SAFETY DATA SHEET

Urexpan NR-300 Activator

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>Urexpan NR-300 Activator</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRODUCT DESCRIPTION:</td>
<td>Caulking Compound</td>
</tr>
<tr>
<td>CHEMICAL NAME/CLASS:</td>
<td>Polyurethane Prepolymer Mixture</td>
</tr>
<tr>
<td>SYNONYMS:</td>
<td>NR-300 Part A</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>
<tr>
<td>PREPARATION DATE:</td>
<td>January 2004</td>
</tr>
<tr>
<td>REVISION DATE:</td>
<td>February 10, 2015</td>
</tr>
</tbody>
</table>

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 Z400.1-2008 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. 1B, Skin Sensitization Cat. 1, Respiratory Sensitization Cat. 1, Skin Irritation Cat. 2, Eye Irritation Cat. 2A, STOT (Inhalation-Respiratory Irritation) SE Cat. 3
- **Signal Word:** Danger
- **Hazard Statement Codes:** H350, H334, H317, H315 + H320, H335
- **Hazard Symbols/Pictograms:** GHS07, GHS08

EMERGENCY OVERVIEW:

**PHYSICAL DESCRIPTION:** This product is a viscous, off-white liquid with no noticeable odor.

**HEALTH HAZARDS:** CAUTION! May cause eye, skin, and respiratory tract irritation, especially if exposure is prolonged. May cause skin and/or respiratory sensitization. May be harmful if swallowed. Contains compounds that are suspect carcinogens.

**FLAMMABILITY HAZARD:** This product is combustible and can ignite if exposed to temperatures at or above 100°C (212°F).

**REACTIVITY HAZARD:** This product can react with water. This product may become unstable if stored for more than 6 months or if exposed to high temperature.

**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>1</td>
</tr>
</tbody>
</table>

See Section 16 for definitions of ratings

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

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

**CANADIAN WHMIS CLASSIFICATION:** Class D1B, 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

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS#</th>
<th>W/W %</th>
<th>GHS Classification Hazard Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proprietary Polyol</td>
<td>40.0-50.0</td>
<td>SELF CLASSIFICATION Classification: Not Applicable</td>
<td></td>
</tr>
<tr>
<td>Heavy Paraffinic Distillate Solvent</td>
<td>64742-04-7</td>
<td>20.0-40.0</td>
<td>Classification: Carcinogenic Cat. 1B Hazard Statement Codes: H350</td>
</tr>
<tr>
<td>Petroleum Tar</td>
<td>64741-62-4</td>
<td>20.0-30.0</td>
<td>Classification: Carcinogenic Cat. 1B Hazard Statement Codes: H350</td>
</tr>
<tr>
<td>Calcium Oxide</td>
<td>1305-78-8</td>
<td>1.0-5.0</td>
<td>SELF CLASSIFICATION Classification: Not Applicable</td>
</tr>
<tr>
<td>Titanium Dioxide</td>
<td>13463-67-7</td>
<td>1.0-5.0</td>
<td>SELF CLASSIFICATION Classification: Not Applicable</td>
</tr>
<tr>
<td>Proprietary Polysiocyanate</td>
<td>1.0-5.0</td>
<td>Classification: Toxicity Cat. 1, Acute Inhalation Toxicity Cat. 2, Eye Irritation Cat. 2, STOT (Inhalation-Respiratory Irritation) SE Cat. 3, Skin Irritation Cat. 2, Respiratory Sensitization Cat. 1, Skin Sensitization Cat. 1, Aquatic Chronic Toxicity Cat. 1 Hazard Statement Codes: H315, H330, H319, H335, H315, H334, H317, H412</td>
<td></td>
</tr>
<tr>
<td>Proprietary Silica</td>
<td>1.0-5.0</td>
<td>SELF CLASSIFICATION Classification: Not Applicable</td>
<td></td>
</tr>
<tr>
<td>p-Toluene Isocyanate</td>
<td>4083-64-1</td>
<td>0.1-0.6</td>
<td>Classification: Eye Irritation Cat. 2, STOT (Inhalation-Respiratory Irritation) SE Cat. 3, Skin Irritation Cat. 2, Respiratory Sensitization Cat. 1 Hazard Statement Codes: H319, H335, H315, H334</td>
</tr>
</tbody>
</table>

Other trace components. Each of the other components is present in less than 1 percent concentration (0.1% concentration for potential carcinogens, reproductive toxins, respiratory tract sensitizers, and mutagens).

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.

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

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

**EYE EXPOSURE:** If this product enters the eyes, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 20 minutes. Do not interrupt flushing.

**INGESTION:** If this material is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. DO NOT INDUCE VOMITING, unless 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:** Dermatitis or other pre-existing skin disorders 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** (closed cup): 100°C (212°F)

**AUTOIGNITION:** Unknown.

**FLAMMABLE LIMITS IN AIR:** Unknown.

**EXTINGUISHING MEDIA:**

- **SUITABLE EXTINGUISHING MEDIA:** Use extinguishing material suitable to the surrounding fire, including foam, halon, carbon dioxide and dry chemical.

- **UNSUITABLE EXTINGUISHING MEDIA:** Water should be used with care.

**PROTECTION OF FIREFIGHTERS:**

**SPECIAL FIRE AND EXPLOSION HAZARDS:** This product is combustible and can be ignited when exposed to its flashpoint. Not sensitive to mechanical impact under normal conditions. May be sensitive to static discharge under normal conditions. Closed containers may develop pressure and rupture in event of fire or if contaminated with water.

**ADVICE TO 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.

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 polyponds. Absorb spilled liquid with clay, sand, polyponds, 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-Occupational/Workplace) and Section 13 (Disposal Considerations) for additional information.

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 taste or swallow. Use only with adequate ventilation. Contaminated clothing needs to be laundered prior to reuse. Keep away from heat and flame. In the event of a spill, follow practices indicated in Section 6: ACCIDENTAL RELEASE MEASURES.

CONDITIONS FOR SAFE STORAGE: Keep container tightly closed when not in use. Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Material should be stored in secondary containers or in a diked area, as appropriate. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged. Containers should be separated from oxidizing materials by a minimum distance of 20 ft. or by a barrier of non-combustible material at least 5 ft. high having a fire-resistance rating of at least 0.5 hours. Storage areas should be made of fire resistant materials. Local Fire Departments should be notified of the storage of this product on site. Storage and processing areas of this product should be identified with a NFPA 704 placard (diamond) large enough to be seen from a distance. Post warning and “NO SMOKING” signs in storage and use areas, as appropriate. Refer to NFPA 30, Flammable and Combustible Liquids Code, for additional information on storage. Have appropriate extinguishing equipment in the storage area (such as sprinkler systems or portable fire extinguishers). Inspect all incoming containers before storage to ensure containers are properly labeled and not damaged. Empty containers may contain residual product; therefore, empty containers should be handled with care. This product should not be stored for more than 6 months. Store below 27°C (80°F).

PRODUCT USE: This product is used as a caulking compound. Follow all industry standards for use of this product.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

EXPOSURE LIMITS/CONTROL PARAMETERS:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS #</th>
<th>Guideline</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proprietary Polyol</td>
<td>NE</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>Calcium Oxide</td>
<td>1305-78-8</td>
<td>ACGIH TLV TWA</td>
<td>2mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA PEL TWA</td>
<td>5 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NIOSH REL TWA</td>
<td>2mg/m³</td>
</tr>
<tr>
<td>Heavy Paraffinic Distillate Solvent</td>
<td>64742-04-7</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>Petroleum Tar</td>
<td>64741-62-4</td>
<td>NE</td>
<td>NE</td>
</tr>
</tbody>
</table>

NE = Not Established. SEN = Confirmed Potential for Worker Sensitization as a Result of Dermal Contact and/or Inhalation Exposure. See Section 16 for Definitions of Terms Used.
8. EXPOSURE CONTROLS - PERSONAL PROTECTION (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>Proprietary Polyisocyanate</td>
<td>4083-64-1</td>
<td>ACGIH TLV TWA</td>
<td>0.036 mg/m³ NIC = 0.007 mg/m³ SEN</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACGIH TLV STEL</td>
<td>0.02 mg/m³ NIC = 0.021 mg/m³ SEN</td>
</tr>
<tr>
<td>p-Toluene Isocyanate</td>
<td></td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>Proprietary Silica</td>
<td></td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>Titanium Dioxide</td>
<td>13463-67-7</td>
<td>ACGIH TLV TWA</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA PEL TWA</td>
<td>15 mg/m³ total dust</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NIOSH REL</td>
<td>Lowest feasible concentration (LOQ 0.2 mg/m³)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DFG MAK TWA</td>
<td>1.5 mg/m³ respirable fraction</td>
</tr>
</tbody>
</table>

NE = Not Established. SEN = Confirmed Potential for Worker Sensitization as a Result of Dermal Contact and/or Inhalation Exposure. See Section 16 for Definitions of Terms Used.

Ventilation and Engineering Controls: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided above.


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 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.

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.

9. Physical and Chemical Properties

Form: Viscous liquid.

Molecular Weight: Mixture.

Odor: None.

Specific Gravity: 1.04

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

Solubility in Water: Reacts.

Melting/Freezing Point: Not established.

VOC (less water and exempt): 10% g/L

Flash Point: 100°F (212°F)

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

Coefficient of Oil/Water Distribution (Partition Coefficient): Not established.

How to Detect This Substance (Warning Properties): The appearance of this product may act as warning properties in the event of an accidental release.

10. Stability and Reactivity

Reactivity/Chemical Stability: Stable under normal circumstances of use and handling. Can become unstable at elevated temperature or if stored more than 6 months. 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: This product is not compatible with strong oxidizers, strong acids, amines, alcohols, bases, amides, phenols, mercaptans, urethanes, ureas, surfactants and water.


Possibility of Hazardous Reactions: This product may undergo hazardous polymerization if exposed to incompatible materials or heat.

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: Contact may irritate the skin and cause redness and discomfort. Prolonged or repeated skin contact may cause dermatitis (dry, red skin). Eye contact may cause redness, pain, and tearing. Skin contact may cause sensitization and allergic reactions.
11. TOXICOLOGICAL INFORMATION (Continued):

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.

CALCIUM OXIDE:
LD₅₀ (Intraperitoneal-Mouse) 3059 mg/kg

PROPRIETARY POLYOL:
Patch test on human volunteers did not demonstrate sensitization properties.

HEAVY PARAFFINIC DISTILLATE SOLVENT:
TDL₀ (Skin-Rat) 2500 mg/kg; female 0-19 days after conception; Reproductive: Fertility: post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants), litter size (e.g. # fetuses per litter; measured before birth); Effects on Embryo or Fetus: fetotoxicity (except death, e.g., stunted fetus)

TDL₀ (Skin-Rat) 8580 mg/kg: female 0-16 days) after conception; Reproductive: Maternal Effects: other effects: Fertility: post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants), litter size (e.g. # fetuses per litter; measured before birth)

TDL₀ (Skin-Rat) 3 mg/kg; female 10-12 days) after conception: Reproductive: Fertility: post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants); Effects on Embryo or Fetus: fetotoxicity (except death, e.g., stunted fetus); Specific Developmental Abnormalities: musculoskeletal system

PETROLEUM TAR:
LD₅₀ (Oral-Rat) > 5 g/kg

LC₅₀ (Inhalation-Rat) > 3700 mg/m³/4 hours

TDL₀ (Skin-Rat) 9 g/kg/14 days-intermittent; Behavioral: food intake (animal); Skin and Appendages: primary irritation (after topical exposure); Nutritional and Gross Metabolism: weight loss or decreased weight gain

TCL₀ (Inhalation-Rat) 540 mg/m³/7 days-intermittent; Skin and Appendages: primary irritation (after topical exposure); Liver: changes in liver weight; Nutritional and Gross Metabolism: weight loss or decreased weight gain

TDL₀ (Inhalation-Rat) 260 mg/kg/84 weeks; Lungs, Thorax, or Respiration: other changes; Blood: changes in cell count (unspecified); Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: dehydrogenases

TCL₀ (Inhalation-Rat) 274 mg/m³/5 days-intermittent; Lungs, Thorax, or Respiration: changes in lung weight; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: multiple enzyme effects, Metabolism (Intermediary): effect on inflammation or mediation of inflammation

TCL₀ (Inhalation-Rat) 250 mg/m³/6 hours/2 years-intermittent; Tumorigenic: carcinogenic by RTECS criteria; Lungs, Thorax, or Respiration: tumors

TCL₀ (Inhalation-Rat) 5 mg/kg/6 hours/13 weeks-intermittent; Lungs, Thorax, or Respiration: other changes; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

TCL₀ (Inhalation-Rat) 250 mg/m³/6 hours/2 years-intermittent; Lungs, Thorax, or Respiration: spumatum; Blood: changes in cell count (unspecified); Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: dehydrogenases

TCL₀ (Inhalation-Rat) 250 mg/m³/6 hours/13 weeks-intermittent; Lungs, Thorax, or Respiration: spumatum; Blood: changes in cell count (unspecified); Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: dehydrogenases

TCL₀ (Inhalation-Rat) 10 mg/m³/6 hours/13 weeks-intermittent; Lungs, Thorax, or Respiration: spumatum; Blood: changes in cell count (unspecified); Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: dehydrogenases

TCL₀ (Inhalation-Rat) 250 mg/m³/6 hours/13 weeks-intermittent; Lungs, Thorax, or Respiration: spumatum; Blood: changes in cell count (unspecified); Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: dehydrogenases

TCL₀ (Inhalation-Rat) 5 mg/m³/13 weeks-intermittent; Lungs, Thorax, or Respiration: other changes; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

TCL₀ (Inhalation-Rat) 250 mg/m³/6 hours/13 weeks-intermittent; Lungs, Thorax, or Respiration: spumatum; Blood: changes in cell count (unspecified); Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: dehydrogenases

TCL₀ (Inhalation-Rat) 250 mg/m³/6 hours/13 weeks-intermittent; Lungs, Thorax, or Respiration: spumatum; Blood: changes in cell count (unspecified); Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: dehydrogenases

TCL₀ (Inhalation-Rat) 5 mg/m³/13 weeks-intermittent; Lungs, Thorax, or Respiration: spumatum; Blood: changes in cell count (unspecified); Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: dehydrogenases

TCL₀ (Inhalation-Rat) 250 mg/m³/6 hours/13 weeks-intermittent; Lungs, Thorax, or Respiration: spumatum; Blood: changes in cell count (unspecified); Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: dehydrogenases

TCL₀ (Inhalation-Rat) 5 mg/m³/13 weeks-intermittent; Lungs, Thorax, or Respiration: spumatum; Blood: changes in cell count (unspecified); Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: dehydrogenases

TCL₀ (Inhalation-Rat) 10 mg/m³/6 hours/13 weeks-intermittent; Lungs, Thorax, or Respiration: structural or functional change in trachea or bronchi

DNA Damage (Human Lung) 100 µg/plate
DNA Damage (Human Lung) 20 γg/disk/4 hours
Sister Chromatid Exchange (Human Lymphocyte) 2 µmol/L/172 hours

Micronucleus Test (Human Lymphocyte) 5 µmol/L/72 hours

Micronucleus Test (Intraperitoneal-Mouse) 3 µmol/g/3 days-continuous

Micronucleus Test (Hamster Ovary) 5 µmol/L

DNA Inhibition (Hamster Lungs) 2000 mg/kg

Sister Chromatid Exchange (Hamster Ovary) 1 µmol/L

PROPRIETARY POLYISOCYANATE:
TCL₀ (Inhalation-Human) 0.014 ppm/30 minutes: Lungs, Thorax, or Respiration: bronchial constriction, respiratory obstruction

Open Irritation Test (Skin-Rabbit) 500 mg: Severe
LD₅₀ (Oral-Rat) 4130 mg/kg
LD₅₀ (Oral-Mouse) 1590 mg/kg
LD₅₀ (Skin-Rabbit) > 10 nLAg

LC₅₀ (Inhalation-Mouse) 9.7 ppm/4 hours

LC₅₀ (Inhalation-Rabbit) 11 ppm/4 hours: Behavioral: excitement; Lungs, Thorax, or Respiration: dyspnea; Gastrointestinal: changes in structure or function of salivary glands

LC₅₀ (Inhalation-Mouse) 9700 ppb/4 hours: Behavioral: excitement; Lungs, Thorax, or Respiration: dyspnea; Gastrointestinal: changes in structure or function of salivary glands

LC₅₀ (Inhalation-Guinea Pig) 12,700 ppb/4 hours: Behavioral: excitement; Lungs, Thorax, or Respiration: dyspnea; Gastrointestinal: changes in structure or function of salivary glands

LC₅₀ (Inhalation-Rabbit) 60 ppm/6 hours

TCL₀ (Inhalation-Rabbit) 10 ppb: Immunological Including Allergic: hypersensitivity delayed

TCL₀ (Inhalation-Mouse) 0.05 ppm/6 minutes: Lungs, Thorax, or Respiration: respiratory depression

TCL₀ (Inhalation-Guinea Pig) 8.5 mg/m³/4 hours: Skin and Appendages: dermatitis, allergic (after systemic exposure)

TCL₀ (Inhalation-Guinea Pig) 0.6 mg/kg; Skin and Appendages: dermatitis, allergic (after systemic exposure)

TDL₀ (Oral-Rat) 7 mg/kg/14 days-intermittent; Nutritional and Gross Metabolism: weight loss or decreased weight gain; Related to Chronic Data: death
11. TOXICOLOGICAL INFORMATION (Continued)

TOXICITY DATA (continued):

PROPRIETARY POLYSOYCANATE (continued):
TDLo (Oral-Rat) 15,600 mg/kg/13 weeks: Lungs, Thorax, or Respiration: structural or functional change in trachea or bronchi; Related to Chronic Data: death
TDLo (Oral-Rat) 31,800 mg/kg/2 years: Tumorigenic: carcinogenic by RTECS criteria; Blood: leukemia Skin and Appendages: tumors
TDLo (Oral-Rat) 63,600 mg/kg/2 years: Tumorigenic: neoplastic by RTECS criteria; Gastrointestinal: tumors; Liver: tumors
TDLo (Oral-Rat) 31,500 mg/kg/105 weeks: Tumorigenic: carcinogenic by RTECS criteria; Skin and Appendages: tumors; Gastrointestinal: tumors
TDLo (Oral-Rat) 63,000 mg/kg/105 weeks: Tumorigenic: carcinogenic by RTECS criteria; Skin and Appendages: tumors
TDLo (Oral-Rat) 31,500 mg/kg/105 weeks: Tumorigenic: carcinogenic by RTECS criteria; Skin and Appendages: tumors; Gastrointestinal: tumors
TDLo (Oral-Mouse) 63 gm/kg/2 years: Tumorigenic: carcinogenic by RTECS criteria; Blood: tumors, lymphoma, including Hodgkin's disease
TDLo (Oral-Rat) 63,000 mg/kg/105 weeks: Tumorigenic: carcinogenic by RTECS criteria; Skin and Appendages: tumors
TDLo (Oral-Mouse) 7 gm/kg/14 days: Nutritional and Gross Metabolic: weight loss or decreased weight gain; Related to Chronic Data: death
TDLo (Skin-Mouse) 180 mg/kg/5 days: Skin and Appendages: cutaneous sensitization, experimental (after topical exposure); Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation
TDLo (Skin-Mouse) 80 mg/kg/3 days: Immunological Including Allergic: hypersensitivity delayed; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation
TDLo (Skin-Mouse) 15 mg/kg/3 days: Immunological Including Allergic: increase in cellular immune response
TDLo (Skin-Mouse) 110 mg/kg/12 days: Skin and Appendages: cutaneous sensitization, experimental (after topical exposure); Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation
TDLo (Skin-Mouse) 160 mg/kg/2 days: Tumorigenic: carcinogenic by RTECS criteria; Vascular: tumors; Liver: tumors
TDLo (Oral-Mouse) 7800 mg/kg/13 weeks: Related to Chronic Data: death
TDLo (Oral-Mouse) 7 gm/kg/14 days: Nutritional and Gross Metabolic: weight loss or decreased weight gain; Related to Chronic Data: death
TDLo (Skin-Mouse) 180 mg/kg/5 days: Skin and Appendages: cutaneous sensitization, experimental (after topical exposure); Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation
TDLo (Skin-Mouse) 80 mg/kg/3 days: Immunological Including Allergic: hypersensitivity delayed; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation
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TDLo (Skin-Mouse) 160 mg/kg/2 days: Tumorigenic: carcinogenic by RTECS criteria; Vascular: tumors; Liver: tumors; Sensitization, experimental (after topical exposure); Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation
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TDLo (Skin-Mouse) 110 mg/kg/12 days: Immunological Including Allergic: increase in cellular immune response
TDLo (Skin-Mouse) 160 mg/kg/2 days: Tumorigenic: carcinogenic by RTECS criteria; Vascular: tumors; Liver: tumors; Sensitization, experimental (after topical exposure); Biochemical: Metabolism (Intermediary): effect on inflammation or medication of inflammation

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>NTP</th>
<th>NIOSH</th>
<th>ACGIH</th>
<th>OSHA</th>
<th>PROP 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy Paraffinic Distillate</td>
<td>1</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Titanium Dioxide</td>
<td>2B</td>
<td>No</td>
<td>Ca</td>
<td>TLV-A4</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Proprietary Polysoycanate</td>
<td>2B</td>
<td>R</td>
<td>CA</td>
<td>TLV-A4</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

IARC-1: Carcinogenic to Humans. IARC Group 2B: Possibly carcinogenic to humans. NIOSH-Ca: Potential occupational carcinogen, with no further categorization. ACGIH TLV: A4: Not Classifiable as a Human Carcinogen. NTP-R: Reasonably Anticipated To Be a Human Carcinogen

IRRITANT OF PRODUCT: This product may irritate contaminated tissue, especially if contact is prolonged.

SENSITIZATION TO THE PRODUCT: This product can cause human skin or respiratory sensitization. Isocyanates, in general, can cause skin discoloration (staining) and hardening of the skin after repeated exposures. Once a person is sensitized, contact with even a small amount of isocyanate 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. Also, due to the isocyanate components, inhalation can cause sensitization, even when concentration is as low as 0.0003 to 0.03 ppm and can occur after single or repeated exposure. 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 to isocyanates for months or years. Others recover complete lung function within months if they have no further isocyanate exposure.

Urexpan NR-300 Activator
Page 6 of 10
February 10, 2015
11. TOXICOLOGICAL INFORMATION (Continued)

TOXICOLOGICAL SYNERGISTIC PRODUCTS: None known.

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of this product and its components on the human reproductive system.

MUTAGENICITY: The components of this product are not reported to produce mutagenic effects in humans. Animal or microorganism data for components are as follows: Titanium dioxide was not mutagenic to Salmonella typhimurium TA1535, TA1537, TA1538, TA97, TA98 or TA100 or to Escherichia coli WP2, either in the presence or absence of an exogenous metabolic system from the livers of uninduced and Aroclor-induced rats, mice and Syrian hamsters. Both positive and negative results have been produced in tests involving the Proprietary Polyisocyanate compound.

EMBRYOTOXICITY/TERTATOGENICITY/REPRODUCTIVE TOXICITY: The components of this product are not reported to produce embryotoxic, teratogenic or reproductive effects in humans.

BIOLOGICAL EXPOSURES INDICES (BEIs): Currently, there are no BEI’s established for any component of this product.

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

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

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

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

ECOTOXICITY: This product has not been tested for aquatic or animal toxicity. All release to terrestrial, atmospheric and aquatic environments should be avoided.

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: Not applicable.

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)</th>
<th>SECTION 304 RQ</th>
<th>SECTION 313 TRI (threshold)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proprietary Polyisocyanate</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: No; SUDDEN RELEASE: No

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

U.S. CERCLA REPORTABLE QUANTITY (RQ): Proprietary Polyisocyanate = 100 lb (45.5 kg).

U.S. CLEAN AIR ACT (CA 112r) THRESHOLD QUANTITY (TQ): The Proprietary Polyisocyanate =10,000 lb (4550 kg).

OTHER U.S. FEDERAL REGULATIONS: Not applicable.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): The Proprietary Polyisocyanate component is on the California Proposition 65 lists. WARNING: This product contains a chemical known to the State of California to cause cancer.

ADDITIONAL CANADIAN REGULATIONS:

CANADIAN DSI/NDSL INVENTORY STATUS: The components of this product listed by CAS# in Section 3 (MATERIAL IDENTIFICATION) are listed on the DSL Inventory.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: No component of this product is on the CEPA Priorities Substances Lists.

CANADIAN WHMIS REGULATIONS: This product is classified as a Controlled Product, Hazard Classes B3 (Combustible Liquid) and D2B (Immediate Acute Toxicity/Irritation/Sensitization) as per the Controlled Product Regulations.
16. OTHER INFORMATION

U.S. ANSI STANDARD LABELING (Precautionary Statements): CAUTION! COMBUSTIBLE LIQUID. MAY CAUSE SKIN AND RESPIRATORY SENSITIZATION. MAY CAUSE EYE, SKIN, AND RESPIRATORY TRACT IRRITATION, ESPECIALLY IF EXPOSURE IS PROLONGED. CONTAINS COMPONENTS THAT ARE SUSPECT CARCINOGENS. MAY POLYMERIZE IF SUBJECT TO HIGH TEMPERATURES. Avoid contact with eyes, skin, and clothing. Avoid breathing fumes, dusts, vapors or mist. Do not taste or swallow. Wash thoroughly after handling. Keep container tightly closed. Use only with adequate ventilation. Keep away from heat and flame. Wear gloves, eye protection, respiratory protection, and appropriate body protection. FIRST-AID: In case of contact, immediately flush skin and eyes with plenty of water. Remove contaminated clothing and shoes. Get medical attention if irritation develops or persists. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, do not induce vomiting. Get medical attention. IN CASE OF FIRE: Use water fog, foam, dry chemical, or CO₂. IN CASE OF SPILL: Absorb spilled product with 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 1B, Skin Sensitization Category 1, Respiratory Sensitization Category 1, Skin Irritation Category 2, Eye Irritation Category 2A, Specific Target Organ Toxicity (Respiratory Irritation by Inhalation) Single Exposure Category 3
Signal Word: Danger
Hazard Statements: H350: May cause cancer. H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled. H317: May cause an allergic skin reaction. H315 + H320: Causes skin and eye irritation. H335: May cause respiratory irritation.
Precautionary Statements:
Prevention: P201: Obtain special instructions before use. P202: Do not handle until all safety precautions have been read and understood. P261: Avoid breathing mists, sprays, fume. P264: Wash contaminated tissues after handling. P270: Do not eat, drink or smoke when using this product. P271: Use only outdoors or in a well-ventilated area. P272: Contaminated work clothing should not be allowed out of the workplace. P280: Wear protective gloves, clothing, eye protection and face protection. P284: Wear respiratory protection.
Disposal: P501: Dispose of contents/containers in accordance with all local, regional, national and international regulations.
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, or local laws or regulations. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.

REFERENCES AND DATA SOURCES: Contact the supplier for information.
METHODS OF EVALUATING INFORMATION FOR THE PURPOSE OF CLASSIFICATION: Bridging principles were used to classify this product.
REVISION DETAILS: February 2012: Up-date and revise entire MSDS to include current GHS requirements.
DATE OF PRINTING: February 16, 2015
DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these, which are commonly used:

KEY ACRONYMS:

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

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

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

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FIRE: Immediate danger to life and health. This level represents a concentration from which one can escape within 3 minutes without suffering escape preventing or permanent injury.

IDLH: Immediately Dangerous to Life and Health. This level represents a concentration from which one can escape within 3 minutes without suffering escape preventing or permanent injury.

LOQ: Limit of Quantitation.

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

NIOSH: Notice of Intended Change.

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

NIOSH RELs: NIOSH’s Recommended Exposure Limits.

PEL: OSHA’s Permissible Exposure Limits. This exposure value means exactly the same as a TLV, except that it is a long term exposure. The OSHA’s Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register 58: 35338-35351 and 58: 40/19). Both the current PELs and the vacated PELs are indicated. The phrase, “Vacated 1989 PEL” is placed next to the PEL that was vacated by Court Order.

SKIN: Used to indicate a substance’s degree of cutaneous absorption.

KEY ACRONYMS (continued):

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

TWA: Time Weighted Average exposure concentration for a conventional 8-hour (TWA) or longer workweek.

WEEL: Workplace Environmental Exposure Limits from the AIHA.

HAZARD RATINGS:

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS: This rating system was developed by the National Paint and Coating Association and the National Fire Protection Association to identify the degree of hazard of a material.

HEALTH HAZARD: 0 Minimal Hazard: No significant health risk, irritation of skin or eyes or anticipated. Skin Irritation: Essentially non-irritating. Mechanical irritation may occur. PEL or Draize = 0.

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DEFINITIONS OF TERMS (Continued)

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS:

HEALTH HAZARD: 0 Materials that, under emergency conditions, would offer no hazard beyond that of ordinary combustible materials. Gases and vapors with an LCF<sub>1</sub> for acute inhalation toxicity greater than 10,000 ppm. Dusts and mists with an LC<sub>F</sub> for acute inhalation toxicity greater than 200 mg/m<sup>3</sup>. Materials that are respiratory irritants. Materials that cause serious or permanent injury or death. Gases and vapors with an LCF<sub>1</sub> for acute inhalation toxicity less than or equal to 0.5 mg/L. Materials whose LD<sub>50</sub> is greater than or equal to 10,000 mg/kg. Materials with an LD<sub>50</sub> for oral toxicity greater than 50,000 mg/kg but less than or equal to 200 mg/kg. Materials with an LD<sub>50</sub> for oral toxicity greater than 500 mg/kg but less than or equal to 2000 mg/kg. Materials that slightly to moderately irritate the respiratory tract, eyes and skin. Materials with an LD<sub>50</sub> for acute oral toxicity greater than 5000 mg/kg but less than or equal to 10,000 ppm. Dusts and mists with an LCF<sub>1</sub> for acute inhalation toxicity greater than 10 mg/L but less than or equal to 200 mg/L. Materials with an LD<sub>50</sub> for acute dermal toxicity greater than 1000 mg/kg but less than or equal to 2000 mg/kg. Materials that slightly to moderately irritate the respiratory tract, eyes and skin. Materials with an LD<sub>50</sub> for acute oral toxicity greater than 5000 mg/kg but less than or equal to 10,000 ppm. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than one-fifth its LCF<sub>1</sub> for acute inhalation toxicity, if its LCF<sub>1</sub> is less than or equal to 5000 ppm and that does not meet the criteria for either degree of hazard 3 or degree of hazard 4. Dusts and mists with an LCF<sub>1</sub> for acute inhalation toxicity greater than 2 mg/L but less than or equal to 10 mg/L. Materials with an LD<sub>50</sub> for acute dermal toxicity greater than 200 mg/kg but less than or equal to 1000 mg/kg. Compressed liquefied gases with boiling points between -30°C (-22°F) and -55°C (-67°F) that cause severe tissue damage, depending on duration of exposure. Materials that are respiratory irritants. Materials that cause severe, but reversible irritation to the eyes or are lachrymators. Materials that are primary skin irritants or sensitizers. Materials whose LD<sub>50</sub> for oral toxicity is greater than 50 mg/kg but less than or equal to 500 mg/kg. Materials that, under emergency conditions, can cause serious or permanent injury or death. Gases with an LCF<sub>1</sub> for acute inhalation toxicity greater than 1,000 ppm but less than or equal to 3,000 ppm. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than its LCF<sub>1</sub> for acute inhalation toxicity but less than or equal to 5 mg/L. Materials with an LCF<sub>1</sub> for acute inhalation toxicity greater than 0.5 mg/L but less than or equal to 2 mg/L. Materials with an LD<sub>50</sub> for acute dermal toxicity greater than 40 mg/kg but less than or equal to 200 mg/kg. Materials that are corrosive to the respiratory tract. Materials that are toxic or highly irritating to mucous membranes or corneal opacity. Materials corrosive to the skin. Cyrogeneic gases that cause frothbite and irreversible tissue damage. Compressed liquefied gases with boiling points below -55°C (-66.5°F) that cause frothbite and irreversible tissue damage. Materials with a flash point at or below 0°C (32°F) but less than or equal to 5°C (41°F). Materials that, under emergency conditions, can be lethal. Gases with an LCF<sub>1</sub> for acute inhalation toxicity less than or equal to 1.000 ppm. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than ten times its LCF<sub>1</sub> for acute inhalation toxicity, if its LCF<sub>1</sub> is less than or equal to 1000 ppm. Dusts and mists whose LD<sub>50</sub> for acute inhalation toxicity is less than or equal to 0.5 mg/L. Materials whose LD<sub>50</sub> for acute dermal toxicity is less than or equal to 40 mg/kg. Materials whose LD<sub>50</sub> for oral toxicity is less than or equal to 5 mg/kg. FLAMMABILITY HAZARD: 0 Materials that are less flammable than ordinary combustible materials, including intrinsically noncombustible materials such as concrete, stone, and sand. Materials that will not burn in air when exposed to a temperature of 816°C (1500°F) for a period of 5 minutes in accordance with Annex D of NFPA 704. Materials that are intrinsically noncombustible. Materials corrosive to the skin. Flash and Fire Points by Cleveland Open Cup Method of Tests and Criteria SEMILOGARITHMIC FLAME SQUEEZE INDEX: Materials that must be moderately heated or exposed to moderate heating before an ignitable vapor phase can be released in sufficient quantities to produce hazardous atmospheres. Materials with an LCF<sub>1</sub> for ignitability at 250°C (482°F) of 0.01 W/mL or less. Materials that readily undergo violent chemical change at elevated temperatures and pressures. Materials that have an instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 10 W/mL and below 1000 W/mL. Materials with a flash point at or below 37.8°C (100°F) (i.e. Class IA liquids). Materials that ignite when exposed to air. Solids containing greater than 0.5% by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent. INSTABILITY HAZARD: 0 Materials that are normally stable, but that can become unstable at elevated temperatures and pressures. Materials that have an instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 10 W/mL and below 1000 W/mL. Materials that are sensitive to localized thermal or mechanical shock at normal temperatures and pressures. Materials that are sensitive to localized thermal or mechanical shock at normal temperatures and pressures. Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) of 1000 W/mL or greater. FLAMMABILITY LIMITS IN AIR: Much of the information related to fire and explosion is derived from the National Fire Protection Association (NFPA). Flash Point: Minimum temperature at which a liquid gives off sufficient vapor to form an ignitable mixture with air near the surface of the liquid or within the test vessel. Closed Cup Flash Point: Minimum temperature at which a liquid gives off sufficient vapor to form a self-sustained combustion in air with no other source of ignition. LLF: Lowest concentration of a flammable vapor or gas mixture that will ignite and burn with a flame. UEL: Highest concentration of a flammable vapor or gas mixture that will ignite and burn with a flame. TOXICOLOGICAL INFORMATION:

Human and Animal Toxicology: Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. LD<sub>50</sub>: Lethal Dose (solids & liquids) that kills 50% of the exposed animals. LC<sub>50</sub>: Lethal Concentration (gases) that kills 50% of the exposed animals. ppm: Concentration expressed in parts per million of air or water. mkg/m<sup>3</sup>: Concentration expressed in weight per unit of volume of air. mkg/m<sup>3</sup>. Quantity of material per weight administered that is based on their body weight in kg. TLm: Lethal Dosage that will cause a symptom. TCLo: Lowest concentration to cause a symptom. TDs, LDLo, and LC<sub>Lo</sub>: 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. Subbrancks (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 embroyotoxic 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 toxic 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 compound will concentrate in life forms that consume contaminated plant or animal matter. TLm: Median threshold limit. log K<sub>OC</sub> or log K<sub>OC</sub>: Coefficient of Oil/Water Distribution is used to assess a substance’s behavior in the environment.

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