1. PRODUCT IDENTIFICATION

<table>
<thead>
<tr>
<th>IDENTIFICATION of the SUBSTANCE or PREPARATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRADE NAME (AS LABELED):</td>
</tr>
<tr>
<td>PRODUCT DESCRIPTION:</td>
</tr>
<tr>
<td>CHEMICAL NAME/CLASS:</td>
</tr>
<tr>
<td>SYNONYMS:</td>
</tr>
<tr>
<td>RELEVANT USE:</td>
</tr>
<tr>
<td>USES ADVISED AGAINST:</td>
</tr>
</tbody>
</table>

COMPANY/UNDERTAKING IDENTIFICATION:

| SUPPLIER/MANUFACTURER’S NAME: | Pecora Corporation |
| ADDRESS: | 165 Wambold Road, Harleysville, PA 19438 |
| EMERGENCY PHONE: | 800-424-9300 (CHEMTREC, 24-hours) |
| BUSINESS PHONE: | 215-723-6051 (Mon–Fri, 8 AM–5 PM ET) |
| PREPARATION DATE: | February 2007 |
| REVISION DATE: | October 8, 2014 |

This product is sold for commercial use. This MSDS has been developed to address safety concerns of those individuals working with bulk quantities of this material, as well as those of potential users of this product in industrial/occupational settings. ALL United States Occupational Safety and Health Administration Standard (29 CFR 1910.1200), U.S. State equivalent Standards, and Canadian WHMIS [Controlled Products Regulations] and the Global Harmonization Standard required information is included in appropriate sections based on the U.S. ANSI Z400.1-2010 format. This product has been classified in accordance with the hazard criteria of the countries listed above.

2. HAZARD IDENTIFICATION

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

Classification: Flammable Liquid Cat. 3, Acute Inhalation Toxicity Cat. 4, Acute Dermal Toxicity Cat. 4, Acute Oral Toxicity Cat. 5, Skin Irritation Cat. 2, Eye Irritation Cat. 2A, STOT (Inhalation-Respiratory Irritation) SE Cat. 3, Skin Sensitization Cat. 1A, Respiratory Sensitization Cat. 1B
Signal Word: Danger

Hazard Symbols/Pictogram: GH02, GH07, GH08

EMERGENCY OVERVIEW:

PHYSICAL DESCRIPTION: This product is a paste with a mild ammonia-like odor. Can come in several colors

HEALTH HAZARDS: CAUTION! Harmful by skin contact. This product may cause respiratory, skin and eye irritation. Eye irritation may severe, depending on duration and concentration of exposure. May be harmful by ingestion and inhalation. Symptoms of ingestion may be delayed. May cause toxic systemic effects by skin absorption. Can cause skin sensitization and may cause respiratory sensitization and allergic reaction in susceptible individuals. The trace Dibutyltin Dioxide component has limited evidence of teratogenic effects in one animal study.

FLAMMABILITY HAZARD: This product is flammable and can ignite if exposed to temperature at or above 40°C (140°F) or direct flame.

REACTIVITY HAZARD: This product may have some reactivity to water, producing silicic acid and methanol. Closed containers may develop pressure and rupture on prolonged exposure to heat or if contaminated with water.

ENVIRONMENTAL HAZARD: This product may be harmful to marine organisms. All release to the environment should be avoided.

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS®)

<table>
<thead>
<tr>
<th>Health</th>
<th>2*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammability</td>
<td>2</td>
</tr>
<tr>
<td>Physical Hazard</td>
<td>0</td>
</tr>
</tbody>
</table>

See Section 16 for definitions of ratings

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Minimal</td>
</tr>
<tr>
<td>1</td>
<td>Slight</td>
</tr>
<tr>
<td>2</td>
<td>Moderate</td>
</tr>
<tr>
<td>3</td>
<td>Serious</td>
</tr>
<tr>
<td>4</td>
<td>Severe</td>
</tr>
<tr>
<td>*</td>
<td>Chronic</td>
</tr>
</tbody>
</table>

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

CANADIAN WHMIS CLASSIFICATION: Class B2 and 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.
### 3. MATERIAL IDENTIFICATION

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS #</th>
<th>W/W%</th>
<th>GHS Classification</th>
<th>Hazard Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proprietary Silicone Polymer</td>
<td>35141-30-1</td>
<td>10.0</td>
<td>SELF CLASSIFICATION</td>
<td>Classification: Flammable Liquid Cat. 3, Acute Inhalation Toxicity Cat. 4, Eye Irritation Cat. 2A, STOT (Inhalation-Respiratory Irritation) SE Cat. 3</td>
</tr>
<tr>
<td>Proprietary Polymer with Ethyl Silicate</td>
<td>30.0-50.0</td>
<td></td>
<td>CATEGORY 2</td>
<td>Acute Dermal Toxicity Cat. 4, Skin Corrosion Cat. 2, Skin Sensitization Cat. 1A, Respiratory Sensitization Cat. 1B</td>
</tr>
<tr>
<td>Proprietary Silica</td>
<td>30.0-50.0</td>
<td></td>
<td>CATEGORY 2</td>
<td>Acute Dermal Toxicity Cat. 4, Skin Corrosion Cat. 2, Skin Sensitization Cat. 1A, Respiratory Sensitization Cat. 1B</td>
</tr>
<tr>
<td>Ethyl Silicate</td>
<td>818-08-6</td>
<td>1.0-5.0</td>
<td>CATEGORY 2</td>
<td>Acute Dermal Toxicity Cat. 4, Skin Corrosion Cat. 2, Skin Sensitization Cat. 1A, Respiratory Sensitization Cat. 1B</td>
</tr>
<tr>
<td>(3-Trimethoxysilylpropyl) diethylenetriamine</td>
<td>78-10-4</td>
<td>1.0-5.0</td>
<td>CATEGORY 2</td>
<td>Acute Dermal Toxicity Cat. 4, Skin Corrosion Cat. 2, Skin Sensitization Cat. 1A, Respiratory Sensitization Cat. 1B</td>
</tr>
<tr>
<td>Dibutyltin Dioxide</td>
<td>30.0-50.0</td>
<td></td>
<td>CATEGORY 2</td>
<td>Acute Dermal Toxicity Cat. 4, Skin Corrosion Cat. 2, Skin Sensitization Cat. 1A, Respiratory Sensitization Cat. 1B</td>
</tr>
</tbody>
</table>

Other components. Each of the other components is present in less than 1 percent concentration. See Section 16 for full text of classification.

### 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 attempt to retrieve victims of exposure. See Section 16 for full text of classification.

**INHALATION**: If dusts of this material are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. If victim is unconscious, having convulsions, or unable to swallow, do not attempt to retrieve victim. Do not interrupt flushing. Remove exposed or contaminated clothing, taking care not to contaminate eyes. If victim is unconscious, having convulsions, or unable to swallow, do not attempt to retrieve victim. Do not interrupt flushing. Remove exposed or contaminated clothing, taking care not to contaminate eyes.

**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.

**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 directly by medical personnel. Have victim rinse mouth with water or give several cupfuls of water, if possible. Do not attempt to retrieve victim. Do not interrupt flushing. Remove exposed or contaminated clothing, taking care not to contaminate eyes.

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

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

### 5. FIRE-FIGHTING MEASURES

**FLASH POINT**: > 46.7°C (116°F)  
**AUTOIGNITION**: Unknown.  
**FLAMMABLE LIMITS IN AIR**: Unknown.

**EXTINGUISHING MEDIA**:  
**SUITABLE EXTINGUISHING MEDIA**: Use extinguishing material suitable to the surrounding fire, including foam, halon, carbon dioxide and dry chemical.  
**UNSUITABLE EXTINGUISHING MEDIA**: Due to the presence of (3-Trimethoxysilylpropyl) Diethylenetriamine, halons should not be used.

**PROTECTION OF FIREFIGHTERS**:  
**SPECIAL HAZARDS ARISING FROM THE SUBSTANCE**: This product is flammable and can be ignited when exposed to its flashpoint. Vapors may form explosive mixtures in air. 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 or if contaminated with water.

**SPECIAL PROTECTIVE ACTIONS FOR FIREFIGHTERS**: Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. 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.
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 poly pads. Absorb spilled liquid with clay, sand, poly pads, or other suitable inert absorbent materials. 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. Monitor area for combustible vapor levels and confirm levels are below exposure limits given in Section 8 (Exposure Controls – Personal Protection), if applicable, and that levels are below applicable LELs (see Section 5 – Fire Fighting Measures) before non-response personnel are allowed into the spill area. Purge equipment with inert gas prior to reuse.

ENVIRONMENTAL PRECAUTIONS: Minimize use of water to prevent environmental contamination. Prevent spill or rinse 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 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.

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. Contaminated clothing needs to be laundered prior to reuse. 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: Keep container tightly closed when not in use. Store containers 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 diked area, as appropriate. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged. Containers should be separated from oxidizing materials by a minimum distance of 20 ft. or by a barrier of non-combustible material at least 5 ft. high having a fire-resistance rating of at least 0.5 hours. Storage areas should be made of fire resistant materials. Local Fire Departments should be notified of the storage of this product on site. Storage and processing areas of this product should be identified with a NFPA 704 placard (diamond) large enough to be seen from a distance. Post warning and “NO SMOKING” signs in storage and use areas, as appropriate. Refer to NFPA 30, Flammable and Combustible Liquids Code, for additional information on storage. Have appropriate extinguishing equipment in the storage area (such as sprinkler systems or portable fire extinguishers). Inspect all incoming containers before storage to ensure containers are properly labeled and not damaged. Empty containers may contain residual product; therefore, empty containers should be handled with care. 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.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

EXPOSURE LIMITS/CONTROL PARAMETERS:

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided below. Ventilation should be explosion-proof.

OCCUPATIONAL/WORKPLACE EXPOSURE LIMITS/GUIDELINES:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS #</th>
<th>Guideline</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dibutyltin Dioxide</td>
<td>S18-08-6</td>
<td>DFG MAK TWA</td>
<td>0.02 mg/m³ (skin) inhalation fraction</td>
</tr>
<tr>
<td>Exposure limits given are for Dn-butyltin compounds as Sn</td>
<td>DFG MAK PREGNANCY CATEGORY</td>
<td>B</td>
<td></td>
</tr>
</tbody>
</table>

NE = Not Established. See Section 16 for Definitions of Terms Used.
8. EXPOSURE CONTROLS - PERSONAL PROTECTION (Continued)

EXPOSURE LIMITS/CONTROL PARAMETERS (continued):

OCCUPATIONAL/WORKPLACE EXPOSURE LIMITS/GUIDELINES (continued):

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS #</th>
<th>Guideline</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Silicate</td>
<td>78-10-4</td>
<td>ACGIH TLV TWA</td>
<td>85 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA REL TWA</td>
<td>850 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NIOSH REL TWA</td>
<td>85 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DFG MAK TWA</td>
<td>700 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DFG MAK PEAK</td>
<td>86 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DFG MAK PREGNANCY CATEGORY</td>
<td>1+MAK 15 min. Average value, 1-hr interval, 4 per shift</td>
</tr>
<tr>
<td>Furned Silica</td>
<td>NE</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>Proprietary Silicone Polymer</td>
<td>NE</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>Proprietary Polymer</td>
<td>NE</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>(3-Trimehoxysilylpropyl) Diethylenetriamine</td>
<td>35141-30-1</td>
<td>ACGIH TLV TWA</td>
<td>4.2 mg/m³ (skin)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NIOSH REL TWA</td>
<td>4 mg/m³ (skin)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DFG MAK</td>
<td>Danger of sensitization of the Skin</td>
</tr>
</tbody>
</table>

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


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 mists or sprays 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 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. The following NIOSH respiratory protection equipment guidelines for the Ethyl Silicate component are provided to aid in selection of respirators should they be needed.

ETHYL SILICATE

CONCENTRATION RESPIRATORY PROTECTION
BASED ON NIOSH REL
Up to 100 ppm: Any Supplied-Air Respirator (SAR).
Up to 250 ppm: Any SAR operated in a continuous-flow mode.
Up to 500 ppm: Any Self-Contained Breathing Apparatus (SCBA) with a full facepiece, or any SAR with a full facepiece.
Up to 1000 ppm: Any SAR that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.
Emergency or Planned Entry into Unknown Concentrations or IDLH Conditions: Any SCBA that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode, or any SAR that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.
Escape: Any Air-Purifying, Full-Facepiece Respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister, or any appropriate escape-type, SCBA.

9. PHYSICAL and CHEMICAL PROPERTIES

FORM: Smooth paste.
MOLECULAR WEIGHT: Mixture.
ODOR: Slight, ammonia-like.
SPECIFIC GRAVITY: 1.03
RELATIVE VAPOR DENSITY (air = 1): Heavier than air.
SOLUBILITY IN WATER: Partially soluble.
MELTING/FREEZING POINT: Not available.
VOC (less water and exempt): <250 g/L
FLASH POINT: 46.7°C (116°F)
pH: Not available.
FLAMMABLE LIMITS (in air by volume, %): Lower: Not established; Upper: Not established.
COEFFICIENT OF OIL/WATER DISTRIBUTION (PARTITION 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.

10. STABILITY and REACTIVITY

CHEMICAL STABILITY: Stable under normal circumstances of use and handling. Can react with water to form ethanol and silicic acid. Details of reaction are not available.

Page 4 of 11 October 8, 2014
10. STABILITY and REACTIVITY (Continued)

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, alcohols, peroxides and halons.

HAZARDOUS DECOMPOSITION PRODUCTS: Combustion: Thermal decomposition of this product can generate dusts, irritating fumes, and toxic gases (e.g., carbon, tin and silicone oxides, formaldehyde, ethanol, methanol, various hydrocarbons). Hydrolysis: Ethanol, silicic acid.

POSSIBILITY OF HAZARDOUS REACTIONS/POLYMERIZATION: This product is not expected to undergo hazardous polymerization, decomposition, condensation, or self-reactivity. Contact with strong oxidizers such as fluorine, chlorine and bromine may cause violent reaction due to presence of Ethyl Silicate.

11. TOXICOLOGICAL INFORMATION

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

CONTACT WITH SKIN or EYES: Depending on the duration of skin contact, skin exposures can cause reddening, discomfort or irritation. Prolonged contact may cause inflammation, redness, rash, swelling and blistering. Skin contact can result in sensitization and allergic reaction. Refer to ‘Sensitization to the Product’ for additional information on possible sensitization effects from skin contact. Brief contact with the liquid or vapors from this product and the eyes can cause irritation, reddening and watering. Eye contact will cause moderate to severe irritation, depending on the duration and concentration of exposure.

SKIN ABSORPTION: Prolonged skin contact may cause adverse systemic toxicity by skin absorption as described under ingestion or inhalation.

INGESTION: May be harmful if swallowed. If the product is spilled, it can irritate the mouth, throat, and other tissues of the gastro-intestinal system and may cause nausea, vomiting, and diarrhea as well as adverse effects on the central nervous system. Adverse effects may be delayed for a week and can include skin problems (rash, thickening and flaking), abdominal pain, gastrointestinal ulcers and bleeding, loss of appetite and muscle pain.

INHALATION: Inhalation of vapors, mists, or sprays of this product can moderately irritate the tissues of the nose, mouth, throat, and upper respiratory system. Symptoms of overexposure may include coughing, sneezing, and difficulty breathing. Inhalation of vapors or fumes from this product may result in sensitization and allergic reaction in sensitive individuals. Refer to ‘Sensitization to the Product’ for additional information on possible sensitization effects by inhalation.

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

TARGET ORGANS: Acute: Skin, eyes, central nervous system. Chronic: Skin.

CHRONIC EFFECTS: Prolonged or repeated skin contact may cause dermatitis (dry, red skin), damage to respiratory system and skin and respiratory sensitization.

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.

ETHYL SILICATE: Standard Draize Test (Eye-Human) 3000 ppm

ETHYL SILICATE (continued):

LC (Inhalation-Mouse) 20 gm/m³/2 hours: Cardiac: other changes; Lungs, Thorax, or Respiratory: changes in pulmonary vascular resistance, respiratory obstruction

LC (Inhalation-Mouse) 30 gm/m³/2 hours: Liver: other changes; Kidney/Ureter/Bladder: changes in blood vessels or in circulation of kidney; Blood: changes in spleen

LC (Inhalation-Mouse) 50 gm/m³/2 hours: Behavioral: toxic psychosis, convulsions or effect on seizure threshold; Lungs, Thorax, or Respiration: cyanosis

LC (Inhalation-Mouse) 60 gm/m³: Peripheral Nerve and Sensation: recording from peripheral motor nerve; Behavioral: somnolence (general depressed activity), tremor

LC (Inhalation-Mouse) 10 gm/m³/3 hours: Peripheral Nerve and Sensation: recording from peripheral motor nerve; Sense Organs and Special Senses (Eye): corneal damage; Behavioral: tremor

LC (Inhalation-Rat) 21 gm/m³/3 hours: Vascular: other changes; Lungs, Thorax, or Respiratory: changes in pulmonary vascular resistance, acute pulmonary edema

LC (Inhalation-Rat) 1 gm/m³/3 hours: Liver: other changes; Kidney/Ureter/Bladder: changes in tubules (including acute renal failure, acute tubular necrosis); Blood: hemorrhage

LC (Inhalation-Rat) 1000 ppm/4 hours

LC (Inhalation-Rat) 9 gm/m³/4 hours: Liver: other changes; Kidney/Ureter/Bladder: changes in tubules (including acute renal failure, acute tubular necrosis); Blood: normocytic anemia

LC (Inhalation-Rat) 21 gm/m³/3 hours: Brain and Coverings: changes in circulation (hemorrhage, thrombosis, etc.); Behavioral: ataxia; Kidney/Ureter/Bladder: changes in tubules (including acute renal failure, acute tubular necrosis)

LC (Inhalation-Mouse) 1 gm/m³/2 hours: Brain and Coverings: changes in circulation (hemorrhage, thrombosis, etc.); other degenerative changes; Behavioral: somnolence (general depressed activity)

LC (Inhalation-Mouse) 10 gm/m³/2 hours: Brain and Coverings: changes in circulation (hemorrhage, thrombosis, etc.), other degenerative changes; Behavioral: somnolence (general depressed activity)

LC (Inhalation-Mammal-Species Unspecified) 4500 mg/m³: Lungs, Thorax, or Respiratory: acute pulmonary edema; Liver: fatty liver degeneration; Blood: other changes

Avoid contact with incompatible chemicals and exposure to extreme temperatures.
11. TOXICOLOGICAL INFORMATION (Continued)

TOXICITY DATA (continued):

ETHYL SILICATE (continued):
LClO (Inhalation: Mammal-Species Unspecified) 4.5 gm/m³: Sense Organs and Special Senses (Eye): conjunctive irritation; Lungs, Thorax, or Respiration: structural or functional change in trachea or bronchi.

LC50 (Inhalation-Mammal-Species Unspecified) 3.2 gm/m³

TC50 (Inhalation-Rat) > 5.9 gm/m³/3 hours: Peripheral Nerve and Sensation: recording from peripheral motor nerve; Behavioral: somnolence (general depressed activity), tremor

TC50 (Inhalation-Rat) 1000 ppm/7 hours/3 days intermittent: Kidney/Ureter/Bladder: changes in tubules (including acute renal failure, acute tubular necrosis), hematuria; Related to Chronic Data: death

TC50 (Inhalation-Rat) 1.5 gm/m³/17 days intermittent: Nutritional and Gross Metabolic: weight loss or decreased weight gain; Related to Chronic Data: death

TC50 (Inhalation-Rat) 32 gm/m³/2 days intermittent: Related to Chronic Data: death

TC50 (Inhalation-Rat) 0.2 gm/m³/61 days intermittent: Peripheral Nerve and Sensation: recording from peripheral motor nerve; Liver: liver function tests impaired

TC50 (Inhalation-Rat) 0.2 gm/m³/153 days intermittent: Brain and Coverings: other degenerative changes; Cardio: changes in coronary arteries; Blood: changes in spleen

TC50 (Inhalation-Rat) 21 gm/m³/2 hours: Sense Organs and Special Senses (Eye): conjunctive irritation; Lungs, Thorax, or Respiration: structural or functional change in trachea or bronchi, dyspnea

TC50 (Inhalation-Mouse) 200 ppm/6 hours/4 weeks intermittent: Sense Organs and Special Senses (Olfaction): effect, not otherwise specified; Kidney/Ureter/Bladder: changes in tubules (including acute renal failure, acute tubular necrosis); Nutritional and Gross Metabolic: weight loss or decreased weight gain

TC50 (Inhalation-Mouse) 200 ppm/6 hours/2 weeks intermittent: Sense Organs and Special Senses (Olfaction): effect, not otherwise specified; Kidney/Ureter/Bladder: other changes; Nutritional and Gross Metabolic: weight loss or decreased weight gain

TC50 (Inhalation-Guinea Pcg) > 5.9 gm/m³/3 hours: Behavioral: ataxia; Lungs, Thorax, or Respiration: acute pulmonary edema; Gastrointestinal: changes in structure or function of salivary glands

PROPRIETARY SILICA:
TC50 (Inhalation-Rat) 30 mg/kg/6 hours/4 weeks intermittent: Lungs, Thorax, or Respiration: other changes; Blood: hemorrhage; Related to Chronic Data: death

PROPRIETARY SILICONE POLYMER:
Standard Draize Test (Skin-Rabbit) 500 µL/24 hours: Mild
Standard Draize Test (Eye-Rabbit) 100 µL/24 hours: Mild
LD50 (Oral-Rat) > 24 gm/kg: Gastrointestinal: hypermotility, diarrhea
LD50 (Oral-Rat) > 17 gm/kg: Kidney/Ureter/Bladder: other changes; Nutritional and Gross Metabolic: other changes
LD50 (Skin-Rabbit) > 2 gm/kg: Behavioral: food intake (animal); Gastrointestinal: hypermotility, diarrhea; Skin and Appendages: dermatitis, other (after systemic exposure)
LD (Oral-Rat) > 5 gm/kg
LD (Intramuscular-Rat) > 1200 µL/kg: Immunological Including Allergic: increase in humoral immune response
LD (Skin-Rabbit) > 10,200 mg/kg
LDLo (Intraocular-Mouse) 16 mL/kg: Gastrointestinal: hypermotility, diarrhea, Immunological Including Allergic: decrease in cellular; decrease in humoral immune response
TDLo (Oral-Rat) 1800 mL/kg/26 weeks-continuous: Lungs, Thorax, or Respiration: changes in lung weight; Liver: changes in liver weight; Kidney/Ureter/Bladder: other changes in urine composition
TDLo (Oral-Rat) 227 gm/kg: Sense Organs and Special Senses (Eye): corneal damage; Behavioral: food intake (animal); Blood: changes in serum composition (e.g. TP, bilirubin, cholesterol)
TDLo (Subcutaneous-Rat) 10 gm/kg: female 6-15 day(s) after conception: Reproductive: Specific Developmental Abnormalities: musculoskeletal system
TDLo (Subcutaneous-Rat) 8 gm/kg: female 15-22 day(s) after conception: Reproductive: Effects on Newborn: stillbirth
TDLo (Subcutaneous-Rabbit) 260 mg/kg: female 6-18 day(s) after conception: Reproductive: Effects on Embryo or Fetus: fetal death; Reproductive: Specific Developmental Abnormalities: body wall

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.

<table>
<thead>
<tr>
<th>CHEMICAL</th>
<th>EPA</th>
<th>IARC</th>
<th>NTP</th>
<th>NIOSH</th>
<th>ACGIH</th>
<th>OSHA</th>
<th>PROP 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dibutyltin Dioxide</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Ethyl Silicate</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
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<td>No</td>
</tr>
<tr>
<td>Proprietary Silica</td>
<td>No</td>
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<tr>
<td>Proprietary Silicon Polymer</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>(3-Trimethoxysilylpropyl) Diethylenetramine</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

IRRITANCY OF PRODUCT: This product is irritating by all routes of exposure. Eye irritation may be severe.

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

Symptoms can include itching, redness, swelling, welts and rash. Respiratory sensitization is also possible.

Skin Sensitization: Repeated or prolonged skin contact with can cause allergic skin sensitization. A sensitized person who contacts even a small amount of material can develop severe dermatitis with symptoms such as skin redness, itching, rashes and swelling. This can spread from the exposed skin areas to other parts of the body not directly exposed to the material. Exposure to hot vapors can cause reddening of the face, swelling of the area around the eyes and itching.

Respiratory Sensitization: The (3-Trimethoxysilylpropyl) Diethylenetramine component is a possible respiratory sensitizer. Sensitized people can react to low levels of airborne occupational sensitizers that have no effect on non-sensitized people. Symptoms can resemble a cold, flu, mild hay fever or asthma. Effects commonly include difficulty in breathing, chest tightness, wheezing, coughing, sneezing, and runny or blocked nose. Other symptoms such as headache, watery eyes and general feelings of bodily discomfort may also appear.

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.

Teratogenicity: In animal studies involving the Dibutyltin Dioxide component, teratogenicity has been observed in the absence of maternal toxicity in one limited study. Dibutyltin Dioxide caused teratogenicity in rats at an oral dose that did not cause maternal toxicity. A single oral dose of approximately 20 mg/kg (cited as 80 microm/kg) in olive oil was administered to rats on the 8th day of pregnancy. No significant maternal toxicity was observed. Statistically significant teratogenicity (external malformations, skeletal malformations and skeletal variations) was observed. This study is limited by the small number of animals (10/group) and the fact that only a single dose was administered on a single day.

BIOLOGICAL EXPOSURES INDICES (BEIs): There are no BEI’s established for any component of this product at this time.

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

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

ETHYL SILICATE: Using a structure estimation method based on molecular connectivity indices, the Koc can be estimated to be 1. According to a classification scheme, this estimated Koc value suggests that this compound is expected to have very high mobility in soil.
12. ECOLOGICAL INFORMATION (Continued)

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

ETHYL SILICATE: If released to air, a vapor pressure of 1.88 mm Hg at 25°C indicates this compound will exist solely in the vapor phase in the atmosphere. Vapor-phase material will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 16 hours. This compound does not contain chromophores that absorb at wavelengths >290 nm and therefore is not expected to be susceptible to direct photolysis by sunlight. If released to soil, this material is expected to have very high mobility based upon an estimated Koc of 1. Volatilization from moist soil surfaces may be an important fate process based upon an estimated Henry's Law constant of 2.0X10^-5 atm-cu m/mole. This compound may volatilize from dry soil surfaces based upon its vapor pressure. Biodegradation data were not available. If released into water, tetraethyl silicate is not expected to adsorb to suspended solids and sediment based upon the estimated Koc. Volatilization from water surfaces may be an important fate process based upon this compound's estimated Henry's Law constant. Estimated volatilization half-lives for a model river and model lake are 2.9 and 25 days respectively. This compound is expected to undergo hydrolysis in aqueous environmental conditions, or on contact with water; without special precautions, this material hydrolyzes to a gel in about 10 days.

BIO-ACCUMULATION POTENTIAL: This product has not been tested for bio-accumulation potential.

ETHYL SILICATE: An estimated BCF of 3 was calculated for this compound, using an estimated log Kow of 0.04(1) and a regression-derived equation. According to a classification scheme, this BCF suggests the potential for bioconcentration in aquatic organisms is low.

ECOTOXICITY: This product has not been tested for aquatic or animal toxicity. The trace Dibutyltin Dioxide component is harmful to aquatic organisms.

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.

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: As supplied, this product would be a hazardous waste as defined by U.S. federal regulation (40 CFR 261) if discarded or disposed. It has the characteristic of Ignitibility. 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: D001.

14. TRANSPORTATION INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION: This product is classified as Dangerous Goods, per U.S. DOT regulations, under 49 CFR 172.101.

UN IDENTIFICATION NUMBER: UN 1133
PROPER SHIPPING NAME: Adhesives, flammable
HAZARD CLASS NUMBER and DESCRIPTION: 3 (Flammable)
PACKING GROUP: PG III
DOT LABEL(S) REQUIRED: Class 3 (Flammable)
NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2012): 128
MARINE POLLUTANT: This material is not classified by the DOT as a Marine Pollutant (as defined by 49 CFR 172.101).

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: This product is classified as Dangerous Goods, per regulations of Transport Canada.

UN IDENTIFICATION NUMBER: UN 1133
PROPER SHIPPING NAME: Adhesives, flammable
HAZARD CLASS NUMBER and DESCRIPTION: 3 (Flammable)
PACKING GROUP: PG III
HAZARD SHIPPING LABEL(S) REQUIRED: Class 3 (Flammable)
SPECIAL PROVISIONS: 5
EXPLOSIVE LIMIT & LIMITED QUANTITY INDEX: 83
ERAP INDEX: None
PASSENGER CARRYING SHIP INDEX: None
PASSENGER CARRYING ROAD OR RAIL VEHICLE INDEX: 60

INTERNATIONAL AIR TRANSPORT ASSOCIATION SHIPPING INFORMATION (IATA): This product is classified as dangerous goods, per the International Air Transport Association.

UN IDENTIFICATION NUMBER: UN 1133
PROPER SHIPPING NAME: Adhesives, flammable
HAZARD CLASS or DIVISION: 3 (Flammable)
HAZARD LABEL(S) REQUIRED: Class 3 (Flammable)
PACKING GROUP: III
EXCEPTED QUANTITIES: EJ
PASSENGER and CARGO AIRCRAFT PACKING INSTRUCTION: 355
PASSENGER and CARGO AIRCRAFT MAXIMUM NET QUANTITY PER PKG: 60 L
PASSENGER and CARGO AIRCRAFT LIMITED QUANTITY PACKING INSTRUCTION: Y344
PASSENGER and CARGO AIRCRAFT LIMITED QUANTITY MAXIMUM NET QUANTITY PER PKG: 10 L
CARGO AIRCRAFT ONLY PACKING INSTRUCTION: 366
CARGO AIRCRAFT ONLY MAXIMUM NET QUANTITY PER PKG: 220 L
SPECIAL PROVISIONS: A3
ERG CODE: 3L

INTERNATIONAL MARITIME ORGANIZATION SHIPPING INFORMATION (IMO): This product is classified as dangerous goods, per the International Maritime Organization.

UN No.: 1133
PROPER SHIPPING NAME: Adhesives, flammable
HAZARD CLASS NUMBER: 3 (Flammable)
LABELS: Class 3 (Flammable)
14. TRANSPORTATION INFORMATION

INTERNATIONAL MARITIME ORGANIZATION SHIPPING INFORMATION (IMO) [continued]:

PACKING GROUP: III
SPECIAL PROVISIONS: 223, 995
LIMITED QUANTITIES: 5 L
EXCEPTED QUANTITIES: E1
PACKING: Instructions: P001, LP01; Provisions: PP1
IBC’s: Instructions: IBC03; Provisions: None
TANKS: Instructions: T2; Provisions: T2, TP1
EmS: F-E, S-D
STOWAGE CATEGORY: Category A.
MARINE POLLUTANT: No component of this product is designated by the IMO to be a Marine Pollutant.

15. REGULATORY INFORMATION

ADDITIONAL U.S. REGULATIONS:
U.S. SARA REPORTING REQUIREMENTS: No component of this product is 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: No; FIRE: Yes; 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 112-n) THRESHOLD QUANTITY (TQ): Not applicable.
OTHER U.S. FEDERAL REGULATIONS: Not applicable.
CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): No component of this product is found on the Proposition 65 List of chemicals.

ADDITIONAL 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: No component of this product is on the CEPA Priorities Substances Lists.
CANADIAN WHMIS REGULATIONS: This product is classified as a Controlled Product, Hazard Class B2 (Flammable Liquid), D2B (Immediate Acute Toxicity/Irritation, Sensitization) as per the Controlled Product Regulations.

ADDITIONAL MEXICAN REGULATIONS:
MEXICAN WORKPLACE REGULATIONS (NOM-018-STPS-2000): This product is not classified as hazardous.

16. OTHER INFORMATION

WARNINGS (per ANSI Z129.1): DANGER! FLAMMABLE LIQUID. CAN IGNITE IF EXPOSED TO DIRECT FLAME OR IF EXPOSED TO HIGH TEMPERATURE. HARMFUL BY SKIN EXPOSURE. MAY BE HARMFUL IF INHALED OR INGESTED. MAY CAUSE EYE, SKIN AND RESPIRATORY IRRITATION; EYE IRRITATION MAY BE SEVERE. CAN CAUSE SKIN SENSITIZATION AND MAY CAUSE RESPIRATORY SENSITIZATION. 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 CO2. 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: Flammable Liquid Category 3, Acute Inhalation Toxicity Category 4, Acute Dermal Toxicity Category 4, Acute Oral Toxicity Category 5, Skin Irritation Category 2, Eye Irritation Category 2A, Specific Target Organ Toxicity (Inhalation-Respiratory Irritation) Single Exposure Category 3, Skin Sensitization Category 1A, Respiratory Sensitization Category 1B
Signal Word: Danger
16. OTHER INFORMATION (Continued)

GLOBAL HAZARDOUS LABELING AND CLASSIFICATION (continued):

Precautionary Statements (continued):

Response: P370 + P378: In case of fire: Use materials appropriate for surrounding fire for extinction. P303 + P361 + P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. P302 + P352: IF ON SKIN: Wash with plenty of soap and water. P333 + P313: If skin irritation or rash occurs: Get medical advice/attention. P364 + P342: Take off contaminated clothing and wash it before reuse. P304 + P303: If inhaled, remove victim to fresh air and keep at rest in a position comfortable for breathing. P342 + P311: If experiencing respiratory symptoms: Call a POISON CENTER or doctor. P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. P237 + P313: If eye irritation persists: Get medical advice/attention. P321: Specific treatment (removal from exposure and treat symptoms). Refer to other portions of precautionary text on this label, SDS or other product information sheets, as appropriate.


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

Hazard Symbols/Pictogram:
- GHS02
- GHS07
- 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 Safety Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR 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 IT'S USE. In no case shall the descriptions, information, data or data presented 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 investigations and experiments to determine the suitability 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:

Bringing principles were used to classify this product.

REVISION DATES:

September 2012: Up-date and revise entire MSDS to include current GHS requirements. May 2013: Up-date for change of flash point.

DATE OF PRINTING:

October 8, 2014

DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. 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 for toxic and infectious agents.

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 is no in vivo data, but that are clearly mutagenic in vitro and structurally related to known active substances. 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 germ cell mutagens cannot apply. At some time in the future, it is conceivable that a Category 4 could be created, for 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 to be insignificant.

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 embryo or fetus and/or damage to the mother. Group B: Biotransformation of the Chemical to a substance with a primary target other than DNA (e.g. purely aneugenic substances) if research results make this seem sensible. 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.

NEC: Not Estimated. Intended for unclassified substances.

NIOSH CEILING: The exposure 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 RELAs: NIOSH's Recommended Exposure Limits.

PELs: OSHA Permissible Exposure Limits. This exposure value means exactly the same as a TEL, 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: 40911). 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. This value is the time-weighted average (TWA) exposure that should not be exceeded at any time during a workday, even if the 8-hour TWA is within the TWA-TWA, PEL-TWA or REL-TWA.

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

TWA: Time Weighted Average Exposure concentration for a conventional 8-hour (TEL, TWA) or up to a 10-hour (REL) workday and a 40-hour workcycle.

WELL: Workplace Environmental Exposure Limits from the ABAH.
DEFINITION OF TERMS (Continued)

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS (continued):

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 in the absence of other fuel. Some examples include Desiccated Calcium Hydroxide (Anhydrous Magnesium Oxide) according to Annex D of NFP 704. Liquids. 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 ignite when heated to 40°C (104°F) or at 20°C (68°F) approximately 5 minutes before reaching 283°C (541°F) and those liquids having a flash point at or above 28°C (82°F) and below 35°C (95°F). A few of these are flammable in water. Typical examples are liquids that are highly flammable in water, such as gasoline, and some alcohols and ethers.) Solid materials in the form of powders or coarse dusts of water. These materials are normally stable, but can become unstable at high temperatures and pressures. These materials are normally stable, but can become unstable, and that is, the materials or materials of similar composition, which have the potential to react with water, but will not release energy violently. Explosives: Division I.6 & I.7 explosives. Substances that may decompose, condense, or self-react, but only under conditions of high temperature and/or pressure and have a low potential (or low risk) to cause significant heat generation or explosion. Substances that cause respiratory irritation. Materials that, in themselves, are normally unstable and will readily undergo violent chemical change, but will not detonate. These materials may react violently with water. Explosives: Division I.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 psi absolute at 221°C (430°F). No Rating. No Rating. No Rating.
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.
- **OSHA**: U.S. Occupational Safety and Health Administration.
- **NIOSH**: National Institute of Occupational Safety and Health, which is the research arm of OSHA.
- **SARA**: Superfund Amendments and Reauthorization Act.
- **TSCA**: U.S. Toxic Substance Control Act.
- **CERCLA**: Comprehensive Environmental Response, Compensation, and Liability Act.
- **DOT**: Department of Transportation.
- **TC**: Transport Canada.
- **WHMIS**: Canadian Workplace Hazardous Materials Information System.
- **DSL/NDSL**: Canadian Domestic/Non-Domestic Substances List.