MATERIAL SAFETY DATA SHEET

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

1. PRODUCT IDENTIFICATION

TRADE NAME (AS LABELED): Flammable Coating for Surfaces
CHEMICAL NAME/CLASS: Polymer/Solvent Mixture
SYNONYMS: None
PRODUCT USE: Printable Topcoat
SUPPLIER/MANUFACTURER'S NAME: ABC CHEMICAL COMPANY
ADDRESS: 1000 Technology Drive Hometown, CA 00000
EMERGENCY PHONE: 1-800-424-9300 (CHEMTREC) [24 hours]
BUSINESS PHONE: (888) 888-8888 [8 AM to 5 PM CT]
DATE OF PREPARATION: January 6, 2006

2. COMPOSITION and INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CHEMICAL NAME</th>
<th>CAS #</th>
<th>% w/w</th>
<th>EXPOSURE LIMITS IN AIR</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>ACGIH-TLV</td>
<td>OSHA-PEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TWA</td>
<td>STEL</td>
</tr>
<tr>
<td>1,3-Dioxolane</td>
<td>646-06-0</td>
<td>83.93–97.06%</td>
<td>20</td>
<td>NE</td>
</tr>
<tr>
<td>Hydrated Silica, Amorphous</td>
<td>7631-86-9</td>
<td>1.21–1.40%</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>Proprietary Aromatic Polyisocyanate</td>
<td>80-88-3</td>
<td>0.83–1.40%</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>Propylene Glycol Monomethyl Ether Acetate</td>
<td>108-65-6</td>
<td>0.13–0.28%</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>Xylene</td>
<td>1330-20-7</td>
<td>0.13–0.28%</td>
<td>100</td>
<td>150</td>
</tr>
<tr>
<td>Ethyl Benzene</td>
<td>100-41-4</td>
<td>0.04–0.05%</td>
<td>100</td>
<td>125</td>
</tr>
</tbody>
</table>

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

None of the other components contribute significant, additional, hazards at the concentrations present in this product. All pertinent hazard information has been provided in this document, per the requirements of the Federal Occupational Safety and Health Administration Standard (29 CFR 1910.1200), U.S. State equivalent Standards and Canadian Workplace Hazardous Materials Identification System Standards (CPR 4).

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

NOTE: ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-1998 format. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.
3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: This product is a water-white, viscous, liquid with a sweet, solvent odor. Inhalation overexposures to the vapors of this product can cause central nervous system effects (dizziness, drowsiness, nausea, and headaches). Severe inhalation exposures may be fatal. This product contains trace amounts of known inhalation/skin sensitizers. Components of this product are suspect carcinogens. This product is flammable and can be readily ignited under almost all conditions and can form explosive mixtures in air. Vapors of this product are heavier than air and may travel to a source of ignition and flashback to a leak or open container. If involved in a fire, this product will release smoke, acrid vapors, and toxic gases (e.g., carbon monoxide, carbon dioxide, hydrogen chloride, isocyanates, and nitrogen compounds). Due to the high level of 1,3-Dioxolane in this product, the product may be unstable under certain conditions and undergo violent chemical change. Emergency responders must wear proper personal protective equipment (and have appropriate fire protection) suitable for the situation to which they are responding.

SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE: The most significant routes of occupational overexposure are inhalation and contact with skin and eyes. The symptoms of overexposure to this product, via route of entry, are as follows:

INHALATION: Overexposure to this product by inhalation may cause dizziness, light-headedness, nausea, and breathing difficulty. In addition, inhalation overexposure to very high vapor levels from this product may cause significant central nervous system effects, pulmonary edema, unconsciousness, or death. Development of pulmonary edema may be delayed and permanent lung damage may result. The Proprietary Aromatic Polyisocyanate and other trace diisocyanate components of this product are 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.

CONTACT WITH SKIN or EYES: Vapors of this product can irritate the eyes. This product will cause immediate pain and irritation if splashed into the eyes, causing redness and tearing. Corneal clouding or damage to eye tissue may occur if eye contact is prolonged. Brief skin contact may be moderately irritating. Prolonged or repeated skin overexposures can cause dermatitis (dry, red skin). The Proprietary Aromatic Polyisocyanate and other trace diisocyanate components of this product are skin sensitizers; subsequent exposure to very small amounts of the product may cause allergic skin reactions in susceptible individuals. Symptoms may include rash, welts, and itching skin.

SKIN ABSORPTION: The 1,3-Dioxolane component of this product can be absorbed through intact skin. If a large area of the skin is involved, symptoms of exposure by this route may include central nervous system depression as described under “Inhalation”. Other harmful effects may occur due to skin absorption.

INJECTION: Injection is not anticipated to be a significant route of overexposure for this product. Injection of this product (via puncture with a contaminated object) can cause pain and irritation in addition to the wound.

INGESTION: Ingestion is not anticipated to be a significant route of overexposure for this product. If this product is swallowed, it may irritate the mouth, throat, esophagus and other tissues of the digestive system. In addition, ingestion may also cause central nervous system depression as described under “Inhalation”. If this product is aspirated into the lungs after ingestion, symptoms of chemical pneumonia and edema (accumulation of fluid in the lungs) may occur.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms.

ACUTE: Overexposures to this product can moderately irritate contaminated skin, eyes, and mucous membranes. Inhalation and ingestion overexposure can cause central nervous system depression and moderate irritation. Severe ingestion overexposure may be fatal.

CHRONIC: Prolonged or repeated skin exposures can cause dermatitis (dry, red skin). The Proprietary Aromatic Polyisocyanate and other trace diisocyanate components of this product are respiratory and skin sensitizers, this product may cause allergic skin and/or respiratory reactions in susceptible individuals. Refer to Section 11 (Toxicological Information) for additional information.

TARGET ORGANS: ACUTE: Respiratory system, skin, eyes, heart, and central nervous system. CHRONIC: Skin, respiratory system, and central nervous system.
4. FIRST-AID MEASURES

Victims of chemical exposure must be taken for medical attention if any adverse effect occurs. Rescuers should be taken for medical attention, if necessary. Take a copy of label and MSDS to health professional with victim.

SKIN EXPOSURE: If this product contaminates the skin, immediately begin decontamination with running water. Minimum flushing is for 15 minutes. Remove exposed or contaminated clothing, taking care not to contaminate eyes. Victim must seek medical attention if any adverse effect occurs.

EYE EXPOSURE: If vapors or liquid from this product enter 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 15 minutes. Victim must seek medical attention if any adverse effect occurs.

INHALATION: If vapors, mists, or sprays of this product are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Remove or cover gross contamination to avoid exposure to rescuers.

INGESTION: If this product 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.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Acute or chronic respiratory conditions, skin disorders, central nervous system conditions, and disorders involving the “Target Organs” (see Section 3, “Hazard Identification”) may be aggravated by overexposure to this product.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate overexposure. Provide oxygen if necessary. Pulmonary function tests, chest X-rays, and nervous system evaluations may prove useful.

5. FIRE-FIGHTING MEASURES

FLASH POINT: Not determined for product. The following values are available for the main component, 1,3-Dioxolane:

1,3-Dioxolane: $3^\circ$C ($35.6^\circ$F)

AUTOIGNITION TEMPERATURE: Not determined for product. The following values are available for the main component, 1,3-Dioxolane:

1,3-Dioxolane: $273^\circ$C ($525^\circ$F)

FLAMMABLE LIMITS (in air by volume, %): Not determined for product. The following values are available for the main component, 1,3-Dioxolane:

Lower (LEL): 1,3-Dioxolane: Not available.
Upper (UEL): 1,3-Dioxolane: Not available.

FIRE EXTINGUISHING MATERIALS: This product is assumed to be flammable. Exposure to high temperature may cause ignition. The following extinguishing materials are recommended for fires involving this product.

Water Spray: YES (for cooling only) Carbon Dioxide: YES
Foam: YES Dry Chemical: YES
Halon: YES Other: Any "C" Class.

UNUSUAL FIRE AND EXPLOSION HAZARDS: This product is flammable. When involved in a fire, this material may ignite and produce irritating vapors and toxic gases (e.g., carbon monoxide, carbon dioxide, hydrogen chloride, monomer compounds, and nitrogen compounds). Vapors from the product may travel to a source of ignition and flashback to a leak or open container.

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

SPECIAL FIRE-FIGHTING PROCEDURES: Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Chemical resistant clothing may be necessary. Move containers from fire area if it can be done without risk to personnel. Water spray can be used to cool fire-exposed containers. Water fog or spray can also be used by trained firefighters to disperse this product’s vapors and to protect personnel. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas. Rinse contaminated equipment thoroughly with soapy water before returning such equipment to service.

6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Trained personnel using pre-planned procedures should respond to uncontrolled releases. Proper protective equipment should be used. In case of a spill, clear the affected area and protect people. Eliminate all sources of ignition before cleanup begins. Use non-sparking tools.
6. ACCIDENTAL RELEASE MEASURES (Continued)

SPILL AND LEAK RESPONSE (continued): The atmosphere must have levels of components lower than those listed in Section 2, including 19.5 percent oxygen before personnel can be allowed into the area without Self-Contained Breathing Apparatus (SCBA). For small spills, absorb spilled liquid with polypads or other suitable absorbent materials, wearing goggles, apron, and gloves. In the event of a non- incidental release, minimum Personal Protective Equipment should be Level B: gloves, nitrile gloves over latex gloves, chemical resistant suit and boots, hard hat, and Self-Contained Breathing Apparatus. Monitor area for combustible vapor levels to determine level of combustible vapors before personnel are allowed into the spill area. Absorb spilled liquid with activated carbon, polypads, or other suitable absorbent materials. Decontaminate the area thoroughly. Prevent material from entering sewers or confined spaces. Place all spill residue in a suitable container and seal. Dispose of in accordance with applicable U.S. Federal, State, or local procedures or appropriate Canadian standards (see Section 13, Disposal Considerations).

PART III How can I prevent hazardous situations from occurring?

7. HANDLING and STORAGE

WORK AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat, drink, smoke, or apply cosmetics while handling this product. Avoid breathing vapors or mists generated by this product. Use in a well-ventilated location. Remove contaminated clothing immediately.

STORAGE AND HANDLING PRACTICES: All employees who handle this material should be trained to handle it safely. Keep away from heat, sparks, and other sources of ignition. Keep container tightly closed when not in use. Use non-sparking tools. Bond and ground containers during transfers of material. If this product is transferred into another container, use only portable containers and dispensing equipment (faucet, pump, drip can) approved for flammable liquids. 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. Store containers away from incompatible chemicals (see Section 10, Stability and Reactivity). 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. Post warning and “NO SMOKING” signs in storage and use areas as appropriate. Have appropriate extinguishing equipment in the storage area (e.g., sprinkler system, portable fire extinguishers). Inspect all incoming containers before storage to ensure containers are properly labeled and not damaged. Refer to NFPA 30, Flammable and Combustible Liquids Code for additional information on storage. Empty containers may contain residual liquid or vapors that are flammable; therefore, empty containers should be handled with care. Never perform any welding, cutting, soldering, drilling, or other hot work on an empty container or piping until all liquid, vapors, and residue have been cleared.

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain that application equipment is locked and tagged out safely if necessary. Collect all rinsates and dispose of according to applicable U.S. Federal, State, or local procedures or appropriate Canadian standards.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided in Section 2 (Composition and Information on Ingredients) if applicable. Exhaust directly to the outside, taking necessary precautions for environmental protection. Ensure eyewash/safety shower stations and appropriate fire protection are available near areas where this product is used.

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below exposure limits listed in Section 2 (Composition and Information on Ingredients) if applicable. If respiratory protection is needed, use only protection authorized in the U.S. Federal OSHA Standard (29 CFR 1910.134), applicable U.S. State regulations, or the Canadian CSA Standard Z94.4-93. 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 OSHA Respiratory Protection Standard (1910.134-1998).

EYE PROTECTION: Splash goggles or safety glasses. Use goggles or safety glasses for spill response, as stated in Section 6 (Accidental Release Measures) of this MSDS. If necessary, refer to U.S. OSHA 29 CFR 1910.133 or appropriate Canadian Standards.

HAND PROTECTION: Wear rubber or solvex gloves for routine industrial use. Use triple gloves for spill response, as stated in Section 6 (Accidental Release Measures) of this MSDS. Use triple gloves for spill response, as stated in Section 6 (Accidental Release Measures) of this MSDS. If necessary, refer to U.S. OSHA 29 CFR 1910.138 or appropriate Standards of Canada.

BODY PROTECTION: Use body protection appropriate for task. Use body protection appropriate for task (e.g., lab coat, Tyvek Suit). 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 U.S. OSHA 29 CFR 1910.136.
9. PHYSICAL and CHEMICAL PROPERTIES

The following physical property information is for the 1,3-Dioxolane component, which may be present in the greatest percentage:

- RELATIVE VAPOR DENSITY (air = 1): 2.6
- MELTING/FREEZING POINT: -95°C (-139°F)
- SOLUBILITY IN WATER: Soluble.
- VAPOR PRESSURE @ 20°C: 70 mm Hg (10.53 kPa)
- COEFFICIENT OF OIL/WATER DISTRIBUTION (PARTITION COEFFICIENT): Log Kow –0.37

The following information is on the product:

- SOLVENT DENSITY: 8.8830
- PERCENT VOC by WEIGHT: 83.4048
- PERCENT VOC by VOLUME: 85.67
- PERCENT SOLIDS by VOLUME: 14.33
- APPEARANCE, ODOR AND COLOR: This product is a water-white, possibly viscous, liquid, with a sweet, solvent odor.
- HOW TO DETECT THIS SUBSTANCE (warning properties): The odor of this product may be a warning property in event of an accidental release.

10. STABILITY and REACTIVITY

STABILITY: Stable under conditions of standard temperature and pressure. Due to the high level of 1,3-Dioxolane in this product, certain conditions (high alkaline conditions, heat) may cause the formation of highly unstable peroxides.

DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, hydrogen chloride, isocyanates, and nitrogen compounds.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: This product would be incompatible with strong oxidizers, strong acids and strong caustics, nitric acid, sulfur dichloride, sulfuric acid, uranium hexafluoride, silver perchlorate, and tetranitromethane.

HAZARDOUS POLYMERIZATION: Will not occur.

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

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

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: The specific toxicity data available for components in 1% composition or greater are as follows:

- LC50 (Inhalation-Mouse) = 10500 mg/m3/2 hours
- LD50 (Oral-Mouse) = 3200 mg/kg
- TCLo (Inhalation-Rat) = 30 mg/m3/6 hours/6 weeks
- TCLo (Inhalation-Rat) = 2 ppm/6 hours/5 days/intermittent
- Standard Draize Test (Skin-rabbit) = 500 µg
- Standard Draize Test (Skin-Guinea Pig, adult) = 2750 mg/55 days/intermittent
- DNA Damage (Intraperitoneal-Rat) = 290 mg/kg
- Standard Draize Test (Eye-Rabbit) = 100 mg

DETERMINATION OF VAPOR PRESSURE: The odor of this product may be a warning property in event of an accidental release.

APPEARANCE, ODOR AND COLOR: This product is a water-white, possibly viscous, liquid, with a sweet, solvent odor.

HOW TO DETECT THIS SUBSTANCE (warning properties): The odor of this product may be a warning property in event of an accidental release.

IRITRANTY OF PRODUCT: The liquid or vapors of this product are moderately irritating to contaminated tissue.

SENSITIZATION TO THE PRODUCT: The Proprietary Aromatic Polyisocyanate and other trace diisocyanate components of this product are respiratory and skin sensitizers; subsequent exposure to very small amounts of the product may cause allergic reactions in susceptible individuals.

- APPEARANCE, ODOR AND COLOR: This product is a water-white, possibly viscous, liquid, with a sweet, solvent odor.
- HOW TO DETECT THIS SUBSTANCE (warning properties): The odor of this product may be a warning property in event of an accidental release.

The following information is on the product:

- SOLVENT DENSITY: 8.8830
- PERCENT VOC by WEIGHT: 83.4048
- PERCENT VOC by VOLUME: 85.67
- PERCENT SOLIDS by VOLUME: 14.33
- APPEARANCE, ODOR AND COLOR: This product is a water-white, possibly viscous, liquid, with a sweet, solvent odor.
- HOW TO DETECT THIS SUBSTANCE (warning properties): The odor of this product may be a warning property in event of an accidental release.

10. STABILITY and REACTIVITY

STABILITY: Stable under conditions of standard temperature and pressure. Due to the high level of 1,3-Dioxolane in this product, certain conditions (high alkaline conditions, heat) may cause the formation of highly unstable peroxides.

DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, hydrogen chloride, isocyanates, and nitrogen compounds.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: This product would be incompatible with strong oxidizers, strong acids and strong caustics, nitric acid, sulfur dichloride, sulfuric acid, uranium hexafluoride, silver perchlorate, and tetranitromethane.

HAZARDOUS POLYMERIZATION: Will not occur.

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

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

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: The specific toxicity data available for components in 1% composition or greater are as follows:

- LC50 (Inhalation-Mouse) = 10500 mg/m3/2 hours
- LD50 (Oral-Mouse) = 3200 mg/kg
- TCLo (Inhalation-Rat) = 30 mg/m3/6 hours/6 weeks
- TCLo (Inhalation-Rat) = 2 ppm/6 hours/5 days/intermittent
- Standard Draize Test (Skin-rabbit) = 500 µg
- Standard Draize Test (Skin-Guinea Pig, adult) = 2750 mg/55 days/intermittent
- DNA Damage (Intraperitoneal-Rat) = 290 mg/kg
- Standard Draize Test (Eye-Rabbit) = 100 mg

DETERMINATION OF VAPOR PRESSURE: The odor of this product may be a warning property in event of an accidental release.

APPEARANCE, ODOR AND COLOR: This product is a water-white, possibly viscous, liquid, with a sweet, solvent odor.

HOW TO DETECT THIS SUBSTANCE (warning properties): The odor of this product may be a warning property in event of an accidental release.

IRITRANTY OF PRODUCT: The liquid or vapors of this product are moderately irritating to contaminated tissue.

SENSITIZATION TO THE PRODUCT: The Proprietary Aromatic Polyisocyanate and other trace diisocyanate components of this product are respiratory and skin sensitizers; subsequent exposure to very small amounts of the product may cause allergic reactions in susceptible individuals.
11. TOXICOLOGICAL INFORMATION (Continued)

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

Mutagenicity: This product is not expected to produce mutagenic effects in humans. Animal mutation data are available for the 1,3-Dioxolane component of this product; these data were obtained during clinical studies on specific animal tissues exposed to high doses of these compounds.

Embryotoxicity: This product is not expected to produce embryotoxic effects in humans. Animal tests involving the 1,3-Dioxolane component indicated slight fetotoxicity in the absence of maternal toxicity.

Teratogenicity: This product is not expected to cause teratogenic effects in humans.

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

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

<table>
<thead>
<tr>
<th>CHEMICAL:</th>
<th>DETERMINANT</th>
<th>SAMPLING TIME</th>
<th>BEI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Benzene</td>
<td>(Mandelic Acid in Urine)</td>
<td>End of shift at end of workweek.</td>
<td>1.5 g/g creatinine</td>
</tr>
<tr>
<td>Ethyl Benzene in End-Exhaled Air</td>
<td></td>
<td>(---)</td>
<td>(--)</td>
</tr>
<tr>
<td>Xylenes</td>
<td>Methylhippuric acids in urine</td>
<td>End of shift</td>
<td>1.5 g/g creatinine</td>
</tr>
</tbody>
</table>

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: The components of this material will be degraded over time into other organic compounds. The following environmental data are available for the components of this product:

1,3-DIOXOLANE:

Terrestrial Fate: An estimated Koc value of 15 indicates high mobility in soil and leaching may occur. Based on an experimental Henry's Law constant of 2.4X10^-5 atm-cu m/mole at 25°C, 1,3-Dioxolane may volatilize from moist soil surfaces. An experimental vapor pressure of 79 mm Hg at 20°C suggests that volatilization from dry soil surfaces may be important. No data were located which suggest biodegradation is a terrestrial fate process of 1,3-Dioxolane.

Aquatic Fate: Volatilization half-lives of 34 hours and 15 days have been estimated for a model river (one meter deep) and a model environmental pond, respectively.

An estimated Koc of 15 and BCF of 0.3 suggest that adsorption to sediment and bioconcentration in aquatic organisms may not be important. Aquatic oxidation with photochemically produced hydroxyl radicals is not likely to be an important fate process based on a half-life of 200 days in water under continuous sunlight.

Atmospheric Fate: Based on a measured vapor pressure of 79 mm Hg at 20°C, 1,3-Dioxolane is expected to exist almost entirely in the vapor phase in the ambient atmosphere. Vapor phase 1,3-Dioxolane is degraded in the ambient atmosphere by reaction with photochemically formed hydroxyl radicals; the half-life for this reaction in air can be estimated to be about 1.1 days. Based on its complete water solubility, removal from air via wet deposition is likely to occur.

Bioconcentration: Based on an experimental log Kow of -0.37 and a regression derived equation, the BCF for 1,3-Dioxolane can be estimated to be approximately 0.3. This BCF value suggests that 1,3-Dioxolane will not bioconcentrate in aquatic organisms.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: This product may be harmful or fatal to contaminated plant and animal life (especially if large quantities are released).

EFFECT OF CHEMICAL ON AQUATIC LIFE: This product can be harmful or fatal to contaminated aquatic plant and animal life. This material floats on water and can potentially form slicks, which are capable of creating oxygen-deprived waterways and severely contaminate coastal and shore life.

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate U.S. Federal, State, and local regulations or with regulations of Canada and its Provinces. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority.

U.S. EPA WASTE NUMBER: Wastes of this product should be tested to see if they meet the criteria for waste characteristic ignitability (D001); per EPA criteria to test wastes to make this determination.

14. TRANSPORTATION INFORMATION

THIS MATERIAL IS HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Flammable liquid, n.o.s. (1,3-Dioxolane)

HAZARD CLASS NUMBER and DESCRIPTION: 3 (Flammable)

UN IDENTIFICATION NUMBER: UN 1993

PACKING GROUP: II

DOT LABEL(S) REQUIRED: 3 (Flammable)

EMERGENCY RESPONSE GUIDEBOOK NUMBER: 2004: 128

MARINE POLLUTANT: No component is classified as a Marine Pollutant, per Appendix B to 49 CFR 172.101
14. TRANSPORTATION INFORMATION (Continued)

NOTE: Shipments of this product may be shipped under small quantity and limited quantity exceptions as indicated under 49 CFR §173.4 and 49 CFR §173.150, if all requirements are met.

Small Quantity Exception (49 CFR 173.4): Small quantities of Class 3 material are not subjected to other requirements of the Hazardous Materials Regulations (Subchapter C) when the maximum quantity per inner receptacle is limited to 30 mL (1 oz). Refer to 49 CFR 173.4 for specific information in packaging small quantity materials.

Limited Quantity Exceptions [49 CFR 173.150(b)]: Limited quantities for Class 3, Packing Group II materials have inner packagings not over 1.0 L net capacity each, packed in strong outer packaging.

TRANSPORT CANADA, TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: This material is considered as Dangerous Goods, per regulations of Transport Canada. The use of the above U.S. DOT information from the U.S. 49 CFR regulations is allowed for shipments that originate in the U.S. For shipments via ground vehicle or rail that originate in Canada, the following information is applicable.

PROPER SHIPPING NAME: Flammable liquid, n.o.s. (1,3-Dioxolane)
HAZARD CLASS NUMBER and DESCRIPTION: 3 (Flammable)
UN IDENTIFICATION NUMBER: UN 1993
HAZARD LABEL (S) REQUIRED: Class 3 (Flammable)
Packing Group: II
SPECIAL PROVISIONS: None
EXPLOSIVE LIMIT & LIMITED QUANTITY INDEX: 5
ERAP INDEX: None
PASSENGER CARRYING SHIP INDEX: None
PASSENGER CARRYING ROAD OR RAIL VEHICLE INDEX: 5

15. REGULATORY INFORMATION

ADDITIONAL U.S. REGULATIONS:

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

<table>
<thead>
<tr>
<th>CHEMICAL NAME</th>
<th>SARA 302 (40 CFR 355, Appendix A)</th>
<th>SARA 304 (40 CFR Table 302.4)</th>
<th>SARA 313 (40 CFR 372.65)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xylene</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for the components of this product. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ): Xylene = 100 lb (45.4 kg)

U.S. TSCA INVENTORY STATUS: The components of this product listed by CAS number in Section 2 (Information on Ingredients and Composition) are listed on the TSCA Inventory.

OTHER U.S. FEDERAL REGULATIONS: The possible components of this product have requirements under other U.S. Federal regulations as follows:

**XYLENE:** Xylene 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. Xylenes are included on this list. Xylene is designated as a hazardous substance under Section 311(b)(2)(A) of the Federal Water Pollution Control Act and further regulated by the Clean Water Act Amendments of 1977 and 1978. These regulations apply to discharges of Xylene.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): The components of this product are not on the California Proposition 65 Lists.

ANSI LABELING (Z129.1): **DANGER!** Flammable liquid and vapor. Causes skin and eye irritation. Inhalation may cause central nervous system effects. May cause allergic respiratory and/or skin reaction. Harmful or fatal if swallowed—can enter lungs and cause damage. Keep away from heat, sparks, and flame. Avoid breathing vapor or mists. Do not get in eyes or on skin or clothing. Do not taste or swallow. Use only with adequate ventilation. Keep container closed. Wash thoroughly after handling. Wear gloves and goggles. **FIRST-AID:** In case of contact, immediately flush skin or eyes for at least 15 minutes with large amounts of water. If inhaled, move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If ingested, do not induce vomiting. Get medical attention immediately. **IN CASE OF FIRE:** Use fog, foam, dry chemical, or carbon dioxide. Liquid will float and may re-ignite on the surface of water. **IN CASE OF SPILL:** Absorb spill with inert material and place in suitable container. Refer to Material Safety Data Sheet for additional information on this product.
15. REGULATORY INFORMATION (Continued)

ADDITIONAL CANADIAN REGULATIONS:
CANADIAN DSL/NDSL INVENTORY STATUS: The components of this product listed in Section 2 (Information on Ingredients and Composition) by CAS number are listed on the DSL Inventory.

OTHER CANADIAN REGULATIONS: Not applicable.

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

CANADIAN WHMIS SYMBOLS:
Class B2: Flammable Liquid
Class D2A/B: Materials Causing Other Toxic Effects (Acute and Chronic Toxic Effects, Sensitization)

16. OTHER INFORMATION

PREPARED BY:
CHEMICAL SAFETY ASSOCIATES, Inc.
PO Box 3519, La Mesa, CA 19944-3519
(800) 441-3365

DEFINITIONS OF TERMS
A large number of abbreviations and acronyms appear on a MSDS. Some of these, which are commonly used, include the following:
CAS #: This is the Chemical Abstract Service Number that uniquely identifies each constituent.

EXPOSURE LIMITS IN AIR:

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

DFG MAK Germ Cell Mutagen Categories: 1: Germ cell mutagens which have been shown to increase the mutant frequency in the progeny of exposed humans. 2: Germ cell mutagens which have been shown to increase the mutant frequency in the progeny of exposed mammals. 3A: Substances which have been shown to induce genetic damage in germ cells of human animals, or which produce mutagenic effects in somatic cells of mammals in vivo and have been shown to reach the germ cells in an active form. 4: Germ cell mutagens because of their genotoxic effects in mammalian somatic cell in vivo; in exceptional cases, substances for which there are no in vivo data, but which are clearly mutagenic in vitro and structurally related to known in vivo mutagens. 4: Not applicable (Category 4 carcinogenic substances are those with non-genotoxic mechanisms of action. By definition, germ cell mutagens are genotoxic. Therefore, a Category 4 for germ cell mutagens cannot apply. At some time in the future, it is conceivable that a Category 4 could be established for genotoxic substances with primary targets other than DNA [e.g. purely aneugenic substances if research results make this seem sensible.] 5: Germ cell mutagens, the potency of which is considered to be so low that, provided the MAK value is observed, their contribution to genetic risk for humans is expected not to be significant.

DFG MAK Pregnancy Risk Group Classification: Group A: A risk of damage to the developing embryo or fetus has been unequivocally demonstrated. Exposure of pregnant women can cause damage of the developing organism, even when MAK and BAT (Biological Tolerance Value for Working Materials) values are observed. Group B: Currently available information indicates a risk of damage to the developing embryo or fetus must be considered to be probable. Damage to the developing organism cannot be excluded when pregnant women are exposed, even when MAK and BAT values are observed. Group C: There is no reason to fear a risk of damage to the developing embryo or fetus when MAK and BAT values are observed. Group D: Classification in one of the groups A-C is not yet possible because, although the data available may indicate a trend, they are not sufficient for final evaluation.

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

LOQ: Limit of Quantitation.

MAK: Federal Republic of Germany Maximum Concentration Values in the workplace.

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 REL: NIOSH's Recommended Exposure Limits.

PEL-Permissible Exposure Limit: 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 Rules (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 there is a danger of cutaneous absorption.

STEEL 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.

EXPOSURE LIMITS IN AIR (continued):

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: 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.

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. PII or Draize = "0". Eye Irritation: Essentially non-irritating, or minimal effects which clear in < 24 hours [e.g. mechanical irritation]. Draize = "0". Oral Toxicity LD50 Rat: < 5000 mg/kg. Dermal Toxicity LD50 Rat or Rabbit: > 2000 mg/kg. Inhalation Toxicity 4-hrs LC50 Rat: < 20 mg/L. 1 (Slight Hazard): Minor reversible injury may occur, slightly or mildly irritating. Skin Irritation: Slightly or mildly irritating. Eye Irritation: Slightly or mildly irritating. Oral Toxicity LD50 Rat > 500-5000 mg/kg. Dermal Toxicity LD50 Rat or Rabbit: > 1000-2000 mg/kg. Inhalation Toxicity LC50 4-hrs Rat: > 2-20 mg/L. 2 (Moderate Hazard): Temporary or transitory injury may occur. Skin Irritation: Moderately irritating; primary irritant; sensitizer. PII or Draize > 0, < 5. Eye Irritation: Moderately to severely irritating and/or corrosive; reversible corneal opacity; corneal involvement or irritation clearing in 8-21 days. Draize > 0, < 25. Oral Toxicity LD50 Rat: > 50-500 mg/kg. Dermal Toxicity LD50 Rat or Rabbit: > 200-1000 mg/kg. Inhalation Toxicity LC50 4-hrs Rat: > 0.5-2 mg/L. 3 (Severe 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 destroy dermal tissue, cause skin burns, 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 LD50 Rat: > 1-50 mg/kg. Dermal Toxicity LD50 Rat or Rabbit: > 20-200 mg/kg. Inhalation Toxicity LC50 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. Skin Irritation: Not appropriate. Do not rate as a "4", based on skin irritation alone. Eye Irritation: Not appropriate. Do not rate as a "4", based on eye irritation alone. Oral Toxicity LD50 Rat or Rabbit: > 20 mg/kg. Inhalation Toxicity LC50 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°C [1500°F] for a period of 5 minutes. 1: (Slight Hazard) Materials that must be pre-heated before ignition can occur. Material require considerable pre-heating, under all ambient temperature conditions before ignition and combustion can occur, Including: Materials that will burn in air when exposed to a temperature of 815°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 IIIIB, or 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 in air. Including: Liquids having a flash-point at or above 37.8°C [100°F]; Solid materials in the form of coarse 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; Solids and semisolids 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 and/or in the presence of oxidizers. They may give off flammable vapors. Solids containing greater than 0.5 percent by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent. Organic peroxides). Solids containing greater than 0.5 percent by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent.

2 (Water Reactivity): Liquids that may decompose, condense, or self-react at ambient temperature and/or pressure, and have a low potential for significant heat generation or explosion. Substances that readily undergo peroxides on exposure to air or oxygen at room temperature.3 (Water Reactivity): Liquids that may form peroxides on exposure to air at 20°C (68°F) and 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 for the Transport of Dangerous Goods, Manual of Tests and Criteria, edited by the United Nations. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than one-fifth its LC50 for acute inhalation toxicity, if its LC50 is less than or equal to 3000 ppm (if the criteria for degree of hazard 4 are met). Any liquid that requires a boiling point of the liquid or vapors of 37.8°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 for the Transport of Dangerous Goods, Manual of Tests and Criteria, edited by the United Nations.

FLAMMABILITY 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. Unstable Compressed Gases: No Rating. Pyrophorics: No Rating. Oxidizers: No rating allowed. Unstable Reactives: Substances that will not polymerize, decompose, condense or self-react.

1 (Water Reactivity): Materials that may decompose, condense, or self-react upon exposure to moisture. Organic Peroxides: Materials that are normally stable, but can become unstable at high temperatures and pressures. These materials may react with water, but will not release energy. Explosives: Division 1.5 & 1.6 substances that are very insensitive to mechanical shock and when mixed with air give off flammable vapors that may be ignited by a temperature of combustible droplets of flammable liquids. Materials that burn extremely rapidly, usually by reason of self-contained oxygen (e.g. dry nitricellulose and many organic peroxides)).

4 (Severe Hazard)- Materials that rapidly or completely vaporize at atmospheric pressure and normal ambient temperature and/or are readily dispersed in air, and that do not meet the criteria for degree of hazard 3 or hazard 4. Compressed liquidsied gases with boiling points between -30°C (-22°F) and -55°C (-66.5°F) that cause frostbite and irreversible tissue damage. Materials that are respiratory irritants. Corrosive gases that cause frostbite and irreversible tissue damage. Materials that are corrosive to the eyes or cause irreversible corneal opacity. Materials that do not in the skin, eyes, or mucous membranes under emergency conditions, can be lethal:

3 (Moderate Hazard): Materials that, under emergency conditions, can cause serious or permanent injury, but do not in the skin, eyes, or mucous membranes under emergency conditions, can be lethal:

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 – Explosive (highly reactive flammable materials that will burn in air when exposed to a temperature, under emergency conditions, can be lethal:

1 (Water Reactivity): Materials 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. Substances that are readily form explosive reactions with water. Substances that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature and/or are readily dispersed in air, and that do not meet the criteria for degree of hazard 3 or hazard 4. Compressed liquidsied gases with boiling points between -30°C (-22°F) and -55°C (-66.5°F) that cause frostbite and irreversible tissue damage. Materials that are respiratory irritants. Corrosive gases that cause frostbite and irreversible tissue damage. Materials that are corrosive to the eyes or cause irreversible corneal opacity. Materials that do not in the skin, eyes, or mucous membranes under emergency conditions, can be lethal:

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. Unstable Compressed Gases: No Rating. Pyrophorics: No Rating. Oxidizers: No rating allowed. Unstable Reactives: Substances that will not polymerize, decompose, condense or self-react.

1 (Water Reactivity): Materials that may decompose, condense, or self-react at ambient temperature and/or pressure, and have a low potential for significant heat generation or explosion. Substances that readily undergo peroxides on exposure to air or oxygen at room temperature.3 (Water Reactivity): Liquids that may form peroxides on exposure to air at 21.1°C (70°F) and 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 for the Transport of Dangerous Goods, Manual of Tests and Criteria, edited by the United Nations. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than one-fifth its LC50 for acute inhalation toxicity, if its LC50 is less than or equal to 3000 ppm (if the criteria for degree of hazard 4 are met). Any liquid that requires a boiling point of the liquid or vapors of 37.8°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 for the Transport of Dangerous Goods, Manual of Tests and Criteria, edited by the United Nations.

FLAMMABILITY 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. Unstable Compressed Gases: No Rating. Pyrophorics: No Rating. Oxidizers: No rating allowed. Unstable Reactives: Substances that will not polymerize, decompose, condense or self-react.

1 (Water Reactivity): Materials that may decompose, condense, or self-react at ambient temperature and/or pressure, and have a low potential for significant heat generation or explosion. Substances that readily undergo peroxides on exposure to air or oxygen at room temperature.3 (Water Reactivity): Liquids that may form peroxides on exposure to air at 21.1°C (70°F) and 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 for the Transport of Dangerous Goods, Manual of Tests and Criteria, edited by the United Nations. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than one-fifth its LC50 for acute inhalation toxicity, if its LC50 is less than or equal to 3000 ppm (if the criteria for degree of hazard 4 are met). Any liquid that requires a boiling point of the liquid or vapors of 37.8°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 for the Transport of Dangerous Goods, Manual of Tests and Criteria, edited by the United Nations.

FLAMMABILITY 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. Unstable Compressed Gases: No Rating. Pyrophorics: No Rating. Oxidizers: No rating allowed. Unstable Reactives: Substances that will not polymerize, decompose, condense or self-react.

1 (Water Reactivity): Materials that may decompose, condense, or self-react at ambient temperature and/or pressure, and have a low potential for significant heat generation or explosion. Substances that readily undergo peroxides on exposure to air or oxygen at room temperature.3 (Water Reactivity): Liquids that may form peroxides on exposure to air at 21.1°C (70°F) and 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 for the Transport of Dangerous Goods, Manual of Tests and Criteria, edited by the United Nations. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than one-fifth its LC50 for acute inhalation toxicity, if its LC50 is less than or equal to 3000 ppm (if the criteria for degree of hazard 4 are met). Any liquid that requires a boiling point of the liquid or vapors of 37.8°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 for the Transport of Dangerous Goods, Manual of Tests and Criteria, edited by the United Nations.

FLAMMABILITY 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. Unstable Compressed Gases: No Rating. Pyrophorics: No Rating. Oxidizers: No rating allowed. Unstable Reactives: Substances that will not polymerize, decompose, condense or self-react.
DEFINITIONS OF TERMS (Continued)

TOXICOLOGICAL INFORMATION:

- Human and Animal Toxicology: Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: LD₅₀ - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; LC₅₀ - Lethal Concentration (gases) which kills 50% of the exposed animals; ppm concentration expressed in parts of material per million parts of air or water; mg/m³ concentration expressed in weight of substance per volume of air; mg/kg quantity of material, by weight, administered to a test subject, based on their body weight in kg. Other measures of toxicity include TD₅₀, the lowest dose to cause a symptom and TCL₅₀, the lowest concentration to cause a symptom; TDo, LDLo, and LDo, or TC, TC₀, LCL₀, and LC₀, the lowest dose (or concentration) to cause lethal or toxic effects. Cancer Information: The sources are: IARC - the International Agency for Research on Cancer; NTP - the National Toxicology Program, RTECS - the Registry of Toxic Effects of Chemical Substances, OSHA and CAL/OSHA. 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.

ECOLOGICAL INFORMATION:

EC is the effect concentration in water. BCF = Bioconcentration Factor, which is used to determine if a substance will concentrate in lifeforms which consume contaminated plant or animal matter. TL₅₀ = median threshold limit; Coefficient of Oil/Water Distribution is represented by log Kow or log Koc and is used to assess a substance's behavior in the environment.

REGULATORY INFORMATION:

U.S. and CANADA:

AICHH: American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits. This section explains the impact of various laws and regulations on the material. EPA is the U.S. Environmental Protection Agency. NIOSH is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. Occupational Safety and Health Administration (OSHA). WHMIS is the Canadian Workplace Hazardous Materials Information System. DOT and TC are the U.S. Department of Transportation and the Transport Canada, respectively. Superfund Amendments and Reauthorization Act (SARA); the Canadian Domestic/Non-Domestic Substances List (DSL/NDSSL); the U.S. Toxic Substance Control Act (TSCA); Marine Pollutant status according to the DOT; the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund); and various state regulations. This section also includes information on the precautionary warnings which appear on the material’s package label. OSHA - U.S. Occupational Safety and Health Administration.