SAFETY DATA SHEET

Pecora P-75

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>

<table>
<thead>
<tr>
<th>COMPANY/UNDERTAKING IDENTIFICATION:</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUPPLIER/MANUFACTURER'S NAME:</td>
</tr>
<tr>
<td>ADDRESS:</td>
</tr>
<tr>
<td>EMERGENCY PHONE:</td>
</tr>
<tr>
<td>BUSINESS PHONE:</td>
</tr>
<tr>
<td>PREPARATION DATE:</td>
</tr>
<tr>
<td>REVISION DATE:</td>
</tr>
</tbody>
</table>

This product is sold for commercial use. This SDS has been developed to address safety concerns of those individuals working with bulk quantities of this product, 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, Canadian WHMIS 2015 and the Global Harmonization-required information is included in appropriate sections based on the Global Harmonization Standard format. This product has been classified in accordance with the hazard criteria of the countries listed above and the SDS contains all the information required by the Canadian WHMIS 2015 (HPR-GHS), the Global Harmonization Standard and OSHA 1910.120.

2. HAZARD IDENTIFICATION


Classification: Flammable Liquid Cat. 2, Carcinogenic Cat. 2, Reproductive Toxicity Cat. 2, Acute Inhalation Toxicity Cat. 2, Aspiration Hazard Cat. 1, STOT RE Cat. 2, Eye Irritation Cat. 2, STOT (Inhalation-Respiratory Irritation) SE Cat. 3, Skin Irritation Cat. 2, Respiratory Irritation Cat. 1, Skin Sensitization Cat. 1, STOT (Inhalation-Central Nervous System) SE Cat. 3, Aquatic Chronic Toxicity Cat. 3

Signal Word: Danger

Hazard Symbols/Pictograms: GHS02, GHS06, GHS08

EMERGENCY OVERVIEW:

Physical Description: This product is a colorless to straw-colored, corrosive, highly flammable liquid with a solvent odor.

Health Hazards: DANGER! Inhalation of vapors may be harmful or fatal and cause adverse central nervous system effects. Harmful or fatal if swallowed. This compound can cause irritation by all routes of exposure. May cause toxic systemic effects by skin absorption. Can cause skin and respiratory sensitization and allergic reaction. Contain compounds that are suspect carcinogens and a compound that is a suspect reproductive toxin.

Flammability Hazard: This product is highly flammable and can ignite if exposed to temperature or direct flame.

Reactivity Hazard: This product may have some sensitivity to water and react to form toluenediamine and carbon dioxide. This reaction is not expected to be violent.

Environmental Hazard: This product has not been tested for environmental impact. All release to the environment should be avoided. Contains a compound that can cause harm to aquatic organisms.

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS®):

<table>
<thead>
<tr>
<th>Health</th>
<th>3*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammability</td>
<td>3</td>
</tr>
<tr>
<td>Physical Hazard</td>
<td>1</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 (HPR-GHS) 2015 CLASSIFICATION AND SYMBOLS: See Section 16 for in Classification and Symbols under HPR-GHS 2015.

U.S. OSHA REGULATORY STATUS: This product has a classification under the Global Harmonization Standard, as applied under OSHA regulations, as given earlier in this Section. See Section 16 for full classification details.
3. COMPOSITION AND INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS #</th>
<th>W/W%</th>
<th>GHS Classification under U.S. OSHA Hazard Communication Standard &amp; Canadian WHMIS (HPR-GHS) 2015 Hazard Statement Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>50.0%</td>
<td>HARMONISED CLASSIFICATION - ANNEX VI OF REGULATION (EC) No 1272/2008 (CLP REGULATION)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Classification: Flammable Liquid Cat. 2, Reproductive Toxicity Cat. 2, Eye Irritation Cat. 2A, Aspiration Hazard Cat. 1, STOT (Central and Peripheral Nervous System) RE Cat. 2, Skin Irritation Cat. 2, STOT (Inhalation/Ingestion/Narcotic Effect) SE Cat. 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hazard Statement Codes: H225, H316d, H304, H373, H315, H319, H336</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ADDITIONAL SELF-CLASSIFICATION: Classification: Acute Oral Toxicity Cat. 5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hazard Statement Codes: H303</td>
</tr>
<tr>
<td>Proprietary Aromatic Polyisocyanate (classification based on CAS # 26717-62-5)</td>
<td>30.0-50.0%</td>
<td>HARMONISED CLASSIFICATION - ANNEX VI OF REGULATION (EC) NO 1272/2008 (CLP REGULATION)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Classification: Carcinogenic Cat. 2, Acute Inhalation Toxicity Cat. 2, Skin Irritation Cat. 2, Skin Sensitization Cat. 1B, Eye Irritation Cat. 2A, STOT (Inhalation-Respiratory Irritation) Se Cat. 3, Aquatic Chronic Toxicity Cat. 2</td>
</tr>
<tr>
<td>Proprietary Glycol Ether</td>
<td>5.0-10.0%</td>
<td>HARMONISED CLASSIFICATION - ANNEX VI OF REGULATION (EC) NO 1272/2008 (CLP REGULATION)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Classification: Flammable Liquid Cat. 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hazard Statement Codes: H226</td>
</tr>
<tr>
<td>Proprietary Aromatic Hydrocarbon</td>
<td>5.0-10.0%</td>
<td>HARMONISED CLASSIFICATION - ANNEX VI OF REGULATION (EC) NO 1272/2008 (CLP REGULATION)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Classification: Reproductive Toxicity Cat. 2, Aspiration Hazard, Acute Oral Toxicity Cat. 5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hazard Statement Codes: H316d, H304, H303</td>
</tr>
<tr>
<td>Ethyl Benzene</td>
<td>100-41-4</td>
<td>0.5-2.5%</td>
<td>HARMONISED CLASSIFICATION - ANNEX VI OF REGULATION (EC) NO 1272/2008 (CLP REGULATION)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Classification: Flammable Liquid Cat. 2, Acute Inhalation Toxicity Cat. 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hazard Statement Codes: H225, H332</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ADDITIONAL SELF-CLASSIFICATION: Classification: Carcinogenic Cat. 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hazard Statement Codes: H351</td>
</tr>
<tr>
<td>2,4-Toluene Diisocyanate</td>
<td>584-84-9</td>
<td>0.15%</td>
<td>HARMONISED CLASSIFICATION - ANNEX VI OF REGULATION (EC) NO 1272/2008 (CLP REGULATION)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Classification: Carcinogenic Cat. 2, Acute Inhalation Toxicity Cat. 2, Skin Irritation Cat. 2, Skin Sensitization Cat. 1B, Eye Irritation Cat. 2A, STOT (Inhalation-Respiratory Irritation) Se Cat. 3, Aquatic Chronic Toxicity Cat. 2</td>
</tr>
<tr>
<td>2,6-Toluene Diisocyanate</td>
<td>91-08-7</td>
<td>0.05%</td>
<td>HARMONISED CLASSIFICATION - ANNEX VI OF REGULATION (EC) NO 1272/2008 (CLP REGULATION)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Classification: Carcinogenic Cat. 2, Acute Inhalation Toxicity Cat. 2, Skin Irritation Cat. 2, Skin Sensitization Cat. 1B, Eye Irritation Cat. 2A, STOT (Inhalation-Respiratory Irritation) Se Cat. 3, Aquatic Chronic Toxicity Cat. 2</td>
</tr>
<tr>
<td>Other Trace Components</td>
<td>Balance</td>
<td></td>
<td>Classification: Not Applicable</td>
</tr>
</tbody>
</table>

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST-AID MEASURES

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

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

Inhalation: If this product is inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions.

Skin Exposure: If the product 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 material enters the eyes, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Begin decontamination with running water. Do not interrupt flushing. Remove exposed or contaminated clothing, taking care not to contaminate eyes. Victim must seek immediate medical attention.

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 cups of water, if conscious. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or unable to swallow. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Dermatitis or other pre-existing skin disorders, respiratory conditions or central nervous system disorders may be aggravated by exposure to this product.

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

5. FIRE-FIGHTING MEASURES

FLASH POINT (calculated): 22°C (71.6°F)

AUTOIGNITION: Not known for product. For Toluene: 480°C (896°F)

FLAMMABILITY LIMITS IN AIR: Not known for product.

For Toluene: LEL: 1.1%, UEL: 7.1%

EXTINGUISHING MEDIA: Suitable Extinguishing Media: Use extinguishing material suitable to the surrounding fire, including foam, halon, carbon dioxide and dry chemical.

Unsuitable Extinguishing Media: Water and halogenated media.

PROTECTION OF FIREFIGHTERS: Special Hazards Arising from the Substance: This is a highly flammable liquid which is also toxic by inhalation and so presents a contact hazard to fire-fighters. This compound reacts with water to form toluidinediamine and carbon dioxide. Not sensitive to mechanical impact under normal conditions. 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. Closed containers may develop pressure and rupture in event of fire or if contaminated with water.
5. FIRE-FIGHTING MEASURES (Continued)

PERSONAL PROTECTION: 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: Note: reacted material may be allowed to harden while still in containers.

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.

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 sewers, soil or groundwater.

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. Avoid contact with water.

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.

PRODUCT USE: This product is 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 ventilation to ensure exposure levels are maintained below the limits provided in this section.
## 8. EXPOSURE CONTROLS - PERSONAL PROTECTION (Continued)

### EXPOSURE LIMITS/CONTROL PARAMETERS (continued):

**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>Ethyl Benzene</td>
<td>100-41-4</td>
<td>ACGIH TLV TWA</td>
<td>20 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA PEL TWA</td>
<td>100 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA PEL STEL</td>
<td>125 ppm (vacated 1989 PEL)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NIOSH REL TWA</td>
<td>100 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NIOSH REL STEL</td>
<td>125 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DFG MAK TWA</td>
<td>20 ppm (skin)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DFG MAK PEAK/CEIL(C)</td>
<td>2×MAK 15 minute average value, 1-hr interval 4 per shift (skin)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DFG MAK PREGNANCY CLASS</td>
<td>C</td>
</tr>
<tr>
<td>Propylene Glycol Monoethyl Ether</td>
<td></td>
<td>DFG MAK TWA</td>
<td>50 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DFG MAK PEAK/CEIL(C)</td>
<td>1×MAK 15 minute average value, 1-hr interval 4 per shift</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AHI WEL TWA</td>
<td>50 ppm</td>
</tr>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>ACGIH TLV TWA</td>
<td>20 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA PEL TWA</td>
<td>200 ppm; 100 ppm (vacated 1989 PEL)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA PEL STEL</td>
<td>300 ppm (ceiling) 10 minute peak per 8 hr shift; 150 (vacated 1989 PEL)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NIOSH REL TWA</td>
<td>100 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NIOSH REL STEL</td>
<td>150 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DFG MAK TWA</td>
<td>50 (skin)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DFG MAK PEAK/CEIL(C)</td>
<td>2×MAK 15 minute average value, 1-hr interval 4 per shift (skin)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DFG MAK PREGNANCY CLASS</td>
<td>C</td>
</tr>
<tr>
<td>Proprietary Aromatic</td>
<td>As CAS#</td>
<td>ACGIH TLV TWA</td>
<td>0.001 ppm (IVF) [skin], DSEN, RSEN</td>
</tr>
<tr>
<td>Polyisocyanate</td>
<td>26471-62-5</td>
<td>OSHA PEL TWA</td>
<td>0.005 ppm (IVF) [skin], DSEN, RSEN</td>
</tr>
<tr>
<td>2,4-Toluene Disocyanate</td>
<td>584-84-9</td>
<td>OSHA PEL STEL</td>
<td>NE</td>
</tr>
<tr>
<td>2,6-Toluene Disocyanate</td>
<td>91-08-7</td>
<td>NIOSH REL TWA</td>
<td>0.02 (ceiling) [ CSA# 584-84-9 only]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NIOSH REL STEL</td>
<td>See Pocket Guide App. A (CAS# 584-84-9 only)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NISHDLUH</td>
<td>See Pocket Guide App. A (CAS# 584-84-9 only)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DFG MAK TWA</td>
<td>2.5 mg/m³ (Ca)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DFG MAK PEAK/CEIL(C)</td>
<td>Can also occur as vapor &amp; aerosol. Danger of sensitization of skin and airways.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DFG MAK PREGNANCY CLASS</td>
<td>Can also occur as vapor &amp; aerosol. Danger of sensitization of skin and airways.</td>
</tr>
<tr>
<td>Proprietary Aromatic Hydrocarbon</td>
<td></td>
<td>ACGIH TLV TWA</td>
<td>NE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA PEL TWA</td>
<td>100 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA PEL STEL</td>
<td>150 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NIOSH REL TWA</td>
<td>150 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NIOSH REL STEL</td>
<td>10 (skin)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DFG MAK TWA</td>
<td>4×MAK 15 minute average value, 1-hr interval 4 per shift (skin)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DFG MAK PEAK/CEIL(C)</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DFG MAK PREGNANCY CLASS</td>
<td></td>
</tr>
</tbody>
</table>

NE: Not Established. IVF: Measured as the inhalable fraction and vapor. DSEN: May cause dermal sensitization. RSEN: May cause sensitization of the airways. See Section 16 for Definitions of Other Terms Used.

### Biological Exposure Indices (BEIs):

Currently, there are ACGIH Biological Exposure Indices (BEIs) determined for the components of this product, as follows:

<table>
<thead>
<tr>
<th>CHEMICAL: DETERMINANT</th>
<th>SAMPLING TIME</th>
<th>BEI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Benzene</td>
<td>End of shift</td>
<td>0.15 g/g creatine</td>
</tr>
<tr>
<td>• Sum of mandelic acid in urine and phenylglyoxylic acid in urine</td>
<td>Prior to Last Shift of Workweek</td>
<td>0.02 mg/L</td>
</tr>
<tr>
<td>Toluene</td>
<td>End of shift</td>
<td>0.03 mg/L</td>
</tr>
<tr>
<td>• Toluene in Blood</td>
<td>End of shift</td>
<td>0.3 mg/L creatine</td>
</tr>
<tr>
<td>• Toluene in Urine</td>
<td>End of shift</td>
<td>1.5 µg/g Creatinine</td>
</tr>
<tr>
<td>• o-Cresol in urine</td>
<td>Prior to End of Shift</td>
<td>1.5 µg/g Creatinine</td>
</tr>
<tr>
<td>Toluene Disocyanate-2,4- (CAS# 584-84-9) or 2,6- (CAS# 91-08-70 or as a mixture of isomers (2015)</td>
<td>Prior to Last Shift of Workweek</td>
<td>0.02 mg/L</td>
</tr>
<tr>
<td>• Toluene diamine in urine <em>, ** (</em> with hydrolysis), (** sum of 2,4 &amp; 2,6- isomers)</td>
<td>End of Shift</td>
<td>0.03 mg/L</td>
</tr>
<tr>
<td>Proprietary Aromatic Hydrocarbons</td>
<td>End of Shift</td>
<td>0.3 mg/L creatine</td>
</tr>
<tr>
<td>• Methylhippuric Acid in Urine</td>
<td>End of Shift</td>
<td>1.5 µg/g Creatinine</td>
</tr>
</tbody>
</table>

### PERSONAL PROTECTIVE EQUIPMENT (PPE):


**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.
8. EXPOSURE CONTROLS - PERSONAL PROTECTION (Continued)

PERSONAL PROTECTIVE EQUIPMENT (continued):

Respiratory Protection: If aerosols, 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 and standards. The following are NIOSH respiratory protective equipment guidelines for the Diisocyanate components, which may present an inhalation hazard as well as the solvent component that can reach exposure levels in this product. These are presented for additional assistance in respiratory protective equipment selection.

ETHYL BENZENE

CONCENTRATION: Up to 800 ppm

RESPIRATORY PROTECTION: Any Chemical Cartridge Respirator with organic vapor cartridge(s), or any Air-Purifying, Full-Facepiece Respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister, 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 SCBA operated in pressure-demand or other positive-pressure mode.

Escape: Any Air-Purifying, Full-Facepiece Respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister, or any appropriate escape-type, SCBA.

TOLUENE

CONCENTRATION: Up to 500 ppm

RESPIRATORY PROTECTION: Any chemical cartridge respirator with organic vapor cartridge(s), any PAPR with organic vapor cartridge(s), any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister, any SAR, or any 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 SCBA operated in pressure-demand or other positive-pressure mode.

Escape: Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister or any appropriate escape-type, SCBA.

2.4-TOLUENE DIISOCYANATE

CONCENTRATION: Up to 500 ppm

RESPIRATORY PROTECTION: Any Chemical Cartridge Respirator with organic vapor cartridge(s), or any Air-Purifying, Full-Facepiece Respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister, any SAR, or any 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 SCBA operated in pressure-demand or other positive-pressure mode.

Escape: Any Air-Purifying, Full-Facepiece Respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister or any appropriate escape-type, SCBA.

2.6-TOLUENE DIISOCYANATE

CONCENTRATION: Up to 500 ppm

RESPIRATORY PROTECTION: Any Chemical Cartridge Respirator with organic vapor cartridge(s), or any Air-Purifying, Full-Facepiece Respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister, any SAR, or any 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 SCBA operated in pressure-demand or other positive-pressure mode.

Escape: Any Air-Purifying, Full-Facepiece Respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister or any appropriate escape-type, SCBA.

PROPRIETARY AROMATIC HYDROCARBON

CONCENTRATION: Up to 500 ppm

RESPIRATORY PROTECTION: 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

The following information is available for the product.

FORM: Liquid.
MOLECULAR WEIGHT: Mixture.
ODOR: Solvent.
VOC (less water and exempt): 692 g/L

HOW TO DETECT THIS SUBSTANCE (WARNING PROPERTIES): The appearance and odor of this product may act as warning properties in the event of an accidental release.

The following information is available for the Toluene component.

MOLECULAR FORMULA: C₈H₈
MOLECULAR WEIGHT: 92.13
ODOR: Gasoline-like.
VAPOR DENSITY: (air = 1) = 3.1
FREEZING/MELTING POINT: -95°C (-139°F)
SPECIFIC GRAVITY @ 20°C (water = 1): 0.86
SOLUBILITY IN WATER @ 25°C: 54-58 mg/100 mL
VAPOR PRESSURE @ 20°C: 22 mm Hg or 2.93 kPa
COEFFICIENT WATER/OIL DISTRIBUTION: Log P (oct) = 2.11-2.80

The following information is available for the Proprietary Aromatic Polyisocyanate based on toluene diisocyanate component.

MOLECULAR FORMULA: Mixture
MOLECULAR WEIGHT: Mixture
ODOR: Solvent-like.
SPECIFIC GRAVITY @ 20°C (water = 1): ~1.15
VAPOR DENSITY (air = 1): > 1
pH: Not available.
BOILING POINT: ~ 145.7°C (~ 293°F)
SOLUBILITY IN WATER: Reacts.
FLASH POINT: ~ 40°C (~ 104°F)
10. STABILITY and REACTIVITY

CHEMICAL STABILITY: Stable under normal circumstances of use and handling. Due to the isocyanate components, contact with water and incompatible materials (see below) may result in hazardous polymerization, with production of heat and carbon dioxide. Closed containers may develop pressure and rupture on prolonged exposure to heat or if contaminated with water.

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

INCOMPATIBLE MATERIALS: Based on components, this product may be incompatible with amines, bases, metal compounds, amides, phenols, mercaptans, urethanes, urea, surface active agents, potassium chloride, tetrytromethane, silver perchlorate, sulfur dichloride, nitrogen tetroxide, uranium hexafluoride, oxidizers, acids, alcohols, water and moisture. Due to Toluene content, this product can attack some plastics, elastomers and coatings, such as polyvinyl chloride (PVC), chlorinated polyvinyl chloride (CPVC), polypropylene, acrylonitrile-butadiene-styrene (ABS), styrene-acrylonitrile (SAN), polyethersulfone, polyurethane (rigid), polybutylene terephthalate, polysulfone, high-density polyethylene (HDPE), ultra high molecular weight polyethylene (UHMWPE), cross-linked polyethylene (XLPE), polyphenylene oxide (Noryl), thermostet polyester, polypropylene and ethylene vinyl acetate (EVA), (nitrile rubber (Nitrile Buna N; NBR), ethylene propylene diene (EPDM), ethylene propylene terpolymer (EPT), chloroprene, styrene-butadiene (SBR), polyurethane, butyl rubber (isobutylene isoprene), natural rubber, isoprene, neoprene, flexible polyvinyl chloride (PVC), chlororosulfonyl polyethylene (Hypalon), low density polyethylene (LDPE), silicone, ethylene vinyl acetate (EVA) and Fluorar, coal tar epoxy and epoxy chemical resistant.


POSSIBILITY OF HAZARDOUS REACTIONS: This product may undergo hazardous polymerization in contact with water or materials to which it is incompatible. The reaction may produce heat and carbon dioxide. Containers may rupture. Due to the isocyanate components, this product may react with water to produce toluenediamine.

11. TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS: The most significant routes of occupational exposure are inhalation and contact with skin and eyes.

The expected symptoms of exposure to this product are as follows:

Contact with Skin or Eyes: Depending on the duration of skin contact, skin exposure can cause reddening, discomfort and moderate to severe irritation. Prolonged or further contact can cause severe inflammation, redness, rash, swelling and blistering. Direct eye contact may cause severe eye irritation. Skin Absorption: Prolonged skin contact may cause adverse systemic toxicity by skin absorption as described under ingestion or inhalation, as well as sensitization and allergic reaction to the skin.

Ingestion: If the product is swallowed, it can irritate the mouth, throat, and other tissues of the gastro-intestinal system or cause burns 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 may be fatal.

Inhalation: Inhalaion of vapors, mists, or sprays of this product can moderately to severely irritate or burn the tissues of the nose, mouth, throat, and upper respiratory system. Symptoms of exposure may include nose irritation, dry or sore or burning throat, runny nose, shortness of breath, wheezing and laryngitis. Severe exposure via inhalation may result in a potentially fatal respiratory disorder (e.g., pulmonary edema, chemical pneumonitis); symptoms may be delayed by hours or even days. Inhalation of high concentrations of this product (as may occur in a poorly ventilated area) may be fatal. Repeated inhalation of mists of this product may cause respiratory disorders (e.g., bronchitis). Inhalation can also lead to adverse central nervous system effects, including dizziness, incoordination, nausea and vomiting. Chronic inhalation of low concentration may cause permanent damage to the lungs and reduced lung function. Liver and kidney damage as well as disturbances to the heart have been reported from exposure to high concentration of vapors of Toluene. Effects such as euphoria, muscle incoordination and loss of consciousness have been reported after severe exposure to toluene diisocyanates. Inhalation can cause respiratory sensitization and allergic reaction as described further in this section.

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, liver and kidneys.

CHRONIC EFFECTS: Direct eye contact may cause severe irritation or damage to eye tissue. Prolonged or repeated skin contact may cause dermatitis (dry, red skin). Components of this product are suspected carcinogens, mutagens and reproductive toxins.

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 that have available data. Due to the large amount of data available for components, only Human data, LD50 Oral-Rat, Oral-Mouse, Skin-Rabbit, Skin-Rat, LC50 Inhalation-Rat, Inhalation-Mouse, Skin and Eye Irritation data and mutagenic data are provided in this SDS. Contact Pecora Corporation for information on any additional data available.

PROPRIETARY GLYCOL ETHER:
LD50 (Oral-Rat) 8532 mg/kg
LD50 (Oral-Rat) 9000 mg/kg; Behavioral: coma
LD50 (Oral-Mouse) > 5000 mg/kg; Behavioral: coma
LD50 (Skin-Rabbit) > 5 gm/kg

ETHYL BENZENES:
Open Irritation Test (Skin-Rabbit) 15 mg/24 hours: Mild
Standard Draize Test (Eye-Rabbit) 500 mg: Severe
TCLo (Inhalation-Human) 100 ppm/8 hours: Sense Organs and Special Senses (Eye): effect, not otherwise specified; Behavioral: sleep; Lungs, Thorax, or Respiration: other changes
TCLo (Inhalation-Human) 21,700 mg/m³: Behavioral: antipsychotic
TCLo (Inhalation-Human) 8700 mg/m³/6 minutes: Sense Organs and Special Senses (Eye): lachrymation
TCLo (Inhalation-Human) 4350 mg/m³: Sense Organs and Special Senses (Eye): conjunctive irritation; Behavioral: tolerance

ETHYL BENZENES (continued):
TCLo (Inhalation-Human) 4350 mg/m³: Sense Organs and Special Senses (Eye): conjunctive irritation
TCLo (Inhalation-Human) 10 ppm/4 hours: Cardiac: pulse rate; Lungs, Thorax, or Respiration: other changes
TCLo (Inhalation-Human) 30 mg/m³/7 years-irreversible: Behavioral: headache, irritability
LD50 (Inhalation-Rat) 55,000 mg/m³/2 hours
LD50 (Inhalation-Mouse) 35,500 mg/m³/2 hours
LD50 (Inhalation-Mouse) 4000 ppm/4 hours
LD50 (Oral-Rat) 1,500 mg/kg; Liver: other changes; Kidney/Ureter/Bladder: other changes
LD50 (Oral-Rat) 3500 mg/kg
LD50 (Skin-Rabbit) 17,800 µL/kg
LD50 (Skin-Rabbit) > 5000 mg/kg
TOXICITY DATA (continued):

**TOLUENE:**
- LDLo (oral, human) = 50 mg/kg
- TCLo (inhalation, man) = 100 ppm; Central nervous system effects
- TCLo (inhalation, human) = 200 ppm; Brain, central nervous system, Blood effects
- Eye Irritancy (human) = 300 ppm
- Skin Irritancy (rabbit) = 435 mg: mild
- Skin Irritancy (rabbit) = 500; moderate
- Eye Irritancy (rabbit) = 870 mg: mild
- Eye Irritancy (rabbit) = 2 mg/24 hours; severe
- Eye Irritancy (rabbit) = 100 mg/30 seconds/rinse; mild
- LDLo (oral, rat) = 5000 mg/kg
- LDLo (skin, rabbit) = 12.124 mg/kg
- LC50 (inhalation, mouse) = 400 ppm/24 hours
- TDL0 (oral, rat) = 7280 mg/kg/female 6-19 days after conception; Reproductive: Effects on Embryo or Fetus: fetotoxicity (except death, e.g., stunted fetus)
- TCL0 (inhalation, rat) = 1500 mg/m³/24 hours/female 1-8 days after conception; Reproductive: Specific Developmental Abnormalities: musculoskeletal system
- TCL0 (inhalation, rat) = 1000 mg/m³/24 hours/female 7-14 days after conception; Reproductive: Specific Developmental Abnormalities: musculoskeletal system

**TOLUENE (continued):**
- TCL0 (inhalation, rat) = 2000 ppm/6 hours/female 7-17 days after conception; Reproductive: Maternal Effects: other effects; Reproductive: Effects on Newborn: physical

**PROPRIETARY AROMATIC HYDROCARBON:**
- Standard Draize Test (Eye-Human) 200 ppm
- LDLo (Oral-Human) 50 mg/kg
- LDLo (Inhalation-Human) 10,000 ppm/6 hours; Behavioral: general anesthetic; Lungs, Thorax, or Respiration: cyanosis; Blood: other changes
- TCL0 (Inhalation-Human) 200 ppm; Sense Organs and Special Senses (Olfaction): effect, not otherwise specified; Sense Organs and Special Senses (Eye): conjunctive irritation; Lungs, Thorax, or Respiration: other changes

**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>Ethyl Benzene</td>
<td>2B</td>
<td>D</td>
<td>No</td>
<td>No</td>
<td>A3</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Toluene</td>
<td>3</td>
<td>II</td>
<td>No</td>
<td>No</td>
<td>A4</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Toluene 2,4 &amp; 2,6-Diisocyanates</td>
<td>2B</td>
<td>No</td>
<td>R</td>
<td>Ca</td>
<td>A4</td>
<td>No</td>
<td>Toluene Diisocyanate (CAS# 26471-62-5)</td>
</tr>
<tr>
<td>Proprietary Aromatic Hydrocarbon</td>
<td>3</td>
<td>I</td>
<td>No</td>
<td>No</td>
<td>A4</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>


**IRRITATION TO THE PRODUCT:** This product is irritating by all routes of exposure.

**SENSITIVITY TO THE PRODUCT:** This product contains toluene diisocyanate compounds, which are known human skin and respiratory sensitizers. Exposure can cause allergic reactions. Cross-sensitization between different isocyanates may occur.

**Respiratory Sensitization:** Initial symptoms of respiratory reactions may appear to be a cold or mild hay fever. However, severe asthmatic symptoms can develop and include wheezing, chest tightness, 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 work with toluene diisocyanates may develop symptoms sooner after each exposure. The number and severity of symptoms may increase. Death has occurred in sensitized individuals accidentally exposed to relatively low concentrations of toluene diisocyanate. Following removal from exposure, some sensitized workers may continue to show a slow decline in lung function and have persistent respiratory problems such as asthmatic symptoms, chronic bronchitis and hypersensitivity for months or years. Exposure to isocyanates is likely to aggravate existing respiratory disease, such as chronic bronchitis, and emphysema.

**Skin Sensitization:** Repeated skin contact with toluene diisocyanate has caused skin sensitization in humans, although the condition is not common. Once a person is sensitized, contact with even a small amount can cause outbreaks of dermatitis with symptoms such as redness, rash, itching and swelling. This can spread from the hands or arms to the face and body. Some people who inhaled toluene diisocyanate developed extensive skin rashes can last weeks.

**TOXICOLOGICAL SYNERGISTIC PRODUCTS:** Combined exposure to toluene and noise, Toluene and n-hexane, Toluene and aspirin or toluene, ethyl benzene and noise has caused a synergistic loss of hearing in animal studies. Increased hearing loss has also been observed in workers in some studies following long-term exposure to Toluene and noise. There have been several studies in humans and animals on the interaction of Aromatic Hydrocarbons with drugs, alcohol and other solvents. The Proprietary Aromatic Hydrocarbon 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 Aromatic Hydrocarbons 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:** Both positive and negative results have been obtained in studies for various mutagenic effects in peripheral blood lymphocytes of workers exposed to Toluene; mutagenicity cannot be determined.

**Embryotoxicity/Fetal Teratogenicity:** Toluene is a developmental toxicity hazard, based on information obtained from animal studies. Fetotoxicity (reduced fetal weight), behavioral effects (effects on learning and memory) and hearing loss (in males) have been observed in the offspring of rats exposed by inhalation to 1200 or 1800 ppm toluene. These effects were observed in the absence of maternal toxicity. The Aromatic Hydrocarbon (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 Aromatic Hydrocarbon) 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 is available.
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 GLYCOL ETHER: No data available.

TOLUENE: In association with clay minerals, Toluene’s adsorption is inversely proportional to the pH of the soil. The reported Kocs are 178 in a sandy soil and as 37 (Wendover silty loam), 160 (Grimsbysilth loam), and 160 (Vaudreuil sandy loam) and 46 (sandy soil), 166 in lake sediment. According to a classification scheme, this Koc data suggests that Toluene is expected to have high to moderate mobility in soil. Also, based on a classification scheme, Koc values of 37-178 measured in soil indicates that Toluene is expected to have high to moderate mobility in soil.

PROPRIETARY AROMATIC HYDROCARBON: 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 low organic carbon content (0.04-1.12%), 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 have moderate to high mobility in soils. Aromatic Hydrocarbon 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 BIOGRADABILITY: This product has not been tested for persistence or biodegradability. The following information is available for the main solvent components.

PROPRIETARY GLYCOL ETHER: This compound is readily biodegradable in activated sludge (OECD 301F, 99% by DOC and OECD 301C, 87% by BOD, after 28 days and in soil (DT50 < 1 day). This chemical is stable to chemical hydrolysis in water at pH = 4 and 7, whereas it is hydrolyzed at pH 9 with half-life of 8.10 days at 25°C. Direct photodegradation is not expected because the material has no absorption band in the UV and VIS region, whereas indirect photo-degradation may occur as a result of reactions with photochemically generated hydroxy radicals, with the half-life of 3.1 hours. Although direct photo-degradation is not expected, this compound in air decomposes and disappears by photolytic reactions with photochemically generated hydroxy radicals. The indirect photochemical hydroxyl radical photolysis has an estimated half-life of 32 hours with an estimated rate constant of 1.19x10-11 cm3/mol/sec and an assumed hydroxyl radical concentration 0.5x106 OH/cm3. For these reasons, there is little potential for accumulation of the compound in air sphere.

TOLUENE: Volatilization of Toluene from moist soil surfaces is expected to be an important fate process given a Henry's Law constant of 6.64x10-3 atm-cm/mol. This compound may volatilize from dry soil surfaces based on a vapor pressure of 28.4 mm Hg at 25°C. Complete biodegradation of Toluene was observed in lab microcosm tests during a 40 hour incubation period using soils previously exposed to this material. The biodegradation half life in various soils was reported as several hours to 71 days. Volatilization from water surfaces is expected based upon a Henry's Law constant of 6.64x10-3 atm-cm/mol. Using this Henry's Law constant and an estimation method, volatilization half-lives for a model river and model lake are 1 hour and 4 days, respectively. The half-life of Toluene in this material in aerobic and anaerobic water was reported as 4 and 56 days, respectively. According to a model of gas/particle partitioning of semi-volatile organic compounds in the atmosphere, Toluene, which has a vapor pressure of 28.4 mm Hg at 25°C, is expected to exist solely as a vapor in the ambient atmosphere. Vapor-phase material is degraded in the atmosphere by reactions with photochemically-produced hydroxyl radicals, nitrate radicals and ozone molecules. The half-life for the reaction with hydroxyl radicals is estimated to be 3 days, calculated from its rate constant of 5.06x10-12 cm3/molecule-sec at 25°C. The half-life for the nighttime reaction with nitrate radicals is estimated as 491 days calculated from its rate constant of 6.8x10-17 cm3/molecule-sec at 25°C. The half-life for the reaction with ozone is estimated as 27,950 days calculated from its rate constant of 4.1x10-22 cm3/molecule-sec at 25°C.

PROPRIETARY AROMATIC HYDROCARBON: 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 degraded in the atmosphere by reaction with photochemically produced hydroxyl radicals with an estimated atmospheric lifetime of about 1-2 days. This compound is expected to have moderate to high mobility in soils based upon experimental Koc values obtained with a variety of soils at differing pH values and organic carbon content. Volatilization from moist soil surfaces is expected based upon an experimental Henry's Law constant of 7.0x10-3 atm-cm/mol. Biodegradation is an important environmental fate process for this compound. In general, it has been found that this material is biodegraded in soil and groundwater samples under aerobic conditions and may be degraded under anaerobic denitrifying conditions. In water, this compound is expected to adsorb somewhat to sediment or particulate matter based on its measured Koc values. This compound is expected to volatilize from water surfaces given its experimental Henry's Law constant. Estimated half-lives for a model river and model lake are 3 and 99 hours, respectively. Log Kow = 3.5-68.

BIO-ACCUMULATION POTENTIAL: This product has not been tested for bio-accumulation potential. The BCFs of the Toluene component in eels is 13 and in golden ide 90. The estimated BCF for Proprietary Aromatic Hydrocarbon is 20. The estimated value for Proprietary Glycol Ether is 0.36. 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 major components. Only select data are given due to the large amount of data available. Contact Pecora for more information.

PROPRIETARY GLYCOL ETHER: EC50 (Phytotoxin bacteria in genle plant) 15 minutes = 5625 mg/L; Microtox test EC50 (Selenatrum capricornutum green alga) 0.72 hours = 1.00 mg/L EC50 (Ochreis daphnia) 48 hours = 408 mg/L EC50 (Oryzias latipes Medaka) 96 hours = 100 mg/L EC50 (Pimephales promelas Fathead Minnow) 96 hours = 2600 mg/L; Flow-through bioassay EC50 (Pimephales promelas Fathead Minnow) 96 hours = 161 mg/L EC50 (Bluegill/Sunfish) 96 hours = 10000 mg/L; Static bioassay EC50 (Salmo gairdneri Rainbow trout) 96 hours = 12:900-15:300 mg/L EC50 (Oryzias latipes Medaka) 96 hours = 100 mg/L, calculated based on nominal concentrations, because measured concentrations were 80% of nominal concentrations.

TOLUENE: EC50 (Daphnia magna) 48 hours = 11.5 mg/L EC50 (Podopsis barus) 96 hours = 56 mg/L EC50 (Daphnia) 24 hours = 58 mg/L EC50 (fathead) 24-96 hours = 24-56 mg/L EC50 (Pimephales promelas) 30 days) 96 hours = 18-30, 34-42 mg/L

TOLUENE (continued): LC50 (Lepomis macrochirus) 96 hours = 13 mg/L LC50 (Oncorhyncus kisutch) 96 hours = 5.5 mg/L LC50 (Characid pontinus) 48 hours = 15 mg/L LC50 (Pimephales promelas) 32 days = 6 mg/L (growth inhibition) LC50 (Oncorhyncus kisutch) 40 days = 2.8 mg/L (growth inhibition) LC50 (Copeodon variegatus) 28 days = 7.7 mg/L (growth inhibition) LC50 (Sarotherodon mossambicus) 70 days = 25 mg/L LC50 (Salmo gairdneri) 4 days = 5.8 mg/L (growth inhibition) LC50 (Salmo gairdneri) 3 days = 12 mg/L (growth inhibition) LC50 (Piscia reticulata) 44 days = 2.87 mmol/L

PROPRIETARY AROMATIC HYDROCARBON: LC50 (rainbow trout) 96 hours = 13.5 mg/L LD50 (goldfish) 24 hours = 13 mg/L LC50 (fathead minnow) 1 hour = 42 mg/L at 18-22°C LC50 (fathead minnows) 24-96 hours = 46 mg/L at 18-22°C LC50 (Carassius auratus goldfish) 96 hours = 16.9 ppm

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 1866
Proper Shipping Name: Resin solution, flammable
Hazard Class Number and Description: 3 (Flammable)
Packing Group: PG II

DOT Label(s) Required: Class 3 (Flammable)


Marine Pollutant: The components of this product not classified by the DOT as a Marine Pollutant (as defined by 49 CFR 172.101).

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

UN Identification Number: UN 1866
Proper Shipping Name: Resin solution, flammable
Hazard Class Number and Description: 3 (Flammable)
Packing Group: PG II
Hazard Shipping Label(s) Required: Class 3 (Flammable)

Special Provisions: None

Explosive Limit & Limited Quantity Index: 5 L

Excepted Quantities: E2

ERAP Index: None

Passenger Carrying Ship Index: None

Passenger Carrying Road or Rail Vehicle Index: 5 L

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

UN Identification Number: UN 1866
Proper Shipping Name: Resin solution, flammable
Hazard Class or Division: 3 (Flammable)

Hazard Shipping Label(s) Required: Class 3 (Flammable)
Packing Group: PG II

Excepted Quantities: E2

Passenger and Cargo Aircraft Packing Instruction: 353
Passenger and Cargo Aircraft Maximum Net Quantity Per Pkg: 5 L

Passenger and Cargo Aircraft Limited Quantity Packing Instruction: Y341
Passenger and Cargo Aircraft Limited Quantity Maximum Net Quantity Per Pkg: 1 L

Cargo Aircraft Only Packing Instruction: 364
Cargo Aircraft Only Maximum Net Quantity Per Pkg: 60 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.: 1866
Proper Shipping Name: Resin solution, flammable
Hazard Class Number: 3 (Flammable)

Labels: Class 3 (Flammable)
Packing Group: II

Special Provisions: None

Limited Quantities: 5 L

Excepted Quantities: E2

Packing: Instructions: P001; Provisions: PP1

IBCs: Instructions: IBC02; Provisions: None

Tanks: Instructions: T4; Provisions: T1, TP8

EmS: F-E, S-E

Stowage Category: Category B.

Segregation: None

Marine Pollutant: No component of this product is designated by the IMO to be a Marine Pollutant.

15. REGULATORY INFORMATION

U.S. REGULATIONS:

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

<table>
<thead>
<tr>
<th>CHEMICAL</th>
<th>SECTION 302 EHS (TPQ)</th>
<th>SECTION 304 RQ</th>
<th>SECTION 313 TRI (threshold)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Benzene</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Proprietary Glycol Ether</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Toluene</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>2,4-Toluene Diisocyanate</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
15. REGULATORY INFORMATION (Continued)

U.S. REGULATIONS (continued):
U.S. SARA Reporting Requirements (continued):

<table>
<thead>
<tr>
<th>CHEMICAL</th>
<th>SECTION 302 EHS (TPQ)</th>
<th>SECTION 304 RQ</th>
<th>SECTION 313 TRI (threshold)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,6-Toluene Diisocyanate</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Proprietary Aromatic Hydrocarbon</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

U.S. SARA 302 Extremely Hazardous Threshold Planning Quantity (TPQ): 2,4-Toluene Diisocyanate: 100 lb (45.4 kg); 2,6-Toluene Diisocyanate: 100 lb (45.4 kg)

U.S. SARA 304 Extremely Hazardous Reportable Quantity (RQ): 2,4-Toluene Diisocyanate: 100 lb (45.4 kg); 2,6-Toluene Diisocyanate: 100 lb (45.4 kg)

U.S. CERCLA Reportable Quantity (RQ): 2,4-Toluene Diisocyanate = 100 lb (45.4 kg); 2,6-Toluene Diisocyanate = 100 lb (45.4 kg); Ethyl Benzene = 1000 (454 kg); Toluene = 1000 lb (454 kg); Proprietary Aromatic Hydrocarbon = 100 lb (45.4 kg). As a glycol ether compound, the Propylene Glycol Monomethyl Ether Acetate component is a CERCLA Hazardous Material, although it has no specific reportable quantity.

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

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

U.S. Clean Air Act (CA 112r) Threshold Quantity (TQ): The 2,4-Toluene Diisocyanate and Proprietary Aromatic Hydrocarbon components are listed as Hazardous Air Pollutants (HAPs) 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:

Clean Water Act Requirements § 311: The following components are designated as Hazardous Substances 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 (includes any isomers and hydrates, as well as any solutions and mixtures containing these substances): Toluene, Proprietary Aromatic Hydrocarbon. These regulations apply to discharges of this substance.

Clean Water Act Requirements § 307: The following components are designated as Toxic Pollutants pursuant to section 307(a)(1) of the Federal Water Pollution Control Act and are subject to effluent limitations. Toluene, Proprietary Aromatic Hydrocarbon.

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65): The Ethyl Benzene and Toluene components are on the California Proposition 65 lists. WARNING: This product contains chemicals known to the State of California to cause developmental harm. This product may expose you to chemicals including Ethyl Benzene and Toluene, which are known to the State of California to cause cancer, birth defects or other reproductive harm. For more information go to P65Warnings.ca.gov. In addition, to the warning text provided above, the following symbol must be displayed. Where the sign, label or shelf tag for the product is not printed using the color yellow, the symbol may be printed in black and white. The symbol shall be placed to the left of the text of the warning, in a size no smaller than the height of the word “WARNING”.

CANADIAN REGULATIONS:

Canadian DSL/LDSL Inventory Status: The components of this product which have a CAS# given in Section 2 (Composition and Information on Ingredients) are listed on the DSL Inventory.

Canadian Environmental Protection Act (CEPA) Priorities Substances Lists: The Proprietary Aromatic Hydrocarbon and Toluene components are on the CEPA Priority Substances 1 list, not considered as “TOXIC” under Section 64 of CEPA.

Ethyl Benzene is a Substances with Greatest Potential For Human Exposure Substance on Environment Canada/Health Canada Pilot Project List (CEPA 1999, Section 73). Meets the categorization criteria: *may present, to individuals in Canada, the greatest potential for exposure; or *are persistent or bio-accumulative in accordance with the regulations, and inherently toxic to human beings or to non-human organisms, as determined by laboratory or other studies.

Canadian WHMIS (HPR-GHS) 2015 Classification and Symbols: See Section 16 for in Classification and Symbols under HPR-GHS 2015.

GLOBAL HARMONIZATION SYSTEM CLASSIFICATION:

Classification: Flammable Liquid Category 2, Carcinogenic Category 2, Reproductive Toxicity Category 2, Acute Inhalation Toxicity Category 2, Aspiration Hazard Category 1, Specific Target Organ Toxicity Repeated Exposure Category 2, Eye Irritation Category 2, Specific Target Organ Toxicity (Inhalation-Respiratory Irritation) Single Exposure Category 3, Skin Irritation Category 2, Respiratory Sensitizer Category 1, Skin Sensitization Category 1, Specific Target Organ Toxicity (Inhalation-Central Nervous System) Single Exposure Category 3, Aquatic Chronic Toxicity Category 3

Signal Word: Danger


Precautionary Statements:

16. OTHER INFORMATION (Continued)

GLOBAL HARMONIZATION SYSTEM CLASSIFICATION (continued):

Precautionary Statements (continued):
Response: P303 + P361 + P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P370 + P378: In case of fire: Use materials appropriate for surrounding fire for extinction. P308 + P313: If exposed or concerned: Get medical advice/attention.
P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. P311: Do NOT induce vomiting.
P304 + P340 + P310: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician. P342 + P311: If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
P305 + P351 + P318: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Do P337 + P313: If eye irritation persists: get medical advice/attention. P301 + P352: IF ON SKIN: Wash with plenty of soap and water. P333 + P313: If skin irritation or rash occurs: Get medical advice/attention. P312: Call a POISON CENTER or doctor/physician if you feel unwell. P320: Specific treatment is urgent.
Disposal: P501: Dispose of contents/containers in accordance with all local, regional, national and international regulations.
Hazard Symbols/Pictograms: GHS02, GHS05, GHS08

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

The information presented in this Material Safety Data Sheet is prepared in good faith but is 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 IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, ITS GENEROSITY, OR ITS ABILITY TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THIS 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 and your own processing or application. You should consult factory specifications and design details. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given or implied to practice any patented invention without a license.

REFERENCES AND DATA SOURCES: Contact the supplier for information.

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

REVISION DETAILS: July 2018: Review and up-date entire SDS for current regulations, data and format.

DATE OF PRINTING: July 24, 2018

DEFINITIONS OF TERMS

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

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. PIl or Draize = 0. Eye Irritation: Essentially non-irritating, minimal effects clearing in 24 hours. Mechanical irritation may occur. Oral Toxicity LDs0 Rat or Rabbit: > 5000 mg/kg. Dermal Toxicity LDs0 Rat or Rabbit: > 2000 mg/kg. Inhalation Toxicity LCs0 4-hrs Rat: > 20 mg/L. 1 Slight Hazard: Minor risk of injury may occur; may irritate the skin if swallowed; may delat the skin and exacerbate existing dermatitis. Skin Irritation: Slightly or mildly irritating. PIl or Draize > 0 ≤ 5. 2 Moderate Hazard: Temporary or transitory injury may occur; prolonged exposure may affect the normal skin barrier. Skin Irritation: Slightly irritant; sensitizer. PIl or Draize ≥ 5.5, with no indication of tissue destruction. Oral Toxicity LDs0 Rat or Rabbit: > 2000 mg/kg. Inhalation Toxicity LCs0 4-hrs Rat: ≥ 0.5–2 mg/L. 3 Serious Hazard: Major injury likely unless prompt action is taken and medical treatment is given; high level of toxicity, corrosive. Skin Irritation: Severely irritating and/or corrosive; may cause destruction of dermal tissue, skin burn, and dermal necrosis. PIl or Draize = 5–8, with destruction of tissue. Eye Irritation: Corrosive, irreversible destruction of ocular tissue; corneal involvement or irritation persisting in 8–24 hours. Draize > 25, with reversible effects. Oral Toxicity LDs0 Rat or Rabbit: > 50–500 mg/kg. Dermal Toxicity LDs0 Rat or Rabbit: > 200–1000 mg/kg. Inhalation Toxicity LCs0 4-hrs Rat: > 0.5–2 mg/L. 4 Severe Hazard: Life-threatening; major or permanent damage may result from single or repeated exposure; extremely toxic; irreversible injury may result from brief contact. Skin Irritation: Not appropriate. Do not rate at all, based on skin irritation alone. Eye Irritation: Not applicable. Do not rate at all, based on eye irritation alone. Inhalation Toxicity LDs0 Rat: ≥ 1 mg/L. Dermal Toxicity LDs0 Rat or Rabbit: ≥ 0.5 mg/kg. Inhalation Toxicity LCs0 4-hrs Rat: ≤ 0.05 mg/L.

Flammability Hazard: 0 Minimal Hazard: Materials that will not burn in air when exposed to a temperature of 815.5 °C (1500°F) for a period of 5 minutes or less; Liquids, solids and semisolids having a flash point at or above 93.3 °C (200°F) (i.e. OSHA Class III); and Most ordinary combustible materials (e.g. wood, paper, etc.). 2 Moderate Hazard: Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur. Materials in this degree will not burn, under normal conditions, form hazardous atmospheres in air, but under high ambient temperatures or moderate heating may release vapor in sufficient quantities to produce hazardous atmospheres with air. This usually includes the following: Liquids that will burn in air when exposed to a temperature of 28 °C (82°F) or higher; and Solid materials whose flash points (when exposed to a temperature of 815.5 °C) are lower than their boiling points. 3 Serious Hazard: Materials that will 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, soy, hemp); and Liquids and solids that will burn in air with a flash point at or above 71°C (160°F) when exposed to a temperature of 815.5 °C (1500°F) or higher. 4 Severe Hazard: Materials that may be ignited under almost all ambient temperature conditions. Materials in this degree produce hazardous atmospheres with air under almost all ambient temperature conditions; are significantly affected by ambient temperature, are readily ignited under almost all conditions before ignition can occur. Materials in this degree will not burn, under normal conditions, form hazardous atmospheres in air, but under high ambient temperatures or moderate heating may release vapor in sufficient quantities to produce hazardous atmospheres with air. This usually includes the following: Liquids that have a flash point below 21.1°C (70°F) and those liquids having a flash point at or above 21.1°C (70°F) and below 37.8°C (100°F) (i.e. OSHA Class IIb and IC); Materials that on account of their chemical form or in the form of finely divided solid can form explosive mixtures. A readily flammable liquid that is easily dispersed in air (e.g. dusts of combustible solids, mists or droplets of flammable liquids); and Materials that burn extremely rapidly, usually by reason of self-contained oxygen (e.g. dry nitrocottonelles and many organic peroxides).
DEFINITIONS OF TERMS (Continued)

FLAMMABILITY HAZARD (continued): Severe Hazard: Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air, and that will burn readily. This usually includes the following: Flammable gases: Flammable cryogenic materials. Any liquid or gaseous material that will burn readily under pressure, but have a low potential (or low risk) for significant heat generation or explosion. Flammable Liquid: Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature and/or have a low potential (or low risk) for significant heat generation or explosion.

FLAMMABILITY HAZARD (continued): Moderate Hazard: Materials that can cause fires or explosions or release heat energy greater than 0.5 MJ/L. These materials are ordinarily stable, but that can become unstable at elevated temperatures and pressures. They have an instantaneous power density (product of heat of reaction and reaction rate) at or above 0.01 W/mL and below 10 W/mL.

FLAMMABILITY HAZARD (continued): Severe Hazard: Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air, and that will burn readily. This usually includes the following: Flammable gases: Flammable cryogenic materials. Any liquid or gaseous material that will burn readily under pressure, but have a low potential (or low risk) for significant heat generation or explosion. Flammable Liquid: Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature and/or have a low potential (or low risk) for significant heat generation or explosion.

FLAMMABILITY HAZARD (continued): Moderate Hazard: Materials that can cause fires or explosions or release heat energy greater than 0.5 MJ/L. These materials are ordinarily stable, but that can become unstable at elevated temperatures and pressures. They have an instantaneous power density (product of heat of reaction and reaction rate) at or above 0.01 W/mL and below 10 W/mL.

FLAMMABILITY HAZARD (continued): Severe Hazard: Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air, and that will burn readily. This usually includes the following: Flammable gases: Flammable cryogenic materials. Any liquid or gaseous material that will burn readily under pressure, but have a low potential (or low risk) for significant heat generation or explosion. Flammable Liquid: Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature and/or have a low potential (or low risk) for significant heat generation or explosion.

FLAMMABILITY HAZARD (continued): Moderate Hazard: Materials that can cause fires or explosions or release heat energy greater than 0.5 MJ/L. These materials are ordinarily stable, but that can become unstable at elevated temperatures and pressures. They have an instantaneous power density (product of heat of reaction and reaction rate) at or above 0.01 W/mL and below 10 W/mL.

FLAMMABILITY HAZARD (continued): Severe Hazard: Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air, and that will burn readily. This usually includes the following: Flammable gases: Flammable cryogenic materials. Any liquid or gaseous material that will burn readily under pressure, but have a low potential (or low risk) for significant heat generation or explosion. Flammable Liquid: Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature and/or have a low potential (or low risk) for significant heat generation or explosion.

FLAMMABILITY HAZARD (continued): Moderate Hazard: Materials that can cause fires or explosions or release heat energy greater than 0.5 MJ/L. These materials are ordinarily stable, but that can become unstable at elevated temperatures and pressures. They have an instantaneous power density (product of heat of reaction and reaction rate) at or above 0.01 W/mL and below 10 W/mL.

FLAMMABILITY HAZARD (continued): Severe Hazard: Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air, and that will burn readily. This usually includes the following: Flammable gases: Flammable cryogenic materials. Any liquid or gaseous material that will burn readily under pressure, but have a low potential (or low risk) for significant heat generation or explosion. Flammable Liquid: Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature and/or have a low potential (or low risk) for significant heat generation or explosion.

FLAMMABILITY HAZARD (continued): Moderate Hazard: Materials that can cause fires or explosions or release heat energy greater than 0.5 MJ/L. These materials are ordinarily stable, but that can become unstable at elevated temperatures and pressures. They have an instantaneous power density (product of heat of reaction and reaction rate) at or above 0.01 W/mL and below 10 W/mL.

FLAMMABILITY HAZARD (continued): Severe Hazard: Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air, and that will burn readily. This usually includes the following: Flammable gases: Flammable cryogenic materials. Any liquid or gaseous material that will burn readily under pressure, but have a low potential (or low risk) for significant heat generation or explosion. Flammable Liquid: Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature and/or have a low potential (or low risk) for significant heat generation or explosion.

FLAMMABILITY HAZARD (continued): Moderate Hazard: Materials that can cause fires or explosions or release heat energy greater than 0.5 MJ/L. These materials are ordinarily stable, but that can become unstable at elevated temperatures and pressures. They have an instantaneous power density (product of heat of reaction and reaction rate) at or above 0.01 W/mL and below 10 W/mL.

FLAMMABILITY HAZARD (continued): Severe Hazard: Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air, and that will burn readily. This usually includes the following: Flammable gases: Flammable cryogenic materials. Any liquid or gaseous material that will burn readily under pressure, but have a low potential (or low risk) for significant heat generation or explosion. Flammable Liquid: Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature and/or have a low potential (or low risk) for significant heat generation or explosion.

FLAMMABILITY HAZARD (continued): Moderate Hazard: Materials that can cause fires or explosions or release heat energy greater than 0.5 MJ/L. These materials are ordinarily stable, but that can become unstable at elevated temperatures and pressures. They have an instantaneous power density (product of heat of reaction and reaction rate) at or above 0.01 W/mL and below 10 W/mL.

FLAMMABILITY HAZARD (continued): Severe Hazard: Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air, and that will burn readily. This usually includes the following: Flammable gases: Flammable cryogenic materials. Any liquid or gaseous material that will burn readily under pressure, but have a low potential (or low risk) for significant heat generation or explosion. Flammable Liquid: Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature and/or have a low potential (or low risk) for significant heat generation or explosion.

FLAMMABILITY HAZARD (continued): Moderate Hazard: Materials that can cause fires or explosions or release heat energy greater than 0.5 MJ/L. These materials are ordinarily stable, but that can become unstable at elevated temperatures and pressures. They have an instantaneous power density (product of heat of reaction and reaction rate) at or above 0.01 W/mL and below 10 W/mL.

FLAMMABILITY HAZARD (continued): Severe Hazard: Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air, and that will burn readily. This usually includes the following: Flammable gases: Flammable cryogenic materials. Any liquid or gaseous material that will burn readily under pressure, but have a low potential (or low risk) for significant heat generation or explosion. Flammable Liquid: Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature and/or have a low potential (or low risk) for significant heat generation or explosion.

FLAMMABILITY HAZARD (continued): Moderate Hazard: Materials that can cause fires or explosions or release heat energy greater than 0.5 MJ/L. These materials are ordinarily stable, but that can become unstable at elevated temperatures and pressures. They have an instantaneous power density (product of heat of reaction and reaction rate) at or above 0.01 W/mL and below 10 W/mL.

FLAMMABILITY HAZARD (continued): Severe Hazard: Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air, and that will burn readily. This usually includes the following: Flammable gases: Flammable cryogenic materials. Any liquid or gaseous material that will burn readily under pressure, but have a low potential (or low risk) for significant heat generation or explosion. Flammable Liquid: Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature and/or have a low potential (or low risk) for significant heat generation or explosion.

FLAMMABILITY HAZARD (continued): Moderate Hazard: Materials that can cause fires or explosions or release heat energy greater than 0.5 MJ/L. These materials are ordinarily stable, but that can become unstable at elevated temperatures and pressures. They have an instantaneous power density (product of heat of reaction and reaction rate) at or above 0.01 W/mL and below 10 W/mL.

FLAMMABILITY HAZARD (continued): Severe Hazard: Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air, and that will burn readily. This usually includes the following: Flammable gases: Flammable cryogenic materials. Any liquid or gaseous material that will burn readily under pressure, but have a low potential (or low risk) for significant heat generation or explosion. Flammable Liquid: Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature and/or have a low potential (or low risk) for significant heat generation or explosion.

FLAMMABILITY HAZARD (continued): Moderate Hazard: Materials that can cause fires or explosions or release heat energy greater than 0.5 MJ/L. These materials are ordinarily stable, but that can become unstable at elevated temperatures and pressures. They have an instantaneous power density (product of heat of reaction and reaction rate) at or above 0.01 W/mL and below 10 W/mL.

FLAMMABILITY HAZARD (continued): Severe Hazard: Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air, and that will burn readily. This usually includes the following: Flammable gases: Flammable cryogenic materials. Any liquid or gaseous material that will burn readily under pressure, but have a low potential (or low risk) for significant heat generation or explosion. Flammable Liquid: Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature and/or have a low potential (or low risk) for significant heat generation or explosion.
DEFINITIONS OF TERMS (Continued)

**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/kg: Concentration expressed in weight of substance per volume of air, water, or body weight. Quantity of material, by weight, administered to a test subject, based on their body weight in kg. TDLo: Lowest dose to cause a symptom. TCLo: Lowest concentration to cause a symptom. TDo, LDLo, and LDo: or TC, TCLo, LCLo, and LCLo: Lowest dose (or concentration) to cause lethal or toxic effects.

**Cancer Information:** IARC: International Agency for Research on Cancer. NTP: National Toxicology Program. RTECS: Registry of Toxic Effects of Chemical Substances. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used.

**Other Information:** BEI: ACGIH Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV.

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

**ECOLOGICAL INFORMATION:** EC: Effect concentration in water. BCF: Bioconcentration Factor, which is used to determine if a substance will concentrate in life forms that consume contaminated plant or animal matter. TLCm: Median threshold limit. log KₒW or log KₒC: Coefficient of Oil/Water Distribution is used to assess a substance’s behavior in the environment.

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

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

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