SAFETY DATA SHEET

Pecora P-801 VOC Primer

PART I  What is the material and what do I need to know in an emergency?

1. PRODUCT IDENTIFICATION

IDENTIFICATION of the SUBSTANCE or PREPARATION

<table>
<thead>
<tr>
<th>TRADE NAME (AS LABELED):</th>
<th>Pecora P-801 VOC Primer</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRODUCT DESCRIPTION:</td>
<td>Polyurethane Primer</td>
</tr>
<tr>
<td>CHEMICAL NAME/CLASS:</td>
<td>Solvent Polymer Mixture</td>
</tr>
<tr>
<td>SYNONYMS:</td>
<td>None</td>
</tr>
<tr>
<td>RELEVANT USE:</td>
<td>Polyurethane Primer</td>
</tr>
<tr>
<td>USES ADVISED AGAINST:</td>
<td>Other Than Relevant Use</td>
</tr>
</tbody>
</table>

COMPANY/UNDERTAKING IDENTIFICATION:

<table>
<thead>
<tr>
<th>SUPPLIER/MANUFACTURER’S NAME:</th>
<th>Pecora Corporation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADDRESS:</td>
<td>165 Wambold Road, Harleysville, PA 19438</td>
</tr>
<tr>
<td>EMERGENCY PHONE:</td>
<td>800-424-9300 (CHEMTREC, 24-hours)</td>
</tr>
<tr>
<td>BUSINESS PHONE:</td>
<td>215-723-6051 (Mon–Fri, 8 AM–5 PM ET)</td>
</tr>
</tbody>
</table>

PREPARATION DATE: August 10, 2013

REVISION DATE: October 1, 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: Carcinogenic Cat. 2, Acute Inhalation Toxicity Cat. 3, Acute Oral Toxicity Cat. 5, Acute Dermal Toxicity Cat. 5, Skin Irritation Cat. 2, Eye Irritation Cat. 2A, Skin Sensitization Cat. 1B, Respiratory Sensitization Cat. 1B

Signal Word: Danger


Hazard Symbols/Pictograms: GHS07, GHS08

EMERGENCY OVERVIEW:

PHYSICAL DESCRIPTION: This product is an amber-colored, combustible liquid with a musty odor characteristic of diisocyanates.

HEALTH HAZARDS: DANGER! Combustible liquid. This product may cause respiratory, skin and eye irritation. Eye irritation may severe, depending on duration and concentration of exposure. Harmful or fatal if swallowed. May cause toxic systemic effects by skin absorption. Exposure may cause adverse central nervous system effects. Can cause skin and respiratory sensitization and allergic reaction in susceptible individuals. Contains compounds that are suspect teratogens and carcinogens.

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

REACTIVITY HAZARD: This product may have some sensitivity to water, producing carbon dioxide and 4,4-methylene dianiline. Due to the high level of Proprietary Polyisocyanate, this product may undergo uncontrolled exothermic polymerization upon contact with incompatible materials, especially strong bases, or if heated above 404°F (759°F). Closed containers may develop pressure and rupture on prolonged exposure to heat or if contaminated with water.

ENVIRONMENTAL HAZARD: This product has not been tested for environmental impact. 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>1</td>
</tr>
<tr>
<td>Physical Hazard</td>
<td>2</td>
</tr>
</tbody>
</table>

See Section 16 for definitions of ratings

0 = Minimal  3 = Serious
1 = Slight  4 = Severe
2 = Moderate * = Chronic

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

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

U.S. OSHA REGULATORY STATUS: This material is classified as hazardous under OSHA regulations.
### 3. COMPOSITION AND INFORMATION ON INGREDIENTS (Continued)

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS #</th>
<th>W/W%</th>
<th>LABEL ELEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proprietary Polyisocyanate</td>
<td>0.0-60.0</td>
<td>Classification: Acute Inhalation Toxicity Cat. 5, Eye Irritation Cat. 2, STOT (Inhalation-Respiratory Irritation) SE Cat. 3, Skin Irritation Cat. 2, Respiratory Sensitizer Cat. 1, Skin Sensitization Cat. 1</td>
<td></td>
</tr>
<tr>
<td>Proprietary Polyisocyanate</td>
<td>0.0-60.0</td>
<td>Classification: Acute Oral Toxicity Cat. 2, Acute Inhalation Toxicity Cat. 2, Eye Irritation Cat. 2, STOT (Inhalation-Respiratory Irritation) SE Cat. 3, Skin Irritation Cat. 2, Respiratory Sensitizer Cat. 1, Skin Sensitization Cat. 1, Aquatic Chronic Toxicity Cat. 3</td>
<td></td>
</tr>
<tr>
<td>Proprietary Polyisocyanate</td>
<td>0.0-60.0</td>
<td>Classification: Carcinogenic Cat. 2, Acute Inhalation Toxicity Cat. 2, Eye Irritation Cat. 2, STOT (Inhalation-Respiratory Irritation) SE Cat. 3, Skin Irritation Cat. 2, Respiratory Sensitizer Cat. 1, Skin Sensitization Cat. 1, Aquatic Chronic Toxicity Cat. 3, Respiratory Sensitization Cat. 1, Skin Sensitization Cat. 1</td>
<td></td>
</tr>
<tr>
<td>Xylene</td>
<td>1330-20-7</td>
<td>8.0-12.0</td>
<td>Classification: Flammable Liquid Cat. 2, Acute Inhalation Toxicity Cat. 4</td>
</tr>
</tbody>
</table>

See Section 16 for full text of Ingredient Hazard and Precautionary Statements

### PART II  What should I do if a hazardous situation occurs?

### 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. Fire protective gear may be 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 MSDS to physician or other health professional with victim(s).

**INHALATION:** If mists, sprays or fumes 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 directly by medical personnel. Have victim rinse mouth with water or give several cupsfuls 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:** Acute or chronic respiratory conditions, and central nervous system conditions or skin problems may be aggravated by overexposure to this product.

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

### 5. FIRE-FIGHTING MEASURES

**FLASH POINT:** >104.4°C (>220°F)

**AUTOIGNITION:** Not known for product.  
Proprietary Polyisocyanate: 240°C (464°F); Trade Secret: 430-510°C (806-950°F); Proprietary Polyisocyanate: Not available; Xylenes: 464°C (867°F)

**FLAMMABLE LIMITS IN AIR:** Not known for product.

**LEL:**
- Proprietary Polyisocyanate: 0.6%
- Trade Secret @ 200°C: 4.7%
- Xylene: 1.0%

**UEL:**
- Not Available
- 21.0%
- 7.0%

**EXTINGUISHING MEDIA:**

**SUITABLE EXTINGUISHING MEDIA:** Use materials appropriate for surrounding materials.

**UNSUITABLE EXTINGUISHING MEDIA:** None known.

**PROTECTION OF FIREFIGHTERS:**

**SPECIAL HAZARDS ARISING FROM THE SUBSTANCE (continued):** Not sensitive to mechanical impact under normal conditions. Vapors may form explosive mixtures in air. Vapors are heavier than air and can accumulate in confined spaces creating a toxicity and explosion hazard. Vapors can travel long distances and flashback to ignition source. Can undergo hazardous polymerization when exposed to aliphatic amines or alcohols, with considerable release of heat; closed containers may rupture violently when heated. Closed containers may develop pressure and rupture in event of fire or if contaminated with water.

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**NFPA RATING FLAMMABILITY**

**HEALTH**

1 2

**INSTABILITY**

1 2

**OTHER**

See Section 16 for Definitions of Ratings

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5. FIRE-FIGHTING MEASURES (Continued)

**PROTECTION OF FIREFIGHTERS** (continued):

**SPECIAL HAZARDS ARISING FROM THE SUBSTANCE**: This is a combustible liquid that may ignite if exposed to direct flame or if highly heated.

**SPECIAL PROTECTIVE ACTIONS FOR FIRE-FIGHTERS**: 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. Avoid contact with water.

**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 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 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.

**PART III**

*How can I prevent hazardous situations from occurring?*

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 touch 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.

Empty containers may contain residual product; therefore, empty containers should be handled with care. Decontaminate empty containers by filling with water or a solution of ammonium hydroxide (0-10%), detergent (2-5%), isopropanol (0-20%): may create a fire or vapor hazard in some situations, e.g. confined spaces; if so, do not use), water (balance of solution). Heat and CO2 gas are released when isocyanates react with water or solution. Let stand uncovered or loosely covered for at least 24 hours. Decontaminate (using above solution) and clean isocyanate handling equipment after use. Stand upwind of all opening, pouring and mixing operations. Keeping work areas clean is essential. Use work surfaces that can be easily decontaminated. Maintain good personal hygiene.

**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.

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7. HANDLING and STORAGE (Continued)

CONDITIONS FOR SAFE STORAGE (continued): 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.

PRODUCT USE: This product is used as a primer. 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, explosion proof ventilation to ensure exposure levels are maintained below the limits provided above.

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>Proprietary Polyisocyanate</td>
<td>ACGIH TLV TWA</td>
<td>OSHA PEL STEL/CEIL(C)</td>
<td>0.051 mg/m³</td>
</tr>
<tr>
<td></td>
<td>OSHA PEL STEL</td>
<td>NIOSH REL TWA</td>
<td>0.2 mg/m³ (ceiling)</td>
</tr>
<tr>
<td></td>
<td>NIOSH REL STEL/CEIL(C)</td>
<td>NIOSH REL STEL</td>
<td>0.2 mg/m³ (ceiling) 10 minutes</td>
</tr>
<tr>
<td></td>
<td>DFG MAK TWA</td>
<td>DFG MAK PEAK/CEIL(C)</td>
<td>0.05 mg/m³/inhalable fraction</td>
</tr>
<tr>
<td></td>
<td>DFG MAK Pregnancy Risk Class</td>
<td>DFG MAK PEAK</td>
<td>①PEAK 15 minute average value, 1-hr interval, 4 per shift; 0.1 mg/m³ (ceiling)</td>
</tr>
<tr>
<td></td>
<td>DFG MAK OTHER</td>
<td>C</td>
<td>Danger of Sensitization of the Skin and Airways</td>
</tr>
<tr>
<td>Proprietary Polyisocyanate</td>
<td>DFG MAK TWA</td>
<td>DFG MAK PEAK/CEIL(C)</td>
<td>0.05 mg/m³/inhalable fraction</td>
</tr>
<tr>
<td></td>
<td>DFG MAK Pregnancy Risk Class</td>
<td>C</td>
<td>Danger of Sensitization of the Skin and Airways</td>
</tr>
<tr>
<td>Trade Secret</td>
<td>NE</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>Xylene</td>
<td>1330-20-7</td>
<td>ACGIH TLV TWA</td>
<td>100 ppm</td>
</tr>
<tr>
<td></td>
<td>ACGIH TLV STEL</td>
<td>OSHA PEL TWA</td>
<td>150 ppm</td>
</tr>
<tr>
<td></td>
<td>OSHA PEL STEL</td>
<td>OSHA PEL STEL</td>
<td>100 ppm (vacated 1989 PEL)</td>
</tr>
<tr>
<td></td>
<td>NIOSH REL TWA</td>
<td>NIOSH REL STEL</td>
<td>150 ppm</td>
</tr>
<tr>
<td></td>
<td>DFG MAK TWA</td>
<td>DFG MAK PEAK</td>
<td>100 (skin)</td>
</tr>
<tr>
<td></td>
<td>DFG MAK OTHER</td>
<td>④MAK 15 minute average value, 1-hr interval 4 per shift</td>
<td></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.

SKIN PROTECTION: Wear chemical impervious gloves (e.g., Nitrile or Neoprene). Use triple gloves for spill response. If necessary, refer to appropriate regulations.

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 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.

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 a full-facepiece pressure-demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under appropriate regulations. The following are NIOSH respiratory equipment guidelines are presented for additional assistance in respiratory protective equipment selection.

PROPRIETARY POLYISOCYANATE

CONCENTRATION | RESPIRATORY PROTECTION
---|---
Up to 0.5 mg/m³: | Any Supplied-Air Respirator (SAR).
Up to 1.25 mg/m³: | Any SAR operated in a continuous-flow mode.
Up to 2.5 mg/m³: | Any Self-Contained Breathing Apparatus with a full facepiece, or any SAR with a full facepiece.
Up to 75 mg/m³: | Any SAR that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary SCBA operated in pressure-demand or other positive-pressure mode.
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 positive-pressure breathing apparatus.
Escape: | Any Air-Purifying, Full-Facepiece Respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having a high-efficiency particulate filter, or any appropriate escape-type, SCBA.

XYLENE

CONCENTRATION | RESPIRATORY PROTECTION
---|---
Up to 900 ppm: | Any chemical cartridge respirator with organic vapor cartridge(s), or any Powered, Air-Purifying Respirator (PAPR) with organic vapor cartridge(s), or any Supplied-Air Respirator (SAR), or any Self-Contained Breathing Apparatus (SCBA) with a full facepiece.
Emergency or Planned Entry into Unknown Concentrations or IDLH Conditions: Any SCBA that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode, or any SAR that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus.
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: Liquid.
MOLECULAR WEIGHT: Mixture.
ODOR: Musty or solvent-like.
ODOR THRESHOLD: For Proprietary Polyisocyanate: 0.4 ppm.
VAPOR DENSITY: (air = 1) > 1
FREEZING/MELTING POINT: Not available.
SPECIFIC GRAVITY (water = 1): Not available.
SOLUBILITY IN WATER: Negligible.
VAPOR PRESSURE: Not available.
COEFFICIENT WATER/OIL DISTRIBUTION: Not available.

COLOR: Amber-colored.
MOLECULAR FORMULA: Mixture.
VISCOSITY: Not available.
BOILING POINT: Not available.
EXPANSION RATIO: Not applicable.
PH: Not available.
EVAPORATION RATE (nBuAc = 1): > 1
VOLATILE ORGANIC CONTENT: <100 g/L
PERCENT SOLIDS: Not available.

HOW TO DETECT THIS SUBSTANCE (WARNING PROPERTIES): The odor of this product may be good warning property in the event of an accidental release.

10. STABILITY and REACTIVITY

CHEMICAL STABILITY: Stable under normal circumstances of use and handling. May polymerize if exposed to incompatible materials, as described further in this section.

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

INCOMPATIBLE MATERIALS: Based upon component incompatibility, this product may be incompatible with strong bases, amines, alcohols, metal oxides, 1,3-dichloro-5,5-dimethyl-2,4-imidazolidinedione dichlorohydrantoin and strong acids. This product may attack some plastics and metals, due to components. Due to the isocyanate materials in this product, it may attack copper and copper alloys, such as brass and bronze, tin and zinc.

HAZARDOUS DECOMPOSITION PRODUCTS: Combustion: Thermal decomposition of this product can generate carbon and nitrogen oxides, methanol hydrogen chloride, hydrogen cyanide, reactive hydrocarbons, and low molecular weight aldehydes. Hydrolysis: Carbon dioxide, methanol, methylene diaminine (formed by reaction of a Proprietary Polyisocyanate (mixed isomers) with water), some alcohols.

POSSIBILITY OF HAZARDOUS REACTIONS: This product may undergo uncontrolled exothermic polymerization upon contact amines or if heated. The resulting pressure build-up could rupture closed containers. The Proprietary Polyisocyanate component reacts slowly, forming carbon dioxide and inert material comprised of polyureas which could rupture closed containers. 4,4'-methylene diaminine is formed as an intermediate product in this reaction. Above 50°C (122°F), the reaction becomes progressively more vigorous.

PART IV Is there any other useful information about this material?

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: 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. 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. Repeated skin contact may cause defatting and dermatitis. The Proprietary Polyisocyanate is a very strong sensitizing agent in humans. Skin sensitization may occur after only one contact with. Brief contact with the liquid or vapors from this product and the eyes can cause irritation, reddening and watering. Permanent eye injury, including blindness, could result from direct contact with the liquid.

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

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 as well as adverse effects on the central nervous system. Symptoms can include dizziness, vomiting and incoordination. Ingestion of large amounts may be harmful and cause systemic toxicity. Aspiration into the lungs after ingestion can pose a serious hazard of chemical and pulmonary edema. Ingestion of large amount may be fatal.

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. Coughing with chest pain or tightness may also occur, frequently at night. These symptoms may occur during exposure or may be delayed several hours. Inhalation of high concentrations of this product (as may occur in a poorly ventilated area) may be fatal. Inhalation can also lead to adverse central nervous system effects, including dizziness, incoordination, nausea and vomiting. High aerosol concentrations could cause inflammation of the lungs (chemical pneumonitis), chemical bronchitis with severe asthma-like wheezing, severe coughing spasms and accumulation of fluid in the lungs (pulmonary edema), which could prove fatal. Symptoms of pulmonary edema may not appear until several hours after exposure and are aggravated by physical exertion. Respiratory sensitization and lung damage may be permanent.

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, respiratory system. Chronic: Skin, respiratory and central nervous systems.

TOXICITY DATA: There are currently no toxicity data available for this product; the following toxicology data are available for components greater than 1% in concentration. Due to the large amount of data, only human data, LD50 Oral-Rat or Mouse, LD50 Skin-Rat or Mouse, LC50 Inhalation-Rat or Mouse and skin irritation data are provided in this SDS. Contact Pecora for more information.

PROPRIETARY POLYISOCYANATE:
Standard Draize Test (Skin-Rabbit) 500 mg/24 hours Standard Draize Test (Eyes-Rabbit) 100 mg: Moderate

PROPRIETARY POLYISOCYANATE (continued):
TCLo (Inhalation-Human) 130 ppb/30 minutes: Immunological Including Allergic: increased immune response: Nutritional and Gross Metabolic: body temperature increase
TOXICITY DATA (continued):

**PROPRIETARY POLYISOCYANATE (continued):**

<table>
<thead>
<tr>
<th>Chemical</th>
<th>TLV(RMM)</th>
<th>RMM</th>
<th>TLV(ACGIH)</th>
<th>RMM</th>
<th>TLV(OSHA)</th>
<th>RMM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proprietary Polyisocyanate</td>
<td>3</td>
<td>CBD</td>
<td>3</td>
<td>CBD</td>
<td>3</td>
<td>CBD</td>
</tr>
</tbody>
</table>

**TRADE SECRET (continued):**

<table>
<thead>
<tr>
<th>Chemical</th>
<th>TLV(RMM)</th>
<th>RMM</th>
<th>TLV(ACGIH)</th>
<th>RMM</th>
<th>TLV(OSHA)</th>
<th>RMM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proprietary Polyisocyanate</td>
<td>3</td>
<td>CBD</td>
<td>3</td>
<td>CBD</td>
<td>3</td>
<td>CBD</td>
</tr>
</tbody>
</table>

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>IARC</th>
<th>EPA</th>
<th>NTP</th>
<th>NIOSH</th>
<th>ACGIH</th>
<th>OSHA</th>
<th>PROP 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proprietary Polyisocyanate</td>
<td>3</td>
<td>CBD</td>
<td>3</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Proprietary Polyisocyanate</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>Trade Secret</td>
<td>3</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>A4</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

IARC-3: Unclassifiable as to Carcinogenicity in Humans. EPA-CBD: Cannot Be Determined. EPA-II: Inadequate Information to Assess Carcinogenic Potential. ACGIH TLV-A4: Not Classifiable as a Human Carcinogen.

IRRITANT OF PRODUCT: This product is irritating by all routes of exposure.

SENSITIZATION TO THE PRODUCT: This product may cause skin and respiratory sensitivity and allergic reaction in susceptible individuals. In general, diisocyanates are well known to cause respiratory sensitization and, therefore, components of this product are considered respiratory sensitizer. Diisocyanate respiratory sensitization is usually caused by a very large exposure, or by multiple exposures. Although varying periods of exposure (1 day to years) may elapse before sensitization occurs, it develops more often during the first few months of exposure. Sensitized individuals react to very low levels of airborne diisocyanates that have no effect on non-sensitized people. At first, the symptoms may appear to be a cold or mild hay fever. However, severe asthmatic symptoms can develop and include wheezing, tightness of the chest, shortness of breath, difficulty breathing and/or coughing. Fever, chills, general feelings of discomfort, headache, and fatigue can also occur. Symptoms may occur immediately upon exposure (within an hour), several hours after exposure or both, and/or at night. Typically, the asthma improves with removal from exposure (e.g. weekends or vacations) and returns, in some cases, in the form of an "acute attack", on renewed exposure. Sensitized people who continue to be exposed to diisocyanates may develop symptoms sooner after each exposure. The number and severity of symptoms may increase. Cross-sensitization between different diisocyanates may occur. Exposure to diisocyanates is likely to aggravate individuals with existing respiratory disease, such as chronic bronchitis and emphysema. Respiratory sensitization may be permanent.

Skin sensitization may occur after only a few days working with products containing Proprietary Polyisocyanate. Onset of symptoms is usually delayed. Symptoms include a rash on the hands, arms, neck, face, chest or abdomen, even when contact occurs with a small amount of product. Other effects such as coughing, a burning sensation in the throat or redness and swelling of the eyes might also occur.

TOXICOLOGICAL SYNERGISTIC PRODUCTS: There have been several studies in humans and animals on the interaction of Xylenes with drugs, alcohol and other solvents. Xylene has a high potential to interact with other compounds because it increases metabolic enzymes in the liver and decreases metabolic enzymes in the lungs. In general, exposure to related solvents, such as benzene, toluene and ethanol (alcohol) slows the rate of clearance of Xylenes from the body, thus enhancing its toxic effects.

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

Mutagenicity: Negative results were obtained in studies involving the Trade Secret and Xylene components.

Embryotoxicity/Teratogenicity: Xylene (mixed isomers) are considered fetotoxic in humans, based on observations of reduced fetal weight, delayed ossification and persistent behavioral effects in animal studies in the absence of maternal toxicity. Other developmental effects have been observed in animal studies in the presence of maternal toxicity. Several human population studies have suggested a link between exposure to organic solvents (including xylene) and increased occurrence of miscarriages or birth defects in children. However, in the majority of cases, there was exposure to a variety of solvents at the same time, exposures were ill-defined, and the number of cases examined was small.

Reproductive Toxicity: No information available.
11. TOXICOLOGICAL INFORMATION (Continued)

BIOLOGICAL EXPOSURES INDICES (BEIs): Currently, the following BEI’s have been established for some components.

<table>
<thead>
<tr>
<th>CHEMICAL:</th>
<th>DETERMINANT</th>
<th>SAMPLING TIME</th>
<th>BEI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xylenes</td>
<td>Methylhippuric Acid in Urine</td>
<td>End of Shift</td>
<td>1.5 μg/g Creatinine</td>
</tr>
</tbody>
</table>

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

MOBILITY: This product has not been tested for mobility in soil. The following information is available for the main solvent components.

PROPRIETARY POLYSIYOCANATE: This compound hydrolyzes rapidly in aqueous solution; therefore, leaching and adsorption to sediment will not be environmentally important.

TRADE SECRET: The Koc of Trade Secret is estimated as 14, using a log Kow of -0.41 and a regression-derived equation. According to a classification scheme, this estimated Koc value suggests that Trade Secret is expected to have very high mobility in soil.

XYLENE: Several experimental Koc values for this compound have been reported depending upon the pH and organic carbon content of the soil. Batch experiments conducted with five low organic carbon content (0.04-1.1%), field contaminated soils (3 silty clay and two sandy loams) yielded Koc values ranging from 39-365. This compound in Norwegian forest soil at pH 5.6 and organic carbon content of 0.2 percent has a reported experimental Koc of 129; in Norwegian agricultural soil at pH 7.4 and organic carbon content of 2.2 percent has a reported experimental Koc of 158; in Norwegian forest soil at pH 4.2 and organic carbon content of 3.7 percent has a reported experimental Koc of 289. Based on a recommended classification scheme and the experimentally determined Koc values, this material is expected to be moderate to high mobility in soil. Xylene isomers have been observed to pass through soil at a dune-infiltration site on the Rhine River and to leach into groundwater under a rapid infiltration site.

PERSISTENCE AND BIODEGRADABILITY: This product has not been tested for persistence or biodegradability. The following information is available for the main solvent components.

PROPRIETARY POLYSIYOCANATE: If released to air, a vapor pressure of 5.0X10^-6 mm Hg at 25°C indicates this compound will exist in both the vapor and particulate phases in the ambient 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 33 hours. Atmospheric degradation may also occur through contact with clouds, fog, or rain. Particulate-phase material will be removed from the atmosphere by wet and dry deposition. This compound reacts readily with water to form amines and polyureas. If released to water or moist soil, this compound is not expected to leach or adsorb to solids due to its rapid degradation reaction with water. Since the compound reacts with water to form amines and urea, there is very little chance that it will accumulate in the food chain.

TRADE SECRET: If released to air, a vapor pressure of 0.045 mm Hg at 25°C indicates Trade Secret will exist solely as a vapor in the ambient atmosphere. Vapor-phase Trade Secret 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 4 days. Trade Secret may also undergo direct photolysis since this compound contains a functional group that can absorb light greater than 290 nm, but the kinetics of this reaction are unknown. If released to soil, Trade Secret is expected to have very high mobility based upon an estimated Koc of 14. Volatilization from moist soil surfaces is not expected to be an important fate process based upon an estimated Henry's Law constant of 3.4X10^-8 atm-cm/mole. Volatilization from dry soil surfaces is not expected to be an important fate process based upon the vapor pressure. Trade Secret was biodegraded 80 percent in a single aerobic screening study during a 10 day incubation period. If released into water, Trade Secret is not expected to adsorb to suspended solids and sediment in water based upon the estimated Koc. Volatilization from water surfaces is not expected to be an important fate process based upon this compound's estimated Henry's Law constant. Trade Secret may undergo hydrolysis in the environment since this compound has functional groups susceptible to hydrolysis.

XYLENE: Based upon an experimental vapor pressure of 7.99 mm Hg at 25°C, this compound is expected to exist entirely in the vapor phase in the ambient atmosphere. Vapor-phase material is expected to be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life of this reaction in air is estimated to be 1.12 days. Atmospheric degradation may also occur through contact with clouds, fog, or rain. Particulate-phase material will be removed from the atmosphere by wet and dry deposition. This compound reacts readily with water to form amines and polyureas. If released to water or moist soil, this compound is not expected to leach or adsorb to solids due to its rapid degradation reaction with water. Since the compound reacts with water to form amines and urea, there is very little chance that it will accumulate in the food chain.

FLOW ACCUMULATION POTENTIAL: This product has not been tested for bio-accumulation potential. The estimated BCF for Xylene is 20. The estimated value for Trade Secret is 13. These values indicate low bioconcentration potential.

ECOTOXICITY: This product has not been tested for aquatic or animal toxicity. All release to terrestrial, atmospheric and aquatic environments should be avoided. The following aquatic toxicity data are available for some components. Only select data are given due to the large amount of data available. Contact Pecora for more information.

PROPRIETARY POLYSIYOCANATE:
EC50 (Daphnia sp waterflea) 24 hours = > 1000 mg/L/fresh water
EC50 (Bacteria-activated sludge) 3 hours = > 100 mg/L/fresh water
EC50 (Algae) 72 hours = > 1640 mg/L/fresh water
LC50 (Fish) 96 hours = > 1000 mg/L/fresh water

TRADE SECRET:
EC50 (Daphnia magna Water flea) 48 hours = > 500 mg/L
EC50 (Dreissena subspicatus green algae) 72 hours = > 500 mg/L
LC50 (Bacteria) 72 hours = > 10,000 mg/L
LC50 (Leuciscus idus Golden orfe) 96 hours = 5.300 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.

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: Wastes of this product should be test to see if they meet the criteria of D001 (Ignitability characteristic).

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.
15. REGULATORY INFORMATION

ADDITIONAL U.S. REGULATIONS:
U.S. SARA REPORTING REQUIREMENTS: The following 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.

<table>
<thead>
<tr>
<th>CHEMICAL</th>
<th>SECTION 302 EHS (TPQ) (40 CFR 355, Appendix A)</th>
<th>SECTION 304 RQ (40 CFR Table 302.4)</th>
<th>SECTION 313 TRI (threshold) (40 CFR 372.65)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proprietary Polyisocyanate</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Proprietary Polyisocyanate</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Proprietary Polyisocyanate</td>
<td>No</td>
<td>No</td>
<td>Yes (Code N120)</td>
</tr>
<tr>
<td>Trade Secret</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Xylene</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

U.S. SARA HAZARD CATEGORIES (SECTION 311/312, 40 CFR 370-21): ACUTE: Yes; CHRONIC: Yes; FIRE: Yes; REACTIVE: Yes; 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): Proprietary Polyisocyanate = 5000 lb (2270 kg). The Proprietary Polyisocyanate component has no specific CERCLA RQ, but as a disiocyanate compound is a CERCLA Hazardous compound.

U.S. CLEAN AIR ACT (CA 112r) THRESHOLD QUANTITY (TO): The Proprietary Polyisocyanate and Xylene components are listed as a Hazardous Air Pollutant (HAP) generally known or suspected to cause serious health problems. The Clean Air Act, as amended in 1990, directs EPA to set standards requiring major sources to sharply reduce routine emissions of toxic pollutants. EPA is required to establish and phase in specific performance based standards for all air emission sources that emit one or more of the listed pollutants. These chemicals are included on this list.

U.S. CLEAN WATER ACT REQUIREMENTS: Xylene is designated as a hazardous substance under section 311(b)(2)(A) of the Federal Water Pollution Control Act and further regulated by the Clean Water Act Amendments of 1977 and 1978. These regulations apply to discharges of these substances. This designation includes any isomers and hydrates, as well as any solutions and mixtures containing these substances.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): No component is on the California Proposition 65 Chemical Lists.

ADDITIONAL CANADIAN REGULATIONS:
CANADIAN DSL/DDSL INVENTORY STATUS: The components of this product are on the DSL Inventory.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBstances LISTs: The Xylene component is on the CEPA Priority Substances 1 list, not considered as”TOXIC” under Section 64 of CEPA.

CANADIAN WHMIS REGULATIONS: This product is classified as a Controlled Product, Hazard D2B (Poisonous and Infectious Material, Other effects/Toxic: Eye Irritation, Skin Irritation, Respiratory Tract and Skin Sensitization) as per the Controlled Product Regulations.

ADDITIONAL MEXICAN REGULATIONS:
MEXICAN WORKPLACE REGULATIONS (NOM-018-STPS-2000): This product is classified as hazardous.

16. OTHER INFORMATION

U.S. ANSI STANDARD LABELING (Precautionary Statements): WARNING! COMBUSTIBLE LIQUID. MAY BE HARMFUL IF INHALED OR INGESTED OR BY SKIN CONTACT. MAY CAUSE EYE, SKIN AND RESPIRATORY IRRITATION; EYE IRRITATION MAY BE SEVERE. VAPORS MAY CAUSE CENTRAL NERVOUS SYSTEM EFFECTS. CONTAINS COMPOUNDS THAT ARE SUSPECT CARCINOGENS. MAY CAUSE SKIN SENSITIZATION AND RESPIRATORY SENSITIZATION. Avoid contact with eyes, skin, and clothing. Avoid breathing mist, vapors or fume. 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 poly pads 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 SYSTEM CLASSIFICATION:
Classification: Carcinogenic Category 2, Acute Inhalation Toxicity Category 3, Acute Oral Toxicity Category 5, Acute Dermal Toxicity Category 5, Skin Irritation Category 2, Eye Irritation Category 2A, Skin Sensitization Category 1B, Respiratory Sensitization Category 1B
Signal Word: Danger

Globally Harmonized System Classification (continued)...

Precautionary Statements:


Response: P308 + P313: If exposed or concerned: Get medical advice/attention. P304 + P340: 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. P350 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. P337 + P313: If eye irritation persists: get medical advice/attention. P302 + P352: IF ON SKIN: Wash with plenty of soap and water. P332 + 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.


Hazard Symbols/Pictograms: 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 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, local or regulatory requirements. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determinations as to the suitability of the product for the particular purpose and part of the condition that they assume responsibility for their use. In no event, no authorization is given nor implied to practice any patented invention without a license.

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

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

REVIEW DATES: New DATE OF PRINTING: October 1, 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:

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

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: Germ cell mutagens that have been shown to increase the mutation frequency in the progeny of exposed humans. 2 Germ cell mutagens that have shown to increase the mutation frequency in the progeny of exposed mammals. 3A: Substances that have been shown to induce genotypic damage in germ cells of human 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 or in vitro mutagenic data currently available, but which are suspected to be mutagenic in other species. 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 mutagen cannot apply at any time in the future, it can only be considered if 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 is unequivocally demonstrated. Exposure of pregnant women can lead to damage of the developing organism, even when MAK and BAT (Bacterial 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 an adverse effect. The duration must be considered, including the 8-hour Time Weighted Average exposure concentration for a conventional 8-hour (TWA, PEL) or up to a 10-hour (REL) workday and a 40-hour 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 LD₅₀: Rat > 5000 mg/kg. Dermal Toxicity LD₅₀ Rat or Rabbit > 2000 mg/kg. Inhalation Toxicity 4-hr Rat > 200 mg/L. 1 Severe Hazard: Minor irritant. Slight to moderately irritating, but reversible within 7 days. Draize = 0 > 5. Oral Toxicity LD₅₀: Rat > 500-5000 mg/kg. Dermal Toxicity LD₅₀ Rat or Rabbit: > 1000-2000 mg/kg. Inhalation Toxicity LD₅₀ 4-hr Rat > 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: Slightly to moderately irritating; reversible; corneal opacity; corneal involvement or irritation clearing in 8-21 days. Draize = 26-100, with reversible effects. Oral Toxicity LD₅₀: Rat > 50-500 mg/kg. Dermal Toxicity LD₅₀ Rat or Rabbit: > 200-1000 mg/kg. Inhalation Toxicity LD₅₀ 4-hr Rat > 0.5-2.5 mg/L. 3 Serious Hazard: Major irritant, 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: Severe or 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 LD₅₀ Rat > 1-50 mg/kg. Dermal Toxicity LD₅₀ Rat or Rabbit: > 20-200 mg/kg. Inhalation Toxicity LD₅₀ 4-hr Rat > 0.1-0.5 mg/L. 4 Severe Hazard: Life-threatening; major or permanent damage may result from single or repeated exposures; 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 LD₅₀ Rat or Rabbit > 20 mg/kg. Inhalation Toxicity LD₅₀ 4-hr Rat > 0.05 mg/L. FLAMMABILITY HAZARD: 0 Minimal Hazard: Materials that will not burn in air when exposure to a temperature of 815°C (1500°F) for a period of 5 minutes. 1 Spark Hazard: Materials that must be ignitable by external ignition sources in air, but do not burn at a rate of 45 inches per minute (114 mm/min) or higher. 2 Moderate Hazard: Materials that must be moderately heated or exposed to relatively high ambient temperatures before they will burn in air. 3 Serious Hazard: Materials that must be heated or exposed to relatively high ambient temperature before they will burn in air. 4 Severe Hazard: Materials that 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, silas, hemp); and Solids and semisolids (e.g. viscous and slow flowing as asphalt) that readily give off flammable vapors.

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October 1, 2014
HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS (continued): FLAMMABILITY RATINGS (continued): 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 ignitable under all conditions. Materials that have a flash point below 22.8°C (73°F) or a boiling point at or above 38°C (100°F) and those liquids having a flash point at or above 22.8°C (73°F) and below 57.8°C (100°F) (i.e. OSHA Class IB and II) are considered to be extremely dangerous. Materials that in themselves are capable of detonation or explosive decomposition or explosive reaction, but that require a strong initiating source or that do not have a mass explosion hazard. 

Compressed Gases: Pressure below OSHA definition. Oxidizers: No Rating. Oxidizers: Packaging Group III oxidizers: Solids: any material that in either condition is capable of detonation or explosive reaction, but require a strong initiating source or that do not have a mass explosion hazard. Explosives: Substances that are combinations of a flammable or combustible solvent and an oxidizer that will rapidly or completely vaporize at ambient temperature and have a flash point less than or equal to the boiling point of the solvent. Pyrophorics: No Rating. Oxidizers: Packaging Group II oxidizers. Solids: any material that, either in concentrated form, 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 II are met. Pyrophorics: No Rating. Oxidizers: Packaging Group I oxidizers. Solids: any material that, either in concentrated form, 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 met. Pyrophorics: No Rating. Oxidizers: Packaging Group I oxidizers. Solids: any material that, either in concentrated form, 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 II are met. Pyrophorics: No Rating. Oxidizers: Packaging Group I oxidizers. Solids: any material that, either in concentrated form, 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 II are met.

1 Water Reactivity: Materials that may decompose or self-react under pressure and have 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. Diuretic Gases: Materials that must be preheated before ignition can occur. Materials in this degree would not produce 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 73.8°C (165°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 representive diameter less than 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. 2 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. 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 less than or equal to 22.8°C (73°F) and having a boiling point below 37.8°C (100°F) (i.e. Class II and Class IIIA liquids). Materials that in themselves are capable of detonation or explosive decomposition or explosive reaction, but that require a strong initiating source or that do not have a mass explosion hazard or that do not have a projection hazard. 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. Water Reactivity: 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. Oxidizers that must be preheated before ignition can occur. Materials in this degree would not produce 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 representive diameter less than 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. 

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS: HEALTH HAZARD (continued): Materials with an LD₅₀ for acute dermal toxicity greater than 500 mg/kg but less than or equal to 1000 mg/kg. Compressed liquefied gases with boiling points between -20°C (-22°F) and -55°C (-65.3°F) that cause severe tissue damage, depending on the contact time. Materials with an LD₅₀ for oral administration greater than 0.5 mg/kg but less than or equal to 5 mg/kg. Materials with an LC₅₀ for acute inhalation toxicity, if its LC₅₀ is less than or equal to 3000 ppm and that do not meet the criteria for Materials with an LD₅₀ for acute inhalation toxicity greater than 1000 ppm but less than or equal to 3000 ppm. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than its LC₅₀ for acute inhalation toxicity, if its LC₅₀ is less than or equal to 3000 ppm and that do not meet the criteria for Materials with an LD₅₀ 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 with an LD₅₀ for oral administration greater than 0.5 mg/kg but less than or equal to 2 mg/kg. Materials with an LD₅₀ 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 with an LD₅₀ for oral administration greater than 0.5 mg/kg but less than or equal to 2 mg/kg. Materials with an LD₅₀ 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.
DEFINITIONS OF TERMS (Continued)

**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. **LD₅₀**: Lethal Dose (solids & liquids) that kills 50% of the exposed animals. **LC₅₀**: 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/m³**: Concentration expressed in weight of substance per volume of air.

**Carcinogenicity:**
**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. A **mutagen** 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 Oc** or **log K OW**: 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. Toxin Substance Control Act. **CERCLA**: Comprehensive Environmental Response, Compensation, and Liability Act. **OIL**: 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:**

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