1. PRODUCT IDENTIFICATION

TRADE NAME (AS LABELED): CLEARSOL CHLOR LF

CHEMICAL NAME/CLASS: Surfactant Solution

PRODUCT USE: Surfactant for Industrial Cleaning

SUPPLIER/MANUFACTURER’S NAME: CLEAR SOLUTIONS USA

ADDRESS: 1007 East Warner Road, Suite 109

Tempe, Arizona 85284

EMERGENCY PHONE: 1-800-424-9300 (CHEMTREC)

BUSINESS PHONE: 480/726-6922

DATE OF PREPARATION: June 7, 2005

2. COMPOSITION and INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CHEMICAL NAME</th>
<th>CAS #</th>
<th>% w/w</th>
<th>ACGIH-TLV</th>
<th>OSHA-PEL</th>
<th>IDLH mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proprietary Surfactant Mixture</td>
<td>&gt; 40</td>
<td></td>
<td>NE</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>&lt; 60</td>
<td>NE</td>
<td>NE</td>
<td>NE</td>
</tr>
</tbody>
</table>

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

NOTE (1): 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 light-yellow liquid, with a bland odor. The chief health hazard associated with overexposure would be the potential for slight to mild irritation of the eyes, skin, nose, and other tissues which come in contact with liquid or mists generated from this product. This product is combustible and must be moderately to severely heated for combustion to occur. Thermal decomposition of this product produces irritating vapors and toxic gases (e.g., oxides of carbon, oxides of nitrogen and oxides of sulfur). This product is not reactive. Emergency responders must wear proper personal protective equipment for the releases 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: Breathing mists or aerosols from this product may lead to mild irritation of nose, throat, or respiratory system. Symptoms of such exposure could include coughing and sneezing. Symptoms are generally alleviated when exposure ends.
3. HAZARD IDENTIFICATION (Continued)

CONTACT WITH SKIN or EYES: Contact with the solution and the eyes can lead to mild to moderate irritation. Direct eye contact with the liquid can cause stinging, tearing, and redness. Skin contact with this product may be slightly irritating, especially after prolonged exposure. Symptoms are generally alleviated when exposure ends. Repeated skin contact may lead to dermatitis (red, cracked skin).

SKIN ABSORPTION: The components of this product are not known to be absorbed through intact skin.

INGESTION: Though not anticipated to be a significant route of occupational exposure, ingestion of this product (especially in large volumes) can irritate the tissues of the mouth, esophagus, and other tissues of the digestive system. Symptoms of such overexposure can include vomiting, diarrhea, abdominal cramps and nausea.

INJECTION: Though not anticipated to be a significant route of occupational exposure, injection of this material would lead to pain, mild irritation, and swelling at the site of injection.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms. In the event of exposure, the following symptoms may be observed:

ACUTE: The most likely symptom of acute overexposure would be slight to irritation of contaminated skin, and mild to moderate eye irritation after contact with liquid or vapors of this product.

CHRONIC: Prolonged or repeated contact with the skin may lead to dermatitis.

TARGET ORGANS: ACUTE: Respiratory system, skin, eyes.

CHRONIC: Skin.

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

4. FIRST-AID MEASURES

Victims of chemical exposure must be taken for medical attention. Rescuers should be taken for medical attention, if necessary. Take copy of label and MSDS to physician or health professional with victim.

SKIN EXPOSURE: If spilled on skin, begin decontamination with copious amounts of running water and soap. Remove exposed or contaminated clothing, taking care not to contaminate eyes. Continue washing/flushing of skin for at least 5 minutes.

EYE EXPOSURE: If the product is splashed in eyes, open victim’s eyes while under gently running water. Use sufficient force to open eyelids. Have the contaminated individual "roll" eyes. The recommended minimum flushing time is 15 minutes. If any adverse effect occurs, seek immediate medical attention.

INHALATION: If aerosols or mists of this product are inhaled, remove victim to fresh air. If adverse effect occurs, seek medical assistance.

INGESTION: If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. If professional advice is not available, do not induce vomiting. Rinse mouth with water immediately, if conscious. If conscious, have victim rinse mouth with water or give several cupfuls of water. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. If contaminated individual is convulsing, maintain an open airway and obtain immediate medical attention.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate overexposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing dermatitis conditions may be aggravated by overexposure to this product.

5. FIRE-FIGHTING MEASURES

FLASH POINT (Closed Cup): > 220°F

AUTOIGNITION TEMPERATURE: Not determined.

FLAMMABLE LIMITS (in air by volume, %):

<table>
<thead>
<tr>
<th></th>
<th>Lower (LEL)</th>
<th>Upper (UEL)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not determined</td>
<td>Not determined</td>
</tr>
</tbody>
</table>
5. FIRE-FIGHTING MEASURES (Continued)

FIRE EXTINGUISHING MATERIALS:

<table>
<thead>
<tr>
<th>Material</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Spray</td>
<td>Carbon Dioxide</td>
</tr>
<tr>
<td>Foam</td>
<td>Dry Chemical</td>
</tr>
<tr>
<td>Halon</td>
<td>Other: Any &quot;ABC&quot; Class</td>
</tr>
</tbody>
</table>

UNUSUAL FIRE AND EXPLOSION HAZARDS: This product must be severely preheated for ignition to occur. When involved in a fire, this material may decompose and produce caustic vapors and toxic gases (e.g., oxides of carbon, oxides of nitrogen and oxides of sulfur).

- Explosion Sensitivity to Static Discharge: Not sensitive.

SPECIAL FIRE-FIGHTING PROCEDURES: Prevent the spread of any released product to source of ignition. Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Move fire-exposed containers of this product out of area, if it can be done without risk to firefighters. If this product is involved in a fire, fire runoff water should be contained to prevent possible environmental damage.

6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Small releases can be cleaned-up using a standard absorbent (i.e., polypads). Responders should wear gloves, goggles, and suitable body protection during the clean-up of small spills. In case of a large spill (in which excessive mists or sprays can be generated), clear the affected area, protect people, and respond with trained personnel. Minimum Personal Protective Equipment should be Level B: triple-gloves (rubber gloves and nitrile gloves, over latex gloves), apron. Self-Contained Breathing Apparatus must be selected if releases which occur in confined or poorly-ventilated areas, or in situations in which the level of oxygen is below 19.5%. Absorb spilled liquid with polypads or other suitable absorbent materials. Rinse area with soap and water solution, followed by a water rinse. Close-off sewers and take other measures to protect human health and the environment, as necessary. Decontaminate the area thoroughly. Place all spill residue in an appropriate 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). Spills in the U.S. may be reportable to the U.S. National Response Center (800) 424-8802.

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. Open containers slowly on a stable surface. Containers of this product must be properly labeled. Do not store above temperatures of 93°C (200°F). Empty containers may contain residual amounts of this product; therefore, empty containers should be handled with care. Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Store away from incompatible materials (see Section 10, Stability and Reactivity). Material should be stored in secondary containers or in a diked area, as appropriate. Keep container tightly closed when not in use. Inspect all incoming containers before storage to ensure containers are properly labeled and not damaged.

For Non-Bulk Containers: 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). When using this product, open valves on pipelines and other production equipment that contains this product slowly. Periodically inspect totes or tanks of this product for leaks or damage. Perform routine maintenance on all process equipment. Storage areas should be made of corrosion resistant materials. Post warning and "NO SMOKING" signs in storage and use areas, as appropriate. Empty containers may contain residual liquid or vapors; therefore, empty containers should be handled with care. Never store food, feed, or drinking water in containers that held this product.

Bulk Containers: All tanks and pipelines which contain this material must be labeled. Perform routine maintenance on tanks or pipelines which contain this product. Report all leaks promptly.
7. HANDLING and STORAGE (Continued)

Tank Car Shipments: Tank cars carrying this product should be loaded and unloaded in strict accordance with tank-car manufacturer's recommendation and all established on-site safety procedures. Appropriate personal protective equipment must be used (see Section 8, Engineering Controls and Personal Protective Equipment.). All loading and unloading equipment must be inspected, prior to each use. Loading and unloading operations must be attended, at all times. Tank cars must be level and wheels must be locked or blocked prior to loading or unloading. Tank car (for loading) or storage tank (for unloading) must be verified to be correct for receiving this product and be properly prepared, prior to starting the transfer operations. Hoses must be verified to be clean and free of incompatible chemicals, prior to connection to the tank car or vessel. Valves and hoses must be verified to be in the correct positions, before starting transfer operations. A sample (if required) must be taken and verified (if required) prior to starting transfer operations. All lines must be blown-down and purged before disconnecting them from the tank car or vessel.

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. Always use this product in areas where adequate ventilation is provided. Before maintenance begins, decontaminate equipment and follow with a triple-rinse with water. Collect all rinsates and dispose of according to applicable Federal, State, or local procedures.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation. If necessary, vent material to outside, taking appropriate precautions to prevent environmental contamination. Ensure eyewash/safety shower stations are available near where this product is used.

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below exposure limits listed in Section 2 (Composition and Information on Ingredients). 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 and applicable standards of Canadian Provinces. 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’s Respiratory Protection Standard (1910.134-1998).

EYE PROTECTION: Splash goggles or safety glasses.

HAND PROTECTION: Wear neoprene or vinyl gloves for routine industrial use. Use triple gloves for spill response, as stated in Section 6 (Accidental Release Measures) of this MSDS.

BODY PROTECTION: Use body protection appropriate for task. An apron or other impermeable body protection is suggested. Full-body chemical protective clothing is recommended for emergency response procedures.

9. PHYSICAL and CHEMICAL PROPERTIES

RELATIVE VAPOR DENSITY (air = 1): Not established.
SPECIFIC GRAVITY (water = 1): 0.9657
SOLUBILITY IN WATER: Soluble
VAPOR PRESSURE, mm Hg @ 20°C: Not determined.
PARTITION COEFFICIENT (n-octanol/water): Not established.
ODOR: Bland
APPEARANCE and COLOR: This is a clear to slightly hazy amber to dark brown liquid.
HOW TO DETECT THIS SUBSTANCE (warning properties): The color or alcoholic odor may be a distinguishing characteristic in event of accidental release.

10. STABILITY and REACTIVITY

STABILITY: Stable.
DECOMPOSITION PRODUCTS: Thermal decomposition will generate oxides of carbon, nitrogen and sulfur.
MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: This product is incompatible with strong oxidizers and chemicals incompatible with water.
HAZARDOUS POLYMERIZATION: Will not occur.
CONDITIONS TO AVOID: Contact with or exposure to incompatible materials, extreme temperatures.
PART IV  Is there any other useful information about this material?

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: Currently, there are no toxicity data for this product.

SUSPECTED CANCER AGENT: None of the components of this product are found on the following lists: FEDERAL OSHA Z LIST, NTP, IARC, CAL/OSHA, and therefore are not considered to be, nor suspected to be, cancer causing agents by these agencies.

IRRITANCY OF PRODUCT: This product may be mildly irritating to contaminated tissue.

SENSITIZATION OF PRODUCT: No component of this product is known to be a skin or respiratory sensitizer.

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 reported to produce mutagenic effects in humans.
- Embryotoxicity: This product is not reported to produce embryotoxic effects in humans.
- Teratogenicity: This product is not reported to cause teratogenic effects in humans.
- Reproductive Toxicity: This product is not reported to cause reproductive effects in humans.

A mutagen is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An embryotoxin is a chemical which 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 which causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance which interferes in any way with the reproductive process.

BIOLOGICAL EXPOSURE INDICES: Currently there are no Biological Exposure Indices (BEIs) associated with the components of this product.

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: This product will decompose over time in ambient environmental conditions.

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

EFFECT OF CHEMICAL ON AQUATIC LIFE: This product can be harmful to contaminated aquatic plant and animal life if large quantities are released to an aquatic environment.

13. DISPOSAL CONSIDERATIONS

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

EPA WASTE NUMBER: Not applicable.

14. TRANSPORTATION INFORMATION

THIS MATERIAL IS NOT HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

- PROPER SHIPPING NAME: Not Applicable
- HAZARD CLASS NUMBER and DESCRIPTION: Not Applicable
- UN IDENTIFICATION NUMBER: Not Applicable
- PACKING GROUP: Not Applicable
- DOT LABEL(S) REQUIRED: Not Applicable
- NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2000): Not Applicable
- MARINE POLLUTANT: No component of this product is designated by the Department of Transportation to be a Marine Pollutant as per 49 CFR 172.101, Appendix B.
- TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: This material is not considered as dangerous goods under
- INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA) DESIGNATION: This material is not considered as dangerous goods under the International Air Transport Association rules.

15. REGULATORY INFORMATION
ADDITIONAL UNITED STATES REGULATIONS:
SARA REPORTING REQUIREMENTS: The components of this product are not subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act.
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. TSCA INVENTORY STATUS: The components of this product are listed on the TSCA Inventory.
U.S. CERCLA REPORTABLE QUANTITY (RQ): For information on the U.S. CERCLA RQs for the components of this product, contact the business phone number listed in Section 1 (Product Identification).
OTHER U.S. FEDERAL REGULATIONS: Not applicable.
U.S. STATE REGULATORY INFORMATION: For information on requirements for components of this product under the States indicated below, contact the business phone number listed in Section 1 (Product Identification).
Alaska - Designated Toxic and Hazardous Substances: See above.
California - Permissible Exposure Limits for Chemical Contaminants: See above.
Florida - Substance List: See above.
Illinois - Toxic Substance List: See above.
Kansas - Section 302/313 List: See above.
Massachusetts - Substance List: See above.
Michigan - Critical Materials Register: See above.
Minnesota - List of Hazardous Substances: See above.
Missouri - Employer Information/Toxic Substance List: See above.
New Jersey - Right to Know Hazardous Substance List: See above.
North Dakota - List of Hazardous Chemicals, Reportable Quantities: See above.
Pennsylvania - Hazardous Substance List: See above.
Rhode Island - Hazardous Substance List: See above.
Texas - Hazardous Substance List: Sodium See above.
West Virginia - Hazardous Substance List: See above.
Wisconsin - Toxic and Hazardous Substance List: See above.
CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): This product DOES NOT contain any chemicals that are known by the State of California to cause cancer.
ANSI LABELING (Z129.1): CAUTION! MAY CAUSE SKIN AND EYE IRRITATION. MAY BE HARMFUL IF INGESTED OR INHALED. Avoid contact with skin, eyes, or clothing. Wash thoroughly after handling. Avoid breathing aerosols, mists, and sprays. Work in well-ventilated area. Do not taste or swallow. Wear gloves, goggles, and appropriate body protection.
FIRST-AID: In case of contact with skin or eyes, flush skin with plenty of water for 15 minutes. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, do not induce vomiting. Get medical attention if adverse effects develop. IN CASE OF FIRE: Use water fog, dry chemical, CO₂, or “alcohol” foam. IN CASE OF SPILL: Absorb spill with inert material (sand, polypads, or other absorbent). For large spills, dike area. Consult Material Safety Data Sheet for additional information.
ADDITIONAL CANADIAN REGULATIONS:
CANADIAN DSL/NDSL INVENTORY STATUS: The components of this product are listed on the DSL Inventory.
OTHER CANADIAN REGULATIONS: Not applicable.
CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITY SUBSTANCES LISTS: The components of this product are not on the CEPA Priority Substances Lists.
CANADIAN WHMIS SYMBOLS: Not Applicable

16. OTHER INFORMATION
PREPARED BY: CLEAR SOLUTIONS USA 1007 East Warner Road, Suite 109 Tempe, AZ 85284 (480) 726-6922
DATE OF PRINTING: June 17, 2008

All statements, technical information and recommendations herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed. THE FOLLOWING IS MADE IN LIEU OF ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PURPOSE. Seller’s and manufacturer’s only obligation shall be to replace such quantity of the product proved to be defective. Before using, user shall determine the suitability of the product for its intended use, and user assumes all risks and liability whatsoever in connection therewith.
NEITHER SELLER NOR MANUFACTURER SHALL BE LIABLE EITHER IN TORT OR IN CONTRACT FOR ANY LOSS OR DAMAGE, DIRECT, INCIDENTAL OR CONSEQUENTIAL, ARISING OUT OF THE USE OR THE INABILITY TO USE THE PRODUCT.
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 which uniquely identifies each constituent.

EXPOSURE LIMITS IN AIR:
ACGIH - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits. TLV - Threshold Limit Value - an airborne concentration of a substance which 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 Time Weighted Average (TWA), the 15-minute Short Term Exposure Limit, and the instantaneous Ceiling Level (C). Skin absorption effects must also be considered.
OSHA - U.S. Occupational Safety and Health Administration.
PEL - Permissible Exposure Limit - 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: 35336-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL which was vacated by Court Order. 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. The DFG - MAK is the Republic of Germany’s Maximum Exposure Level, similar to the U.S. PEL. 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). NIOSH issues exposure guidelines called Recommended Exposure Levels (RELs). When no exposure guidelines are established, an entry of NE is made for reference.

HAZARD RATINGS:
HAZARDOUS MATERIALS IDENTIFICATION SYSTEM: Health Hazard: 0 (minimal acute or chronic exposure hazard); 1 (slight acute or chronic exposure hazard); 2 (moderate acute or significant chronic exposure hazard); 3 (severe acute exposure hazard; onetone exposureovercan result in permanent injury and may be fatal); 4 (extreme acute exposure hazard; onetone overexposure can be fatal). Flammability Hazard: 0 (minimal hazard); 1 (materials that require substantial pre-heating before burning); 2 (combustible liquid or solids; liquids with a flash point of 38-93°C [100-200°F]); 3 (Class IB and IC flash points below 38°C [100°F]); 4 (Class IA flammable liquids with flash points below 23°C [73°F] and boiling points below 38°C [100°F]). Reactivity Hazard: 0 (normally stable); 1 (material that can become unstable at elevated temperatures or which can react slightly with water); 2 (materials that are unstable but do not detonate or which can react violently with water); 3 (materials that can detonate when initiated or which can react explosively with water); 4 (materials that can detonate at normal temperatures or pressures).
NATIONAL FIRE PROTECTION ASSOCIATION: Health Hazard: 0 (material that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials); 1 (materials on exposure under fire conditions could cause irritation or minor residual injury); 2 (materials that on intense or continued exposure under fire conditions could cause temporary incapacitation or possible residual injury); 3 (materials that can on short exposure could cause serious temporary or residual injury); 4 (materials that under very short exposure causes death or major residual injury). Flammability Hazard and Reactivity Hazard: Refer to definitions for “Hazardous Materials Identification System”.

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 vapors to form an ignitable mixture with air. Autoignition Temperature: The minimum temperature required to initiate combustion in air with no other source of ignition. LEL - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. UEL - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

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 TDLo, the lowest dose to cause a symptom and TCLo the lowest concentration to cause a symptom; TDo, LDLo, and LDo, or TC, TCo, LCl, and LCo, 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. 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:
This section explains the impact of various laws and regulations on the material. U.S.: EPA is the U.S. Environmental Protection Agency. DOT is the U.S. Department of Transportation. SARA is the Superfund Amendments and Reauthorization Act. TSCA is the U.S. Toxic Substance Control Act. CERCLA (or Superfund) refers to the Comprehensive Environmental Response, Compensation, and Liability Act. Labeling is per the American National Standards Institute (ANSI Z129.1). CANADA: CEPA is the Canadian Environmental Protection Act. WHMIS is the Canadian Workplace Hazardous Materials Information System. TC is Transport Canada. DSL/NDSL are the Canadian Domestic/Non-Domestic Substances Lists.