EGS Electrical Group

NELSON

An Emerson/General Signal Joint Venture

MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards

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

1. PRODUCT IDENTIFICATION

TRADE NAME (AS LABELED):	**PCS PIPE CHOKE SYSTEM**
CHEMICAL NAME/CLASS:	Steel Collar with intumescent insert
SYNONYMS:	Firestop Device
PRODUCT USE:	Firestop Product
SUPPLIER/MANUFACTURER'S NAME:	Nelson EGS
ADDRESS:	4135 E. 100th East Ave. #100 Tulsa, Oklahoma 74146-3636
CHEMTREC EMERGENCY NO.:	1-800-424-9300 (United States)
BUSINESS PHONE:	(918) 627-5530/(800) 331-7325
DATE OF PREPARATION:	February 6, 2002

2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	% w/w	EXPOSURE LIMITS IN AIR					
			ACGIH- TLV		OSHA- PEL			OTHER
			TWA mg/m^3	STEL mg/m^3	TWA mg/m^3	STEL mg/m^3	IDLH mg/m^3	mg/m^3
Melamine Crystal	108-78-1	23-27	NE	NE	NE	NE	NE	NE
Polybutene	9003-29-6	14-16	NE	NE	NE	NE	NE	NE
Polyphosphoric Acid, Ammonium Salt	68333-79-9	14-16	NE	NE	NE	NE	NE	NE
Pentaerythritol	115-77-5	14-16	10	NE	15 (total dust) 5 (respirable fraction) Vacated 1989 PELs: 10 (total dust) 5 (respirable fraction)	NE	NE	NIOSH RELs: 10 (total dust) 5 (respirable fraction)
Petroleum Lubricating Grease	Not Applicable	14-15	NE	NE	NE	NE	NE	NE
Graphite	7782-42-5	9-12	2 (respirable fraction, all forms except graphite fibers)	NE	15 mppcf Vacated 1989 PELs: 2.5 (respirable fraction)	NE	1250	NIOSH RELs: 2.5 (Respirable dust) DFG MAKs: 1.5 (respirable fraction)

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

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

2. COMPOSITION and INFORMATION ON INGREDIENTS (Continued)

CHEMICAL NAME	CAS #	% w/w	EXPOSURE LIMITS IN AIR					
			ACGIH- TLV		OSHA- PEL			OTHER
			TWA mg/m^3	STEL mg/m^3	TWA mg/m^3	STEL mg/m^3	IDLH mg/m^3	mg/m^3
Aluminum	7429-90-5	< 5	10	NE	15 (total dust) 5 (respirable fraction)	NE	NE	NIOSH RELs: 10 (total dust) 5 (respirable fraction) DFG MAKs: 1.5 (respirable fraction)
Other components which are present in less than 1 percent concentration (0.1% concentration for potential carcinogens, reproductive toxins, respiratory tract sensitizers, and mutagens).		Balance	None of the other components contribute significant additional hazards at the concentrations present in this product. All pertinent hazard information has been provided in this document, per the requirements of the Federal Occupational Safety and Health Administration Standard (29 CFR 1910.1200), U.S. State equivalent Standards and Canadian Workplace Hazardous Materials Identification System Standards (CPR 4).					

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

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

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: This product is a gray, fibrous, intumescent (fire-retardant) material which has a mild odor, and which is attached to a steel collar. The chief health hazard associated with overexposure to this product would be the potential to slightly irritate the eyes, skin, nose, and other tissues that come in contact with this product. This product is not flammable or reactive. Thermal decomposition of this product produces irritating vapors and toxic gases (e.g., silicon oxides, carbon oxides). Emergency responders must wear proper personal protective equipment for the releases to which they are responding.

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

INHALATION: Breathing airborne particulates of this product can irritate the nose, throat, or respiratory system. Symptoms of such exposure could include coughing and sneezing. Symptoms are generally alleviated when exposure ends.

CONTACT WITH SKIN or EYES: Eye contact with the product can cause stinging, tearing, and redness from mechanical irritation. Skin contact with this product may be slightly irritating, especially after prolonged exposure. Repeated skin contact may cause dermatitis (red, dry skin). Symptoms are generally alleviated when exposure ends.

SKIN ABSORPTION: Skin absorption is not anticipated to be a significant route of overexposure for any component of this product.

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

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

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

ACUTE: The most likely symptom of acute overexposure would be slight to moderate irritation of contaminated skin or eyes after contact with this product.

CHRONIC: Prolonged or repeated contact with the skin may cause dermatitis. See Section 11 (Toxicological Information) for additional data.

TARGET ORGANS: ACUTE: Skin, eyes. CHRONIC: Skin.

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM

HEALTH	(BLUE)	1
FLAMMABILITY	(RED)	0
REACTIVITY	(YELLOW)	0
PROTECTIVE EQUIPMENT		B

EYES	RESPIRATORY	HANDS	BODY
	SEE SECTION 8		

For routine applications.

See Section 16 for Definition of Ratings

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

4. FIRST-AID MEASURES

Contaminated individuals must seek medical attention if any adverse effect occurs. Rescuers should be taken for medical attention, if necessary. Take a copy of label and MSDS to physician or health professional with the contaminated individual.

SKIN EXPOSURE: If particulates or dusts from this product contaminates the skin, begin decontamination with copious amounts of running water. Remove exposed or contaminated clothing, taking care not to contaminate eyes.

EYE EXPOSURE: If particulates or dusts from this product contaminates the eyes, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have the contaminated individual "roll" eyes. The recommended minimum flushing time is 15 minutes. Seek medical attention if any adverse effect occurs.

INHALATION: If particulates or dusts from this product are inhaled, remove victim to fresh air.

INGESTION: If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. DO NOT INDUCE VOMITING, unless directed by medical personnel. Have victim rinse mouth with water, if conscious. Never induce vomiting or give a diluent (e.g., water) to someone who is unconscious, having convulsions, or unable to swallow.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Preexisting dermatitis, and other skin disorders can be aggravated by exposure to this product.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate overexposure.

5. FIRE-FIGHTING MEASURES

FLASH POINT: Not applicable.
AUTOIGNITION TEMPERATURE: Not applicable.
FLAMMABLE LIMITS (in air by volume, %):
Lower (LEL): Not applicable.
Upper (UEL): Not applicable.

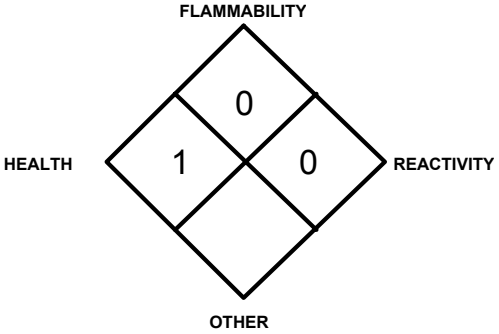
FIRE EXTINGUISHING MATERIALS: Select fire extinguishing media appropriate for the surrounding area.

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

UNUSUAL FIRE AND EXPLOSION HAZARDS: This product is not combustible and does not contribute to the intensity of a fire. When involved in a fire, this material may decompose and produce irritating vapors, acrid smoke, and toxic gases (e.g., nitrogen oxides, carbon oxides).

Explosion Sensitivity to Mechanical Impact: Not sensitive.
Explosion Sensitivity to Static Discharge: Not sensitive.

NFPA RATING



See Section 16 for Definition of Ratings

SPECIAL FIRE-FIGHTING PROCEDURES: Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Move fire-exposed containers if it can be done without risk to firefighters. If possible, firefighters should control runoff water to prevent environmental contamination. Rinse contaminated equipment with soapy water before returning such equipment to service.

6. ACCIDENTAL RELEASE MEASURES

RELEASE RESPONSE: Small releases can be cleaned up wearing gloves, goggles, and suitable body protection. In case of a large spill (in which excessive airborne particulates can be generated), clear the affected area, protect people, and respond with trained personnel. Minimum Personal Protective Equipment should be **Level B: triple-gloves (rubber gloves and nitrile gloves over latex gloves), tyvek or lab coat and boots, dust mask. Self-Contained Breathing Apparatus must be selected if releases which occur in confined or poorly ventilated areas or in situations in which the level of oxygen is below 19.5.**

Sweep up or vacuum spilled solid, minimizing the generation of airborne particulates. Rinse area with soap and water solution, followed by a water rinse. Close off sewers and take other measures to protect human health and the environment, as necessary. Decontaminate the area thoroughly. Place all spill residue in an appropriate container and seal. Dispose of in accordance with applicable U.S. Federal, State, or local procedures, or appropriate Canadian standards (see Section 13, Disposal Considerations).

PART III *How can I prevent hazardous situations from occurring?*

7. HANDLING and STORAGE

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

STORAGE AND HANDLING PRACTICES: All employees who handle this material should be trained to handle it safely. Open containers slowly on a stable surface. Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Store away from incompatible materials (see Section 10, Stability and Reactivity). Inspect all incoming containers before storage to ensure containers are properly labeled and not damaged.

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

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided in Section 2 (Composition and Information on Ingredients), if applicable. For processing operations, employees should use a mechanical fan or vent area to outside. Eye wash station/safety showers should be near locations where this product is used or stored.

RESPIRATORY PROTECTION: None normally required for routine chemical use. Airborne contaminant concentrations must be maintained below guidelines listed in Section 2 (Composition and Information on Ingredients). If respiratory protection is needed, use only protection authorized in the U.S. Federal OSHA Standard (29 CFR 1910.134), applicable U.S. State regulations, or the Canadian CSA Standard Z94.4-93. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998).

EYE PROTECTION: Splash goggles or safety glasses.

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

BODY PROTECTION: Use body protection appropriate for task.

9. PHYSICAL and CHEMICAL PROPERTIES

RELATIVE VAPOR DENSITY (air = 1): Not applicable.
SPECIFIC GRAVITY (water = 1): 1.47 @ 20°C
SOLUBILITY IN WATER: Slight.
VAPOR PRESSURE, mm Hg @ 20°C: Not applicable.
PARTITION COEFFICIENT (n-octanol/water): Not applicable.
EVAPORATION RATE (n-BuAc = 1): Not applicable.
MELTING/FREEZING POINT: >1000°C (>1832°F)
BOILING POINT: >500°C (>932°F)
pH: Not applicable.
ODOR THRESHOLD: Not established.
APPEARANCE, ODOR and COLOR: This is gray material with fibers with a mild odor.
HOW TO DETECT THIS SUBSTANCE (warning properties): The appearance may act as a distinguishing characteristic for this product.

10. STABILITY and REACTIVITY

STABILITY: Stable.

DECOMPOSITION PRODUCTS: Thermal decomposition can generate nitrogen oxides and carbon oxides.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Strong acids.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Avoid exposure or contact to extreme temperatures, incompatible chemicals.

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

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: The specific toxicology data available for components greater than 1% in concentration are as follows.

MELAMINE:

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

LD_{50} (Oral-Rat) 3161 mg/kg

LD_{50} (Oral-Mouse) 3296 mg/kg

LD_{50} (Skin-Rabbit) > 1 gm/kg

LD_{50} (Unreported-Rat) 6 gm/kg

LD_{50} (Unreported-Mouse) 1 gm/kg

LC_{50} (Inhalation-Rat) 3248 mg/m^3

TDLo (Oral-Rat) 32760 mg/kg/13 weeks-continuous: Kidney, Ureter, Bladder: other changes; Related to Chronic Data: death

LDLo (Intraperitoneal-Rat) 3200 mg/kg: Sense Organs and Special Senses (Eye): lacrimation; Behavioral: tremor; Lungs, Thorax, or Respiration: cyanosis

LDLo (Intraperitoneal-Mouse) 800 mg/kg: Sense Organs and Special Senses (Eye): lacrimation; Behavioral: tremor; Lungs, Thorax, or Respiration: cyanosis

TD (Oral-Rat) 197 gm/kg/2 years-continuous: Tumorigenic: Carcinogenic by RTECS criteria; Kidney, Ureter, Bladder: tumors

TD (Oral-Rat) 162 gm/kg/2 years-continuous: Tumorigenic: equivocal tumorigenic agent by RTECS criteria; Kidney, Ureter, Bladder: tumors

TDLo (Oral-Rat) 195 gm/kg/2 years-continuous: Tumorigenic: Carcinogenic by RTECS criteria; Kidney, Ureter, Bladder: tumors

MELAMINE (continued):

TDLo (Oral-Mouse) 93,600 mg/kg/13 weeks-continuous: Kidney, Ureter, Bladder: other changes

TCLo (Inhalation-Rat) 58 ug/m^3/17 weeks-intermittent: Liver: other changes; Blood: changes in serum composition (e.g. TP, bilirubin, cholesterol); Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: transaminases

TCLo (Inhalation-Rat) 500 μg/m^3: male 17 week(s) pre-mating: Reproductive: Paternal Effects: spermatogenesis (incl. genetic material, sperm morphology, motility, and count); Fertility: pre-implantation mortality (e.g. reduction in number of implants per female; total number of implants per corpora lutea); Effects on Embryo or Fetus: fetal death

Phage Inhibition Capacity (Escherichia coli) 78 μg/well

Micronucleus Test (Oral-Mouse)1 gm/kg

PENTAERYTHRITOL:

LD_{50} (Oral-Rat) 19,500 mg/kg: Behavioral: general anesthetic; Gastrointestinal: ulceration or bleeding from stomach; Liver: other changes

LD_{50} (Oral-Mouse) 25,500 mg/kg: Behavioral: altered sleep time (including change in righting reflex), tremor, ataxia

PENTAERYTHRITOL(continued):

LD_{50} (Oral-Rabbit) 18500 mg/kg: Behavioral: general anesthetic; Gastrointestinal: ulceration or bleeding from stomach; Liver: other changes71

LD_{50} (Oral-Guinea Pig) 11300 mg/kg: Behavioral: altered sleep time (including change in righting reflex), tremor, ataxia

LC (Inhalation-Rat) > 11 gm/m3/6 hours

TDLo (Oral-Rat) 10,600 μg/kg/30W weeks-intermittent: Behavioral: alteration of classical conditioning

TDLo (Oral-Rabbit) 10,605 mg/kg/30 weeks-intermittent: Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: true cholinesterase, Metabolism (Intermediary):histamines (including liberation not immunochemical in origin)

POLYBUTENES:

TCLo (Inhalation-Rat) 700 mg/m^3/7 hours/2 weeks-intermittent: Liver: changes in liver weight; Nutritional and Gross Metabolic: weight loss or decreased weight gain

SUSPECTED CANCER AGENT: The components of this product are listed by agencies tracking potential carcinogenic effects, as follows:

Melamine: IARC-3 (Unclassifiable as to Carcinogenicity in Humans)

IRRITANCY OF PRODUCT: This product may be slightly irritating to contaminated tissue, especially after prolonged or repeated exposure.

SENSITIZATION TO THE PRODUCT: The components of this product are not known to be skin or respiratory sensitizers.

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

Mutagenicity: This product is not reported to produce mutagenic effects in humans. Human and animal mutation data are available for Melamine (a component of this product); these data were obtained during clinical studies on specific human and animal tissues exposed to high doses of this compound.

Embryotoxicity: This product is not reported to produce embryotoxic effects in humans.

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

Reproductive Toxicity: This product is not reported to cause reproductive effects in humans. Clinical studies on test animals exposed to relatively high doses of Melamine (a component of this product) provided reproductive toxicity data.

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

ACGIH BIOLOGICAL EXPOSURE INDICES: Currently, there are no ACGIH Biological Exposure Indices (BEIs) determined for the components of the Rubber Composite of this product.

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: This product will persist in the environment.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: This product may be harmful to contaminated plant and animal-life (especially if large quantities are released). Refer to Section 11 (Toxicological Information) for additional information on effects on animals.

EFFECT OF CHEMICAL ON AQUATIC LIFE: This product may be harmful to contaminated aquatic plant and animal life.

13. DISPOSAL CONSIDERATIONS

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

U.S. EPA WASTE NUMBER: Not applicable.

14. TRANSPORTATION INFORMATION

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

PROPER SHIPPING NAME: Not applicable.
HAZARD CLASS NUMBER and DESCRIPTION: Not applicable.
UN IDENTIFICATION NUMBER: Not applicable.
PACKING GROUP: Not applicable.
DOT LABEL(S) REQUIRED: Not applicable.

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2000): Not applicable.

MARINE POLLUTANT: This product is not designated by the DOT to be a Marine Pollutant (49 CFR 172.101, Appendix B).

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: This material is not considered as dangerous goods by Transport Canada.

IATA DESIGNATION: This material is not considered as dangerous goods by the International Air Transport Association.

UPS SHIPPING: This material is not considered as Hazardous Materials by the United Parcel Service.

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

U.S. CERCLA REPORTABLE QUANTITY (RQ): Not applicable.

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

OTHER U.S. FEDERAL REGULATIONS: Not applicable.

U.S. STATE REGULATORY INFORMATION: Components of this product are covered under specific State regulations, as denoted below:

Alaska - Designated Toxic and Hazardous Substances: Pentaerythritol, Graphite.
California - Permissible Exposure Limits for Chemical Contaminants: Pentaerythritol, Graphite
Florida - Substance List: Graphite.
Illinois - Toxic Substance List: Pentaerythritol, Graphite.
Kansas - Section 302/313 List: Melamine.
Massachusetts - Substance List: Graphite.
Michigan - Critical Materials Register: No.
Minnesota - List of Hazardous Substances: Pentaerythritol, Graphite
Missouri - Employer Information/Toxic Substance List: Pentaerythritol, Graphite
New Jersey - Right to Know Hazardous Substance List: Melamine.
North Dakota - List of Hazardous Chemicals, Reportable Quantities: No.
Pennsylvania - Hazardous Substance List: Pentaerythritol, Graphite
Rhode Island - Hazardous Substance List: Pentaerythritol, Graphite
Texas - Hazardous Substance List: Graphite.
West Virginia - Hazardous Substance List: Graphite.
Wisconsin - Toxic and Hazardous Substances: Graphite.

15. REGULATORY INFORMATION (Continued)

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): No component of this product is on the California Proposition 65 lists.

ANSI LABELING (Z129.1): **CAUTION!** MAY IRRITATE SKIN AND EYES. MAY BE HARMFUL IF INGESTED OR IF PARTICULATES ARE INHALED. Avoid contact with skin, eyes, or clothing. Wash thoroughly after handling. Avoid breathing airborne particulates. Work in well-ventilated area. Do not taste or swallow. Wear gloves, goggles, and appropriate body protection. **FIRST-AID:** In case of contact with skin or eyes, flush skin with plenty of water for 15 minutes. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, do not induce vomiting. Get medical attention if adverse effects develop. **IN CASE OF FIRE:** Use water fog, dry chemical, CO_2, or "alcohol" foam. **IN CASE OF SPILL:** Sweep up carefully, avoiding the generation of airborne particulates. For large spills, dike area. Consult Material Safety Data Sheet for additional information.

ADDITIONAL CANADIAN REGULATIONS:

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

OTHER CANADIAN REGULATIONS: Not applicable.

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

CANADIAN WHMIS SYMBOLS: Not applicable.

16. OTHER INFORMATION

PREPARED BY: CHEMICAL SAFETY ASSOCIATES, Inc.
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(858) 565 - 0302

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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 which uniquely identifies each constituent. It is used for computer-related searching.

EXPOSURE LIMITS IN AIR:

ACGIH - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits. **TLV -** Threshold Limit Value - an airborne concentration of a substance which represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour Time Weighted Average **(TWA)**, the 15-minute Short Term Exposure Limit, and the instantaneous Ceiling Level **(C)**. Skin absorption effects must also be considered.

OSHA - U.S. Occupational Safety and Health Administration.

PEL - Permissible Exposure Limit - This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 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 which was vacated by Court Order. **IDLH -** Immediately Dangerous to Life and Health **-** This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury. **The DFG - MAK** is the Republic of Germany's Maximum Exposure Level, similar to the U.S. PEL. **NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. Occupational Safety and Health Administration (**OSHA**). NIOSH issues exposure guidelines called Recommended Exposure Levels (**REL**s). When no exposure guidelines are established, an entry of **NE** is made for reference.

HAZARD RATINGS:

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM: Health Hazard: **0** (minimal acute or chronic exposure hazard); **1** (slight acute or chronic exposure hazard); **2** (moderate acute or significant chronic exposure hazard); **3** (severe acute exposure hazard; onetime overexposure can result in permanent injury and may be fatal); **4** (extreme acute exposure hazard; onetime overexposure can be fatal). Flammability Hazard: **0** (minimal hazard); **1** (materials that require substantial pre-heating before burning); **2** (combustible liquid or solids; liquids with a flash point of 38-93°C [100-200°F]); **3** (Class IB and IC flammable liquids with flash points below 38°C [100°F]); **4** (Class IA flammable liquids with flash points below 23°C [73°F] and boiling points below 38°C [100°F]. Reactivity Hazard: **0** (normally stable); 1 (material that can become unstable at elevated temperatures or which can react slightly with water); **2** (materials that are unstable but do not detonate or which can react violently with water); **3** (materials that can detonate when initiated or which can react explosively with water); **4** (materials that can detonate at normal temperatures or pressures).

NATIONAL FIRE PROTECTION ASSOCIATION: Health Hazard: **0** (material that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials); **1** (materials that on exposure under fire conditions could cause irritation or minor residual injury); **2** (materials that on intense or continued exposure under fire conditions could cause temporary incapacitation or possible residual injury); **3** (materials that can on short exposure could cause serious temporary or residual injury); **4** (materials that under very short exposure causes death or major residual injury). Flammability Hazard and Reactivity Hazard: Refer to definitions for "Hazardous Materials Identification System".

FLAMMABILITY LIMITS IN AIR:

Much of the information related to fire and explosion is derived from the National Fire Protection Association (**NFPA**). Flash Point - Minimum temperature at which a liquid gives off sufficient vapors to form an ignitable mixture with air. Autoignition Temperature: The minimum temperature required to initiate combustion in air with no other source of ignition. LEL - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. UEL - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

TOXICOLOGICAL INFORMATION:

Human and Animal Toxicology: Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: **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. **Ecological Information:** EC is the effect concentration in water. **BCF =** Bioconcentration Factor, which is used to determine if a substance will concentrate in lifeforms which consume contaminated plant or animal matter. Coefficient of Oil/Water Distribution is represented by **log K_{ow}** or **log K_{oc}** and is used to assess a substance's behavior in the environment.

REGULATORY INFORMATION:

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