SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI, Canadian WHMIS, European Union Standards, Australian WorkSafe, the Japanese Industrial Standard JIS Z 7250: 2000 and the Global Harmonization Standard

1. IDENTIFICATION of the SUBSTANCE or PREPARATION

IDENTIFICATION OF SUBSTANCE/PREPARATION:

TRADE NAME (AS LABELED):	**Silverback Ink Stupid Black**
CHEMICAL NAME/CLASS:	Water-Based Ink
SYNONYMS:	Not Applicable
PRODUCT USE:	Various Uses
U.N. NUMBER:	None Allocated
U.N. DANGEROUS GOODS CLASS/SUBSIDIARY RISK:	None Allocated
HAZCHEM CODE (AUSTRALIA):	None Allocated
POISONS SCHEDULE NUMBER (AUSTRALIA):	None Allocated

COMPANY/UNDERTAKING IDENTIFICATION:

U.S. SUPPLIER/MANUFACTURER'S NAME:	**SILVERBACK INK CORP**
ADDRESS:	4869 Fountain Ave Los Angeles, CA 90029, USA
INFORMATION PHONE:	1-323-669-8282
EMERGENCY PHONE:	**CHEMTREC:** (800) 424-9300 (U.S., Canada, Puerto Rico) 24 hours **CHEMTREC:** +1-703-527-3887 [collect] (International) 24 hours
EMAIL:	tattoodyou@aol.com
DATE OF PREPARATION:	November 23, 2014
DATE OF REVISION:	New

NOTE: ALL United States Occupational Safety and Health Administration Standard (29 CFR 1910.1200), U.S. State equivalent Standards, Canadian WHMIS [Controlled Products Regulations], all applicable EU Directives through EC 1907: 2006, the European Union CLP EC 1272/2008 and the Global Harmonization Standard, Australian [NOHSC:2011 (2003)], and Japanese Industrial Standard (JIS Z 7250: 2000) required information is included in appropriate sections based on the U.S. ANSI Z400.1-2004 format. These products have been classified in accordance with the hazard criteria of the countries listed above.

2. HAZARD IDENTIFICATION

GLOBAL HARMONIZATION AND EU CLP REGULATION (EC) 1272/2008 and the JAPANESE INDUSTRIAL STANDARD LABELING AND CLASSIFICATION: Classified in accordance with CLP Regulation (EC) 1272/2008, Australian Worksafe and Japanese JIS Z7253: 2012. For additional information on classification under EU 67/548/EEC, see below.

Classification: Eye Irritation Cat. 2A Signal Word: Warning Hazard Statement Codes: H319

Precautionary Statement Codes: P264, P280, P305 + P351 + P338, P337 + P313

Hazard Symbol/Pictogram: GHS07

EU 67/548/EEC LABELING AND CLASSIFICATION LABELING/CLASSIFICATION: These products meet the definition of hazardous, as defined by the European Community Council Directive 67/548/EEC or subsequent Directives.

Classification: Irritant Risk Phrase Codes: R36 Safety Phrase Codes: S2; S25; S37/39

Hazard Symbol: Xi

See Section 16 for full text of classification of product and components

EMERGENCY OVERVIEW: Product Description: These products are black liquids that have a mild odor. **Health Hazards:** The primary health hazard associated with these products is the potential for mild irritation of contaminated tissue. Eye contact may cause irritation. The inks may stain skin, eyes, other contaminated tissue, and objects. **Flammability Hazards:** These products are not flammable. If involved in a fire, the product may decompose to produce carbon and nitrogen oxides and formaldehyde. **Reactivity Hazards:** These products are not reactive. **Environmental Hazards:** These products may have adverse effects when released into the environment. **Emergency Recommendations:** Emergency responders must wear the personal protective equipment suitable for the situation to which they are responding.

3. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	EINECS #	Japanese ENCS #	Australian AICS	% w/v	LABEL ELEMENTS EU Classification (67/548/EEC) GHS & EU Classification (1272/2008 EC) Risk Phrases/Hazard Statements
Proprietary Black Pigment			Excepted as a Mineral	Listed	10-30	SELF CLASSIFICATION (Inhalation of particulates) EU 67/548 Classification: Carcinogenic Cat. 3 Risk Phrase Codes: R40 GHS & EU 1272/2008 Classification: Carcinogenic Category 2 Hazard Statement Codes: H351
Proprietary Alcohol				Listed	7-14	EU 67/548 Classification: Flammable, Irritant Risk Phrase Codes: R11, R36 GHS & EU 1272/2008 Classification: Flammable Liquid Category 2, Eye Irritant Category 2, STOT SE 3 Hazard Statement Codes: H225, H319, H336
Proprietary Polyvinyl Polymer				Listed	1-5	EU 67/548 Hazard Classification: Not Applicable GHS & EU 1272/2008 Classification: Not Applicable
Proprietary Aliphatic Triol				Listed	1-3	EU 67/548 Hazard Classification: Not Applicable GHS & EU 1272/2008 Classification: Not Applicable
Proprietary Glycol Ether				Listed	Trace	EU 67/548 Classification: Harmful, Irritant Risk Phrase Codes: R22, R36 GHS & EU 1272/2008 Classification: Acute Oral Toxicity Cat. 4, Eye Irritation Category 2A Hazard Statement Codes: H302, H319
Proprietary Pyrone Acid				Listed	Trace	SELF CLASSIFICATION EU 67/548 Classification: Harmful Risk Phrase Codes: R22 GHS & EU 1272/2008 Classification: Acute Oral Cat. 4 Hazard Statement Codes: H351
Water	7732-18-5	231-791-2	Not Identified in the Listing	Listed	Balance	EU 67/548 Hazard Classification: Not Applicable GHS & EU 1272/2008 Classification: Not Applicable

See Section 16 for full classification information of product and components.

4. FIRST-AID MEASURES

PROTECTION OF FIRST AID RESPONDERS: Rescuers should be taken for medical attention, if necessary. Only trained personnel should administer supplemental oxygen and/or cardio-pulmonary resuscitation, if necessary.

DESCRIPTION OF FIRST AID MEASURES: Victim(s) must be taken for medical attention. Take copy of label and MSDS to physician or other health professional with victim(s). Remove victim(s) to fresh air, as quickly as possible.

Skin Exposure: If these products contaminate the skin, begin decontamination with running water. Minimum flushing is for 20 minutes. The contaminated individual must seek medical attention if any adverse effects occur after flushing.

Eye Exposure: If these products enter the eyes, open contaminated individual's eyes while under gently running water. Use sufficient force to open eyelids. Have contaminated individual "roll" eyes. Minimum flushing is for 20 minutes. Contaminated individual must seek medical attention if adverse effect continues after flushing.

Inhalation: If these products are inhaled, remove victim to fresh air. The contaminated individual must seek medical attention if any adverse effects occur.

Ingestion: If these products are swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. If professional advice is not available, do not induce vomiting. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or unable to swallow. If victim is convulsing, maintain an open airway and obtain immediate medical attention.

IMPORTANT SYMPTOMS AND EFFECTS: See Sections 2 (Hazard Information) and 11 (Toxicological Information) for information.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Skin or respiratory conditions may be aggravated by exposure to these products.

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

5. FIRE-FIGHTING MEASURES

FLASH POINT: Not flammable.

AUTOIGNITION TEMPERATURE: Not applicable.

FLAMMABLE LIMITS (in air by volume, %): Not applicable.

FIRE EXTINGUISHING MEDIA: Unless incompatibilities exist for surrounding materials, carbon dioxide, water spray, 'ABC' type chemical extinguishers, foam, dry chemical and halon extinguishers can be used to fight fires involving these products.

UNSUITABLE FIRE EXTINGUISHING MEDIA: None known.

5. FIRE-FIGHTING MEASURES (Continued)

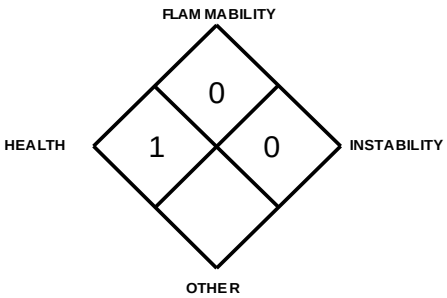
SPECIAL HAZARDS ARISING FROM THE SUBSTANCE: When involved in a fire, this material may decompose and produce irritating vapors and toxic gases (e.g., carbon and nitrogen oxides, formaldehyde).

Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: Not sensitive.

SPECIAL PROTECTIVE ACTIONS FOR FIRE-FIGHTERS Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Due to the presence of colorants, the runoff water from these products can discolor contaminated objects. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas. If necessary, rinse fire-response equipment with soapy water before returning it to service.

NFPA RATING



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

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS AND EMERGENCY PROCEDURES: Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. Call CHEMTREC (1-800-424-9300) for emergency assistance. Or if in Canada, call CANUTEC (613-996-6666). The atmosphere must at least 19.5 percent Oxygen before non-emergency personnel can be allowed in the area without Self-Contained Breathing Apparatus and fire protection.

PERSONAL PROTECTIVE EQUIPMENT: Proper protective equipment should be used. Use only non-sparking tools and equipment.

Small Spills: Wear rubber gloves, splash goggles, and appropriate body protection.

Large Spills: Minimum Personal Protective Equipment should be rubber gloves, rubber boots, face shield, and Tyvek suit. Minimum level of personal protective equipment for releases in which the level of oxygen is less than 19.5% or is unknown must be **Level B: triple-gloves (rubber gloves and nitrile gloves over latex gloves), chemical resistant suit and boots, hard hat, and Self-Contained Breathing Apparatus.**

METHODS FOR CLEAN-UP AND CONTAINMENT:

Small Spills: Carefully absorb spill using polypads or other non-reactive absorbent. Place spilled material in appropriate container for disposal, sealing tightly. Remove all residue before decontamination of spill area.

Large Spills: Access to the spill area should be restricted. For large spills, dike or otherwise contain spill and absorb spill with polypads or other non-reactive absorbent material. Monitor area for combustible vapor levels.

All Spills: Place all spill residue in a double plastic bag or other containment and seal. Decontaminate the area thoroughly. 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.

ENVIRONMENTAL PRECAUTIONS: Avoid release to the environment. Run-off water may be contaminated by other materials and should be contained to prevent possible environmental damage.

REFERENCE TO OTHER SECTIONS: See information in Section 8 (Exposure Controls – Personal Protection) and Section 13 (Disposal Considerations) for additional information.

7. HANDLING and STORAGE

PRECAUTIONS FOR SAFE HANDLING: As with all chemicals, avoid getting these products ON YOU or IN YOU. Wash thoroughly after handling these products. Do not eat, drink, smoke, or apply cosmetics while handling these products. Avoid breathing these products. Keep away from incompatible materials (see Section 10, Stability and Reactivity). Containers of these products must be properly labeled. Use in a well-ventilated location. Remove contaminated clothing.

CONDITIONS FOR SAFE STORAGE: Keep container tightly closed when not in use. Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Material should be stored in secondary containers or in a diked area, as appropriate. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged. Have appropriate extinguishing equipment in the storage area (such as sprinkler systems or portable fire extinguishers). Empty containers may contain residual product; therefore, empty containers should be handled with care.

SPECIFIC USE(S): These products are for use as an ink. Follow all industry standards for use of these products.

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 these products in areas where adequate ventilation is provided. Decontaminate equipment thoroughly, before maintenance begins. Collect all rinsates and dispose of according to applicable Federal, State, or local procedures, or applicable standards.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

EXPOSURE LIMITS/CONTROL PARAMETERS:

Ventilation and Engineering Controls: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided in this section. Use local exhaust ventilation. Normal office ventilation conforming to the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standards is adequate under normal circumstances of use.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION (Continued)

EXPOSURE LIMITS/CONTROL PARAMETERS (continued):

Ventilation and Engineering Controls (continued): Persons using this material should consult a qualified Ventilation Engineer and/or Industrial Hygienist if concerns about exposures arise. If necessary, refer to Australian National Code of Practice for the Control of Workplace Hazardous Substances [NOHSC: 2007 (1994)] for further information.

Workplace Exposure Limits/Control Parameters:

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
Proprietary Black Pigment		3 (inhal. fract.)	NE	3.5	NE	3.5 (0.1 in presence of PAHs, as PAHs; 1-hr TWA)	NE	1750	DFG MAK: As inhalable dust
Proprietary Pyrone Acid		NE	NE	NE	NE	NE	NE	NE	NE
Proprietary Aliphatic Triol		Mist		15 (total dust), 5 (resp. fract.) Mist	Mist	NE	NE	NE	DFG MAKs: TWA = 50 (Inhalable fraction) PEAK = 2•MAK 15 min. average value, 1-hr interval, 4 per shift DFG MAK Pregnancy Risk Classification: C
Proprietary Aliphatic Alcohol		200 ppm	400 ppm	400 ppm	500 ppm (vacated 1989 PEL)	400 ppm	500 ppm	2000 ppm (based on LEL)	DFG MAK: TWA = 200 ppm PEAK = 2•MAK, 15 min., average value, 1-hr interval, 4 per shift DFG MAK Pregnancy Risk Classification: C
Proprietary Glycol Ether		NE	NE	NE	NE	NE	NE	NE	DFG MAKs: TWA = 20 (skin) PEAK = 2•MAK 15 min. average value, 1-hr interval, 4 per shift DFG MAK Pregnancy Risk Classification: C
Proprietary Polyvinyl Polymer		NE	NE	NE	NE	NE	NE	NE	NE

NE = Not Established. PAHs = Polycyclic Aromatic Hydrocarbons NIC = Notice of Intended Change See Section 16 for Definitions of Other Terms Used

International Occupational Exposure Limits: The following international limits are in place for some components of these products. Limits may have changed since time of preparation of this SDS and should be checked with competent authorities of individual countries.

PROPRIETARY BLACK PIGMENT:
Australia: TWA = 3 mg/m^3, JUL 2008
Austria: MAK-TMW = 2 mg/m^3, resp, 2007
Belgium: TWA = 3.6 mg/m^3, MAR 2002
Denmark: TWA = 3.5 mg/m^3, carc, MAY 2011
Finland: TWA = 3.5 mg/m^3, STEL = 7 mg/m^3, NOV 2011
France: VME = 3.5 mg/m^3, FEB 2006
Iceland: TWA = 3.5 mg/m^3, NOV 2011
Japan: OEL = 1 mg/m^3 (resp. dust), 4 mg/m^3 (total dust), 2B carc, MAY 2012
Korea: TWA = 3.5 mg/m^3, 2006
Mexico: TWA = 3.5 mg/m^3; STEL = 7 mg/m^3, 2004
The Netherlands: MAC-TGG = 3.5 mg/m3, 2003
New Zealand: TWA = 3 mg/m^3, JAN2002
Norway: TWA = 3.5 mg/m^3, JAN 1999
Peru: TWA = 3.5 mg/m^3, JUL 2005
The Philippines: TWA = 3.5 mg/m^3, JAN 1993
Russia: STEL = 4 mg/m^3, JUN 2003
Sweden: TWA = 3 mg/m^3, JUN 2005
United Kingdom: TWA = 3.5 mg/m^3; STEL = 7 mg/m^3, OCT 2007
In Argentina, Bulgaria, Colombia, Jordan, Singapore, Vietnam check ACGIH TLV

PROPRIETARY ALIPHATIC ALCOHOL:
Belgium: TWA = 10 mg/m^3, MAR 2002
Finland: TWA = 20 mg/m^3, NOV 2011
France: VME = 10 mg/m^3, FEB 2006
Germany: MAK = 50 mg/m3, inhal, 2011
Korea: TWA = 10 mg/m^3 (mist), 2006
Mexico: TWA = 10 mg/m^3 (inhalable), 2004
The Netherlands: MAC-TGG = 10 mg/m^3, 2003
New Zealand: TWA = 10 mg/m^3 (mist), JAN 2002
Peru: TWA = 10 mg/m^3, JUL 2005
Switzerland: MAK-W = 50 mg/m^3, KZG-W = 100 mg/m^3, inhal, JAN 2011
United Kingdom: TWA = 10 mg/m^3, OCT2007
In Argentina, Bulgaria, Colombia, Jordan, Singapore, Vietnam check ACGIH TLV

PROPRIETARY ALCOHOL:
Australia: TWA = 400 ppm (983 mg/m^3), STEL = 500 ppm (1230 mg/m^3), JUL 2008
Austria: MAK-TMW 200 ppm (500 mg/m^3); KZW = 800 ppm (2000 mg/m^3), 2007

PROPRIETARY ALCOHOL (continued):
Belgium: TWA =400 ppm (997 mg/m^3), MAR 2002
Belgium: STEL = 500 ppm (1248 mg/m^3), MAR 2002
Denmark: TWA = 200 ppm (490 mg/m^3), MAY 2011
France: VLE = 400 ppm (980 mg/m^3), FEB 2006
Germany: MAK = 500 mg/m^3 (200 mL/m^3), 2005
Hungary: TWA = 500 mg/m^3, STEL = 2000 mg/m^3, Skin, SEP 2000
Iceland: TWA = 200 ppm (490 mg/m^3), skin, NOV 2011
Japan: OEL-C = 400 ppm (980 mg/m^3), MAY 2009
Korea: TWA = 400 ppm (980 mg/m^3), STEL = 500 ppm (1225 mg/m^3), 2006
Mexico: TWA = 400 ppm (980 mg/m^3); STEL = 500 ppm (1225 mg/m^3), 2004
The Netherlands: MAC-TGG = 650 mg/m^3, 2003
New Zealand: TWA = 400 ppm (983 mg/m^3); STEL = 500 ppm (1230 mg/m^3), JAN 2002
Peru: TWA = 200 ppm (491 mg/m^3); STEL = 400 ppm (983 mg/m^3), JUL 2005
The Philippines: TWA = 400 ppm (980 mg/m^3), JAN 1993
Poland: MAC(TWA) = 900 mg/m^3, MAC(STEL) = 1200 mg/m^3, JAN 1999
Russia: TWA = 10 mg/m^3, STEL = 50 mg/m^3, JUN 2003
Sweden: TWA = 150 ppm (350 mg/m^3); STEL = 250 ppm (600 mg/m^3), JUN 2005
Switzerland: MAK-W = 200 ppm (500 mg/m^3), KZG-W = 400 ppm (1000 mg/m^3), DEC 2006
Turkey: TWA = 200 ppm (500 mg/m^3), JAN 1993
United Kingdom: TWA = 400 ppm (999 mg/m^3); STEL = 500 ppm (1250 mg/m^3), OCT 2007
In Argentina, Bulgaria, Colombia, Jordan, Singapore, Vietnam check ACGIH TLV

PROPRIETARY GLYCOL ETHER:
Austria: MAK-TMW = 20 ppm (110 mg/m^3); KZW = 20 ppm (110 mg/m^3), skin, 2007
Finland: TWA = 20 ppm (110 mg/m^3), STEL = 50 ppm (290 mg/m^3), skin, NOV 2011
Germany: MAK = 20 ppm (110 mg/m^3), skin, 2011
The Netherlands: MAC-TGG = 110 mg/m^3, 2003
Russia: STEL = 2 mg/m^3, JUN 2003
Switzerland: MAK-W = 20 ppm (110 mg/m^3), KZG-W = 40 ppm (220 mg/m^3), skin, JAN 2011

PROPRIETARY POLYVINYL POLYMER:
Russia: STEL = 10 mg/m^3, JUN 2003

8. EXPOSURE CONTROLS - PERSONAL PROTECTION (Continued)

PERSONAL PROTECTIVE EQUIPMENT: *The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132, including Respiratory Protection Standard [29 CFR 1910.134]), equivalent standards of Canada (including CSA including CSA Respiratory Standard Z94.4-02 and CSA Standard Z94.3-07), 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), or standards of Japan (including JIS T 8116:2005 for glove selection, JIS T 8150:2006 for respiratory PPE, JIS T 8147:2003 for eye protectors, and JIS T 8030:2005 for protective clothing). Please reference applicable regulations and standards for relevant details.*

Respiratory Protection: Respiratory protection is not generally needed when using these products. Maintain airborne contaminant concentrations below limits listed in this section, if applicable. In instances where inhalable mists or sprays of product may be generated, and respiratory protection is necessary, use only respiratory protection authorized in appropriate regulations. Oxygen levels below 19.5% are considered IDLH by U.S. OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, SAR with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998).

Eye Protection: Depending on the use of these products, splash goggles or safety glasses may be worn. Use goggles or safety glasses for spill response, as stated in Section 6 (Accidental Release Measures) of this SDS. If necessary, refer to appropriate regulations when selecting eye protection.

Hand Protection: Wear butyl rubber, neoprene, or nitrile rubber or latex gloves for routine use. If necessary, refer to appropriate regulations for further information.

Body Protection: Use body protection appropriate for task, such as a lab coat. If necessary, use body protection appropriate for task (e.g., Tyvek suit, rubber apron). If a hazard of injury to the feet exists due to falling objects, rolling objects, where objects may pierce the soles of the feet or where employee's feet may be exposed to electrical hazards, use foot protection, as described in appropriate regulations.

9. PHYSICAL and CHEMICAL PROPERTIES

FORM: Liquid.
COLOR: Black.
MOLECULAR FORMULA: Mixture.
MOLECULAR WEIGHT: Mixture.
ODOR: Mild.
ODOR THRESHOLD: Not established.
VAPOR DENSITY (air = 1): Not established.
EVAPORATION RATE (*n*-BuAc = 1): < 1
SPECIFIC GRAVITY (water = 1): Not established.
MELTING/FREEZING POINT: Not established.
SOLUBILITY IN WATER: Soluble
BOILING POINT: Not established.
VAPOR PRESSURE: Not established.
pH: Not established.
OXIDIZING PROPERTIES: Not applicable.
EXPLOSIVE PROPERTIES: Not applicable.
COEFFICIENT OF OIL/WATER DISTRIBUTION (PARTITION COEFFICIENT): Not established.
HOW TO DETECT THIS SUBSTANCE (identification properties): The odor and color of these products may be distinguishing characteristics to identify it event of a spill.

10. STABILITY and REACTIVITY

CHEMICAL STABILITY: Stable under conditions of normal temperature and pressure.
DECOMPOSITION PRODUCTS: *Combustion:* If exposed to extremely high temperatures, these products can decompose to generate carbon and nitrogen oxides and formaldehyde. *Hydrolysis:* None known.
MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Strong oxidizers, water-reactive materials.
POSSIBILITY OF HAZARDOUS REACTION OR POLYMERIZATION: Will not occur.
CONDITIONS TO AVOID: Exposure to or contact with extreme temperatures and incompatible chemicals.

11. TOXICOLOGICAL INFORMATION

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 material, via route of entry, are as described below.

Inhalation: These products do not normally present a significant inhalation hazard under anticipated circumstances of use. Inhalation of vapors, mists, or sprays of this material, may mildly irritate the nose, throat, and other tissues of the respiratory system.

Contact with Skin or Eyes: Due to the colorants, skin contact may discolor contaminated areas. Skin contact may cause mild irritation in sensitive individuals. Repeated or prolonged skin overexposure may cause dermatitis (dry, red skin). Eye contact with this material can moderately irritate the eyes, causing discomfort, tearing, and redness. Because the eye tissue may be stained, vision may be temporarily blurred.

Skin Absorption: The trace Proprietary Glycol Ether component can be absorbed through intact skin. Due to the small amount in this product, no adverse effect is expected by this route.

Ingestion: Though not anticipated to be a significant route of occupational exposure, ingestion of large quantities of this material may cause nausea, vomiting, diarrhea, and discoloration of the mouth, teeth, and tissues of the throat.

Injection: Accidental injection of this liquid (as may occur by a puncture with a contaminated object) will cause local pain, irritation, and redness.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: In the event of overexposure, the following symptoms may be observed:

Acute: The ink may stain hair, skin, and other contaminated tissue. Eye contact will cause moderate irritation. Ingestion of large amounts may cause nausea, vomiting, diarrhea.

11. TOXICOLOGICAL INFORMATION (Continued)

HEALTH EFFECTS OR RISKS FROM EXPOSURE (continued):

Chronic: Repeated or prolonged skin overexposure may cause dermatitis (dry, red skin).

TARGET ORGANS: Acute: Skin, central nervous system, eyes. Chronic: Skin, reproductive system.

TOXICITY DATA: Specific toxicology data currently available for components of these products are as follows.

PROPRIETARY BLACK PIGMENT:

LD_{50} (Oral-Rat) > 15 400 mg/kg: Behavioral: somnolence (general depressed activity)

LD_{50} (Skin-Rabbit) > 3 gm/kg

TCLo (Inhalation-Rat) 7 mg/m^3: Lungs, Thorax, or Respiration: other changes; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

TCLo (Inhalation-Rat) 1.66 mg/m^3/7 hours: Lungs, Thorax, or Respiration: sputum; Blood: changes in leukocyte (WBC) count; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

TCLo (Inhalation-Rat) 50 mg/m^3: Sense Organs and Special Senses (Olfaction): effect, not otherwise specified; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

TCLo (Inhalation-Rat) 229 mg/m^3/6 hours: Lungs, Thorax, or Respiration: other changes; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

TCLo (Inhalation-Rat) 50 mg/m^3/6 hours/90 days-intermittent: Lungs, Thorax, or Respiration: other changes

TCLo (Inhalation-Rat) 1 mg/m^3/13 weeks-intermittent: Lungs, Thorax, or Respiration: other changes; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

TCLo (Inhalation-Rat) 1 mg/m^3/13 weeks-intermittent: Lungs, Thorax, or Respiration: other changes, changes in lung weight; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

TCLo (Inhalation-Rat) 50 mg/m^3/13 weeks-intermittent: Lungs, Thorax, or Respiration: other changes; Biochemical: Metabolism (Intermediary): other

TCLo (Inhalation-Rat) 50 mg/m^3/13 weeks-intermittent: Lungs, Thorax, or Respiration: other changes; Biochemical: Metabolism (Intermediary): other, Metabolism (Intermediary): effect on inflammation or mediation of inflammation

TCLo (Inhalation-Rat) 7 mg/m^3/6 hours/13 weeks-intermittent: Sense Organs and Special Senses (Olfaction): effect, not otherwise specified; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

TCLo (Inhalation-Rat) 11,600 µg/m^3/18 hours/2 years-intermittent: Tumorigenic: carcinogenic by RTECS criteria; Lungs, Thorax, or Respiration: tumors

TCLo (Inhalation-Mouse) 50 mg/m^3/6 hours: Sense Organs and Special Senses (Olfaction): effect, not otherwise specified

TCLo (Inhalation-Mouse) 1 mg/m^3/13 weeks-intermittent: Lungs, Thorax, or Respiration: other changes; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

TCLo (Inhalation-Mouse) 1 mg/m^3/13 weeks-intermittent: Lungs, Thorax, or Respiration: other changes, changes in lung weight; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

TCLo (Inhalation-Mouse) 7 mg/m^3/6 hours/13 weeks-intermittent: Sense Organs and Special Senses (Olfaction): effect, not otherwise specified; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

TCLo (Inhalation-Hamster) 7 mg/m^3/13 weeks-intermittent: Lungs, Thorax, or Respiration: other changes; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

TCLo (Inhalation-Hamster) 50 mg/m^3/6 hours/13 weeks-intermittent: Sense Organs and Special Senses (Olfaction): effect, not otherwise specified

TDLo (Oral-Mouse) 20,000 µg/kg/4 weeks-intermittent: Brain and Coverings: other degenerative changes; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

TDLo (Skin-Rat) 11 gm/kg/4 weeks-intermittent: Blood: pigmented or nucleated red blood cells; Liver: changes in liver weight; Nutritional and Gross Metabolic: weight loss or decreased weight gain

TDLo (Intravenous-Rat) 10 mg/kg/2 minutes: Liver: changes in liver weight; Blood: changes in spleen

TDLo (Intravenous-Rat) 10 mg/kg/2 minutes: Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: hepatic microsomal mixed oxidase (dealkylation, hydroxylation, etc.) TDLo (Intratracheal-Rat) 16 mg/kg: Lungs, Thorax, or Respiration: other changes; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

TDLo (Intratracheal-Rat) 15 mg/kg: Lungs, Thorax, or Respiration: other changes; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: cytochrome oxidases (including oxidative phosphorylation)

TDLo (Intratracheal-Rat) 10 mg/kg: Lungs, Thorax, or Respiration: sputum; Biochemical: Metabolism (Intermediary): other proteins; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

TDLo (Intratracheal-Mouse) 20 mg/kg/4 days-intermittent: Lungs, Thorax, or Respiration: sputum; Immunological Including Allergic: increase in cellular immune response; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

TDLo (Intratracheal-Mouse) 1000 µg/kg: Lungs, Thorax, or Respiration: other changes; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

TDLo (Intratracheal-Mouse) 4000 µg/kg/4 weeks-intermittent: Lungs, Thorax, or Respiration: other changes; Immunological Including Allergic: increase in cellular immune response; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

TDLo (Parenteral-Mouse) 36 µg/kg/3 days-intermittent: Immunological Including Allergic: increase in humoral immune response

Mutation in Microorganisms (Bacteria-*Salmonella typhimurium*) 1 mg/plate

DNA Adduct (Inhalation-Mouse) 6200 µg/m^3/16 hours/12 weeks-intermittent

DNA Damage (Human Lymphocyte) 16 µg/L/48 hours

DNA Damage (Inhalation-Rat) 50 ug/L/13 weeks-intermittent

DNA Damage (Inhalation-Rat) 50 gm/L/13 weeks

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM

HEALTH HAZARD	(BLUE)	1
FLAMMABILITY HAZARD	(RED)	0
PHYSICAL HAZARD	(YELLOW)	0

PROTECTIVE EQUIPMENT

EYES	RESPIRATORY	HANDS	BODY
	SEE SECTION 8		SEE SECTION 8

For Routine Industrial Use and Handling Applications

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

PROPRIETARY ALIPHATIC TRIOL:

TDLo (Oral-Human) 1428 mg/kg: Behavioral: headache; Gastrointestinal: nausea or vomiting

Standard Draize Test (Skin-Rabbit) 500 mg/24 hours: Mild

Standard Draize Test (Eye-Rabbit) 500 mg/24 hours: Mild

LD_{50} (Oral-Rat) 12,600 mg/kg: Behavioral: general anesthetic, muscle weakness; Liver: other changes

LD_{50} (Oral-Rat) 12,600 mg/kg

LD_{50} (Oral-Mouse) 4090 mg/kg

LD_{50} (Oral-Rabbit) 27 gm/kg

LD_{50} (Oral-Guinea Pig) 7750 mg/kg

LD_{50} (Intraperitoneal-Rat) 4420 mg/kg: Behavioral: toxic psychosis; Cardiac: other changes; Kidney/Ureter/Bladder: other changes

LD_{50} (Intraperitoneal-Mouse) 8700 mg/kg: Behavioral: altered sleep time (including change in righting reflex)

LD_{50} (Subcutaneous-Rat) 100 mg/kg

LD_{50} (Subcutaneous-Mouse) 91 mg/kg

LD_{50} (Intravenous-Rat) 5566 mg/kg

LD_{50} (Intravenous-Mouse) 4250 mg/kg

LD_{50} (Intravenous-Rabbit) 53 gm/kg

LDLo (Intramuscular-Rat) 10 mg/kg: Kidney/Ureter/Bladder: changes in tubules (including acute renal failure, acute tubular necrosis), other changes in urine composition

LDLo (Intramuscular-Rat) 10 mL/kg: Kidney/Ureter/Bladder: changes in tubules (including acute renal failure, acute tubular necrosis); Blood: changes in serum composition (e.g. TP, bilirubin, cholesterol); Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: multiple enzyme effects

TDLo (Intramuscular-Rat) 5000 mg/kg: Kidney/Ureter/Bladder: renal function tests depressed

TDLo (Intramuscular-Rat) 8 mL/kg: Kidney/Ureter/Bladder: changes in tubules (including acute renal failure, acute tubular necrosis); Blood: changes in serum composition (e.g. TP, bilirubin, cholesterol); Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

TDLo (Intramuscular-Rat) 4 mL/kg: Kidney/Ureter/Bladder: changes in tubules (including acute renal failure, acute tubular necrosis), urine volume decreased; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: catalyses

TDLo (Intramuscular-Rat) 4000 mg/kg: Kidney/Ureter/Bladder: other changes; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

TDLo (Oral-Rat) 96 gm/kg/30 days-intermittent: Blood: changes in leukocyte (WBC) count, changes in serum composition (e.g. TP, bilirubin, cholesterol); Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: true cholinesterase

TDLo (Oral-Rat) 100 mg/kg: male 1 day(s) pre-mating: Reproductive: Fertility: post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants)

TDLo (Oral-Mouse) 560 gm/kg/8 weeks-continuous: 560 gm/kg/8 weeks-continuous: Lungs, Thorax, or Respiration: structural or functional change in trachea or bronchi

TDLo (Oral-Mouse) 2800 mg/kg/25 weeks-continuous: Skin and Appendages: tumors; Tumorigenic: facilitates action of known carcinogen

TDLo (Oral-Mouse) 87.5 gm/kg/25 weeks-intermittent: Tumorigenic: equivocal tumorigenic agent by RTECS criteria Lungs, Thorax, or Respiration: tumors; Tumorigenic: facilitates action of known carcinogen

TDLo (Intratesticular-Rat) 280 mg/kg: male 2 day(s) pre-mating: Reproductive: Paternal Effects: spermatogenesis (incl. genetic material, sperm morphology, motility, and count), testes, epididymis, sperm duct

TDLo (Intratesticular-Rat) 1600 mg/kg: male 1 day(s) pre-mating: Reproductive: Fertility: male fertility index (e.g. # males impregnating females per # males exposed to fertile non-pregnant females)

TDLo (Intratesticular-Rat) 862 mg/kg: male 1 day(s) pre-mating: Reproductive: Paternal Effects: spermatogenesis (incl. genetic material, sperm morphology, motility, and count)

11. TOXICOLOGICAL INFORMATION (Continued)

TOXICITY DATA (continued):

PROPRIETARY ALIPHATIC TRIOL (continued):

TDLo (Intratesticular-Monkey) 119 mg/kg: male 1 day(s) pre-mating: Reproductive: Paternal Effects: spermatogenesis (incl. genetic material, sperm morphology, motility, and count), testes, epididymis, sperm duct

DNA Inhibition (Human Lymphocyte) 200 mmol/L

Cytogenetic Analysis (Oral-Rat) 1 gm/kg

PROPRIETARY ALCOHOL:

LDLo (oral, man) = 5272 mg/kg; Behavioral: coma; Vascular: BP lowering not characterized in autonomic section; Lungs, Thorax, or Respiration: chronic pulmonary edema

LDLo (oral, human) = 3570 mg/kg; Behavioral: coma; Lungs, Thorax, or Respiration: respiratory depression; Gastrointestinal: nausea or vomiting

TDLo (oral, man) = 14,432 mg/kg; Behavioral: coma; Vascular: BP lowering not characterized in autonomic section; Lungs, Thorax, or Respiration: dyspnea

TDLo (oral, human) = 223 mg/kg; Behavioral: hallucinations, distorted perceptions; Cardiac: pulse rate; Vascular: BP lowering not characterized in autonomic section TDLo (oral, infant) = 13 gm/kg; Behavioral: somnolence (general depressed activity), irritability; Gastrointestinal: nausea or vomiting

LDLo (unreported, man) = 2770 mg/kg

Skin Irritancy (rabbit) = 500 mg; mild

Eye Irritancy (rabbit) = 100 mg; severe

Eye Irritancy (rabbit) = 16 mg

Eye Irritancy (rabbit) = 10 mg; moderate

LD_{50} (oral, rat) = 5045 mg/kg

LD_{50} (oral, mouse) = 3600 mg/kg

LD_{50} (oral, rabbit) = 6410 mg/kg

LD_{50} (skin, rabbit) = 12,800 mg/kg

LD_{50} (intravenous, rat) = 1099 mg/kg

LD_{50} (intravenous, mouse) = 1509 mg/kg

LD_{50} (intravenous, rabbit) = 1184 mg/kg

PROPRIETARY ALCOHOL (continued):

LD_{50} (intraperitoneal, rat) = 2735 mg/kg

LD_{50} (intraperitoneal, mouse) = 4477 mg/kg

LD_{50} (intraperitoneal, rabbit) = 667 mg/kg

LD_{50} (intraperitoneal, guinea pig) = 2560 mg/kg

LD_{50} (intraperitoneal, hamster) = 3444 mg/kg

LDLo (oral, dog) = 1537 mg/kg; Gastrointestinal: nausea or vomiting

LDLo (oral, cat) = 6 mL/kg

LCLo (inhalation, rat) = 16,000 ppm/4 hours

LCLo (inhalation, mouse) = 12,800 ppm/3 hours

LDLo (intravenous, cat) = 1963 mg/kg

LDLo (parenteral, frog) = 20 g/kg; Peripheral Nerve and Sensation: spastic paralysis with or without sensory change; Behavioral: somnolence (general depressed activity)

LDLo (subcutaneous, mouse) = 6000 mg/kg

LDLo (intravenous, dog) = 5120 mg/kg

TDLo (oral, rat) = 6480 mg/kg/male 26 weeks pre; Reproductive effects

TCLo (inhalation, rat) = 10,000 ppm/7 hours/female 1–19 days post; Teratogenic effects

Cytogenetic Analysis (*Saccharomyces cerevisiae*) = 200 mmol/tube

Cytogenetic Analysis (inhalation, rat) = 1030 µg/m^3/16 weeks/intermittent

PROPRIETARY POLYVINYL POLMYER:

LD_{50} (Oral-Rat) 100 gm/kg: Gastrointestinal: hypermotility, diarrhea

LD_{50} (Oral-Mouse) > 40 gm/kg

LD_{50} (Oral-Rabbit) 1040 mg/kg

LD_{50} (Oral-Guinea Pig) 100 gm/kg: Gastrointestinal: hypermotility, diarrhea

LD_{50} (Intraperitoneal-Mouse) 12 gm/kg

LD_{50} (Unreported-Mouse) 16 gm/kg

TDLo (Intravenous-Rat) 35 gm/kg/4 weeks-intermittent: Kidney/Ureter/Bladder: other changes, changes in bladder weight; Endocrine: changes in spleen weight

CARCINOGENIC POTENTIAL OF COMPONENTS: Components of these products are listed by agencies tracking the carcinogenic potential of chemical compounds, as follows;

PROPRIETARY BLACK PIGMENT: ACGIH TLV-A4 (Not Classifiable as a Human Carcinogen), IARC-2B (Possibly Carcinogenic to Humans); MAK-3B (Substances for Which in *vitro tests* or Animal Studies Have Yielded Evidence Of Carcinogenic Effects That is Not Sufficient for Classification of the Substance In One of the Other Categories. Further studies are required before a final classification can be made. A MAK or BAT value can be established, provided no genotoxic effects have been detected.); NIOSH-Ca (Potential Occupational Carcinogen with No Further Categorization * In presence of PAHs); Notice of Intended Change: ACGIH TLV-A3 (Confirmed Animal Carcinogen with Unknown Relevance to Humans)

PROPRIETARY ALCOHOL: ACGIH TLV-A4 (Not Classifiable as a Human Carcinogen); IARC-3 (Not Classifiable as to Carcinogenicity to Humans)

PROPRIETARY POLYVINYL POLYMER: IARC-3 (Not Classifiable as to Carcinogenicity to Humans)

The remaining components of these products 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.

IRRITANCY OF PRODUCT: Acute exposure to this material via skin contact, eye contact, and inhalation may mildly irritate contaminated tissue.

SENSITIZATION TO THE PRODUCT: The components of these products are not known to be human skin or respiratory sensitizers.

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of components of these products on the human reproductive system.

Mutagenicity: No data are available on possible mutagenic effects from these products and their components.

Embryotoxicity: The components of these products are not reported to produce embryotoxic effects in humans. The Proprietary Alcohol component has produced fetotoxicity (reduced fetal weight) in rats exposed by inhalation, in the absence of maternal toxicity. Reduced survival in the early postnatal period has been observed in the offspring of rats exposed to high oral doses, in the presence of minimal maternal toxicity. Rats were exposed by inhalation to 0, 3500, 7000 or 10000 ppm during days 1-19 of pregnancy. Maternal toxicity was observed at the 2 high doses, but not at 3500 ppm. Fetal weights were significantly reduced in a concentration related manner at all treatment levels. At 7000 and 10000 ppm, teratogenicity and/or embryotoxicity were observed.

Teratogenicity: No data are available on possible teratogenic effects from these products and their components.

Reproductive Toxicity: The components of these products are not reported to cause reproductive effects in humans. In a two-generation study of Proprietary Alcohol, rats were orally dosed with 0, 100, 500 or 1000 mg/kg/day for 10 weeks prior to mating. Females were dosed during mating, gestation and lactation and males were dosed during mating through delivery of the last litter sired. In the first generation, a significant reduction was observed in the live birth index and the survival index on days 1 and 4 for the offspring of animals exposed to 1000 mg/kg/day, as well as the survival rate of off-spring. Only minimal maternal toxicity (increased liver weight) was observed at 500 mg/kg/day. At 1000 mg/kg/day, 2/30 females in the first generation (P1) and 2/26 females died in the second generation.

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

CHEMICAL: DETERMINANT	SAMPLING TIME	BEI
Proprietary Alcohol • Acetone in urine	• End of Shift End of Workweek	• 40 mg/L

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

MOBILITY: These products have not been tested for mobility in soil. It is expected to be somewhat mobile in soil. The following information is available for the Proprietary Alcohol component.

PROPRIETARY ALCOHOL:

The Koc of this material is estimated as 25, using a measured log Kow of 0.05 and a regression-derived equation. According to a classification scheme, this estimated Koc value suggests that this compound is expected to have very high mobility in soil.

PERSISTENCE AND BIODEGRADABILITY: These products have not been tested for persistence or biodegradability. It is expected that some biodegradation will occur to these products; however, no specific information is known. The following information is available for the Proprietary Alcohol component.

PROPRIETARY ALCOHOL:

Based on a classification scheme, an estimated Koc value of 25, determined from a log Kow of 0.05 and a regression-derived equation, indicates that this compound is expected to have very high mobility in soil. Volatilization from moist soil surfaces is expected to be an important fate process given a Henry's Law constant of 8.10X10-6 atm-cu m/mole. The potential for volatilization from dry soil surfaces may exist based upon a vapor pressure of 45.4 mmHg. This compound is readily degraded in aerobic systems; the range of half-lives for aerobic degradation using a sewage sludge inoculum are < 1 day to 48 days. This material has also been shown to be readily degraded under anaerobic conditions. Volatilization from water surfaces is expected based upon a Henry's Law constant of 8.10X10-6 atm-cu m/mole. Using this Henry's Law constant and an estimation method, volatilization half-lives for a model river and model lake are 57 hours and 29 days, respectively. This compound is readily degraded in aerobic systems; the range of half-lives for aerobic degradation using a sewage sludge inoculum are < 1 day to 48 days. This material has also been shown to be readily degraded under anaerobic conditions. According to a model of gas/particle partitioning of semi-volatile organic compounds in the atmosphere, this compound, which has a vapor pressure of 45.4 mm Hg at 25°C, is expected to exist solely as a vapor in the ambient atmosphere. Vapor-phase material is degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 3.2 days, calculated from its rate constant of 5.07X10-12 cu cm/molecule-sec at 25°C.

BIO-ACCUMULATION POTENTIAL: These products have not been tested for bio-accumulation potential. The following information is available for the Proprietary Alcohol component.

PROPRIETARY ALCOHOL:

An estimated BCF of 3 was calculated for this compound, using a log Kow of 0.05 and a regression-derived equation. According to a classification scheme, this BCF suggests the potential for bioconcentration in aquatic organisms is low.

ECOTOXICITY: These products have not been tested for the effects of these products on terrestrial or aquatic organisms if released to the environment. Plants may be discolored and damaged (depending on the severity of the contamination). The following aquatic toxicity data are available for the Proprietary Alcohol component.

PROPRIETARY ALCOHOL:

- EC_0 (*Scenedesmus quadricauda* green algae) 7 days = 1,800 mg/L
- EC_0 (*Microcystis aeruginosa*) 8 days = 1,000 mg/L
- EC_0 (*Entosiphon sulcatum* protozoa) 72 hours = 4,930 mg/L
- EC_0 (Uronema parduczi Chatton-Lwoff) = 3,425 mg/L
- EC_{50} (*Photobacterium*) 5 minutes = 22,800 mg/L
- EC_{50} (*Daphnia magna*) 3,010 mg/L
- EC_{50} (*Pseudomonas putida*) 16 hours = 1,050 mg/L
- Toxic (*Chlorella pyrenoidosa* algae) = 17,400 mg/L

PROPRIETARY ALCOHOL (continued):

- LC_0 (creek chub) 24 hours = 900 mg/L
- LC_{50} (*Artemia salina*) 24 hours = 16,700 mg/L
- LC_{50} (*Streptocephalus proboscideus*) 24 hours = 11,600 mg/L
- LC_{50} (*Daphnia magna*) 24 hours = 9,500 mg/L
- LC_{50} (*Brachionus calyciflorus*) 24 hours = 28,600 mg/L
- LC_{50} (*Crangon crangon* brown shrimp) 48 hours = 1,400 mg/L
- LC_{50} (*Crangon crangon* brown shrimp) 98 hours = 1,150 mg/L

PROPRIETARY ALCOHOL (continued):

- LC_{50} (goldfish) 24 hours = > 500 mg/L
- LC_{50} (fathead minnow) 1 hour = 11,830 mg/L
- LC_{50} (fathead minnow) 24 hours = 11,160 mg/L
- LC_{50} (fathead minnow) 48 hours = 11,130 mg/L
- LC_{50} (fathead minnow) 72 hours = 11,130 mg/L
- LC_{50} (fathead minnow) 96 hours = 11,130 mg/L
- LC_{50} (*Poecilia reticulata* guppy) 7 days = 7,060 mg/L
- LC_{50} (*Daphnia magna*) 4,600 mg/L
- LC_{100} (creek chub) 24 hours = 1,100 mg/L
- NOEC (*Daphnia magna*) 757-2,100 mg/L

RESULTS OF PBT AND vPvB ASSESSMENT: No data available. PBT and vPvB assessments are part of the chemical safety report required for some substances in European Union Regulation (EC) 1907/2006, Article 14.

OTHER ADVERSE EFFECTS: These products do not contain any constituents with known 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. These products, 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.

U.S. EPA WASTE NUMBER: Not applicable to wastes consisting only of these products.

EUROPEAN WASTE CODES: Wastes from MFSU and Removal of Printing Inks: 08 03 99: Wastes Not Otherwise Specified

14. TRANSPORTATION INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION: These products are not classified as dangerous goods, per U.S. DOT regulations, under 49 CFR 172.101.

TRANSPORT CANADA, TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: These products are NOT classified as dangerous goods, per regulations of Transport Canada.

INTERNATIONAL AIR TRANSPORT ASSOCIATION SHIPPING INFORMATION (IATA): These products are NOT classified as dangerous goods.

INTERNATIONAL MARITIME ORGANIZATION SHIPPING INFORMATION (IMO): These products are NOT classified as dangerous goods.

EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR): These products are NOT classified by the United Nations Economic Commission for Europe to be dangerous goods.

14. TRANSPORTATION INFORMATION (Continued)

AUSTRALIAN FEDERAL OFFICE OF ROAD SAFETY CODE FOR THE TRANSPORTATION OF DANGEROUS GOODS BY ROAD OR RAIL: These products are NOT classified as dangerous goods, per regulations of the Australian Federal Office of Road Safety.

TRANSPORT IN BULK ACCORDING TO ANNEX II OF MARPOL 73/78 AND THE IBC CODE: Not applicable.

ENVIRONMENTAL HAZARDS: These products are neither environmentally hazardous according to the criteria of the UN Model Regulations (as reflected in the IMDG Code, ADR, RID, and ADN); no component meets the criteria of environmentally hazardous.

15. REGULATORY INFORMATION

ADDITIONAL UNITED STATES REGULATIONS:

U.S. SARA Reporting Requirements: The components of these products are subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act and are listed as follows:

CHEMICAL NAME	SARA 302 (40 CFR 355, Appendix A)	SARA 304 (40 CFR Table 302.4)	SARA 313 (40 CFR 372.65)
Trace glycol ether compound	No	No	N230
Proprietary Alcohol (mfg-strong acid process)	No	No	Yes

U.S. SARA Threshold Planning Quantity (TPQ): There are no specific Threshold Planning Quantities for this material. The default Federal SDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

U.S. CERCLA Reportable Quantity (RQ): The proprietary Glycol Ether component has no specific RQ assigned, but is part of a generic or broad class of glycol ethers which are CERCLA hazardous substances. See 50 Federal Register 13456 (April 4, 1985).

U.S. TSCA Inventory Status: The components of these products are listed on the TSCA Inventory.

U.S. Hazardous Air Pollutant (HAPs): The components of these products are not listed by the EPA under section 112(b) of the Clean Air Act as a 'HAP'.

Other U.S. Federal Regulations: Not applicable.

California Safe Drinking Water And Toxic Enforcement Act (Proposition 65): The Proprietary Black Pigment component, (airborne, unbound particles of respirable size) is on the California Proposition 65 Lists. If airborne particles of these products are generated, the following warning must be on packaging and labeling of these products: WARNING! These products contain a component known to the State of California to cause cancer. As a liquid, this warning is not expected to be required.

ADDITIONAL CANADIAN REGULATIONS:

Canadian DSL/NDSL Inventory Status: The components of these products are listed on the DSL Inventory.

Canadian Environmental Protection Act (CEPA) Priority Substances Lists: The Proprietary Alcohol component is listed as a Substance With Greatest Potential For Human Exposure Substance on Environment Canada/Health Canada Pilot Project List (CEPA 1999, Section 73). Meets categorization criteria: *may present, to individuals in Canada, the greatest potential for exposure; or *are persistent or bioaccumulative in accordance with the regulations, and inherently toxic to human beings or to non-human organisms, as determined by laboratory or other studies.

Canadian WHMIS Classification and Symbols: **Class D2B**: Materials Causing Other Toxic Effects- Acute and Chronic Toxic Effects-Irritant

ADDITIONAL EUROPEAN UNION REGULATIONS:

Safety, Health, and Environmental Regulations/Legislation Specific for the Product: Currently, there is no specific legislation pertaining to these products.

CHEMICAL SAFETY ASSESSMENT: No data available. The chemical safety assessment is required for some substances according to European Union Regulation (EC) 1907/2006, Article 14.

ADDITIONAL AUSTRALIAN REGULATIONS:

Australian Inventory Of Chemical Substances (AICS) Status: The components of these products are listed on the AICS.

Hazardous Substances Information System (HSIS): The components of these products are not listed in the HSIS.

Standard for the Uniform Scheduling of Drugs and Poisons: Not applicable.

ADDITIONAL JAPANESE REGULATIONS:

Japanese ENCS Inventory: Components are not on the ENCS Inventory.

Japanese Ministry of Economy, Trade, and Industry (METI) Status: Components are not listed as Class I Specified Chemical Substances, Class II Specified Chemical Substances, or Designated Chemical Substances by the Japanese METI.

Poisonous and Deleterious Substances Control Law: Components are not listed as a Specified Poisonous Substance under the Poisonous and Deleterious Substances Control Law.

16. OTHER INFORMATION

ANSI LABELING (Z129.1): **CAUTION!** MAY CAUSE SERIOUS EYE IRRITATION. MAY CAUSE SKIN AND RESPIRATORY TRACT IRRITATION. MAY DISCOLOR CONTAMINATED SKIN, EYES, HAIR, AND CLOTHES. Use with adequate ventilation. Avoid contact of liquid with skin, eyes, and clothing. Avoid exposure to vapors, mists, or sprays. Wash thoroughly after handling. Wear appropriate hand and eye protection. **FIRST-AID:** In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. If inhaled, remove to fresh air. If swallowed, do not induce vomiting. Get medical attention if irritation develops or persists or if any other adverse effect occurs. **IN CASE OF FIRE:** Use water fog, dry chemical, or CO_2, or alcohol foam. **IN CASE OF SPILL:** Absorb spill with inert materials (e.g., polypads, dry sand). Rinse area with soapy water. Consult Safety Data Sheet for additional information.

16. OTHER INFORMATION (Continued)

GLOBAL HARMONIZATION AND EU CLP REGULATION (EC) 1272/2008, AUSTRALIAN WORKSAFE and the JAPANESE INDUSTRIAL STANDARD LABELING AND CLASSIFICATION: Classified in accordance with CLP Regulation (EC) 1272/2008 and the Japanese Industrial Standard JIS Z 7250. For additional information on classification under EU 67/548/EEC, see below.

Classification: Eye Irritation Category 2A

Hazard Statement Codes: H319: Causes serious eye irritation.

Precautionary Statements:

Prevention: P264: Wash thoroughly after handling. P280: Wear protective gloves/protective clothing/eye protection/face protection.

Response: P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313: If eye irritation persists: get medical advice/attention.

Storage: None

Disposal: None

Signal Word: Warning

Hazard Symbols/Pictograms: GHS07

EU 67/548/EEC LABELING AND CLASSIFICATION: These products meet the definition of hazardous, as defined by the European Community Council Directive 67/548/EEC or subsequent Directives.

Classification: Irritant

Risk Phrases: R36: Irritating to eyes.

Safety Phrases: S2: Keep out of the reach of children. S25: Avoid contact with eyes. S37/39: Wear suitable gloves and eye/face protection.

Hazard Symbol: Xi

CLASSIFICATION INFORMATION FOR COMPONENTS:

CLP Regulation (EC) 1272/2008

Proprietary Black Pigment: Self-classification.

Classification: Carcinogenic Category 2

Hazard Statements: H351: Suspected of causing cancer by inhalation.

Proprietary Pyrone Acid: Self-classification.

Classification: Eye Irritant Category 2A

Hazard Statements: H319: Causes serious eye irritation.

Proprietary Alcohol: Published classification.

Classification: Flammable Liquid Category 2, Eye Irritant Category 2A, Specific Target Organ Toxicity (Inhalation-Central Nervous System) Single Exposure Category 3

Hazard Statements: H225: Highly flammable liquid and vapour. H319: Causes serious eye irritation. H336: May cause drowsiness or dizziness.

Proprietary Glycol Ether: Published classification.

Classification: Acute Oral Toxicity Category 4, Eye Irritant Category 2A

Hazard Statements: H302: Harmful if swallowed. H319: Causes serious eye irritation.

All Remaining Components:

Classification: An official classification for this substance has not been published under CLP 1272/2008 and a self-classification is not applicable.

67/548/EEC AND 2001/59/EC

Proprietary Black Pigment: Self-classification.

Classification: Carcinogenic Category 3

Risk Phrases: R40: Limited evidence of a carcinogenic effect.

Proprietary Pyrone Acid: Self-classification.

Classification: Irritant

Risk Phrases: R36: Irritating to eyes.

Proprietary Alcohol: Published classification.

Classification: Highly Flammable, Irritant

Risk Phrases: R11: Highly Flammable. R36: Irritating to eyes. R67: Vapours may cause drowsiness and dizziness.

Proprietary Glycol Ether: Published classification.

Classification: Harmful, Irritant

Risk Phrases: R22: Harmful if swallowed. R36: Irritating to eyes.

All Remaining Components:

Classification: An official classification for this substance has not been published in Commission Directives 93/72/EEC or 94/69EC and a self classification is not applicable.

REVISION DETAILS: New.

REFERENCES AND DATA SOURCES: Contact the supplier for information.

METHODS OF EVALUATING INFORMATION FOR THE PURPOSE OF CLASSIFICATION: Bridging principles were used to classify these products.

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DEFINITIONS OF TERMS

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

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

LOQ: Limit of Quantitation.

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

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

NIC: Notice of Intended Change.

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

NIOSH 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 a 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 LD_{50} Rat*: < 5000 mg/kg. *Dermal Toxicity LD_{50}Rat or Rabbit*: < 2000 mg/kg. *Inhalation Toxicity 4-hrs LC_{50} Rat*: < 20 mg/L.); **1** (Slight Hazard: Minor reversible Injury may occur; slightly or mildly irritating. *Skin Irritation*: Slightly or mildly irritating. *Eye Irritation*: Slightly or mildly irritating. *Oral Toxicity LD_{50} Rat*: > 500-5000 mg/kg. *Dermal Toxicity LD_{50}Rat or Rabbit*: > 1000-2000 mg/kg. *Inhalation Toxicity LC_{50} 4-hrs Rat*: > 2-20 mg/L); **2** (Moderate Hazard: Temporary or transitory injury may occur. *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 LD_{50} Rat*: > 50-500 mg/kg. *Dermal Toxicity LD_{50}Rat or Rabbit*: > 200-1000 mg/kg. *Inhalation Toxicity LC_{50} 4-hrs Rat*: > 0.5-2 mg/L.);**3** (Serious Hazard: Major injury likely unless prompt action is taken and medical treatment is given; high level of toxicity; corrosive. *Skin Irritation*: Severely irritating and/or corrosive; may 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 LD_{50} Rat*: > 1-50 mg/kg. *Dermal Toxicity LD_{50}Rat or Rabbit*: > 20-200 mg/kg. *Inhalation Toxicity LC_{50} 4-hrs Rat*: > 0.05-0.5 mg/L.); **4** (Severe Hazard: Life-threatening; major or permanent damage may result from single or repeated exposure. *Skin Irritation*: Not appropriate. Do not rate as a "4", based on skin irritation alone. *Eye Irritation*: Not appropriate. Do not rate as a "4", based on eye irritation alone. *Oral Toxicity LD_{50} Rat*: ≤ 1 mg/kg. *Dermal Toxicity LD_{50}Rat or Rabbit*: ≤ 20 mg/kg. *Inhalation Toxicity LC_{50} 4-hrs Rat*: ≤ 0.05 mg/L).

FLAMMABILITY HAZARD: 0 (Minimal Hazard-Materials that will not burn in air when exposure to a temperature of 815.5°C [1500°F] for a period of 5 minutes.); **1** (Slight Hazard-Materials that must be pre-heated before ignition can occur. Material require considerable pre-heating, under all ambient temperature conditions before ignition and combustion can occur, Including: Materials that will burn in air when exposed to a temperature of 815.5°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 course dusts that may burn rapidly but that generally do not form explosive atmospheres; Solid materials in a fibrous or shredded form that may burn rapidly and create flash fire hazards (e.g. cotton, sisal, hemp; Solids and semisolids that readily give off flammable vapors.);

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS (continued):

FLAMMABILITY HAZARD (continued): 3 (Serious Hazard- Liquids and solids that can be ignited under almost all ambient temperature conditions. 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 are largely confined to the package and no projection of fragments of appreciable size or range are expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package. *Compressed Gases*: Pressurized and meet OSHA definition but < 514.7 psi absolute at 21.1°C (70°F) [500 psig]. *Pyrophorics*: No Rating. *Oxidizers*: Packing Group II 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*: Packing 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. 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 LC_{50} for acute inhalation toxicity is greater than 10,000 ppm. Dusts and mists whose LC_{50} for acute inhalation toxicity is greater than 200 mg/L. Materials whose LD_{50} for acute dermal toxicity is greater than 2000 mg/kg. Materials whose LD_{50} 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 LC_{50} for acute inhalation toxicity is greater than 5,000 ppm but less than or equal to 10,000 ppm. Dusts and mists whose LC_{50} for acute inhalation toxicity is greater than 10 mg/L but less than or equal to 200 mg/L. Materials whose LD_{50} for acute dermal toxicity is greater than 1000 mg/kg but less than or equal to 2000 mg/kg. Materials whose LD_{50} 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 LC_{50} for acute inhalation toxicity is greater than 3,000 ppm but less than or equal to 5,000 ppm. Dusts and mists whose LC_{50} for acute inhalation toxicity is greater than 2 mg/L but less than or equal to 10 mg/L. Materials whose LD_{50} for acute dermal toxicity is greater than 200 mg/kg but less than or equal to 1000 mg/kg. Materials whose LD_{50} 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 LC_{50} for acute inhalation toxicity, if its LC_{50} is less than or equal to 5000 ppm and that does not meet the criteria for either degree of hazard 3 or degree of hazard 4. 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.

DEFINITIONS OF TERMS (Continued)

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS (continued):

HEALTH HAZARD (continued): **3** (materials that, under emergency conditions, can cause serious or permanent injury): Gases and vapors whose LC_{50} for acute inhalation toxicity is greater than 1,000 ppm but less than or equal to 3,000 ppm. Dusts and mists whose LC_{50} for acute inhalation toxicity is greater than 0.5 mg/L but less than or equal to 2 mg/L. Materials whose LD_{50} for acute dermal toxicity is greater than 40 mg/kg but less than or equal to 200 mg/kg. Materials whose LD_{50} 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 LC_{50} for acute inhalation toxicity, if its LC_{50} is less than or equal to 3000 ppm and that does not meet the criteria for degree of hazard 4. 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 LC_{50} for acute inhalation toxicity less than or equal to 1,000 ppm. Dusts and mists whose LC_{50} for acute inhalation toxicity is less than or equal to 0.5 mg/L. Materials whose LD_{50} for acute dermal toxicity is less than or equal to 40 mg/kg. Materials whose LD_{50} for acute oral toxicity is less than or equal to 5 mg/kg. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than one-fifth its LC_{50} for acute inhalation toxicity, if its LC_{50} is less than or equal to 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 according 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 up 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 (100°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. **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.

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS (continued):

INSTABILITY HAZARD (continued): **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 **N**ational **F**ire **P**rotection **A**ssociation (**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: **LD_{50}** - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **LC_{50}** - 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/m^3** concentration expressed in weight of substance per volume of air; **mg/kg** quantity of material, by weight, administered to a test subject, based on their body weight in kg. 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.

REPRODUCTIVE TOXICITY INFORMATION:

A mutagen is a chemical that causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An embryotoxin is a chemical that causes damage to a developing embryo (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.

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:

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. **O**ccupational **S**afety and **H**ealth **A**dministration (**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/NDSL)**; 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 and INTERNATIONAL:

The DFG: This is the Federal Republic of Germany's Occupation Health Agency, similar to the U.S. OSHA. **EU** is the European Union (formerly known as the **EEC,** European Economic Community). **EINECS:** This is 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. **AICS** is the Australian Inventory of Chemical Substances. **METI** is the Japanese Ministry of Economy, Trade, and Industry.