temperatures less than or equal to 500°C (932°F) when tested by differential scanning calorimetry. **1** Materials that in themselves are normally stable, but that can become unstable at elevated temperatures and pressures. Materials that have an instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 0.01 W/mL and below 10 W/mL. **2** Materials that readily undergo violent chemical change at elevated temperatures and pressures. Materials that have an instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 10 W/mL and below 100 W/mL. **3** Materials that in themselves are capable of detonation or explosive decomposition or explosive reaction, but that require a strong initiating source or that must be heated under confinement before initiation. Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 100 W/mL and below 1000 W/mL. Materials that are sensitive to thermal or mechanical shock at elevated temperatures and pressures. **4** Materials that in themselves are readily capable of detonation or explosive decomposition or explosive reaction at normal temperatures and pressures. Materials that are sensitive to localized thermal or mechanical shock at normal temperatures and pressures. Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) of 1000 W/mL or greater.

#### FLAMMABILITY LIMITS IN AIR:

Much of the information related to fire and explosion is derived from the National Fire Protection Association (NFPA). Flash Point: Minimum temperature at which a liquid gives off sufficient vapor to form an ignitable mixture with air near the surface of the liquid or within the test vessel used. Autoignition Temperature: Minimum temperature of a solid, liquid, or gas required to initiate or cause self-sustained combustion in air with no other source of ignition. LEL: Lowest concentration of a flammable vapor or gas/air mixture that will ignite and burn with a flame. UEL: Highest concentration of a flammable vapor or gas/air mixture that will ignite and burn with a flame.

#### TOXICOLOGICAL INFORMATION:

**Human and Animal Toxicology:** Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. LD<sub>50</sub>: Lethal Dose (solids & liquids) that kills 50% of the exposed animals. LC<sub>50</sub>: Lethal Concentration (gases) that kills 50% of the exposed animals. ppm: Concentration expressed in parts of material per million parts of air or water. mg/m<sup>3</sup>: Concentration expressed in weight of substance per volume of air. mg/kg: Quantity of material, by weight, administered to a test subject, based on their body weight in kg. TDLo: Lowest dose to cause a symptom. TCLo: Lowest concentration to cause a symptom. TD0, LDLo, and LDo, or TC, TCo, LCLo, and LCo: Lowest dose (or concentration) to cause lethal or toxic effects. **Cancer Information:** IARC: International Agency for Research on Cancer. NTP: National Toxicology Program. RTECS: Registry of Toxic Effects of Chemical Substances. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. **Other Information:** BEI: ACGIH Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV.

#### REPRODUCTIVE INFORMATION:

A mutagen is a chemical that causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An embryotoxin is a chemical that causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A teratogen is a chemical that causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance that interferes in any way with the reproductive process.

#### ECOLOGICAL INFORMATION:

EC: Effect concentration in water. BCF: Bioconcentration Factor, which is used to determine if a substance will concentrate in life forms that consume contaminated plant or animal matter. TLm: Median threshold limit. log K<sub>ow</sub> or log K<sub>oc</sub>: Coefficient of Oil/Water Distribution is used to assess a substance's behavior in the environment.

**REGULATORY INFORMATION:** This section explains the impact of various laws and regulations on the material.

#### U.S.:

EPA: U.S. Environmental Protection Agency. ACGIH: American Conference of Governmental Industrial Hygienists, a professional association that establishes exposure limits. OSHA: U.S. Occupational Safety and Health Administration. NIOSH: National Institute of Occupational Safety and Health, which is the research arm of OSHA. DOT: U.S. Department of Transportation. TC: Transport Canada. SARA: Superfund Amendments and Reauthorization Act. TSCA: U.S. Toxic Substance Control Act. CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act. Marine Pollutant status according to the DOT; CERCLA or Superfund; and various state regulations. This section also includes information on the precautionary warnings that appear on the material's package label.

#### CANADA:

WHMIS: Canadian Workplace Hazardous Materials Information System. TC: Transport Canada. DSL/NDL: Canadian Domestic/Non-Domestic Substances List.