EGS Electrical Group NELSON Firestop Products

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):	**PILLOW, PLW**
CHEMICAL NAME/CLASS:	Mineral Fiber
SYNONYMS:	None
PRODUCT USE:	Firestop Product
SUPPLIER/MANUFACTURER'S NAME:	Nelson EGS
ADDRESS:	4135 S. 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 05, 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
Urea Formaldehyde Resin	9011-05-6	43	NE	NE	NE	NE	NE	NE
Sorbitol	50-70-4	14.9	NE	NE	NE	NE	NE	NE
Furfuryl Alcohol	98-00-0	7.42	40 (Skin)	60 (Skin)	200	NE	75 ppm	NIOSH REL: TWA- 40(Skin) STEL- 60 (Skin) DFG MAKs: TWA- 41 (MAK danger of cutaneous absorption)
Ammonium Sulfate	7783-20-2	6	NE	NE	NE	NE	NE	NE
Sodium Hexametaphosphate	10124-56-8	3.6	NE	NE	NE	NE	NE	NE
Pellitized Urea	57-13-6	5.8	NE	NE	NE	NE	NE	NE
Monoethylene Glycol	107-21-1	2.8	100 (Ceiling)	NE	NE	NE	75	DFG MAK: TWA-26 (Ceiling, MAK danger of cutaneous absorption)
Diammonium Phosphate	7783-28-0	1.5	NE	NE	NE	NE	NE	NE
Urea Phosphate	4861-19-2	0.9	NE	NE	NE	NE	NE	NE
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 consists of a mineral fiber enclosed in a polyethylene bag. The chief health hazard associated with overexposure would be the potential to slightly irritate the eyes, skin, nose, and other tissues that come in contact with the mineral fiber of this product or in the event that particulates are generated from the product. This product is not flammable or reactive. Thermal decomposition of this product produces irritating vapors and toxic gases (e.g., carbon oxides, nitrogen oxides and ammonia). Emergency responders must wear proper personal protective equipment for the releases to which they are responding.

SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE: Under normal circumstances of use, this product should not present significant health hazards. In event of thermal decomposition of the mineral fiber or if particulates are generated, the most significant routes of occupational overexposure would be via inhalation and contact with skin. The symptoms of overexposure to this product, via route of entry, are as follows:

INHALATION: Breathing airborne particulates, if generated during use of this product may 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 should not normally present a significant health hazard. In event of the generation of particulates, stinging, tearing, and redness from mechanical irritation could result. Mechanical injury to the skin from cuts or abrasions may occur if sharp edges of the product develop.

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

INGESTION: Ingestion of this product is unlikely.

INJECTION: Injection of this product is unlikely.

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 particulates or fumes generated from thermal decomposition of the mineral fiber of this product.

CHRONIC: None anticipated.

TARGET ORGANS: ACUTE: Skin, eyes. CHRONIC: None anticipated.

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 use.

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 cuts or abrasions occur from mechanical injury, treat victim and seek medical attention if necessary.

EYE EXPOSURE: If particulates generated from the product contaminate 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 generated from the product are inhaled, remove victim to fresh air.

INGESTION: Not applicable.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None anticipated.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms.

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.

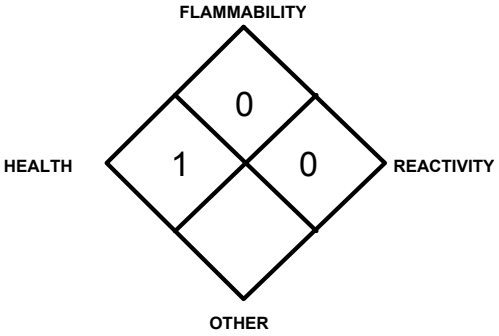
FIRE EXTINGUISHING MATERIALS: Select fire extinguishing media appropriate for the surrounding area and other materials involved in the fire.

Water Spray: YES
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, the mineral fiber may decompose and produce irritating vapors, acrid smoke, and toxic gases (e.g., carbon oxides, nitrogen oxides and ammonia).

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: Due to the nature of this product, no special accidental release measures are normally required. Uncontrolled releases involving other materials released near this product should be responded to by appropriately trained personnel using pre-planned procedures.

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

7. HANDLING and STORAGE

WORK AND HYGIENE PRACTICES: : If during the use of this product, vapors are generated during heating, avoid breathing the vapors or skin or eye contact with the vapors.

STORAGE AND HANDLING PRACTICES: Store this product in a cool, dry location, away from sources of intense heat. Store away from incompatible materials (see Section 10, Stability and Reactivity).

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: No special ventilation and engineering controls are required for use of this product.

RESPIRATORY PROTECTION: None normally required for routine use of this product. 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: No special eye protection is required for use of this product. Wear safety glasses or goggles if during use of this product operations may produce flying debris or particulates.

HAND PROTECTION: Wear gloves to protect the skin against mechanical injury, such as leather work gloves, when handling this product.

BODY PROTECTION: Use body protection appropriate for task.

9. PHYSICAL and CHEMICAL PROPERTIES

RELATIVE VAPOR DENSITY (air = 1): Not applicable.
EVAPORATION RATE (n-BuAc = 1): Not applicable.
SPECIFIC GRAVITY @ 68°F (water = 1): Not available.
MELTING/FREEZING POINT: Not applicable
SOLUBILITY IN WATER: Insoluble
BOILING POINT: Not applicable
VAPOR PRESSURE, mm Hg @ 20°C: Not applicable.
pH: Not applicable.
PARTITION COEFFICIENT (n-octanol/water): Not applicable.
ODOR THRESHOLD: Not established.
APPEARANCE, ODOR and COLOR: This is treated mineral fiber enclosed in a polyethylene bag.
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 of the mineral fiber can generate carbon oxides, nitrogen oxides and ammonia.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Strong acids and strong oxidizers.

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 are available for components of the mineral fiber greater than 1% in concentration are as follows.

ETHYLENE GLYCOL:

Standard Draize Test (Eye-Rat) 12 mg/m^3/3 days
Standard Draize Test (Skin-Rabbit, adult) 555 mg open: Mild irritation effects
Standard Draize Test (Eye-Rabbit, adult) 500 mg/24 hours: Mild irritation effects
Standard Draize Test (Eye-Rabbit, adult) 100 mg/1 hour: Mild irritation effects
Standard Draize Test (Eye-Rabbit, adult) 12 mg/m^3/3 days
Standard Draize Test (Eye-Rabbit, adult) 1440 mg/6 hours Moderate irritation effects
LD_{50} (Oral-Rat) 4700 mg/kg
LD_{50} (Oral-Mouse) 7500 mg/kg
LD_{50} (Intraperitoneal-Rat) 5010 mg/kg
LD_{50} (Intraperitoneal-Mouse) 5614 mg/kg
LD_{50} (Subcutaneous-Rat) 2800 mg/kg
LD_{50} (Intravenous-Rat) 3260 mg/kg
TDLo (Oral-Child) 5500 mg/kg: Central nervous system effects, Pulmonary system effects, KID
TDLo (Oral-Rat) 8580 mg/kg (female 6-15 days post): Teratogenic effects
TDLo (Oral-Rat) 50 gm/kg: female 6-15 day(s) after conception: Reproductive: Specific Developmental Abnormalities: skin and skin appendages, musculoskeletal system, blood and lymphatic systems (including spleen and marrow)
TDLo (Oral-Rat) 8580 mg/kg: female 6-15 day(s) after conception: Reproductive: Effects on Embryo or Fetus: fetotoxicity (except death, e.g., stunted fetus), Specific Developmental Abnormalities: musculoskeletal system
TDLo (Oral-Rat) 12500 mg/kg: female 6-15 day(s) after conception: Reproductive: Specific Developmental Abnormalities: craniofacial (including nose and tongue), musculoskeletal system

ETHYLENE GLYCOL (continued):

TDLo (Oral-Rat) 25 gm/kg: female 6-15 day(s) after conception: Reproductive: Maternal Effects: uterus, cervix, vagina, Fertility: litter size (e.g. # fetuses per litter; measured before birth), Effects on Embryo or Fetus: fetotoxicity (except death, e.g., stunted fetus)
TDLo (Oral-Rat) 50 gm/kg: female 6-15 day(s) after conception: Reproductive: Fertility: post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants)
TDLo (Oral-Mouse) 84 g/kg (female 1-21 days post): Reproductive effects
TDLo (Oral-Mouse) 7500 mg/kg: female 6-15 day(s) after conception: Reproductive: Effects on Embryo or Fetus: fetotoxicity (except death, e.g., stunted fetus), Specific Developmental Abnormalities: musculoskeletal system
TDLo (Oral-Mouse) 7500 mg/kg: female 6-15 day(s) after conception: Reproductive: Specific Developmental Abnormalities: craniofacial (including nose and tongue), musculoskeletal system
TDLo (Oral-Mouse) 84 gm/kg: female 1-21 day(s) after conception lactating female 21 day(s) post-birth: Reproductive: Effects on Newborn: live birth index (measured after birth) (e.g. %, reduced weight gain), delayed effects
TDLo (Oral-Mouse) 88720 mg/kg: female 7-14 day(s) after conception: Reproductive: Fertility: post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants), Effects on Newborn: stillbirth, live birth index (measured after birth)

ETHYLENE GLYCOL (continued):

TDLo (Oral-Mouse) 15 gm/kg: female 6-15 day(s) after conception: Reproductive: Maternal Effects: uterus, cervix, vagina, Fertility: pre-implantation mortality (e.g. reduction in number of implants per female; total number of implants per corpora lutea), Fertility: other measures of fertility
TDLo (Oral-Rabbit) 28 gm/kg: female 6-19 day(s) after conception: Reproductive: Maternal Effects: other effects
LDLo (Oral-Human) 398 mg/kg: Central nervous system effects, Gastrointestinal tract effects, LIV
LDLo (Intramuscular-Rat) 3300 mg/kg
LDLo (Subcutaneous-Mouse) 2700 mg/kg
TCLo (Inhalation-Human) 10,000 mg/m^3: Eye effects, Pulmonary system effects
TCLo (Inhalation-Rat) 2500 mg/m^3/6 hours: female 6-15 day(s) after conception: Reproductive: Maternal Effects: other effects, Specific Developmental Abnormalities: musculoskeletal system, other developmental abnormalities
TCLo (Inhalation-Mouse) 1000 mg/m^3/6 hours: female 6-15 day(s) after conception: Reproductive: Maternal Effects: uterus, cervix, vagina, other effects, Fertility: pre-implantation mortality (e.g. reduction in number of implants per female; total number of implants per corpora lutea)
TCLo (Inhalation-Mouse) 1000 mg/m^3/6 hours: female 6-15 day(s) after conception: Reproductive: Fertility: post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants), Effects on Embryo or Fetus: fetotoxicity (except death, e.g., stunted fetus), Effects on Newborn: sex ratio

11. TOXICOLOGICAL INFORMATION (Continued)

TOXICITY DATA (Continued):

ETHYLENE GLYCOL (continued):

TCLo (Inhalation-Mouse) 2100 mg/m^3/6 hours: female 6-15 day(s) after conception: Reproductive: Maternal Effects: other effects, Fertility: pre-implantation mortality (e.g. reduction in number of implants per female; total number of implants per corpora lutea), Fertility: post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants)

TCLo (Inhalation-Mouse) 2100 mg/m^3/6 hours: female 6-15 day(s) after conception: Reproductive: Fertility: litter size (e.g. # fetuses per litter; measured before birth), Effects on Embryo or Fetus: fetotoxicity (except death, e.g., stunted fetus), Specific Developmental Abnormalities: musculoskeletal system

DNA Inhibition (Human-Lymphocyte) 320 mmol/L

Cytogenetic Analysis (Oral-Rat) 1200 mg/kg

Mutation in Mammalian Somatic Cells (Mouse-Lymphocyte) 100 mmol/L

SORBITOL:

TDLo (Oral-Woman) 1700 mg/kg/ days: Gastrointestinal: hypermotility, diarrhea

LD_{50} (Oral-Rat) 15,900 mg/kg

LD_{50} (Oral-Mouse) 17,800 mg/kg

LD_{50} (Intraperitoneal-Mouse) 15 gm/kg

LD_{50} (Subcutaneous-Rat) 29,600 mg/kg

LD_{50} (Subcutaneous-Mouse)24 gm/kg

LD_{50} (Intravenous-Rat) 7100 mg/kg

LD_{50} (Intravenous-Mouse) 9480 mg/kg

Cytogenetic Analysis (Hamster-Ovary) 300 mmol/L

UREA:

Standard Draize Test (Skin-Human) 22 mg/3 days-intermittent: Mild

LD_{50} (Oral-Rat) 8471 mg/kg

LD_{50} (Oral-Mouse) 11 gm/kg

LD_{50} (Intraperitoneal-Rat) > 5 gm/kg

LD_{50} (Subcutaneous-Rat) 8200 mg/kg

LD_{50} (Subcutaneous-Mouse) 9200 mg/kg

LD_{50} (Intravenous-Rat) 5300 mg/kg

LD_{50} (Intravenous-Mouse) 4600 mg/kg

LD_{50} (Intratracheal-Rat) 567 mg/kg

LDLo (Intraperitoneal-Mouse) 6608 mg/kg

LDLo (Subcutaneous-Dog) 3 gm/kg

LDLo (Intravenous-Dog) 3 gm/kg

LDLo (Subcutaneous-Rabbit) 3 gm/kg

LDLo (Intravenous-Rabbit) 4800 mg/kg

LDLo (Subcutaneous-Pigeon) 14800 mg/kg

LDLo (Subcutaneous-Frog) 600 mg/kg

LDLo (Oral-Domestic Mammal) 511 mg/kg

TCLo (Inhalation-Rat) 288 mg/m^3/17 weeks-intermittent: changes in urine composition; Blood: other changes; changes in chlorine

TDLo (Skin-Rat) 3024 mg/kg/4 weeks-continuous: changes in liver weight, changes in thymus weight, changes in testicular weight

TDLo (Skin-Rat) 37800 mg/kg/25 weeks-continuous: changes in brain weight, changes in prostate weight

UREA (continued):

TDLo (Skin-Rat) 821 gm/kg/1 years-continuous: Tumorigenic; tumors; Blood: lymphoma, including Hodgkin's disease

TDLo (Oral-Mouse) 394 gm/kg/1 years-continuous: Tumorigenic

TDLo (Intraplacental-Woman) 1400 mg/kg: female 16 week(s) after conception: Reproductive: Fertility: abortion

TDLo (Intraplacental-Woman) 1600 mg/kg: female 16 week(s) after conception: Fertility: abortion

TDLo (Intraplacental-Woman) 1600 mg/kg: female 16 week(s) after conception: Fertility: abortion

TDLo (Intrauterine-Monkey) 6 gm/kg: female 18 week(s) after conception: Fertility: abortion

DNA Inhibition (Human-Lymphocyte) 600 mmol/L

Cytogenetic Analysis (Human) 50 mmol/L

Cytogenetic Analysis (Oral-Mouse) 100 gm/kg/5 days-continuous

Cytogenetic Analysis (Hamster-Fibroblast) 16 gm/L/24 hours

Cytogenetic Analysis (Hamster-Lung) 13 gm/L

DNA Damage (Mouse-Lymphocyte) 628 mmol/L

DNA Damage (Hamster-Fibroblast) 8 mol/L

Mutation in Mammalian Somatic Cells (Mouse-Lymphocyte) 265 mmol/L

FURFURYL ALCOHOL:

Standard Draize Test (Eye-Rabbit)100 mg/24 hours: Moderate

LD_{50} (Oral-Rat) 177 mg/kg: Behavioral: excitement, ataxia; Lungs, Thorax, or Respiration: cyanosis

LD_{50} (Oral-Mouse) 160 mg/kg: Tumorigenic: active as anti-cancer agent

LD_{50} (Oral- Mammal-species unspecified) 360 mg/kg

LD_{50} (Skin-Rat) 3825 mg/kg

LD_{50} (Skin-Rabbit) 400 mg/kg: Behavioral: convulsions or effect on seizure threshold

LD_{50} (Intraperitoneal-Rat) 650 mg/kg

LD_{50} (Subcutaneous-Rat) 85 mg/kg: Behavioral: convulsions or effect on seizure threshold9

LD_{50} (Intravenous-Rabbit) 650 mg/kg

LD_{50} (Unreported-Rat) 460 mg/kg

LD_{50} (Unreported-Mouse) 338 mg/kg

LD_{50} (Unreported-Rabbit) 632 mg/kg

LC_{50} (Inhalation-Rat) 233 ppm/4 hours

LC_{50} (Inhalation-Mouse) 597 ppm/6 hours

TCLo (Inhalation-Rat) 250 mg/m^3/2 weeks-intermittent: Sense Organs and Special Senses (Olfaction): effect, not otherwise specified; Related to Chronic Data: death

TCLo (Inhalation-Mouse) 16 ppm/6 hours/16 days-intermittent: Sense Organs and Special Senses (Olfaction): effect, not otherwise specified

FURFURYL ALCOHOL(continued):

TCLo (Inhalation-Rat) 50 ppm/6 hours/16 weeks-intermittent: Brain and Coverings: other degenerative changes; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: dehydrogenases, other transferases

TCLo (Inhalation-Rat) 16 ppm/6 hours/16 days-intermittent: Sense Organs and Special Senses (Olfaction): effect, not otherwise specified

TCLo (Inhalation-Rat) 2 ppm/6 hours/14 weeks-intermittent: Sense Organs and Special Senses (Olfaction): effect, not otherwise specified

TCLo (Inhalation-Rat) 32 ppm/6 hours/2 years-intermittent: Tumorigenic: Carcinogenic by RTECS criteria; Sense Organs and Special Senses (Olfaction): tumors

TCLo (Inhalation-Rat) 32 ppm/6 hours/2 years-intermittent: Tumorigenic: Carcinogenic by RTECS criteria; Kidney, Ureter, Bladder: Kidney tumors

TCLo (Inhalation-Mouse) 2 ppm/6 hours/14 weeks-intermittent: Sense Organs and Special Senses (Olfaction): effect, not otherwise specified

TCLo (Inhalation-Mammal-species unspecified)22 mg/m^3/17 weeks-intermittent: Brain and Coverings: recordings from specific areas of CNS; Blood: changes in serum composition (e.g. TP, bilirubin, cholesterol); Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: transaminases

DNA Repair (Bacteria-Bacillus subtilis) 2 mg/disc

Cytogenetic Analysis (Hamster-Ovary) 2500 μmol/L

UREA FORMALDEHYDE RESIN:

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

Standard Draize Test (Eye-Rabbit) 100 μL/24 hours: Severe

LD_{50} (Oral-Rat) 8394 mg/kg

LD_{50} (Oral-Mouse) 6361 mg/kg

LD_{50} (Unreported-Rat) 38 gm/kg: Behavioral: somnolence (general depressed activity)

LD_{50} (Unreported-Mouse) 20 gm/kg: Behavioral: somnolence (general depressed activity)

LC_{50} (Inhalation-Rat) > 167 mg/m^3/4 hours

LD_{50} (Skin-Rat) > 2100 mg/kg

LD (Skin-Rabbit) > 2200 mg/kg

LD (Oral-Guinea Pig) >2320 mg/kg

TDLo (Oral-Rat) 62 mg/kg/26 weeks-intermittent: Liver: liver function tests impaired; Blood: changes in leukocyte (WBC) count; Biochemical: Metabolism (Intermediary): other proteins

DNA Damage (Bacteria-Escherichia coli) 3000 ppm

11. TOXICOLOGICAL INFORMATION (Continued)

SUSPECTED CANCER AGENT: The components of this product are not found on the following lists: FEDERAL OSHA Z LIST, NTP, IARC, and CAL/OSHA and therefore are neither considered to be nor suspected to be cancer-causing agents by these agencies.

IRRITANCY OF PRODUCT: Contact with this product is not expected to be irritating.

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 Ethylene Glycol, Sorbitol, Urea Polymer, Furfuryl Alcohol and Urea (components 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. Animal teratogenic data are available for Ethylene Glycol (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.

Reproductive Toxicity: This product is not reported to cause reproductive effects in humans. Clinical studies on test animals exposed to relatively high doses of Ethylene Glycol and Urea (components 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. Environmental data is available for the components of this product as follows.

ETHYLENE GLYCOL:

Log K_{ow} = 1.36

Estimated Log Koc: Log Koc = 4

Biological Oxygen Demand = 0.47 g oxygen/ g ethylene glycol

Chemical Oxygen Demand = 1.29 g oxygen/ g ethylene glycol

Mobility: Based on a Log Koc of 4, determined from the Log Kow of 1.36, it is expected that Ethylene Glycol will be highly mobile in the soil.

Biodegradation: Biodegradation of Ethylene Glycol is expected to be a major fate process. Complete biodegradation has been shown to be 97% within one to twenty-nine days.

Bioconcentration: The bioconcentration factor of Ethylene Glycol in fish was reported to be 10 after 3 days of exposure; this suggests that it will not bioconcentrate in fish.

Persistence: If released to soil, Ethylene glycol should not adsorb to soil or sediments. Complete biodegradation can occur within one to twenty-nine days, depending on soil type and moisture content. If released to water, Ethylene Glycol is not expected to volatilize, and should biodegrade within 5-78 days. If released to the atmosphere, Ethylene Glycol will exist in vapor phase. Vapor-phase Ethylene Glycol is degraded in the atmosphere by reaction with photochemically produced hydroxy radicals. The half-life for this reaction in air is estimated to be about 50 hours.

UREA:

Water Solubility: 1 g/1 ml water

Log K_{ow} = - 1.09.

Persistence:Urea will eventually degrade, releasing ammonia and nitrate into the environment.

Biodegradation:

Waste water treatment: degradation rate by psychrophilic bacteria: at 20°C: maximum: 11.6 mg/L/hr with an average of 10.9 mg/L/hr; at 2°C: maximum: 4.0 mg/L/hr with an average of 3.2 mg/L/hr

Bioconcentration:

In 6 to 72-hr bioaccumulation studies using carp (Cyprinus carpio) and a static flow system, the concentration of urea was found to be equally distributed in all, organs, and in the water at all time periods; thus, the BCF would be only 1. In 3-day static-system tests using golden ide fish (Leuciscus idus melanotus), the BCF of urea was less then 10.

FURFURYL ALCOHOL:

Water Solubility: 1.0x106 mg/L

Octanol/Water Partition Coefficient: Log Kow = 0.28 (measured)

Persistence: Should biodegrade well. Resinifies slowly upon standing.

Biodegradation: A 97% removal of Furfuryl Alcohol was observed in 5 days in aerobic screening tests using a vigorous activated sludge system which was acclimated for 20 days prior to the experiments. No information was found regarding biodegradation obtained under anaerobic conditions nor in natural water or soil.

12. ECOLOGICAL INFORMATION (Continued)

ENVIRONMENTAL STABILITY (continued):

FURFURYL ALCOHOL (Continued):

Bioconcentration: An estimated BCF of 0.96 can be calculated (SRC) from a measured log Kow of 0.28 using a recommended regression equation. Based upon the estimated BCF and the reported infinite solubility of the compound in water, Furfuryl Alcohol will not be expected to significantly bioconcentrate in aquatic, organisms

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. Aquatic data is available for the components of this product as follows.

ETHYLENE GLYCOL:

NOEC (*Scenedesmus* algae) = 1,000 mg/L
toxic (*Pseudomonas* bacteria) = 250 mg/L
toxic (*Chlorella pyrenoidosa* algae) = 180,000 mg/L
EC_0 (*Pseudomonas putida* bacteria) 16 hours = >10,000 mg/L
EC_0 (*Microcystis aeruginosa* algae) 8 days = 2,000 mg/L
EC_0 (Scenedesmus quadricauda green algae) 7 days >10,000 mg/L
EC_0 (*Entosiphon sulcatum* protozoa) 72 hours = >10,000 mg/L
EC_0 (Uronema parduczi Chatton-Lwoff protozoa) = >10,000 mg/L
EC_{50} MicrotoxTM test (*Photobacterium*) 5 minutes = 112 g/L
LC_{50} Artoxkit M test (*Artemia salina*) 24 hours = 81 g/L
LC_{50} Streptoxkit F test (*Streptocephalus proboscideus*) 24 hours = 54 g/L
LC_{50} (*Daphnia magna* water flea) 24 hours = 74 g/L
LC_{50} Rotoxkit F test (*Brachionus calyciflorus*) 24 hours = 118 g/L
LC_{50} (*Poecilia reticulata* guppy) 7 days = 49,300 mg/L
LD_{50} (goldfish) 24 hours = >5,000 mg/L

UREA FORMALDEHYDE RESIN:

LC_{50} (*Leuciscus idus*) 96 hours = > 500 mg/L

UREA:

EC_0 (*Pseudomonas putida*) 16 hours = >10,000 mg/L
EC_0 (*Scenedesmus quadricauda*) 7 days = > 10,000 mg/L
BCF (wet wt): (*Chlorella fusca*) = 11,700
EC_0 (*Entosiphon sulcatum*) 72 hours = 29 mg/L
LC_{50} (*Poecilia reticulata*) 4 days = 17,500 mg/L
LC_{50} (*Tilapia mossambica*) 4 days = 22,500 mg/L
critical range (creek chub) = 16,000-30,000 mg/L (in Detroit River)

FURFURYL ALCOHOL:

LC_{50} (*Pimephales promelas,* fathead minnow) 96 hours = 32 mg/L @ 22°C
TLm (mosquito fish) 24-96 hours = 44-24 mg/L
EC_0 (*Pseudomonas putida* bacteria) 16 hours = 180 mg/L
EC_0 (*Microcystis aeruginosa* algae) 8 days = 5.2 mg/L
EC_0 (*Scenedesmus quadricauda* green algae) 7 days = 25 mg/L
EC_0 (*Entosiphon sulcatum* protozoa) 72 hours = 227 mg/L
EC_0 (*Uronema parduczi* Chatton-Lwoff protozoa) 384 mg/L
Toxic (*Pseudomonas* bacteria) 50 mg/L
Toxic (*Scenedesmus* algae) 100 mg/L
Toxic (*Colpoda* protozoa) 1,250 mg/L
Toxic (*Daphnia* arthropods) = 1,500 mg/L

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: The components of this product are not designated by the DOT to be Marine Pollutants (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 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)
Ethylene Glycol`	No	No	Yes

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): Sodium Metahexaphosphate = 5,000 lb (2,270 kg), Ethylene Glycol = 5,000 lb (2,270 kg)

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: Ethylene Glycol, Furfuryl Alcohol.

California - Permissible Exposure Limits for Chemical Contaminants: Ethylene Glycol, Furfuryl Alcohol.

Florida - Substance List: Ethylene Glycol, Furfuryl Alcohol.

Illinois - Toxic Substance List: Ethylene Glycol, Furfuryl Alcohol..

Kansas - Section 302/313 List: Ethylene Glycol, Furfuryl Alcohol.

Massachusetts - Substance List: Ethylene Glycol, Furfuryl Alcohol

Michigan - Critical Materials Register: None.

Minnesota - List of Hazardous Substances: Ethylene Glycol, Furfuryl Alcohol.

Missouri - Employer Information/Toxic Substance List: Ethylene Glycol, Furfuryl Alcohol.

New Jersey - Right to Know Hazardous Substance List: Ethylene Glycol, Furfuryl Alcohol, Sodium Phosphate, tribasic.

North Dakota - List of Hazardous Chemicals, Reportable Quantities: Furfuryl Alcohol.

Pennsylvania - Hazardous Substance List: Metaphosphoric acid, Hexasodium Salt.

Rhode Island - Hazardous Substance List: Ethylene Glycol, Furfuryl Alcohol.

Texas - Hazardous Substance List: Furfuryl Alcohol **West Virginia - Hazardous Substance List:** Furfuryl Alcohol.

Wisconsin - Toxic and Hazardous Substances: Furfuryl Alcohol.

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!** PARTICULATES OR FUMES (IF INVOLVED IN FIRE) GENERATED BY THE PRODUCT MAY IRRITATE SKIN AND EYES. PARTUCULATES OR FUMES (IF INVOLVED IN FIRE) MAY BE HARMFUL IF INGESTED OR INHALED. PRODUCT MAY POSE CUT OR ABRASION HAZARD. 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 particulates or fumes are inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if adverse effects develop. **IN CASE OF FIRE:** Use water fog, dry chemical, CO_2, or "alcohol" foam. Consult Material Safety Data Sheet for additional information.

ADDITIONAL CANADIAN REGULATIONS:

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

OTHER CANADIAN REGULATIONS: Not applicable.

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

CANADIAN WHMIS SYMBOLS: Not applicable.

16. OTHER INFORMATION

PREPARED BY: CHEMICAL SAFETY ASSOCIATES, Inc.
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DATE OF PRINTING: July 15, 2004

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

DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these, which are commonly used, include the following:

CAS #: This is the Chemical Abstract Service Number, 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.