

MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI, Canadian WHMIS Standards, European Directives, Australian WorkSafe and SPRING Singapore Standards

1. PRODUCT IDENTIFICATION

TRADE NAME (AS LABELED): NeutralCal™ 10
CHEMICAL NAME/CLASS: Mixture of Paraffinic Mineral Oils and Calcium Sulfonate
CHEMICAL FORMULA: Not Applicable-Mixture
SYNONYMS: None
U.N. NUMBER: Not Applicable
U.N. DANGEROUS GOODS CLASS/SUBSIDIARY RISK: Not Applicable
HAZCHEM CODE (AUSTRALIA): Not Applicable
POISONS SCHEDULE NUMBER (AUSTRALIA): Schedule 5
PRODUCT USE: Detergent/Dispersant and Corrosion Inhibiting Lubricating Oil
U.S. SUPPLIER/MANUFACTURER'S NAME: SOLTEX, INC.
ADDRESS: 3707 FM 1960West, Ste. 560
Houston, TX 77068 USA
BUSINESS PHONE: 1-281-587-0900
FACSIMILE: 1-281-587-1998
AUSTRALIAN SUPPLIER/DISTRIBUTOR'S NAME:
ADDRESS:
BUSINESS PHONE:
EUROPEAN SUPPLIER/ DISTRIBUTOR'S NAME:
ADDRESS:
BUSINESS PHONE:
SINGAPORE SUPPLIER/ DISTRIBUTOR'S NAME:
ADDRESS:
BUSINESS PHONE:
EMERGENCY PHONE: United States/Canada: 1-800/424-9300 (Chemtrec) [24-hours]
International: 0+1-703-527-3887 (Chemtrec) [24-hours]
EMAIL ADDRESS/COMPETENT PERSON FOR MSDS: Mr. C. Edward Baxter: eBaxter@soltexinc.com
DATE OF PREPARATION: February 14, 2008

NOTE: ALL Canadian WHMIS, European Directive, Australian NOHSC and Singapore SPRING required information is included in appropriate sections based on the U.S. ANSI Z400.1-2004 format. This product has been classified in accordance with the hazard criteria of the countries listed above and the MSDS contains all the information required by the Canadian WHMIS [Controlled Products Regulations] and European Union [Regulation (EC) 1907/2006 Annex II], Australian (NOHSC:2011, 8.30-8.48) information, and Singapore SPRING required information is included.

2. HAZARD IDENTIFICATION

EU LABELING AND CLASSIFICATION: This product meets the definition of hazardous, as defined by the European Union Council Directive 67/548/EEC or subsequent Directives.

EU CLASSIFICATION: [Xn]: Harmful

EU RISK PHRASES: R: 65

EU SAFETY PHRASES: S: (2-); S: 14; S: 23; S: 62

EUROPEAN COMMUNITY ANNEX II HAZARD SYMBOL:



EMERGENCY OVERVIEW: Product Description: This product is brown, viscous liquid with a petroleum odor. **Health Hazards:** This product may irritate skin, eyes, and other contaminated tissues. Inhalation can cause adverse effects on central nervous system. Ingestion may be harmful or fatal. Prolonged skin contact can cause defatting of skin and dermatitis. Contact with heated product can cause thermal burns. Components of this product are suspect carcinogens. **Flammability Hazards:** This product is a Class IIIB combustible liquid. This material can burn but will not readily ignite. However, if the material is heated above the flash point it can release vapors that will ignite when exposed to ignition sources. In enclosed spaces, heated vapor can ignite with explosive force. Mists or sprays may ignite at temperatures below the flash point. If involved in a fire, products of thermal decomposition can include sulfur oxides, reactive hydrocarbons and polycyclic aromatic hydrocarbons (PAHs) and calcium oxides. **Reactivity Hazards:** Negligible. **Environmental Hazards:** Releases of this product may be harmful to the environment. If released on water, product may produce oil slick and prevent oxygenation of aquatic environment. **Emergency Recommendations:** Emergency responders must wear the personal protective equipment suitable for the situation to which they are responding. Fire retardant gear may be necessary.

3. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	EINECS #	AICS Inventory Listing	% w/v	EU/AUSTRALIAN CLASSIFICATION FOR COMPONENTS
Mineral Oil, Severely Hydrotreated Paraffinic Distillate	64742-65-0	265-169-7	Listed	35%	Hazard Classification: Carcinogenic Category 2 Risk Phrases: R 45 Notes: H & L
Calcium Dodecylbenzenesulfonate	26264-06-2	247-557-8	Listed	65%	Hazard Classification: Not established. Risk Phrases: Not established.

See Section 15 for full text of Ingredient Risk Phrases for components. See Section 15 for Inventory listing for other countries.

4. FIRST-AID MEASURES

Victims of chemical exposure must be taken for medical attention if any adverse effect occurs. Remove or cover gross contamination to avoid exposure to rescuers. 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/continues after flushing.

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. **Do not use compressed oxygen in hydrocarbon atmospheres.** If adverse effect continues after removal to fresh air, seek medical attention.

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, or disorders involving the "Target Organs" (see Section 11, "Toxicological Information") may be aggravated by overexposure to this product.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate overexposure. Provide oxygen, if necessary.

5. FIRE-FIGHTING MEASURES

FLASH POINT: Not determined for product.

For Mineral Oil: 204°C (399.2°F)

FLAMMABILITY LIMITS: Not established.

AUTOIGNITION: Not determined for product.

For Mineral Oils: 260-371°C (500-700°F)

FIRE EXTINGUISHING MATERIALS: The following extinguishing materials are recommended for fires involving this product.

Carbon Dioxide: YES Dry Chemical: YES Other: Any "C" Class

Halon: YES Foam: YES Water Spray: YES (for cooling only)

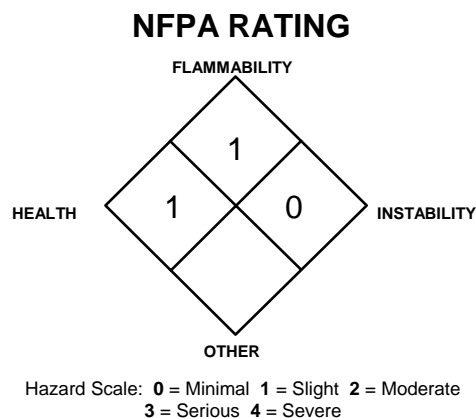
FIRE EXTINGUISHING MATERIALS NOT BE USED: None known.

UNUSUAL FIRE AND EXPLOSION HAZARDS: This product is a Class IIIC combustible liquid. This material can burn but will not readily ignite. However, if the material is heated above the flash point it can release vapors that will ignite when exposed to ignition sources. In enclosed spaces, heated vapor can ignite with explosive force. Mists or sprays may ignite at temperatures below the flash point. When involved in a fire, this material may ignite and produce irritating vapors and toxic gases (e.g., sulfur oxides, reactive hydrocarbons and polycyclic aromatic hydrocarbons (PAHs) and calcium oxides).

Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: The electrical conductivity of well refined, dry mineral oils is very low. Therefore, the pure oil (no additives present) can accumulate static charge by agitation or pouring. If heated, 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. The atmosphere must have levels of components lower than those listed in Section 8, (Exposure Controls and Personal Protective Equipment), if applicable, and have at least 19.5 percent oxygen before personnel can be allowed into the area without Self-Contained Breathing Apparatus (SCBA).

Small Spills: absorb spilled liquid with clay, sand, activated carbon, polypads, or other suitable absorbent materials, wearing gloves, goggles and apron.

Large Spills: Minimum Personal Protective Equipment should be **Level B: triple-gloves (rubber gloves and nitrile gloves over latex gloves), chemical resistant suit and boots, hard hat, and Self-Contained Breathing Apparatus.** For large spills, dike or otherwise contain spill and remove with vacuum truck or pump to storage/salvage vessels. Decontaminate the area thoroughly. Prevent material from entering sewer or confined spaces, waterways, soil or public waters. 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.

Place all spill residue in a double plastic bag or other containment 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). For spills on water, contain, minimize dispersion and collect. Dispose of recovered material and report spill per regulatory requirements.

7. HANDLING and STORAGE

SAFE WORK AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Eye wash stations or safety showers should be near areas where this product is stored or handled. 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 and launder before reuse.

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, only use portable containers and dispensing equipment (faucet, pump, drip can) approved for combustible liquids. Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Do not store containers above 100°C (212°F). Material stored at cold temperatures may become very viscous and be difficult to pump. 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 (i.e., 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.

SPECIFIC USE(S): This product is a lubricating oil. Follow all industry standards for use of this product.

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 Federal, State, and local procedures standards.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION, ENGINEERING AND OCCUPATIONAL EXPOSURE CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided below. Exhaust directly to the outside, taking necessary precautions for environmental protection. If necessary, refer to Australian National Code of Practice for the Control of Workplace Hazardous Substances [NOHSC: 2007 (1994)] for further information.

OCCUPATIONAL EXPOSURE STANDARDS:

CHEMICAL NAME	CAS #	EXPOSURE LIMITS IN AIR							
		ACGIH-TLVs		OSHA-PELs		NIOSH-RELs		NIOSH	OTHER
		TWA mg/m ³	STEL mg/m ³	TWA mg/m ³	STEL mg/m ³	TWA mg/m ³	STEL mg/m ³	IDLH mg/m ³	mg/m ³
Severely Hydrotreated Paraffinic Mineral Oil Recommended exposure limits given are for Oil, Mist, Mineral	64742-65-0	5	10	5	NE	5	10	NE	NE
Calcium Dodecylbenzenesulfonate	26264-06-2	NE	NE	NE	NE	NE	NE	NE	NE

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

8. EXPOSURE CONTROLS - PERSONAL PROTECTION (Continued)

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with regulations found in U.S. OSHA 29 CFR Subpart I (beginning at 1910.132), equivalent standards of Canada (including CSA Standard Z94.4-02 and CSA Standard Z94.3-02), standards of EU member states (including EN 529:2005 for respiratory PPE, CEN/TR 15419:2006 for hand protection, and CR 13464:1999 for face/eye protection), or standards of Australia (including AS/NZS 1715:1994 for respiratory PPE, AS/NZS 4501.2:2006 for protective clothing, AS/NZS 2161.1:2000 for glove selection, and AS/NZS 1336:1997 for eye protection). Please reference applicable regulations and standards for relevant details.

RESPIRATORY PROTECTION: If necessary, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), equivalent U.S. State standards, Canadian CSA Standard Z94.4-02, the European Standard EN 529:2005, and EU member state standards, the Australian Standard 1716-Respiratory Protective Devices and Australian Standard 1715-Selection, Use, and Maintenance of Respiratory Protective Devices, or Singapore standards. 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: Wear safety glasses with side shields (or goggles) and a face shield. If necessary, refer to U.S. OSHA 29 CFR 1910.133, Canadian CSA Standard Z94.3-02, European Standard CR 13464:1999, the Australian Standard 1337-Eye Protection for Industrial Applications and Australian Standard 1336-Recommended Practices for Eye Protection in the Industrial Environment, or Singapore standards.

HAND PROTECTION: Wear appropriate gloves to prevent protection against solvents. If material is heated, wear insulated gloves. Check gloves for leaks. Wash hands before putting on gloves and after removing gloves. If necessary, refer to U.S. OSHA 29 CFR 1910.138, appropriate Standards of Canada, the Australian Standard 2161-Industrial Safety Gloves and Mittens, the European Standard CEN/TR 15419:2006, or Singapore standards.

BODY/SKIN PROTECTION: Use body protection appropriate for task (e.g., coveralls or apron). For prolonged or repeated exposures, use impervious synthetic rubber clothing (boots, gloves, aprons, etc.) over parts of the body subject to exposure. If handling hot fluid, use insulated protective clothing (boots, gloves, aprons, etc.). If necessary, refer to appropriate Standards of Canada, the European Standard CEN/TR 15419:2006, Australian Standard 3765-Clothing for Protection Against Hazardous Chemicals, or Singapore standards. 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 and the Canadian CSA Standard Z195-02, *Protective Footwear*.

9. PHYSICAL and CHEMICAL PROPERTIES

RELATIVE VAPOR DENSITY (air = 1): Not established. **EVAPORATION RATE (n-BuAc = 1):** < 1

MELTING/FREEZING POINT: Not established.

BOILING POINT: Not established.

SOLUBILITY IN WATER: Insoluble.

SOLUBILITY IN SOLVENTS: Not determined.

VAPOR PRESSURE @ 20°C: Not established.

pH: Not determined.

OXIDIZING PROPERTIES: Not applicable.

SHOCK SENSITIVITY: Not applicable.

VISCOSITY @ 100°C: > 60 cSt

ODOR THRESHOLD: Not established.

PERCENT VOLATILE: 90-99%

SPECIFIC GRAVITY @ 15°C: 0.98 g/mL

FLAMMABILITY LIMITS: Not established.

FLASH POINT: Not established. For Mineral Oil: 204°C (399.2°F)

AUTOIGNITION: Not established. For Mineral Oil: 260-371°C (500-700°F)

For Calcium Sulfonate: Not determined.

COEFFICIENT OF OIL/WATER DISTRIBUTION (PARTITION COEFFICIENT): Not established.

APPEARANCE, ODOR and COLOR: This product is a viscous, brown liquid, with a solvent odor.

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

10. STABILITY and REACTIVITY

DECOMPOSITION CONDITIONS/STABILITY: Stable under conditions of standard temperature and pressure.

DECOMPOSITION PRODUCTS: *Combustion:* Sulfur oxides, reactive hydrocarbons and polycyclic aromatic hydrocarbons (PAHs) and calcium oxides. *Hydrolysis:* None known.

HAZARDOUS POLYMERIZATION: Will not occur.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: This product is incompatible with strong oxidizing agents, and acids.

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

11. TOXICOLOGICAL INFORMATION

IRRITANCY OF PRODUCT: The liquid or vapors of this product are moderately irritating to contaminated eyes. Inhalation and skin contact can be mildly irritating. Prolonged skin contact can cause dermatitis.

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

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

INHALATION: Due to the viscosity of this product, inhalation is not likely unless heated. If use produces mists or sprays that are inhaled, irritation of the nose, throat and respiratory tract may occur. Prolonged or repeated exposure to very high concentrations of oil mists may lead to lung disease (a benign form of pulmonary fibrosis). Symptoms may include cough, mucous formation and difficulty breathing. Long-term animal toxicity studies with mineral oils indicate that inhalation of high concentrations (100 mg/m³ and above) of aerosols can result in inflammatory lung reactions and fatty deposits (lipoid granulomas).

CONTACT WITH SKIN or EYES: Depending on the duration and concentration of overexposure, eye contact with vapors may result in mild irritation. Direct eye contact with liquid or mist may cause conjunctival irritation. Contact with the skin may cause irritation of the skin, depending on duration and concentration of contact. Repeated or prolonged contact may produce defatting of the skin leading to irritation and dermatitis, with symptoms of dryness, redness and cracking. Long-term exposure to oils with a high polycyclic aromatic hydrocarbon (PAH) content may also cause an abnormal sensitivity to sunlight (photosensitivity) and/or darkening of the skin. Contact with heated product may cause burns.

SKIN ABSORPTION: No component of this product is known to be absorbed via intact skin.

INGESTION: Ingestion is not anticipated to be a significant route of occupational exposure. If this product is swallowed, it may cause gastrointestinal irritation and vomiting. Ingestion may lead to aspiration into the lungs. Aspiration may lead to chemical pneumonitis which is characterized by pulmonary edema and hemorrhage, and may be fatal. Signs of lung involvement include increased respiration rate, increased heart rate, and a bluish discoloration of the skin. Coughing, choking, and gagging are often noted at the time of aspiration.

INJECTION: Accidental injection of this product (via cut or puncture with a contaminated object) may cause irritation in addition to the wound.

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

ACUTE: This product may moderately to severely irritate contaminated eyes. Skin contact and inhalation can cause irritation of contaminated tissues. Ingestion of this product may be harmful or fatal and may lead to aspiration into the lungs.

CHRONIC: Prolonged skin contact may cause dermatitis. Components of this product are suspect carcinogens, based on animal data.

TARGET ORGANS: **ACUTE:** Skin, eyes, respiratory system. **CHRONIC:** Skin.

TOXICITY DATA: The following toxicology data are available for components of this product.

CALCIUM DODECYLBENZENESULFONATE:
LD₅₀ (Oral-Rat) 4 gm/kg

CALCIUM DODECYLBENZENESULFONATE (continued):
LD₅₀ (Oral-Mouse) 3680 mg/kg

CARCINOGENIC POTENTIAL OF COMPONENTS: The components of this product are listed by agencies tracking the carcinogenic potential of chemical compounds, as follows:

SEVERELY HYDROTREATED PARAFFINIC MINERAL OIL: IARC-3 (Unclassifiable as to Carcinogenicity in Humans)

The remaining components of this product are not found on the following lists: U.S. EPA, U.S. NTP, U.S. OSHA, U.S. NIOSH, GERMAN MAK, IARC, and ACGIH and therefore are neither considered to be nor suspected to be cancer-causing agents by these agencies.

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

Mutagenicity: The components of this product are not reported to produce mutagenic effects in humans.

Embryotoxicity: The components of this product are not reported to produce embryotoxic effects in humans.

Teratogenicity: The components of this product are not reported to cause teratogenic effects in humans.

Reproductive Toxicity: The components of this product are not reported to cause reproductive effects in humans.

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM			
HEALTH HAZARD	(BLUE)	1	
FLAMMABILITY HAZARD	(RED)	1	
PHYSICAL HAZARD	(YELLOW)	0	
PROTECTIVE EQUIPMENT			
EYES	RESPIRATORY	HANDS	BODY
See Section 8			
For Routine Industrial Use and Handling Applications			

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

11. TOXICOLOGICAL INFORMATION (Continued)

REPRODUCTIVE TOXICITY INFORMATION (continued):

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 no ACGIH Biological Exposure Indices (BEIs) determined for the components identified of this product.

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

MOBILITY: This product has not been tested for mobility in soil. It is expected to be highly mobile in soil due to petroleum derivative components.

PERSISTENCE AND BIODEGRADABILITY: This product has not been tested for persistence or biodegradability. It is expected that some biodegradation will occur to this product; however, no specific information is known.

BIO-ACCUMULATION POTENTIAL: This product has not been tested for bio-accumulation potential. No information is available for components.

ECOTOXICITY: This product has not been tested for aquatic or animal toxicity. All release to terrestrial, atmospheric and aquatic environments should be avoided. The product may produce a slick if released to an aquatic environment, preventing oxygenation of the water.

OTHER ADVERSE EFFECTS: This product does not contain any component with ozone depletion potential.

ENVIRONMENTAL EXPOSURE CONTROLS: Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHODS: It is the responsibility of the generator to determine at the time of disposal whether the product meets the criteria of a hazardous waste per regulations of the area in which the waste is generated and/or disposed of. Waste disposal must be in accordance with appropriate Federal, State, and local regulations. 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. Shipment of wastes must be done with appropriately permitted and registered transporters.

DISPOSAL CONTAINERS: Waste materials must be placed in and shipped in appropriate 5-gallon or 55 gallon poly or metal waste pails or drums. Permeable cardboard containers are not appropriate and should not be used. Ensure that any required marking or labeling of the containers be done to all applicable regulations.

PRECAUTIONS TO BE FOLLOWED DURING WASTE HANDLING: Wear proper protective equipment when handling waste materials. Dispose of in accordance with applicable Federal, State, and local procedures and standards.

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

EUROPEAN WASTE CODES: 13 Oil Wastes and Wastes of Liquid Fuels (except edible oils, and those in chapters 05, 12 and 19) **13 08 99*** wastes not otherwise specified

14. TRANSPORTATION INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION REGULATIONS: Unless heated during transport, this product is not classified as dangerous goods, per U.S. DOT regulations, under 49 CFR 172.101. Note: This product may be classified as an oil under 49CFR (DOT) Part 130 and be subject to the requirements under this part. If shipped by rail or highway in a tank with a capacity of 3500 gallons or more, the product may be subject to these requirements. Consult 49 CFR Part 130 for more information on this determination. If this product is heated during transport, the following classification applies:

PROPER SHIPPING NAME: Elevated temperature liquid, n.o.s. with a flash point at or above 100°C and below its flash point (petroleum oil)

HAZARD CLASS NUMBER and DESCRIPTION: 9 (Miscellaneous Hazard)

UN IDENTIFICATION NUMBER: UN 3257

PACKING GROUP: III

DOT LABEL(S) REQUIRED: 9 (Miscellaneous Hazard)

EMERGENCY RESPONSE GUIDEBOOK NUMBER, 2004: 154

MARINE POLLUTANT: This material is not designated by the Department of Transportation to be a Marine Pollutant (49 CFR 172.101, Appendix B).

14. TRANSPORTATION INFORMATION (Continued)

TRANSPORT CANADA, TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: Unless heated during transport, this product is not classified as dangerous goods, per regulations of Transport Canada. If this product is heated during transport, 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: Elevated temperature liquid, n.o.s. with a flash point at or above 100°C and below its flash point (petroleum oil)

HAZARD CLASS NUMBER and DESCRIPTION: 9 (Miscellaneous Hazard)

UN IDENTIFICATION NUMBER: UN 3257

PACKING GROUP: III

HAZARD LABEL(S) REQUIRED: Class 9 (Miscellaneous Hazard)

SPECIAL PROVISIONS: None

EXPLOSIVE LIMIT & LIMITED QUANTITY INDEX: 5

ERAP INDEX: None

PASSENGER CARRYING SHIP INDEX: None

PASSENGER CARRYING ROAD OR RAIL VEHICLE INDEX: Forbidden

MARINE POLLUTANT: This material is not classified as a Marine Pollutant under Transport Canada regulations.

INTERNATIONAL AIR TRANSPORT ASSOCIATION SHIPPING INFORMATION (IATA): Unless heated during transport, this product is not classified as dangerous goods, per the International Air Transport Association. Heated product is forbidden to be shipped via aircraft.

INTERNATIONAL MARITIME ORGANIZATION SHIPPING INFORMATION (IMO): Unless heated during transport, this product is not classified as dangerous goods, under rules of the IMO. If this product is heated during transport, the following classification applies:

PROPER SHIPPING NAME: Elevated temperature liquid, n.o.s. with a flash point at or above 100°C and below its flash point (petroleum oil)

HAZARD CLASS NUMBER AND DESCRIPTION: 9 (Miscellaneous Hazard)

UN IDENTIFICATION NUMBER: UN 3257

PACKING GROUP: III

LABEL(S) REQUIRED: Class 9 (Miscellaneous Hazard)

SPECIAL PROVISIONS: 232

LIMITED QUANTITIES: None

PACKING INSTRUCTIONS: P099

EmS: F-A, S-P

STOWAGE AND SEGREGATION: Category A. If under deck, in a mechanically ventilated area.

MARINE POLLUTANT: No component of this product meets the criteria for marine pollutant.

EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR): Unless heated during transport, this product is not classified as dangerous goods by the United Nations Economic Commission for Europe. If this product is heated during transport, the following classification applies:

UN NO.: 3257

NAME and DESCRIPTOR: Elevated temperature liquid, n.o.s. with a flash point at or above 100°C and below its flash point (petroleum oil)

CLASS: 9

CLASSIFICATION CODE: M9

PACKING GROUP: III

LABELS: 9

SPECIAL PROVISIONS: 274, 580, 643

LIMITED QUANTITIES: LQ0

PACKING INSTRUCTIONS: P099, IBC99

MIXED PACKING PROVISIONS: T3

HAZARD IDENTIFICATION No.: 99

AUSTRALIAN FEDERAL OFFICE OF ROAD SAFETY CODE FOR THE TRANSPORTATION OF DANGEROUS GOODS BY ROAD OR RAIL: Unless heated during transport, this product is not classified as dangerous goods, per regulations of the Federal Office of Road Safety. If this product is heated during transport, the following classification applies:

U.N. NUMBER: 3257

NAME OF SUBSTANCE: Elevated temperature liquid, n.o.s. with a flash point at or above 100°C and below its flash point (petroleum oil)

HAZARD CLASS: 9

PACKING GROUP: III

HAZCHEM CODE: 2W

SPECIAL PROVISIONS: SP232

PACKAGING CODE: 3.8.9

PROPERTIES AND OBSERVATIONS: When the goods are being transported in quantities exceeding package limits the Elevated Temperature Label shall be displayed as a subsidiary risk label on the E.I.P. Refer to Table 7.1

14. TRANSPORTATION INFORMATION (Continued)

SINGAPORE STANDARD 286: PART A: Unless heated during transport, this product has no requirements under the Specification for Caution Labeling for Hazardous Substances, Part 4: Marking of Packages, Containers and Vehicles, as it does not meet the criteria for any hazard class under this regulation. If this product is heated during transport, the following classification applies:

U.N. NUMBER:	3257
NAME OF SUBSTANCE:	Elevated temperature liquid, n.o.s. with a flash point at or above 100°C and below its flash point (petroleum oil)
HAZARD CLASS NUMBER AND DESCRIPTION:	9 (Miscellaneous Hazard)
PACKING GROUP:	III
HAZCHEM CODE:	2W
SPECIAL PROVISIONS:	None

15. REGULATORY INFORMATION

ADDITIONAL U.S. REGULATIONS:

U.S. 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: The components of this product are NOT subject to specific Threshold Planning Quantities requirements. 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. SARA HAZARD CATEGORIES (SECTION 311/312, 40 CFR 370-21): ACUTE: Yes; CHRONIC: No; FIRE: Yes; REACTIVE: No; SUDDEN RELEASE: No

U.S. CERCLA REPORTABLE QUANTITY (RQ): No component of this product has a CERCLA RQ. The petroleum distillate is covered by EPA's Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) petroleum exclusion. Releases to air, land, or water are not reportable under CERCLA (Superfund).

U.S. TSCA INVENTORY STATUS: The components are listed on the TSCA Inventory.

CLEAN WATER AND OIL POLLUTION ACTS: This product may be classified as an oil under Section 311 of the Clean Water Act (40 CFR 110) and the Oil Pollution Act of 1990. Discharge or spills that produce a visible sheen on either surface water, or in waterways/sewers that lead to surface water, must be reported to the National Response Center at 1-800-424-8802.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): This product may contain very trace amounts of Toluene and Benzene, which are listed on the Proposition 65 lists.

ANSI LABELING (Z129.1): **WARNING!** COMBUSTIBLE LIQUID-CAN IGNITE IF EXPOSED TO FLAME OR HIGH TEMPERATURE. MAY CAUSE SKIN, AND RESPIRATORY TRACT IRRITATION. Keep away from heat, sparks, and flame. Avoid contact with oxidizers or UV light. Avoid breathing vapor or mists. Avoid contact with skin or clothing. Use only with adequate ventilation. Keep container tightly closed. Wash thoroughly after handling. Wear gloves and goggles. Use only with adequate ventilation. **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. **IN CASE OF SPILL:** Absorb spill with inert material and place in suitable container. Do not allow contamination of waterways or soil. Refer to Material Safety Data Sheet for additional information on this product.

ADDITIONAL CANADIAN REGULATIONS:

CANADIAN DSL/NDSL INVENTORY STATUS: The components of this product listed the DSL Inventory

OTHER CANADIAN REGULATIONS: Not applicable.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: The components of this product are not on the CEPA Priority Substances Lists.

CANADIAN WHMIS CLASSIFICATION and SYMBOLS:

Class B3: Combustible liquid

Class D2B: Toxic Material Causing Other Toxic Effects



EUROPEAN UNION INFORMATION FOR PRODUCT:

EU LABELING AND CLASSIFICATION: This product is classified as Harmful as defined by the European Union Council Directive 67/548/EEC or subsequent Directives.

EU CLASSIFICATION: Xn [Harmful]

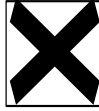
EU RISK PHRASES: [R: 65]: Harmful: may cause lung damage if swallowed.

15. REGULATORY INFORMATION (Continued)

EUROPEAN UNION INFORMATION FOR PRODUCT (continued):

EU SAFETY PHRASES: [S: 7]: Keep container tightly closed. [S: 14]: Keep away from oxidizers. [S: 15]: Keep away from heat. [S: 23]: Do not breathe fumes or vapor. [S: 45]: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). [S: 62]: If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

EU HAZARD SYMBOLS:



CLASSIFICATION FOR COMPONENTS:

Calcium Sulfonate:

An official classification for this substance has not been published in Commission Directives 93/72/EEC, 94/69/EC, 96/56/EC, or 98/98/EC or subsequent directives.

Severely Hydrotreated Paraffinic Mineral Oil:

The following classification has been published in Commission Directives.

EU CLASSIFICATION: Carcinogen Category 2.

EU RISK PHRASES: [R: 45]: May cause cancer.

EU SAFETY PHRASES: [S: 45]: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). [S: 53]: Avoid exposure - obtain special instructions before use.

NOTES: [H]: The classification and label shown for this substance applies to the dangerous property(ies) indicated by the risk phrase(s) in combination with the category(ies) of danger shown. The requirements of Article 6 of Directive 67/548/EEC on manufacturers, distributors, and importers of this substance apply to all other aspects of classification and labelling. The final label shall follow the requirements of section 7 of Annex VI to Directive 67/548/EEC. This note applies to certain coal- and oil-derived substances and to certain entries for groups of substances in Annex I to Directive 67/548/EEC. [L]: The classification as a carcinogen need not apply if it can be shown that the substance contains less than 3 % DMSO extract as measured by IP 346.

ADDITIONAL AUSTRALIAN REGULATIONS:

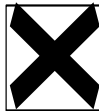
LABELING AND CLASSIFICATION: This product is classified as Harmful as defined by Australian NOHSC: 1008 (2004).

CLASSIFICATION: Xn [Harmful]

RISK PHRASES: [R: 65]: Harmful: may cause lung damage if swallowed.

SAFETY PHRASES: [S: 7]: Keep container tightly closed. [S: 14]: Keep away from oxidizers. [S: 15]: Keep away from heat. [S: 23]: Do not breathe fumes or vapor. [S: 45]: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). [S: 62]: If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

HAZARD SYMBOLS:



AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES (AICS) STATUS: The components of this product are listed on the AICS as given in the table at the end of this Section.

STANDARD FOR THE UNIFORM SCHEDULING OF DRUGS AND POISONS:

SCHEDULE 5: HYDROCARBONS, LIQUID, including kerosene, diesel (distillate), mineral turpentine, white petroleum spirit, toluene, xylene and light mineral and paraffin oils (but excluding their derivatives).

ADDITIONAL LABELING INFORMATION: For advice, contact a Poisons Information Centre (Phone eg Australia 131 126; New Zealand 03 4747 000) or a doctor (at once). If swallowed, do NOT induce vomiting.

ADDITIONAL SINGAPORE REGULATIONS:

CODE OF PRACTICE ON POLLUTION CONTROL REQUIREMENTS: The components identified of this product are NOT subject to the requirements under the Singapore Code of Practice on Pollution Control.

INTERNATIONAL CHEMICAL INVENTORY SUMMARY: The components of this product listed are found on the following National Chemical Inventories:

INVENTORY NAME					
COMPONENT NAME	CAS#	U.S. TSCA	AUSTRALIAN AICS	CANADIAN DSL/NDL	EUROPEAN EINECS/ELINCS
Severely Hydrotreated Paraffinic Mineral Oil	64742-65-0	Yes	Yes	DSL	265-169-7
Calcium Dodecylbenzenesulfonate	26264-06-2	Yes	Yes	DSL	247-557-8

16. OTHER INFORMATION

PREPARED BY:

CHEMICAL SAFETY ASSOCIATES, Inc.
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(800) 441-3365 • (619) 670-0609

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. EnviroFuels LLC assumes no responsibility for injury to the vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, EnviroFuels LLC assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.

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 working 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 of 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. **3B:** Substances which are suspected of being 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 lead to 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 RELS: 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 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 there is a danger of cutaneous absorption.

STEL-Short Term Exposure Limit: 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: 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 LD₅₀Rat 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 LD₅₀Rat 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 LD₅₀Rat or Rabbit:* > 200-1000 mg/kg. *Inhalation Toxicity LC₅₀ 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 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 LD₅₀Rat 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:* ≤ 1 mg/kg. *Dermal Toxicity LD₅₀Rat 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 815.5°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:

FLAMMABILITY HAZARD (continued):

0 (continued): 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, 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.); 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, including: Liquids having a flash point below 22.8°C [73°F] and having a boiling point at or above 38°C [100°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]; 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 which will burn readily, including: 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; Material that ignite spontaneously when exposed to air at a temperature of 54.4°C [130°F] or below [e.g. 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. *Unstable Compressed Gases:* No Rating. *Pyrophorics:* No Rating. *Oxidizers:* No "0" rating allowed. *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 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 explosives or that do not have a mass explosion hazard. *Compressed Gases:* Pressure below OSHA definition. *Pyrophorics:* No Rating. *Oxidizers:* Packaging Group III; *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 explosive 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 – Explosive substances where the explosive effect is 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:* Packaging Group II *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. *Unstable Reactives:* Substances that may polymerize, decompose, condense, or self-react at ambient temperature and/or pressure, but have a low potential 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 1.2 – 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:* Packaging Group I *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. *Oxidizers:* *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 to cause significant heat generation or explosion.; 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-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 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 whose LC₅₀ for acute inhalation toxicity is greater than 10,000 ppm. Dusts and mists whose LC₅₀ for acute inhalation toxicity is greater than 200 mg/L.

DEFINITIONS OF TERMS (Continued)

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS (continued):

HEALTH HAZARD (continued): 0 (continued): Materials whose LD₅₀ for acute dermal toxicity is greater than 2000 mg/kg. Materials whose LD₅₀ for acute oral toxicity is greater than 2000 mg/kg. Materials that are essentially non-irritating to the respiratory tract, eyes and skin. **1** (materials that, under emergency conditions, can cause significant irritation): Gases and vapors whose LC₅₀ for acute inhalation toxicity is greater than 5,000 ppm but less than or equal to 10,000 ppm. Dusts and mists whose LC₅₀ for acute inhalation toxicity is greater than 10 mg/L but less than or equal to 200 mg/L. Materials whose LD₅₀ for acute dermal toxicity is greater than 1000 mg/kg but less than or equal to 2000 mg/kg. Materials whose LD₅₀ for acute oral toxicity is greater than 500 mg/kg but less than or equal to 2000 mg/kg. Materials that cause slight to moderate irritation to the respiratory tract, eyes and skin. **2** (materials that, under emergency conditions, can cause temporary incapacitation or residual injury): Gases and vapors whose LC₅₀ for acute inhalation toxicity is greater than 3,000 ppm but less than or equal to 5,000 ppm. Dusts and mists whose LC₅₀ for acute inhalation toxicity is greater than 2 mg/L but less than or equal to 10 mg/L. Materials whose LD₅₀ for acute dermal toxicity is greater than 200 mg/kg but less than or equal to 1000 mg/kg. Materials whose LD₅₀ for acute oral toxicity is greater than 50 mg/kg but less than or equal to 500 mg/kg. 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 5000 ppm and that does not meet the criteria for either degree of hazard 3 or degree of hazard 4. 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. **3** (materials that, under emergency conditions, can cause serious or permanent injury): Gases and vapors whose LC₅₀ for acute inhalation toxicity is greater than 1,000 ppm but less than or equal to 3,000 ppm. Dusts and mists whose LC₅₀ for acute inhalation toxicity is greater than 0.5 mg/L but less than or equal to 2 mg/L. Materials whose LD₅₀ for acute dermal toxicity is greater than 40 mg/kg but less than or equal to 200 mg/kg. Materials whose LD₅₀ for acute oral toxicity is greater than 5 mg/kg but less than or equal to 50 mg/kg. 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 and that does not meet the criteria for degree of hazard 4. Compressed liquefied 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. Cryogenic gases that cause frostbite and irreversible tissue damage. Materials that are corrosive to the respiratory tract. Materials that are corrosive to the eyes or cause irreversible corneal opacity. Materials that are corrosive to the skin. **4** (materials that, under emergency conditions, can be lethal): Gases and vapors whose LC₅₀ for acute inhalation toxicity less than or equal to 1,000 ppm. Dusts and mists whose LC₅₀ for acute inhalation toxicity is less than or equal to 0.5 mg/L. Materials whose LD₅₀ for acute dermal toxicity is less than or equal to 40 mg/kg. Materials whose LD₅₀ for acute oral toxicity is less than or equal to 5 mg/kg. 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 1000 ppm.

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 accordance with Annex D. **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 accordance with Annex D. Liquids, solids and semisolids having a flash point at or above 93.4°C (200°F) (i.e. 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 *Recommendation 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 percent 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 a 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). 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. Most ordinary combustible materials. **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) (i.e. 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 in 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 percent 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 (73°F) and below 37.8°C (100°F) (i.e. Class IB and IC liquids). 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 a 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 percent by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent.

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS (continued):

FLAMMABILITY HAZARD (continued): 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) (i.e. Class IA liquids). Materials that ignite when exposed to air. 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.

INSTABILITY HAZARD: 0 Materials that in themselves are normally stable, even under fire conditions: Materials that have an estimated 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 estimated 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 estimated 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 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. Materials that are sensitive to localized thermal or mechanical shock at normal temperatures and pressures.

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**, **LCLo**, 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. **TL_m** = median threshold limit; Coefficient of Oil/Water Distribution is represented by **log K_{ow}** or **log K_{oc}** and is used to assess a substance's behavior in the environment.

REGULATORY INFORMATION:

U.S. and CANADA:

U.S. and CANADA: ACGIH: 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/NDL**); 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.

EUROPEAN: EU is the European Union (formerly known as the **EEC**, European Economic Community). **EINECS**: This the European Inventory of Now-Existing Chemical Substances. The **ARD** is the European Agreement Concerning the International Carriage of Dangerous Goods by Road and the **RID** are the International Regulations Concerning the Carriage of Dangerous Goods by Rail. **AUSTRALIAN: AICS** is the Australian Inventory of Chemical Substances. **NOHSC**: National Occupational Health & Safety Code.