SAFETY DATA SHEET

PECORA CORPORATION®
Architectural Weatherproofing Products
U.S.A. • since 1862

PECORA P-801 VOC PRIMER

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 IDENTIFICATION of the SUBSTANCE or PREPARATION

PRODUCT IDENTIFIER/TRADE NAME (AS LABELED)	**PECORA P-801 VOC Primer**
OTHER MEANS OF IDENTIFICATION	None
RECOMMENDED PRODUCT USE:	Polyurethane Primer
RESTRICTIONS ON USE:	Other than recommended use

1.2 U.S. COMPANY/UNDERTAKING IDENTIFICATION:

U.S. SUPPLIER/MANUFACTURER'S NAME:	**Pecora Corporation**
ADDRESS:	165 Wambold Road, Harleysville, PA 19438
EMERGENCY PHONE:	800-424-9300 (CHEMTREC, 24-hours)
BUSINESS PHONE:	215-723-6051 (Mon–Fri, 8 AM–5 PM ET)
PREPARATION DATE:	December 9, 2020
REVISION DATE:	May 25, 2023

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 material, as well as those of potential users of this product in industrial/occupational settings.

2. HAZARD IDENTIFICATION

2.1 GLOBAL HARMONIZATION LABELING AND CLASSIFICATION: Classified in accordance with Global Harmonization Standard under U.S. OSHA Hazard Communication Standard, Canadian WHMIS HPR-GHS 2015.

2.1.1 Classification:

Flammable Liquid Category 3, Carcinogenicity Category 2, Skin Irritation Category 2; Skin Sensitization Category 1B, Respiratory Sensitization Category 1, Eye Corrosion-Irritation Category 2A; Specific Target Organ Toxicity (Inhalation-Respiratory Irritation) Single Exposure Category 3; Specific Target Organ Toxicity (Inhalation-Respiratory Damage) Repeated Exposure Category 2, Aquatic Acute Toxicity Category 2, Aquatic Chronic Toxicity Category 2

2.1.2 Signal Word: Danger

2.1.3 Hazard Statements:

H226: Flammable liquid and vapor. H351: Suspected of causing cancer. H361f: Suspected of damaging fertility. H315: Causes skin irritation. H317: May cause an allergic skin reaction. H319: Causes serious eye irritation. H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled. H335: May cause respiratory irritation. H373: Causes damages to respiratory system through prolonged or repeated inhalation exposure. H411: Toxic to aquatic life with long-lasting effects.

2.1.4 Hazards Not Otherwise Classified (HNOC): Possible adverse effects on the auditory system.

2.1.5 Physical Hazards Not Otherwise Classified (PHNOC): Static accumulating in a combustible liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor. May cause flash fire or explosion. Contact with water may cause a hazardous exothermic reaction.

2.1.6 Precautionary Statements:

2.1.6.1 Prevention:

P210: Keep away from heat, sparks, open flames, hot surfaces. — No smoking. P203: Obtain, read and follow all safety instructions before use. P240: Ground and bond container and receiving equipment. P241: Use explosion-proof electrical, ventilating and lighting equipment. P242: Use only non-sparking tools. P243: Take precautionary measures against static discharge. P260: Do NOT breathe mists, sprays, fume. P264 + P265: Wash hands and other contamination areas thoroughly after handling. Do not touch eyes. 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. P273: Avoid release to the environment. P280: Wear protective gloves, clothing, eye protection and face protection. P284: Wear respiratory protection.

2.6.1.2 Response:

P370 + P378: In case of fire: Use materials appropriate for surrounding fire for extinction. Do not use water unless in flooding quantities. P318: If exposed or concerned, get medical advice. P303 + P361 + P353: IF ON SKIN (or hair): Remove or take off immediately all contaminated clothing. Rinse skin with water or instant-acting shower. P333 + P317: If skin irritation or rash occurs, get medical attention. P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P317: If eye irritation persists: get medical help. P304 + P340: If inhaled, remove victim to fresh air and keep at rest in a position comfortable for breathing. P342 + P316: If experiencing respiratory symptoms: Get emergency medical help immediately. P363: Wash contaminated clothing before reuse. P321: Specific treatment (remove from exposure and treat symptoms). P391: Collect spillage.

2.6.1.3 Storage:

P403 + P233 + P235: Store in a well-ventilated place. Keep container tightly closed. Keep cool. P405: Store locked up.

2.6.1.4 Disposal:

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

2.1.7 Hazard Symbols/Pictograms: GHS02, GHS07, GHS08, GHS09

2. HAZARD IDENTIFICATION (Continued)

2.2 Percent of Unknown Acute Toxicity: This product is a mixture; the following are percentages of unknown acute toxicity, by route of exposure. Oral: 7% Dermal 29%, and Inhalation: 7%.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Chemical Name	CAS #	W/W%	LABEL ELEMENTS GHS Classification under U.S. OSHA Hazard Communication Standard & Canadian WHMIS (HPR-GHS) 2015 Hazard Statement Codes
Benzene, 1-chloro-4-fluoromethyl	98-56-6	20-40	Notified Classification: Flammable Liquid Cat. 3, Carcinogenic Cat. 2, Reproductive Toxicity Cat. 2, Skin Irritation Cat. 2, Skin Sensitization Cat. 1B, Eye Corrosion-Irritation Cat. 2A, Specific Target Organ Toxicity (Inhalation-Respiratory Irritation) Single Exposure Cat. 3, Aquatic Chronic Toxicity Category 2 Hazard Statements: H226: Flammable liquid and vapor. H351: Suspected of causing cancer. H361f: Suspected of damaging fertility. H315:Causes skin irritation. H317: May cause an allergic skin reaction. H319: Causes serious eye irritation. H335: May cause respiratory irritation. H411: Toxic to aquatic life with long-lasting effects.
Polyether Polyol		20-35	Classification: Not Classified
Proprietary Vegetable Oil		20-30	Classification: Not Classified.
Solvent Naphtha (Petroleum) Heavy Aromatic	64742-95-4	5-10	Harmonized Classification: Aspiration Hazard Cat. 1 Notified Classification: Flammable Liquid Cat. 3, Germ Cell Mutagen Cat. 1B (see notes in Section 11-Mutagenicity), Reproductive Toxicity Cat. 2 (see notes in Section 11-Reproductive Toxicity), Carcinogenicity Cat. 2, Acute Oral Toxicity Cat. 4, Acute Dermal Toxicity Cat.4, Skin Irritation Cat. 2, Skin Sensitization Cat. 1B (see notes in Section 11-Skin Sensitization Effects), Eye Corrosion-Irritation Cat. 2A, Specific Target Organ Toxicity (Inhalation-Respiratory Irritation/Narcotic Effects) Single Exposure Cat. 3, Aquatic Acute Toxicity Cat. 1, Aquatic Chronic Toxicity Cat. 1 Hazard Statements: : H226: Flammable liquid and vapor. H304: May be fatal if swallowed and enters airways. H340: May cause genetic effects (see notes in Section 11-Mutagenicity). H351: Suspected of causing cancer.H361fd: Suspected of damaging fertility. Suspected of damaging the unborn child (see notes in Section 11-Reproductive Toxicity). H302 + H312: Harmful if swallowed or in contact with skin. H315:Causes skin irritation. H319: Causes serious eye irritation. H317: May cause an allergic skin reaction (see notes in Section 11-Skin Sensitization Effects). H335: May cause respiratory irritation. H336: May cause drowsiness or dizziness. H400: Very toxic to aquatic life. H410: Very toxic to aquatic life with long-lasting effects.
Proprietary Resin		4-8	Classification: Not Classified
2,4-Diphenylmethane Diisocyanate	5873-54-1	2-6	Harmonized Classification: Carcinogenic Cat. 2, Acute Inhalation Toxicity Cat. 4, Skin Irritation Cat. 2, Skin Sensitization Cat. 1B, Eye Corrosion-Irritation Cat. 2A, Respiratory Sensitization Cat. 1, Specific Target Organ Toxicity (Inhalation-Respiratory Irritation) Single Exposure Cat. 3, Specific Target Organ Toxicity (Inhalation-Respiratory System Damage) Repeated Exposure Cat. 2 Hazard Statements: H351: Suspected of causing cancer. H315:Causes skin irritation. H319: Causes serious eye irritation. H317: May cause an allergic skin reaction. H332: Harmful if inhaled. H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled. H335: May cause respiratory irritation. H373: May cause damage to the respiratory system through prolonged or repeated exposure by inhalation.
4,4'-Diphenylmethane Diisocyanate	101-68-8	1-5	Harmonized Classification: Carcinogenic Cat. 2, Acute Inhalation Toxicity Cat. 4, Skin Irritation Cat. 2, Skin Sensitization Cat. 1B, Eye Corrosion-Irritation Cat. 2A, Respiratory Sensitization Cat. 1, Specific Target Organ Toxicity (Inhalation-Respiratory Irritation) Single Exposure Cat. 3, Specific Target Organ Toxicity (Inhalation-Respiratory System Damage) Repeated Exposure Cat. 2 Hazard Statements: H351: Suspected of causing cancer. H315:Causes skin irritation. H319: Causes serious eye irritation. H317: May cause an allergic skin reaction. H332: Harmful if inhaled. H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled. H335: May cause respiratory irritation. H373: May cause damage to the respiratory system through prolonged or repeated exposure by inhalation.
Proprietary Polymer		0.5-0.9	Notified Classification: Eye Damage/Corrosion Cat. 1 Aquatic Acute Toxicity Cat. 3 Hazard Statements: H318: Causes serious eye damage. H412: Harmful to aquatic life with long-lasting effects.
1,2,3-Trimethylbezene	526-73-8	0.1-0.5	Notified Classification: Flammable Liquid Cat. 3, Aspiration Hazard Cat. 1, Skin Irritation Cat. 2, Specific Target Organ Toxicity (Inhalation-Respiratory Irritation) Single Exposure Cat. 3 Hazard Statements: : H226: Flammable liquid and vapor. H304: May be fatal if swallowed and enters airways. H315:Causes skin irritation. H319: Causes serious eye irritation. H335: May cause respiratory irritation.
Naphthalene	91-20-3	0.1-0.5	Harmonized Classification: Carcinogenic Cat. 2, Acute Oral Toxicity Cat. 4, Aquatic Acute Toxicity Cat. 1, Aquatic Chronic Toxicity Cat. 1 Notified Classification: Flammable Solid Cat. 1 Hazard Statements: H228: Flammable solid. H351: Suspected of causing cancer. H302: Harmful if swallowed. H400: Very toxic to aquatic life. H410: Very toxic to aquatic life with long-lasting effects.
2.2'-Diphenylmethane Diisocyanate	2536-05-2	0.1-0.5	Harmonized Classification: Carcinogenic Cat. 2, Acute Inhalation Toxicity Cat. 4, Skin Irritation Cat. 2, Skin Sensitization Cat. 1B, Eye Corrosion-Irritation Cat. 2A, Respiratory Sensitization Cat. 1, Specific Target Organ Toxicity (Inhalation-Respiratory Irritation) Single Exposure Cat. 3, Specific Target Organ Toxicity (Inhalation-Respiratory System Damage) Repeated Exposure Cat. 2 Hazard Statements: H351: Suspected of causing cancer. H315:Causes skin irritation. H319: Causes serious eye irritation. H317: May cause an allergic skin reaction. H332: Harmful if inhaled. H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled. H335: May cause respiratory irritation. H373: May cause damage to the respiratory system through prolonged or repeated exposure by inhalation.

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

3. COMPOSITION AND INFORMATION ON INGREDIENTS (Continued)

Chemical Name	CAS #	W/W%	LABEL ELEMENTS GHS Classification under U.S. OSHA Hazard Communication Standard & Canadian WHMIS (HPR-GHS) 2015 Hazard Statement Codes
1,2,4-Trimethyl-benzene	95-63-6	0.1-0.3	HARMONIZED CLASSIFICATION - ANNEX VI OF REGULATION (EC) NO 1272/2008 (CLP REGULATION) Classification: Flammable Liquid Cat. 3, Acute Inhalation Hazard Cat. 4, Skin Irritation Cat. 2, Eye Corrosion/Irritation Cat. 2A, Specific Target Organ Toxicity (Inhalation-Respiratory Irritation) Single Exposure Cat. 3, Aquatic Chronic Toxicity Cat. 2 Hazard Statements: H226: Flammable liquid and vapor. H332: Harmful if inhaled. . H315: Causes skin irritation. H319: Causes serious eye irritation. H335: May cause respiratory irritation. H411: Toxic to aquatic life with long-lasting effects. NOTIFIED CLASSIFICATION UNDER EU ECHA Classification: Aspiration Hazard Cat. 1 Hazard Statements: H304: May be fatal if swallowed and enters airways.
Other components not classified, with no exposure limits and/or in less than 0.1%		Balance	Classification: Not Applicable

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

4. FIRST-AID MEASURES

4.1 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.

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

4.2.1 Inhalation: If aerosols of this material are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions.

4.2.1.1 GHS Precautionary Statements for Inhalation Exposure: P304 + P340: If inhaled, remove victim to fresh air and keep at rest in a position comfortable for breathing P342 + P316: If experiencing respiratory symptoms: Get emergency medical help immediately. P319: Get medical help if you feel unwell.

4.2.2 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.

4.2.2.1 GHS Precautionary Statements for Skin Exposure: P303 + P361 + P353: IF ON SKIN (or hair): Remove or take off immediately all contaminated clothing. Rinse skin with water or instant-acting shower. P333 + P317: If skin irritation or rash occurs, get medical attention. P363: Wash contaminated clothing before reuse.

4.2.3 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.

4.2.3.1 GHS Precautionary Statements for Eye Exposure: P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P317: If eye irritation persists: get medical help.

4.2.4 Ingestion: If this material is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. DO NOT INDUCE VOMITING, unless directly by medical personnel. Have victim rinse mouth with water or give several cupfuls of water, if 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.

4.2.4.1 GHS Precautionary Statements for Ingestion Exposure: None applicable.

4.3 MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Acute or chronic respiratory, skin and auditory nerve conditions may be aggravated by exposure to this product.

4.4 IMPORTANT SYMPTOMS AND EFFECTS, WHETHER ACUTE OR DELAYED: See Sections 2 (Hazard Identification) and 11 (Toxicological Information) for more detailed information.

4.4.1 Acute:

Symptoms/Effects/General: May be harmful if swallowed, or if inhaled. Irritant to skin, eyes respiratory system. Causes serious eye irritation. All potential effects are dependent on concentration and duration of exposure.

Symptoms/Effects After Inhalation: EXPOSURE TO HIGH CONCENTRATIONS: Coughing, dry or sore throat, dizziness, headache.

Symptoms/Effects After Skin Contact: Dermatitis, dry skin.

Symptoms/Effects After Eye Contact: Moderate to severe irritation of eye tissue.

Symptoms/Effects After Ingestion: AFTER ABSORPTION OF LARGE QUANTITIES: Central nervous system depression. Headache. Nausea. Vomiting. Abdominal pain. Disturbances of consciousness.

4.4.2 Chronic:

Symptoms/Effects After Skin Contact: Dermatitis (dry, red skin, itching, cracking of the skin, skin rash/inflammation). May cause skin sensitization.

Symptoms/Effects After Accidental Injection/Ingestion/Eye Contact: None known.

Symptoms/Effects After Inhalation: May cause damage to the auditory system and organs and/or respiratory system. May cause respiratory sensitization.

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

5. FIRE-FIGHTING MEASURES

5.1 FLASH POINT: 57.2°C (135°F)

5.2 AUTOIGNITION: Not tested.

5.3 FLAMMABLE LIMITS IN AIR: Not tested.

5. FIRE-FIGHTING MEASURES (Continued)

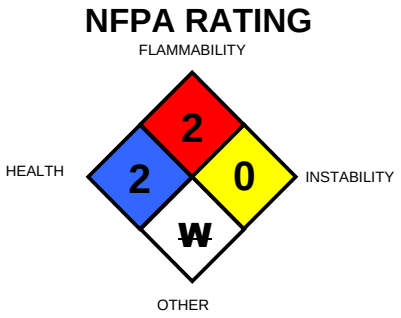
5.4 FIRE EXTINGUISHING MEDIA: Use materials appropriate for surrounding materials. ABC extinguishers, carbon dioxide, foam, dry chemical and flooding quantities of water.

5.5 UNSUITABLE EXTINGUISHING MEDIA: Water should be used in flooding quantities only due to potential for hazardous polymerization.

5.6 SPECIAL HAZARDS ARISING FROM THE PRODUCT: Combustible liquid and vapor. Not sensitive to mechanical impact under normal conditions. Vapors may form explosive mixtures in air. Vapors can travel long distances and flashback to ignition source. Closed containers may develop pressure and rupture violently in event of fire or if contaminated with water. Reactions with water may be highly exothermic.

5.6.1 Explosion Sensitivity to Mechanical Impact: Not Sensitive.

5.6.2 Explosion Sensitivity to Static Discharge: The vapors of this product may be ignited by static electrical energy.



Hazard Scale: **0** = Minimal 1 = Slight 2 = Moderate **3** = Serious 4 = Severe

5.7 SPECIAL PROTECTIVE ACTIONS FOR FIRE-FIGHTERS: Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Move containers from fire area if it can be done without risk to personnel. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

5.7.1 GHS Precautionary Statements for Fire-Fighters: P370 + P378: In case of fire: Use materials appropriate for surrounding fire for extinction. Do not use water unless in flooding quantities.

6. ACCIDENTAL RELEASE MEASURES

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

6.2 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.

6.2.1 Small Spills: For releases of 1 drum or less, Level D Protective Equipment (gloves, chemical resistant apron, boots, and eye protection) should be worn.

6.2.2 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.**

6.3 METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP:

6.3.1 All Spills: Access to the spill area should be restricted. Spread should be limited by gently covering the spill with polypads. Absorb spilled liquid with clay, sand, polypads, or other suitable inert absorbent materials. Due to reactivity of isocyanate components, use of a stabilizer for isocyanates should be considered. All contaminated absorbents and other materials should be placed in an appropriate container and seal. Do not mix with wastes from other materials. Dispose of in accordance with applicable Federal, State, and local procedures (see Section 13, Disposal Considerations). Dispose of recovered material and report spill per regulatory requirements. Remove all residue before decontamination of spill area. Clean spill area with soap and copious amounts of water. Monitor area for combustible vapor levels and confirm levels are below exposure limits given in Section 8 (Exposure Controls-Personal Protection), if applicable, and that levels are below applicable LELs (see Section 5 – Fire Fighting Measures) before non-response personnel are allowed into the spill area. Purge equipment with inert gas prior to reuse.

6.4 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.

6.4.1 GHS Precautionary Statements for Environmental Precaution: P391: Collect spillage.

6.5 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.

6.6 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

7.1 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, vapors or mist. Do not taste or swallow. Use only with adequate ventilation. Wash hands after handling this product. Contaminated clothing needs to be laundered prior to reuse. Keep away from heat and flame. Avoid contact with water. In the event of a spill, follow practices indicated in Section 6: ACCIDENTAL RELEASE MEASURES. Keeping work areas clean is essential. Use work surfaces that can be easily decontaminated.

7. HANDLING and STORAGE (Continued)

7.1 PRECAUTIONS FOR SAFE HANDLING (continued): Maintain good personal hygiene.

7.1.1 GHS Statements for Safe Handling: P203: Obtain, read and follow all safety instructions before use. P318: If exposed or concerned, get medical advice. P240: Ground and bond container and receiving equipment. P241: Use explosion-proof electrical, ventilating and lighting equipment. P242: Use only non-sparking tools. P243: Take precautionary measures against static discharge. P260: Do NOT breathe mists, sprays, fume. P264 + P265: Wash hands and other contamination areas thoroughly after handling. Do not touch eyes. 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. P273: Avoid release to the environment. P280: Wear protective gloves, clothing, eye protection and face protection. P284: Wear respiratory protection.

7.2 CONDITIONS FOR SAFE STORAGE AND ANY INCOMPATIBILITIES: 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 an 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. Do not burn, cut, torch, weld, braise, solder, or expose containers to heat or flames. Empty drums may not be used for other purposes. Store container below 27°C (80°F) to avoid possible reactions related to heat and overpressure of containers.

7.2.1 GHS Statements for Safe Handling: P403 + P233 + P235: Store in a well-ventilated place. Keep container tightly closed. Keep cool. P405: Store locked up.

7.2.2 Incompatibilities: Strong oxidizers, strong acids and strong bases. Refer to Section 10 (Stability and Reactivity) for more complete information.

7.3 PRODUCT USE: This product is used as a polyurethane coating. Follow all industry standards for use of this product.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

8.1 CONTROL PARAMETERS, INCLUDING OCCUPATIONAL EXPOSURE GUIDELINES AND THE SOURCE OF THOSE VALUES:

8.1.2 U.S. Occupational/Workplace Exposure Limits/Guidelines: Only components with exposure limits are referenced.

Chemical Name	CAS #	Guideline	Value
Proprietary Vegetable Oil (limits given are for vegetable oils, mist)	8001-79-1	OSHA PEL TWA NIOSH REL TWA	15 mg/m^3 (total dust); 5 mg/m^3 (respirable fraction) 10 mg/m^3 (total dust); 5 mg/m^3 (respirable fraction)
4,4'-Methylenediphenyl Diisocyanate	101-68-8	ACGIH TLV TWA OSHA PEL STEL NIOSH REL TWA NIOSH REL STEL NIOSH IDLH DFG MAK TWA DFG MAK PEAK/CEIL(C) DFG MAK PREGNANCY CLASS	0.005 ppm 0.02 ppm (ceiling) 0.005 ppm 0.02 ppm (ceiling) 10 minutes 75 ppm 0.005 ppm Inhalation fraction (skin); Danger of sensitization of skin and airways. 1●MAK 15 min average value, 1-hr interval, 4 per shift. Danger of sensitization of skin and airways. 0.1 (ceiling) C
Naphthalene	91-20-3	ACGIH TLV TWA OSHA PEL STEL NIOSH REL TWA NIOSH REL STEL NIOSH IDLH DFG MAKs DFG MAK PREGNANCY CLASS	10 ppm (skin) 10 ppm 10 ppm 15 ppm 250 ppm Skin B
Polyether Polyol (as a polypropylene glycol)	25322-69-4	AIHA WEEL TWA	10 mg/m^3 (aersol only)
Solvent Naphtha (Petroleum) Heavy Aromatic (limits are for petroleum distillates naphtha)	64742-95-4	OSHA PEL TWA NIOSH REL TWA NIOSH REL STEL NIOSH IDLH	500 ppm 350 mg/m^3 1800 mg/m^3 15 minutes 1100 PPM (10% of LEL)
1,2,4-Trimethylbenzene 1,2,3-Trimethylbenzene	95-63-6 526-73-6	ACGIH TLV TWA NIOSH REL TWA AIHA WEEL TWA	10 ppm (mixed isomers) 10 ppm 1 ppm

See Section 16 for Definitions of Terms Used.

8.2 BIOLOGICAL MONITORING AND THE SOURCE OF THOSE VALUES:

8.2.1 ACGIH Biological Exposure Indices (BEIs)8.1.3 Biological Exposure Indices (BEIs): Currently, the following BEI's have been established for components.

CHEMICAL: DETERMINANT	SAMPLING TIME	BEI
Naphthalene • 1-Naphthol + 2-Naphthol	• End of Shift	-----

8. EXPOSURE CONTROLS - PERSONAL PROTECTION (Continued)

8.3 ENGINEERING CONTROLS:

8.3.1 Ventilation and Engineering Controls: Use with adequate, explosion proof ventilation to ensure exposure levels are maintained below the limits provided further in this section.

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

8.2 PERSONAL PROTECTIVE EQUIPMENT (continued):

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

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

8.2.3 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.

8.2.4 Respiratory Protection: If mists or sprays from this product are created during use, use appropriate respiratory protection. If necessary, use only respiratory protection authorized in appropriate regulations. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under appropriate regulations. The following are NIOSH respiratory protective equipment guidelines for a main isocyanate component, which may present an inhalation hazard are presented for additional assistance in respiratory protective equipment selection.

4,4-Diphenylmethane Diisocyanate

Concentration	Respiratory Protection
Up to 0.5 mg/m^3:	Any Supplied-Air Respirator (SAR).
Up to 1.25 mg/m^3:	Any SAR operated in a continuous-flow mode.
Up to 2.5 mg/m^3:	Any Self-Contained Breathing Apparatus with a full facepiece, or any SAR with a full facepiece.
Up to 75 mg/m^3:	Any SAR that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.
Emergency or Planned Entry into Unknown Concentrations or IDLH Conditions:	Any SCBA that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode, 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 having a high-efficiency particulate filter, or any appropriate escape-type, SCBA.

9. PHYSICAL and CHEMICAL PROPERTIES

9.1 FORM: Somewhat viscous liquid.
9.2 COLOR: Amber-colored.
9.3 MOLECULAR WEIGHT: Mixture.
9.4 MOLECULAR FORMULA: Mixture.
9.5 ODOR: Characteristic of isocyanates.
9.6 ODOR THRESHOLD: Not determined.
9.7 BOILING POINT: Not available.
9.8 FREEZING/MELTING POINT: Not available.
9.9 RELATIVE DENSITY/SPECIFIC GRAVITY (water = 1): 1.12
9.10 VAPOR DENSITY: (air = 1): > 1
9.11 VAPOR PRESSURE: Not available.
9.12 pH: Not available.
9.13 SOLUBILITY IN WATER: Not available.
9.14 OTHER SOLUBILITIES: Not known.
9.15 EVAPORATION RATE (nBuAc = 1): Not available.
9.16 VOLATILE ORGANIC COMPOUNDS (VOC): < 100 g/L
9.17 FLAMMABILITY: Flammable liquid and vapor.
9.18 FLASH POINT: 57.2°C (135°F)
9.19 AUTOIGNITION TEMPERATURE: Not determined.
9.20 FLAMMABLE LIMITS IN AIR: Not tested.
9.21 PERCENT VOLATILE BY VOLUME: Not determined.
9.22 COEFFICIENT WATER/OIL DISTRIBUTION: Not available.
9.23 VISCOSITY: Not available.
9.24 HOW TO DETECT THIS SUBSTANCE (WARNING PROPERTIES): The odor of this product may act as warning properties in the event of an accidental release.

10. STABILITY and REACTIVITY

10.1 REACTIVITY: Due to diisocyanate components this product may undergo exothermic reactions in contact with incompatible materials and/or water. Due to the main component, Benezne,1-chloro-4-trifluoromethyl)-, this product may have a strongly exothermic reaction with sodium dimethyl sulfinate.

10.2 CHEMICAL STABILITY: Stable under normal circumstances of use and handling.

10.3 POSSIBILITY OF HAZARDOUS REACTIONS/POLYMERIZATION: Due to the multiple diisocyanate components, this product may undergo uncontrolled exothermic polymerization upon contact with incompatible materials (see below), or if heated above 204 C(399 F) The resulting pressure build-up could rupture closed containers. The presence of water or moisture can produce a sufficient amount of carbon dioxide to over-pressurize and rupture containers.

10.4 CONDITIONS TO AVOID: Avoid contact with incompatible chemicals and exposure to ignition sources, prolonged heating or extreme temperatures.

10.5 INCOMPATIBLE MATERIALS: This product is not compatible with strong bases, such as triethylamine and sodium hydroxide, trialkyl phosphines, potassium acetate, sodium dimethyl sulfinate and many metal compounds soluble in organic media.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS:

10.6.1 Combustion: Thermal decomposition of this product can generate carbon, hydrochloride, hydrogen fluoride, hydrogen cyanide, isocyanates and formaldehyde.

10.6.2 Hydrolysis: Water reacts with isocyanates at room temperature to yield ureas and large quantities of carbon dioxide. Reactions with water can produce heat.

11. TOXICOLOGICAL INFORMATION

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

11.1.1 Contact with Skin: Causes skin irritation. Depending on the duration of skin contact, skin exposure can cause reddening, discomfort or irritation. May cause an allergic skin reaction. Several components are suspect skin sensitizers. Refer to 'Sensitization to the Product' further in this section for additional information.

11.1.1 Contact with Eyes: Causes serious eye irritation. Brief contact with the liquid or vapors from this product and the eyes can cause irritation, reddening and watering. Direct contact with the liquid may cause more severe irritation or damage to eye tissue.

11.1.2 Skin Absorption: Prolonged skin contact may cause adverse systemic effects.

11.1.3 Ingestion: May be harmful if swallowed. If swallowed, irritation of the mouth, throat, and other tissues of the gastro-intestinal system can occur, as well as cause nausea, vomiting, and diarrhea. Symptoms can include dizziness, vomiting and incoordination. Ingestion of large amounts may cause systemic toxicity. May be fatal if swallowed and enters airways. Aspiration into the lungs after ingestion can pose a serious hazard of chemical and pulmonary edema. Ingestion of large amount may be fatal.

11.1.4 Inhalation: May cause respiratory irritation. Inhalation of vapors, mists, or sprays of this product can moderately to can irritate the tissues of the nose, mouth, throat, and upper respiratory system. Symptoms of exposure may include coughing, sneezing, and difficulty breathing. Inhalation can cause systemic effects, including dizziness, incoordination, nausea and vomiting. High aerosol concentrations could cause inflammation of the lungs (chemical pneumonitis), chemical bronchitis, severe coughing spasms and accumulation of fluid in the lungs (pulmonary edema), which could prove fatal. Symptoms of pulmonary edema may not appear until several hours after exposure and are aggravated by physical exertion.

The Diisocyanate components are known human respiratory sensitizers; subsequent exposure to very small amounts of the product may cause allergic reactions in susceptible individuals. Symptoms may include wheezing, coughing, and difficulty breathing. Cross-sensitization with other isocyanates can occur.

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

11.1.6: Other Effects: In workplace studies involving solvent mixtures containing trimethylbenzene isomers, there was a significant increase in inner ear disorders in comparison with unexposed controls.

11.2 DELAYED and IMMEDIATE EFFECTS and CHRONIC EFFECTS FROM SHORT-TERM and LONG-TERM EXPOSURE:

11.2.1 Short-Term: This product may be harmful by inhalation or ingestion. Eye contact may cause severe irritation. Skin contact and inhalation may be irritating.

11.2.2 Long-Term: Prolonged or chronic skin contact may cause dermatitis. May cause skin and/or respiratory sensitization. Inhalation may cause adverse effects on the auditory s and respiratory systems. Potential carcinogenic effects from chronic skin exposure. Potential reproductive and mutagenic effects

11.3 TARGET ORGANS:

11.3.1 Short Term: Skin, eyes, respiratory system.

11.3.2 Long Term: Skin, respiratory system, auditory system/organs, reproductive system.

11.4 OVERALL ACUTE TOXICITY ESTIMATES (ATE) FOR PRODUCT:

11.4.1 Oral ATE: > 5000 mg/kg (7% unknown)

11.4.2 Dermal ATE: > 3500 mg/kg (29% unknown)

11.4.3 Inhalation Vapor ATE: > 37 mg/L (7% unknown)

11.5 TOXICITY DATA: The following toxicology data are available for components greater than 1% in concentration. Due to the large amount of data, only human data, LD50 Oral-Rat or Mouse, LD50 Skin-Rat or Mouse, LC50 Inhalation-Rat or Mouse and skin irritation data are provided in this SDS. Contact Pecora for more information.

Benzene-1-Chloro-4-Fluoromethyl:
LD_{50} (Oral-Rat) 5546 mg/kg
LD_{50} (Skin-Rabbit) 3300 mg/kg
LC_{50} (Inhalation-Rat) 4 hours: 32.02 mg/L

Proprietary Vegetable Oil:
TDLo (Oral-Human) 140 mg/kg: Behavioral: hallucinations, distorted perceptions; Gastrointestinal: nausea or vomiting; Kidney/Ureter/Bladder: other changes
LD_{50} (Oral-Rat) > 5000 mg/kg

2,4-Diphenylmethane Diisocyanate:
LD_{50} (Oral-Rat) > 2000 mg/kg
LD_{50} (Skin-Rabbit) > 9400 mg/kg
LC_{50} (Inhalation-Rat) 4 hours: 49.94 mg/L

4,4-Diphenylmethane Diisocyanate:
TCLo (Inhalation-Human) 130 ppb/30 minutes: Immunological Including Allergic: increased immune response; Nutritional and Gross Metabolic: body temperature increase

4,4-Diphenylmethane Diisocyanate (continued):
Standard Draize Test (Skin-Rabbit) 500 mg/24 hours
Standard Draize Test (Eyes-Rabbit) 100 mg: Moderate
LD_{50} (Oral-Rat) > 2000 mg/kg
LD_{50} (Skin Rabbit) > 10,000 mg/kg
LC_{50} (Inhalation-Rat) 4 hours: 0.178 mg/L

Polyether Polyol:
LD_{50} (Oral-Rat) > 5000 mg/kg
LD_{50} (Skin-Rabbit) > 3000 mg/kg
LC_{50} (Inhalation-Rat) 4 hours: > 800 mg/L

Solvent Naphtha (Petroleum) Heavy Aromatic:
Standard Draize Test (Skin-Rabbit) 500 µL/24 hours: Mild
LD_{50} (Oral-Rat) > 5000 mg/kg
LD_{50} (Skin-Rabbit) > 2000 mg/kg
LC_{50} (Inhalation-Rat) 4 hours: 0.590 mg/L

11.6 REPEATED DOSE TOXICITY:

Diphenylmethane Diisocyanates: As an MDI substance enters the lung, NCO groups react with biological nucleophiles at the MDI/lung fluid interface to form MDI-conjugates. Formation of these MDI-adducts depletes protective nucleophiles in the lung and results in pulmonary irritation and inflammatory cell influx. All substances of the MDI category are classified with STOT Repeated Exposure Cat 2 according to CLP. Therefore, based on the described MoA and the addressed RAAF Assessment Elements, the available data on the endpoint Repeated Dose Toxicity are considered adequate and sufficient for classification and labelling and read-across without the need for additional toxicity testing.

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

CHEMICAL	IARC	EPA	NTP	NIOSH	ACGIH	OSHA	PROP 65
Benzene-1-chloro-4-fluoromethyl	2B	No	No	No	No	No	Yes
Castor Oil (as a vegetable oil)	2B	No	No	No	A3	No	No
2,4-Diphenylmethane Diisocyanate	3	CBD, D	No	No	No	No	No
4,4'- Methylenediphenyl Diisocyanate	3	CBD, C, D	No	No	No	No	No
Naphthalene	2B	CBD, C	R	No	A3	No	Yes
1,2,3-Trimethylbenzene	No	II	No	No	No	No	No
1,2,4-Trimethylbenzene	No	II	No	No	A4	No	No

ACGIH TLV-A3: Confirmed Animal Carcinogen with Unknown Relevance to Humans. ACGIH TLV-A4: Not Classifiable as a Human Carcinogen. EPA-C-Possible Human Carcinogen. EPA-CBD-Cannot Be Determined. EPA-D: Not Classifiable as to Human Carcinogenicity. EPA-II: Inadequate Information to Assess Carcinogenic Potential. IARC-2B: Possibly Carcinogenic to Humans. IARC-3: Unclassifiable as to Carcinogenicity in Humans.

Additional Information on Carcinogenic Potential:

The Solvent Naphtha (Petroleum) Heavy Aromatic component is a considered a kerosine. Kerosines are not carcinogenic when animals are exposed via the oral or inhalation route. However, chronic skin contact with kerosines and jet fuel may lead to tumor formation as a consequence of repeated cycles of irritation, skin damage and repair (similar to OECD 451).

Justification for selection of carcinogenicity via dermal route endpoint: Result of extensive investigations into the mechanism of skin tumor formation by petroleum middle distillates. Conclusion of a non-genotoxic mechanism provoked by repeated dermal irritation.

Carcinogenicity: via dermal route (target organ): Other: skin

11.8 IRRITANCY OF PRODUCT: This product is irritating by all routes of exposure. Depending on concentration and duration of exposure, eye exposure may be severe.

11.9 SENSITIZATION TO THE PRODUCT: The Diisocyanate components are known human skin and respiratory sensitizers; subsequent exposure to very small amounts of the product may cause allergic reactions in susceptible individuals. Once a person is sensitized to, contact with even a small amount causes outbreaks of dermatitis with symptoms such as skin redness, itching, rash and swelling. This reaction can spread from the point of contact (usually the hands or arms) to other parts of the body. Contact allergic dermatitis can also occur from exposure to this product. Respiratory sensitization is also possible. People who develop respiratory sensitization can experience symptoms of bronchial asthma such as wheezing, difficult breathing, sneezing and runny or blocked nose following exposure to low airborne concentrations that have no effect on non-sensitized people. Cross-sensitization between different isocyanates may occur.

11.9.1 Skin Sensitization: The following components have skin sensitization data.

Repeated skin contact with diisocyanates 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. Cross-sensitization with other isocyanate compounds can occur.

Based on the EC^3 value calculated using the dose-response curve Benzene-1-Chloro-4-Fluoromethyl (PCBTF) was classified as a weak sensitizer in the LLNA test. The classification of Benzene-1-Chloro-4-Fluoromethyl (PCBTF) for skin sensitization can be the following: Category 1, Sub-category 1B.

The Castor Oil component is listed by the EU ECHA database as a Suspected Skin Sensitizer: The Toolbox profiler Protein binding alerts for skin sensitization by OASIS v1.3 gives an alert for skin sensitization.

11. TOXICOLOGICAL INFORMATION (Continued)

11.9 SENSITIZATION TO THE PRODUCT (continued):

11.9.1 Skin Sensitization (continued):

A reported case of potential skin sensitization from Naphthalene was investigated by patch testing with numerous substances that gave a positive reaction only for Naphthalene. When contact with Naphthalene was eliminated, the dermatitis disappeared.

The Solvent Naphtha (Petroleum) Heavy Aromatic component has an EU ECHA notified classification as a skin sensitizer; however, the database considers this compound to be a kerosine and Kerosines are not considered skin to be skin sensitizers based on animal assays for skin sensitization (such as the Magnusson-Kligman GPMT and the Buehler assays), kerosines and jet fuels did not trigger a positive response. Therefore, kerosines do not meet the criteria for classification as a dermal sensitizer under EU CLP Regulation (EC No. 1272/2008).

The trace 1,2,3-Trimethylbenzene component as a Suspected Skin Sensitizer: CAESAR skin sensitization model in VEGA (Q)SAR platform predicts that the chemical is Sensitizer (good reliability).

11.9.2 Respiratory Sensitization: Initial symptoms of respiratory reactions from diisocyanates 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 diisocyanates may develop symptoms sooner after each exposure. The number and severity of symptoms may increase. 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.

11.10 TOXICOLOGICAL SYNERGISTIC PRODUCTS: None known.

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

11.11.1 Mutagenicity:

The trace 1,2,3-Trimethylbenzene component is listed in the EU ECHA database as a Suspected Mutagen: CAESAR Mutagenicity model in VEGA (Q)SAR platform predicts that the chemical is Mutagen (EXPERIMENTAL value); KNN Mutagenicity model in VEGA (Q)SAR platform predicts that the chemical is Mutagen (EXPERIMENTAL value); mutagen according to ISSSTY.

11.11.2 Embryotoxicity/Teratogenicity:

Naphthalene studies in rats showed evidence of some fetotoxicity but no malformation was observed at doses causing significant maternal toxicity (450 mg/kg/day). In rabbits, no developmental effects were seen in one study at a dose causing mild maternal toxicity, or in another study at a dose close to those producing pronounced maternal toxicity. Overall, Naphthalene only produces fetotoxicity at maternally toxic doses in animals and does not produce developmental toxicity at maternally subtoxic doses.

11.11.3 Reproductive Toxicity:

Benzene, 1-chloro-4-(trifluoromethyl)-: Data on two sub-chronic studies on rats and mice, show adverse effects on the sexual functions of both species. In particular, sperm motility is the most affected parameter. No studies on other species have been carried out and no human data is available.

Diphenylmethane Diisocyanates: For the developmental toxicity endpoint, the fetal effects observed with 4,4'-MDI and pMDI are consistent and secondary to maternal toxicity as a consequence of respiratory irritation. Respiratory irritation, in turn, is consistent with the hypothesized MoA and direct electrophilic reactions of bio-accessible NCO groups. All substances of the MDI category share this common hypothesized MoA and since 4,4'-MDI and pMDI have the highest bio-accessible NCO content, they are considered the worst-case substance and can be used as the source for read-across to all substances of the MDI category with high confidence.

Trimethylbenzene isomers cross the placenta. No information is available on adverse effects. The trace 1,2,3-Trimethylbenzene component is listed in the EU ECHA database as Suspected Toxic for Reproduction: The Toolbox profiler DART scheme v.1.0 gives an alert for toxicity to reproduction.

The Solvent Naphtha (Petroleum) Heavy Aromatic has been given a Notified Classification in the EU ECHA database as a suspect reproductive toxin. However, based on a weight of evidence and category read-across approach, there is insufficient data to classify kerosines as toxic for reproduction under Annex VI of EU CLP Regulation (EC No. 1272/2008). This compound is considered a kerosine.

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

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

Benzene, 1-chloro-4-(trifluoromethyl)-: The Koc of this compound is estimated at approximately 2,200, using an estimated log Kow of 3.6 and a regression-derived equation. According to a classification scheme, this estimated Koc value suggests that this material is expected to have slight mobility in soil.

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

Benzene, 1-chloro-4-(trifluoromethyl)-: If released to air, a vapor pressure of 7.63 mm Hg at 25°C indicates this compound will exist solely as a vapor in the ambient atmosphere. Vapor-phase material will be degraded slowly in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 67 days. If released to soil, this material is expected to have slight mobility based upon an estimated Koc of 2,200. Volatilization from moist soil surfaces may be an important fate process based upon an estimated Henry's Law constant of 3.5X10-2 atm-cu m/mole. This compound may potentially volatilize from dry soil surfaces based upon its vapor pressure. However, adsorption to soil is expected to attenuate volatilization. 64% degradation occurred over 59 days in an anaerobic screening test, suggesting biodegradation of this material may be an important fate process in soil and water under anaerobic conditions. If released into water, this compound is expected to adsorb to suspended solids and sediment in water based upon the estimated Koc. Volatilization from water surfaces may be an important fate process based upon this compound's estimated Henry's Law constant. Estimated volatilization half-lives for a model river and model lake are 4.0 hours and 5.3 days, respectively. However, volatilization is expected to be attenuated by adsorption to suspended solids and sediment in the water column.

12. ECOLOGICAL INFORMATION (Continued)

12.3 BIO-ACCUMULATION POTENTIAL: This product has not been tested for bio-accumulation potential. The following information is for the main component, which has shown a high bio-accumulation potential.

Benzene, 1-chloro-4-(trifluoromethyl)-: An estimated BCF of 320 was calculated for this compound, using an estimated log Kow of 3.6 and a regression-derived equation. According to a classification scheme, this BCF suggests the potential for bioconcentration in aquatic organisms is high.

12.4 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 for components that are toxic to aquatic organisms.

Benzene, 1-chloro-4-(trifluoromethyl)-:
EC_{50} (*Daphnia magna* Water flea) 48 hours: 2 mg/L
EC_{50} (*Pseudokirchnerella subcapitata* green algae) 72 hours: 0.41 mg/L
LC_{50} (*Brachydanio rerio* Zebra danio) 96 hours: 3 mg/L

Solvent Naphtha (Petroleum) Heavy Aromatic:
EC_{50} (*Daphnia magna* Water flea) 48 hours: 0.076-0.47 mg/L
EC_{50} (*Desmodesmus subspicatus* green algae) 72 hours: 0.094-1.89 mg/L
LC_{50} (Fish) 96 hours: 0.058-0.84 mg/L

12.5 OTHER ADVERSE EFFECTS: This product is not expected to have any ozone depletion potential.

12.6 ENDOCRINE DISRUPTING PROPERTIES: No component has shown or is known to cause endocrine disrupting properties.

12.7 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

13.1 PREPARING WASTES FOR DISPOSAL: As supplied, this product is 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.

13.1 GHS Statements for Preparing Wastes for Disposal: P501: Dispose of contents of containers in accordance with all local, regional, national and international regulations.

13.2 U.S. EPA WASTE NUMBER: Wastes of this product should be tested to see if they meet the criteria of D001 (Ignitability characteristic).

14. TRANSPORTATION INFORMATION

14.1 U.S. DEPARTMENT OF TRANSPORTATION (DOT): Per U.S. DOT regulations, under 49 CFR 172.101.

UN Identification Number:	UN 1263
Proper Shipping Name:	Paint
Hazard Class Number and Description:	3 (Flammable)
Packing Group:	PG III
DOT Label(s) Required:	Class 3 (Flammable)
North American Emergency Response Guidebook Number (2020):	128

Marine Pollutant: No component is listed as a Marine Pollutant (as defined by 49 CFR 172.101.

14.2 TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS (TDG): Per regulations of Transport Canada.

UN Identification Number:	UN 1263
Proper Shipping Name:	Paint
Hazard Class Number and Description:	3 (Flammable)
Packing Group:	PG III
Hazard Shipping Label(s) Required:	Class 3 (Flammable)
Special Provisions:	59, 142
Excepted Quantities:	E1
Explosive Limit & Limited Quantity Index:	5 L
ERAP Index:	None
Passenger Carrying Ship Index:	None
Passenger Carrying Road Or Rail Vehicle Index:	60 L

Marine Pollutant: Components of this product meet the criteria of the Canadian TDG to be a Marine Pollutant.

14.3 INTERNATIONAL AIR TRANSPORT ASSOCIATION SHIPPING INFORMATION (IATA):

UN Identification Number:	UN 1263
Proper Shipping Name:	Paint
Hazard Class or Division:	3 (Flammable)
Hazard Label(s) Required:	Class 3 (Flammable)
Packing Group:	III
Excepted Quantities:	E1
Passenger and Cargo Aircraft Packing Instruction:	355
Passenger and Cargo Aircraft Maximum Net Quantity per Pkg.:	60 L
Passenger and Cargo Aircraft Limited Quantity Packing Instruction:	Y344
Passenger and Cargo Aircraft Limited Quantity Maximum Net Quantity per Pkg.:	10 L
Cargo Aircraft Only Packing Instruction:	366
Cargo Aircraft Only Maximum Net Quantity per Pkg.:	220 L
Special Provisions:	A3, A72, A192
ERG Code:	3L

14. TRANSPORTATION INFORMATION (Continued)

14.4 INTERNATIONAL MARITIME ORGANIZATION SHIPPING INFORMATION (IMO): Per the International Maritime Organization.

UN No.:	1263
Proper Shipping Name:	Paint
Hazard Class Number:	3 (Flammable)
Labels:	Class 3 (Flammable)
Packing Group:	III
Special Provisions:	None
Limited Quantities:	5 L
Excepted Quantities:	E1
Packing:	Instructions: P001; Provisions: PP1
IBCs:	Instructions: IBC03; Provisions: None
Tanks:	Instructions: T2; Provisions: T1, TP29
EmS:	F-E, S-E
Stowage Category:	Category A.
Segregation:	None.

Marine Pollutant: Several components of this product meet the criteria of the IMO to be Marine Pollutants.

15. REGULATORY INFORMATION

15.1 U.S. REGULATIONS:

15.1.1 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.

CHEMICAL	SECTION 302 EHS (TPQ) (40 CFR 355, Appendix A)	SECTION 304 RQ (40 CFR Table 302.4)	SECTION 313 TRI (threshold) (40 CFR 372.65)
4,4'-Methylenediphenyl Diisocyanate	No	No	Yes
Naphthalene	No	No	Yes
1,2,4-Trimethylbenzene	No	No	Yes

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

15.1.3 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.

15.1.4 U.S. CERCLA Reportable Quantity (RQ): 4,4'-Methylenediphenyl Diisocyanate: 5000 lb (2275 kg); Naphthalene: 100 lb (45.4 kg)

15.1.5 U.S. Clean Air Act (CA 112r) Threshold Quantity (TQ): Naphthalene is designated as a hazardous substance under Section 112(b) List of Hazardous Air Pollutants. The 2,4'-Diphenylmethane Diisocyanate component is listed as a Hazardous Air Pollutant (HAP generally known or suspected to cause serious health problems. The Clean Air Act, as amended in 1990, directs EPA to set standards requiring major sources to sharply reduce routine emissions of toxic pollutants. EPA is required to establish and phase in specific performance-based standards for all air emission sources that emit one or more of the listed pollutants. This chemical is included on this list.

15.1.6 U.S. Clean Water Act Requirements: Naphthalene is designated as a hazardous substance under section 311(b)(2)(A) of the Federal Water Pollution Control Act and further regulated by the Clean Water Act Amendments of 1977 and 1978. These regulations apply to discharges of these substance. This designation includes any isomers and hydrates, as well as any solutions and mixtures containing this substance. Naphthalene is on the Priority Pollutant list under 40 CFR Part 423, Appendix A.

15.1.7 California Safe Drinking Water And Toxic Enforcement Act (Proposition 65): Benzene-1-chloro-4-fluoromethyl and Naphthalene are listed on the California Proposition Lists. WARNING: This product can expose you to chemicals including Benzene-1-chloro-4-fluoromethyl and Naphthalene, 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."

15.2 CANADIAN REGULATIONS:

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

15.2.2 Canadian Environmental Protection Act (CEPA) Priorities Substances Lists: The Naphthalene component is on the CEPA Toxic Substances 1 list.

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

16. OTHER INFORMATION

16.1 HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS®)

Health	**2***
Flammability	**2**
Physical Hazard	**0**

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.

16. OTHER INFORMATION (Continued)

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

16.3 METHODS OF EVALUATING INFORMATION FOR THE PURPOSE OF CLASSIFICATION: GHS criteria were used to classify this product.

16.4 DATE OF PREPARATION: December 9, 2020; Revision: May 25, 2023

16.5 REVISION DETAILS:

December 11, 2020: Revise flash point in Sections 5 and 9. Revise product GHS classification to include Flammable Liquid Category 3, relevant Hazard Statement, Precautionary Statements and symbol in Section 2. Revise precautionary statement in appropriate sections of the SDS. Revise Section 15 shipping classification by all modalities.

May 25, 2023: Revise SDS due to change in formulation.

16.6 DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

The information presented in this Safety Data Sheet is presented in good faith based on data believed to be accurate as of the date this Safety Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR 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.

DEFINITIONS OF TERMS

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

KEY ACRONYMS:

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

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

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

LOQ: Limit of Quantitation.

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

NIC: Notice of Intended Change.

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

NIOSH RELs: NIOSH's Recommended Exposure Limits.

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

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

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

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

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

WEEL: Workplace Environmental Exposure Limits from the AIHA.

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS: This rating system was developed by the National Paint and Coating Association and has been adopted by industry to identify the degree of chemical hazards.

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

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

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS (continued):

FLAMMABILITY HAZARD (continued): **3** Serious Hazard: Liquids and solids that can be ignited under almost all ambient temperature conditions. Materials in this degree produce hazardous atmospheres with air under almost all ambient temperatures, or, unaffected by ambient temperature, are readily ignited under almost all conditions. This usually includes the following: Liquids having a flash point below 22.8°C (73°F) and having a boiling point at or above 38°C (100°F) and those liquids having a flash point at or above 22.8°C (73°F) and below 37.8°C (100°F) (e.g., OSHA Class IB and IC); Materials that on account of their physical form or environmental conditions can form explosive mixtures with air and are readily dispersed in air (e.g., dusts of combustible solids, mists or droplets of flammable liquids); and Materials that burn extremely rapidly, usually by reason of self-contained oxygen (e.g. dry nitrocellulose and many organic peroxides). **4** Severe Hazard: Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air, and that will burn readily. This usually includes the following: Flammable gases; Flammable cryogenic materials; Any liquid or gaseous material that is liquid while under pressure and has a flash point below 22.8°C (73°F) and a boiling point below 37.8°C (100°F) (e.g., OSHA Class IA); and Materials that ignite spontaneously when exposed to air at a temperature of 54.4°C (130°F) or below (pyrophoric).

PHYSICAL HAZARD: **0** *Water Reactivity*: Materials that do not react with water. *Organic Peroxides*: Materials that are normally stable, even under fire conditions and will not react with water. *Explosives*: Substances that are Non-Explosive. *Compressed Gases*: No Rating. *Pyrophorics*: No Rating. *Oxidizers*: No 0 rating. *Unstable Reactives*: Substances that will not polymerize, decompose, condense, or self-react.). **1** *Water Reactivity*: Materials that change or decompose upon exposure to moisture. *Organic Peroxides*: Materials These materials may react with water but will not release energy violently. that are normally stable but can become unstable at high temperatures and pressures. *Explosives*: Division 1.5 & 1.6 explosives. Substances that are very insensitive explosives or that do not have a mass explosion hazard. *Compressed Gases*: Pressure below OSHA definition. *Pyrophorics*: No Rating. *Oxidizers*: Packaging Group III oxidizers; Solids: any material that in either concentration tested, exhibits a mean burning time less than or equal to the mean burning time of a 3:7 potassium bromate/cellulose mixture and the criteria for Packing Group I and II are not met. Liquids: any material that exhibits a mean pressure rise time less than or equal to the pressure rise time of a 1:1 nitric acid (65%)/cellulose mixture and the criteria for Packing Group I and II are not met. *Unstable Reactives*: Substances that may decompose condense, or self-react, but only under conditions of high temperature and/or pressure and have little or no potential to cause significant heat generation or explosion hazard. Substances that readily undergo hazardous polymerization in the absence of inhibitors. **2** *Water Reactivity*: Materials that may react violently with water. *Organic Peroxides*: Materials that, in themselves, are normally unstable and will readily undergo violent chemical change but will not detonate. These materials may also react violently with water. *Explosives*: Division 1.4 explosives. Explosive substances where the explosive effects are largely confined to the package and no projection of fragments of appreciable size or range are expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package. *Compressed Gases*: Pressurized and meet OSHA definition but < 514.7 psi absolute at 21.1°C (70°F) [500 psig]. *Pyrophorics*: No Rating. *Oxidizers*: Packing Group II oxidizers. Solids: any material that, either in concentration tested, exhibits a mean burning time of less than or equal to the mean burning time of a 2:3 potassium bromate/cellulose mixture and the criteria for Packing Group I are not met. Liquids: any material that exhibits a mean pressure rise time less than or equal to the pressure rise of a 1:1 aqueous sodium chlorate solution (40%)/cellulose mixture and the criteria for Packing Group I are not met. *Reactives*: Substances that may polymerize, decompose, condense, or self-react at ambient temperature and/or pressure, but have a low potential (or low risk) for significant heat generation or explosion. Substances that readily form peroxides upon exposure to air or oxygen at room temperature. **3** *Water Reactivity*: Materials that may form explosive reactions with water. *Organic Peroxides*: Materials that are capable of detonation or explosive reaction but require a strong initiating source or must be heated under confinement before initiation; or materials that react explosively with water. *Explosives*: Division 1.3 explosives. Explosive substances that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but do not have a mass explosion hazard. *Compressed Gases*: Pressure ≥ 514.7 psi absolute at 21.1°C (70°F) [500 psig]. *Pyrophorics*: No Rating. *Oxidizers*: Packing Group I oxidizers. Solids: any material that, in either concentration tested, exhibits a mean burning time less than the mean burning time of a 3:2 potassium bromate/cellulose mixture. Liquids: any material that spontaneously ignites when mixed with cellulose in a 1:1 ratio, or which exhibits a mean pressure rise time less than the pressure rise time of a 1:1 perchloric acid (50%)/cellulose mixture. *Unstable Reactives*: Substances that may polymerize, decompose, condense, or self-react at ambient temperature and/or pressure and have a moderate potential (or moderate risk) to cause significant heat generation or explosion.

DEFINITIONS OF TERMS (Continued)

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS (continued):

PHYSICAL HAZARD (continued): **4** *Water Reactivity*: Materials that react explosively with water without requiring heat or confinement. *Organic Peroxides*: Materials that are readily capable of detonation or explosive decomposition at normal temperature and pressures. *Explosives*: Division 1.1 & 1.2 explosives. Explosive substances that have a mass explosion hazard or have a projection hazard. A mass explosion is one that affects almost the entire load instantaneously. *Compressed Gases*: No Rating. *Pyrophorics*: Add to the definition of Flammability 4. *Oxidizers*: No 4 rating. *Unstable Reactives*: Substances that may polymerize, decompose, condense, or self-react at ambient temperature and/or pressure and have a high potential (or high risk) to cause significant heat generation or explosion. *Pyrophorics*: Add to the definition of Flammability 4. *Oxidizers*: No 4 rating. *Unstable Reactives*: Substances that may polymerize, decompose, condense, or self-react at ambient temperature and/or pressure and have a high potential (or high risk) to cause significant heat generation or explosion.

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS:

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

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

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS (continued):

FLAMMABILITY HAZARD (continued): **3 (continued):** Materials that on account of their physical form or environmental conditions can form explosive mixtures with air and are readily dispersed in air. Flammable or combustible dusts with representative diameter less than 420 microns (40 mesh). Materials that burn with extreme rapidity, usually by reason of self-contained oxygen (e.g., dry nitrocellulose and many organic peroxides). Solids containing greater than 0.5% by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent. **4** Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air and will burn readily. Flammable gases. Flammable cryogenic materials. Any liquid or gaseous materials that is liquid while under pressure and has a flash point below 22.8°C (73°F) and a boiling point below 37.8°C (100°F) (e.g., Class IA liquids). Materials that ignite when exposed to air, Solids containing greater than 0.5% by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent.

INSTABILITY HAZARD: **0** Materials that in themselves are normally stable, even under fire conditions. Materials that have an instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) below 0.01 W/mL. Materials that do not exhibit an exotherm at temperatures less than or equal to 500°C (932°F) when tested by differential scanning calorimetry. **1** Materials that in themselves are normally stable, but that can become unstable at elevated temperatures and pressures. Materials that have an instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 0.01 W/mL and below 10 W/mL. **2** Materials that readily undergo violent chemical change at elevated temperatures and pressures. Materials that have an instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 10 W/mL and below 100W/mL. **3** Materials that in themselves are capable of detonation or explosive decomposition or explosive reaction, but that require a strong initiating source or that must be heated under confinement before initiation. Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 100 W/mL and below 1000 W/mL. Materials that are sensitive to thermal or mechanical shock at elevated temperatures and pressures. **4** Materials that in themselves are readily capable of detonation or explosive decomposition or explosive reaction at normal temperatures and pressures. Materials that are sensitive to localized thermal or mechanical shock at normal temperatures and pressures. Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) of 1000 W/mL or greater.

FLAMMABILITY LIMITS IN AIR:

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

TOXICOLOGICAL INFORMATION:

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

REPRODUCTIVE INFORMATION:

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

ECOLOGICAL INFORMATION:

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

REGULATORY INFORMATION:

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