

# SAFETY DATA SHEET



This Safety Data Sheet (SDS) complies with the requirements of the U.S. Federal Occupational Safety and Health Administration Hazard Communication Standard (29 CFR 1910.1200, as updated in 2012), the American National Standards Institute (Z400.1, 1998), and equivalent state Standards. It has also been developed in accordance with the Canadian Workplace Hazardous Materials Standard and the United Nations Globally Harmonized System of Classification of Chemicals, as well as European Union requirements under REACH (Registration, Evaluation, Authorization and Restriction of Chemical substances, per EC 1907/2006) and Directive 91/155/EC. Refer to Section 16 of this document for the definition of terms and abbreviations.

## SECTION 1: IDENTIFICATION of the Substance/Mixture and of the Company/Undertaking

### 1.1 PRODUCT IDENTIFIER:

- PRODUCT NAME: **COPPER PRIMER**
- SYNONYMS: Not applicable
- CHEMICAL NAME/CLASS: Aqueous Salt Solution
- PRODUCT CODE(s): 45.206

### 1.2 RELEVANT IDENTIFIED USES OF THE MIXTURE OR USES ADVISED AGAINST

- IDENTIFIED USE: Metal Plating.
- USES ADVISED AGAINST: None Specified

### 1.3 DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

- DISTRIBUTED BY: **GROBET FILE CO. OF AMERICA, INC.**
- ADDRESS: 750 Washington Ave.; Carlstadt, NJ 07072
- BUSINESS PHONE: 201-939-6700; Toll Free – 800-847-4188 (USA only)
- EMERGENCY PHONE: 1-800-255-3924 (9 am – 5 pm EST)

### 1.4 OTHER PERTINENT INFORMATION

- This product is sold in relatively small quantities. This SDS has been developed to address safety concerns affecting small volume handling situations and those involving warehouses and other workplaces where large numbers of these items are stored or distributed.

## SECTION 2: HAZARDS IDENTIFICATION

### 2.1 CLASSIFICATION OF THE SUBSTANCE OR MIXTURE:

REGULATION	CLASSIFICATION
OSHA HAZARD COMMUNICATION (GHS)	Eye Damage/Irritation – Category 2B.

## SECTION 2: HAZARDS IDENTIFICATION (Continued)

### 2.2 LABEL ELEMENTS:

- OSHA/CLP – BASED ON GLOBALLY HARMONIZED SYSTEM

**Symbol:** See symbol to the right.

**Signal Word:** WARNING!

**Hazard Statement:**

- May be harmful if swallowed. Causes eye and mild skin irritation. Toxic to aquatic life. Toxic to aquatic life with long-lasting effects.



**Precautionary Statements:**

- Avoid release into the environment. Use personal protective equipment as required.
- Call a POISON CENTER/doctor/physician if you feel unwell.
- Collect spillage.
- IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. If eye irritation persists, see a physician. If skin irritation occurs: Get medical advice/attention.
- Dispose of contents/container in accordance with local regulations.

### 2.3 OTHER PERTINENT DATA ON CHEMICAL AND PHYSICAL HAZARDS:

- HAZARDOUS MATERIALS IDENTIFICATION SYSTEM

Health	1	HMIS Personal Protective Equipment Rating: Occupational Use situations: B/C; Safety glasses and gloves/ body protection suitable to specific circumstances of use should be considered.
Flammability	0	
Physical Hazard	0	
Protective Equipment	B/C	

- CANADIAN REGULATORY STATUS

- This product is classified as hazardous under Canadian Controlled Products regulations (SOR-88-66 **WHMIS 2015**: See previous section. **Pre-2015 WHMIS E**: D2-A/B: Materials Causing Other Toxic Effects/Very Toxic and Toxic Material
- This SDS contains all the information required by the CPR.



## SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

### 3.1/3.2 SUBSTANCES/MIXTURES

COMPONENT	CAS NUMBER	EINECS #	GHS HAZARD CLASSIFICATION	% (w/w)
Copper Salt	Proprietary <sup>1</sup>	Proprietary	Acute toxicity, Oral (Category 3), Skin irritation (Category 2), Eye irritation (Category 2A), Acute aquatic toxicity (Category 1), Chronic aquatic toxicity (Category 1)	5-10%
Aqueous solution, with components that are not hazardous or are below 1.0% in concentration (or below 0.1% in concentration for carcinogens, reproductive toxins, respiratory tract sensitizers, and mutagens). All ingredients are listed per the requirements of regulations pertinent to Safety Data Sheet requirements under various regulations..				Balance

<sup>1</sup> The exact identity of the compounds and the percentage of composition have been withheld as a trade secret. All relevant physical and health hazards have been declared, in accordance with regulatory requirements.

## SECTION 4: FIRST AID MEASURES

### 4.1 DESCRIPTION OF FIRST AID MEASURES

**Eyes:** Flush with copious amounts of water for 15 minutes. "Roll" eyes during flush. Seek medical attention immediately. **Skin:** Flush area with warm, running water for 15 minutes. **Inhalation:** If dusts of this product are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. **Ingestion:** Contact a Poison Control Center or physician for instructions. If professional advice is not available, do not induce vomiting. Victim should drink milk, egg whites, or large quantities of water. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or who cannot swallow.

### 4.2 MOST IMPORTANT ACUTE AND CHRONIC EXPOSURE SYMPTOMS

- **ACUTE:** Depending on the duration of contact, overexposures may irritate the eyes, skin, mucous membranes, and any other exposed tissue. If swallowed, the product can cause gastrointestinal irritation causing nausea and vomiting. Symptoms of exposure are generally alleviated when overexposure ends. Due to the presence of Copper Salt, inhalation of excessive quantities of mists over a prolonged period of time may cause ulceration and perforation of the nasal septum if inhaled in excessive quantities. Also, it should be noted that though unlikely in occupational settings, ingestion of copper compounds may produce systemic toxic effects to the kidney and liver and central nervous excitation followed by depression.
- **CHRONIC:** Prolonged or repeated skin contact may cause dermatitis. Prolonged or repeated eye contact may cause conjunctivitis. May cause liver and kidney damage. May cause anemia and other blood cell abnormalities. Individuals with Wilson's disease are unable to metabolize copper. Thus, copper accumulates in various tissues and may result in liver, kidney, and brain damage.
- **TARGET ORGANS:** Acute: Skin, eyes, gastrointestinal system. Chronic: Blood, kidney, liver

### 4.3 INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

- **RECOMMENDATIONS TO PHYSICIANS:** Treat symptoms and eliminate exposure.
- **MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:** Eye and skin disorders.

## SECTION 5: FIREFIGHTING MEASURES

### 5.1 EXTINGUISHING MEDIA

- **RECOMMENDED FIRE EXTINGUISHING MEDIA:** Water Spray, Water Jet, Dry Powder, Foam, Carbon Dioxide, Halon, or any other.
- **UNSUITABLE FIRE EXTINGUISHING MEDIA:** None known.

### 5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

- **NFPA FLAMMABILITY CLASSIFICATION:** Not flammable.
- **UNUSUAL HAZARDS IN FIRE SITUATIONS:** This product is non-combustible. This product does not significantly contribute to the intensity of a fire. Use extinguishing material suitable to the surrounding fire.



Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: Not sensitive.

### 5.3 ADVICE FOR FIREFIGHTERS

- Wear Self Contained Breathing Apparatus and full protective equipment for fire response. Move containers from fire area if it can be done without risk to personnel. Otherwise, use water spray to keep fire-exposed containers cool. Contaminated equipment should be rinsed thoroughly with water before returning to service.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### 6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT, AND EMERGENCY PROCEDURES

- **RESPONSE TO INCIDENTAL RELEASES:** Personnel who have received basic chemical safety training can generally handle small-scale releases (e.g., under 5 gallons). For small releases, the minimum Personal Protective Equipment should be rubber gloves and rubber apron, splash goggles or safety glasses. Use caution during clean-up; avoid stepping into spilled solid or clean-up procedures that generate substantial amounts of dust.
- **RESPONSE TO NON-INCIDENTAL RELEASES:** For large-scale releases of this product, minimum Personal Protective Equipment should be Level C: triple-gloves, chemical resistant apron, boots, and splash goggles and air purifying respirator equipped with a HEPA filter. Level B protection should be used when oxygen levels are below 19.5% or are unknown.
- **RESPONSE PROCEDURES FOR ANY RELEASE:** Wipe up spilled liquid with polypads or sponge. Rinse area with soap/water solution followed by a water rinse.

### 6.2 ENVIRONMENTAL PRECAUTIONS

- Avoid response actions that can cause a release of a significant amount of the substance (1 liter or more) into the environment.

### 6.3 METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP

- **SPILL RESPONSE EQUIPMENT:** Polypad/sponge.

### 6.4 REFERENCES TO OTHER SECTIONS

- **SECTION 8:** For exposure levels and detailed personal protective equipment recommendations.
- **SECTION 13:** For waste handling guidelines.

## SECTION 7: HANDLING AND STORAGE

### 7.1 PRECAUTIONS FOR SAFE HANDLING

- **HYGIENE PRACTICES:** Keep out of reach of children. Follow good chemical hygiene practices. Do not smoke, drink, eat, or apply cosmetics in the chemical use area. Avoid inhalation of dusts. Use in well-ventilated area. Avoid contact with skin or eyes. Remove contaminated clothing promptly. Clean up spilled product immediately.
- **HANDLING RECOMMENDATIONS:** Employees must be appropriately trained to use this product safely as needed. Keep containers closed when not in use.

### 7.2 CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

- **STORAGE RECOMMENDATIONS:** Ensure all containers are correctly labeled. Store containers away from direct sunlight, sources of intense heat, or where freezing is possible. Store this product away from incompatible chemicals (See Section 10, Stability and Reactivity). Empty containers may contain residual material; therefore, empty containers should be handled with care. Material should be stored in secondary containers, or in a diked area, as appropriate. Storage and use areas should be covered with impervious materials. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 CONTROL PARAMETERS

- **U.S. NATIONAL EXPOSURE LIMITS:**

COMPONENT	ACGIH TLV	OSHA PEL	NIOSH REL	OTHER
COPPER SALT (as Copper and its inorganic compounds)	NE	NE	NE	Sigma Aldrich: TWA = 1 mg/m <sup>3</sup>

- **BIOLOGICAL OCCUPATIONAL EXPOSURE LIMITS:** There are no Biological Exposure Indices (BEIs) for components of this product.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION (Continued)

### 8.2 EXPOSURE CONTROLS

- **ENGINEERING CONTROLS:** Use this product in well-ventilated environment. Safety showers, eye wash stations, and hand-washing equipment should be available.
- **RESPIRATORY PROTECTION:** None needed under normal conditions of use. Use NIOSH approved respirators if ventilation is inadequate to control sprays or mists. For situations in which significant amounts of sprays or mists could be generated, wear an air-purifying respirator with a high-efficiency particulate filter.
- **HAND PROTECTION:** Neoprene gloves or nitrile gloves should be used. Use triple gloves for spill response, as stated in Section 6 (Accidental Release Measures) of this SDS.
- **EYE PROTECTION:** Splash goggles or safety glasses.
- **BODY PROTECTION:** Use a body protection appropriate to task (e.g., lab coat, coveralls, or apron). Care should be taken to select protection for potentially exposed areas when prolonged exposure could occur in occupational settings.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

- |  |  |
|--|--|
| (a) <b>APPEARANCE:</b> Light blue liquid.  | (j) <b>UPPER/LOWER FLAMMABILITY OR EXPLOSIVE LIMITS:</b> Not applicable. |
| (b) <b>ODOR:</b> Odorless.   | (k) <b>VAPOR PRESSURE (mmHg @ 20°C):</b> Not applicable.                 |
| (c) <b>ODOR THRESHOLD:</b> Not determined.                                       | (l) <b>VAPOR DENSITY:</b> Not applicable.                                |
| (d) <b>pH:</b> 8.15  | (m) <b>RELATIVE DENSITY (water=1):</b> 1.1                               |
| (e) <b>MELTING POINT/FREEZING POINT:</b> Approx. 0°C (32 °F).                    | (n) <b>SOLUBILITY:</b> Soluble in water.                                 |
| (f) <b>INITIAL BOILING POINT AND BOILING RANGE:</b> Approximately 100°C (212°F). | (o) <b>PARTITION COEFFICIENT: N-OCTANOL/WATER:</b> Not determined.       |
| (g) <b>FLASH POINT:</b> Not applicable.  | (p) <b>AUTO-IGNITION TEMPERATURE:</b> Not applicable.                    |
| (h) <b>EVAPORATION RATE (water=1):</b> Approx. 1                                 | (q) <b>DECOMPOSITION TEMPERATURE:</b> Not determined.                    |
| (i) <b>FLAMMABILITY:</b> Not flammable.  | (r) <b>VISCOSITY:</b> Not applicable.                                    |
|  | (s) <b>EXPLOSIVE PROPERTIES:</b> Not applicable.                         |
|  | (t) <b>OXIDIZING PROPERTIES:</b> Not an oxidizer.                        |

### 9.2 OTHER INFORMATION

- **VOC (less water & exempt):** Not applicable.
- **WEIGHT% VOC:** Not applicable.

## SECTION 10: STABILITY AND REACTIVITY

### 10.1 REACTIVITY

- Not reactive under typical conditions of use or handling; contact with water can generate some heat.

### 10.2 CHEMICAL STABILITY

- Normally stable under standard temperatures and pressures.

### 10.3 POSSIBILITY OF HAZARDOUS REACTIONS

- This product is not self-reactive or air-reactive. This product can release heat upon contact with water. This product will not undergo hazardous polymerization.

### 10.4 CONDITIONS TO AVOID

- Avoid contact with incompatible chemicals.

### 10.5 INCOMPATIBLE MATERIALS

- Strong oxidizing agents, strong acids, strong bases, water reactive materials.

### 10.6 HAZARDOUS DECOMPOSITION PRODUCTS

- Products of thermal decomposition of this product can include carbon monoxide, carbon dioxide and compounds of copper.

## SECTION 11: TOXICOLOGICAL INFORMATION

### 11.1 INFORMATION ON TOXICOLOGICAL EFFECTS

- **ACUTE TOXICITY:**

- **TOXICOLOGY DATA:** The following data are available for the hazardous components in this product listed in Section 3 (Composition/Information on Ingredients).

**COPPER SALT**

LD50 (Oral, mouse) = 369 mg/kg

LD50 (Oral, mouse) = 87 mg/kg

LD50 (Oral, rat) = 300 mg/kg

LD50 (Oral, rat) = 960 mg/kg

- **DEGREE OF IRRITATION:** Mild to moderate after prolonged exposure.
- **SENSITIZATION:** Due to the presence of Copper Salt, this solution may cause allergic skin reactions in sensitive individuals.
- **REVIEW OF ACUTE SYMPTOMS AND EFFECTS:** See Section 2 (Hazards Information) and Section 4 (First-Aid Measures) for details.
  - **EYES:** May cause mild to moderate eye irritation.
  - **SKIN:** May cause mild to moderate skin irritation.
  - **INHALATION:** May cause mild to moderate irritation of membranes of nose, mouth, throat.
  - **INGESTION:** May cause mild irritation and of gastrointestinal system. Ingestion of excessive amounts can cause adverse health effects.

- **CHRONIC TOXICITY:**

- **CARCINOGENICITY STATUS:** The following table summarizes the carcinogenicity listing for the components of this product. "NO" indicates that the substance is not considered to be, or suspected to be, a carcinogen by the listed agency.

CHEMICAL	IARC	NTP	NIOSH	OSHA	OTHER
COPPER SALT	NO	NO	NO	NO	For "Copper and its Inorganic Compounds" = EPA-D: Not classifiable as to human carcinogenicity.

- **REPRODUCTIVE TOXICITY INFORMATION:** The components of this product are not reported to cause reproductive effects under typical circumstances of exposure. The following data are available for components of this product, obtained in laboratory studies.

**COPPER SALT: TDLo (Oral-Pig) 140 mg/kg; female 1-15 week(s) after conception lactating female 4 week(s) post-birth: Reproductive: Effects on Newborn: biochemical and metabolic; TDLo (Intraperitoneal-Rat) 791 mg/kg/18 weeks-intermittent: Nutritional and Gross Metabolic: weight loss or decreased weight gain; TDLo (Intraperitoneal-Rat) 7500 µg/kg; female 3 day(s) after conception: Reproductive: Fertility: other measures of fertility; TDLo (Subcutaneous-Rat) 12,768 µg/kg; male 1 day(s) pre-mating: Reproductive: Paternal Effects: testes, epididymis, sperm duct; TDLo (Subcutaneous-Mouse) 12,768 µg/kg; male 30 day(s) pre-mating: Reproductive: Paternal Effects: testes, epididymis, sperm duct; TDLo (Intratesticular-Rat) 3192 µg/kg; male 1 day(s) pre-mating: Reproductive: Paternal Effects: spermatogenesis (incl. genetic material, sperm morphology, motility, and count), testes, epididymis, sperm duct; TDLo (Intravenous-Mouse) 3200 µg/kg; female 8 day(s) after conception: Reproductive: Effects on Embryo or Fetus: fetotoxicity (except death, e.g., stunted fetus); Specific Developmental Abnormalities: Central Nervous System, cardiovascular (circulatory) system**

- **MUTAGENIC EFFECTS** The components of this product are not reported to cause mutagenic effects under typical circumstances of exposure. The following data are available for components of this product, obtained in laboratory studies.

**COPPER SALT: Mutation Test Systems-not otherwise (Bacteria-Bacillus subtilis) 400 µmol/L; Sex Chromosome Loss and Nondisjunction (Parenteral-Drosophila melanogaster) 1000 ppm; Sex Chromosome Loss and Nondisjunction (Unreported-Drosophila melanogaster) 7100 ppm; DNA Damage (Rat-Ascites tumor) 500 µmol/L; DNA Damage (Rat-Liver) 1 mmol/L; DNA Inhibition (Intraperitoneal-Mouse) 20 gm/kg; Morphological Transformation (Hamster-Embryo) 80 µmol/L Unscheduled DNA Synthesis (Hamster-Embryo) 200 µmol/L**

- **SPECIFIC TARGET ORGAN TOXICITY – SINGLE EXPOSURE:** Not applicable.
- **SPECIFIC TARGET ORGAN TOXICITY – REPEATED EXPOSURE:** Not applicable

- **OTHER INFORMATION**

- **TOXICOLOGICALLY SYNERGISTIC PRODUCTS:** None known.
- **ADDITIONAL TOXICOLOGY:** Not applicable.

## SECTION 12: ECOLOGICAL INFORMATION

### 12.1 TOXICITY

- Based on available data, this product can be harmful or to contaminated terrestrial plants or animals.
- Based on available data, this product can be harmful or fatal to contaminated aquatic plants or animals.

### 12.2 PERSISTENCE AND DEGRADABILITY

- When released into the soil, the components of this product are expected to biodegrade, dissipate in soils via oxidation, or otherwise chemically degrade or photo-decompose via solar radiation.

### 12.3 BIOACCUMULATIVE POTENTIAL

- The components of this product are not anticipated to bioaccumulate in any significant quantities.

### 12.4 MOBILITY IN SOIL

- It is to be expected this product will have small mobility in soil. Some of the components may get into the soil and, ultimately, the ground water.

## SECTION 13: DISPOSAL CONSIDERATION

### 13.1 WASTE TREATMENT METHODS

- **WASTE HANDLING RECOMMENDATIONS:** Prepare, transport, treat, store, and dispose of waste product according to all applicable local, U.S. State and U.S. Federal regulations, the applicable Canadian standards, or the appropriate standards of the nations of the European Community.
- **PRECIOUS METAL RECLAMATION:** When applicable and practical, users of the product may wish to utilize precious metal reclamation services for final disposition of wastes.

## SECTION 14: TRANSPORT INFORMATION

### 14.1 DANGEROUS GOODS BASIC DESCRIPTION AND OTHER TRANSPORT INFORMATION

- This material is hazardous for shipment, per the Hazardous Materials Regulations or Dangerous Goods Codes. Please contact the manufacturer if there are questions pertinent to the shipment of this product.

### 14.2 ENVIRONMENTAL HAZARDS

- None described, as related to transportation.

### 14.3 SPECIAL PRECAUTIONS FOR USERS

- Not applicable.

### 14.4 TRANSPORT IN BULK

- Not applicable.

## SECTION 15: REGULATORY INFORMATION

### 15.1 SAFETY, HEALTH, AND ENVIRONMENTAL REGULATIONS SPECIFIC FOR THE PRODUCT.

- **OTHER IMPORTANT U.S. REGULATIONS**
  - **U .S. SARA THRESHOLD PLANNING QUANTITY:** Not applicable.
  - **U.S. SARA HAZARD CATEGORIES (SECTION 311/312, 40 CFR 370-21):** ACUTE: Yes; CHRONIC: Yes; FIRE: No; REACTIVE: No; SUDDEN RELEASE: No
  - **U.S. CERCLA REPORTABLE QUANTITY (RQ):** Copper Salt = 4.54 kg (10 lb).
  - **U.S. TSCA INVENTORY STATUS:** All components of this product are listed on the TSCA Inventory.
  - **SARA 313 COMPONENTS:** Copper Salt (as a copper compound) is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.
  - **CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) STATUS:** Not applicable.

## SECTION 15: REGULATORY INFORMATION (Continued)

### INTERNATIONAL REGULATIONS

- **CANADIAN DSL/NDL INVENTORY STATUS:** The listed components of this product are on the DSL/NDL Inventory.
- **CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS:** The components of this product are not on the CEPA Priorities Substances Lists.

## SECTION 16: OTHER INFORMATION

### 16.1 INDICATION OF CHANGE.

- **CHANGE INDICATED:** Update per OSHA Hazard Communication Standard (29 CFR 1910.1200).
- **DATE OF PUBLICATION:** August 24, 2015
- **SUPERCEDES:** Not applicable.

### 16.2 KEY LITERATURE REFERENCES AND SOURCES FOR DATA

- RTECS – Registry of Effects of Toxic Chemicals
- ECHA: European Chemical Hazards Agency <http://echa.europa.eu/en/information-on-chemicals/>
- TOXNET: <http://toxnet.nlm.nih.gov/>

### 16.3 ABBREVIATIONS AND ACRONYMS.

**ALL SECTIONS:** **OSHA:** U.S. Federal Occupational Safety and Health Administration. **WHMIS:** Canadian Workplace Hazardous Materials Standard. **GHS:** Globally Harmonized System of Classification of Chemical Substances. **REACH:** European Union regulation, Registration, Evaluation, Authorization and Restriction of Chemical substances.

**SECTION 2:** **CAS Number:** Chemical Abstract Service Number, which is used by the American chemical Society to uniquely identify a chemical. **EINECS:** European Inventory of Existing Commercial Substances.

**SECTION 3:** **HAZARDOUS MATERIALS IDENTIFICATION SYSTEM RATING:** This is a rating system used by industry to summarize physical and health hazards to chemical users and was originally developed by the National Paint and Coating Association. 0 = No Significant Hazard. 1 = Slight Hazard. 2 = Moderate Hazard. 3 = Severe Hazard. 4 = Extreme Hazard.

**SECTION 5:** **NFPA:** National Fire Protection Association. **NFPA FLAMMABILITY CLASSIFICATION:** The NFPA uses the flash point (F.I.P.) and boiling point (BP) to classify flammable or combustible liquids. Class IA: F.I.P. below 73°F and BP below 100°F. Class IB: F.I.P. below 73°F and BP at or above 100°F. Class IC: :F.I.P. at or above 73°F and BP at or above 100°F. Class II: : F.I.P. at or above 100°F and below 140°F. Class IIIA: F.I.P. at or above 140°F and below 200°F. Class IIIB: F.I.P. at or above 200°F. **NFPA HAZARDOUS MATERIALS RATING:** This is a rating system used to summarize physical and health hazards to firefighters. 0 = No Significant Hazard. 1 = Slight Hazard. 2 = Moderate Hazard. 3 = Severe Hazard. 4 = Extreme Hazard.

**SECTION 8:** **NE:** Not established. **ACGIH:** American Conference of Government Industrial Hygienists; **TWA:** Time-Weighted Average (over an 8-hour work day); **STEL:** Short-Term Exposure Limit (15 minute average, no more than 4-times daily and each exposure separated by one-hour minimally); **C:** Ceiling Limit (concentration not to be exceeded in a work environment). **PEL:** Permissible Exposure Limit. **NIOSH:** National Institute of Occupational Safety and Health; **REL:** Recommended Exposure Limit; **IDLH:** Immediately Dangerous to Life and Health Concentrations. *Note:* In July 1992, a court ruling vacated the more protective PELs set by OSHA in 1989. Because OSHA may enforce the more protective levels under the “general duty clause”, both the current and vacated levels are presented in this document. **ppm:** Parts per Million. **mg/m<sup>3</sup>:** Milligrams per cubic meter. **mppcf:** Millions of Particles per Cubic Foot. **BEI:** Biological Exposure Limit. **EL:** Exposure Limit ( United

Kingdom). Federal Republic of Germany (**DFG**) Maximum Concentration Values in the Workplace (**MAKS**)

**SECTION 9:** **pH:** Scale (0 to 14) used to rate the acidity or alkalinity of aqueous solutions. For example, a pH value of 0 indicates a strongly acidic solution, pH of 7 indicates a neutral solution, and a pH value of 14 indicates an extremely basic solution. **FLASH POINT:** Temperature at which a liquid generates enough flammable vapors so that ignition may occur. **AUTOIGNITION TEMPERATURE:** Temperature at which spontaneous ignition occurs. **LOWER EXPLOSIVE LIMIT (LEL):** The minimal concentration of flammable vapors in air which will sustain ignition. **UPPER EXPLOSIVE LIMIT (UEL):** The maximum concentration of flammable vapors in air which will sustain ignition.≈: Approximately symbol.

**SECTION 11:** **CARCINOGENICITY STATUS:** NTP: National Toxicology Program. IARC: International Agency for Research on Cancer. **REPRODUCTIVE TOXICITY INFORMATION:** Mutagen: Substance capable of causing chromosomal damage to cells. Embryotoxin: Substance capable of damaging the developing embryo in an overexposed female. Teratogen: Substance capable of damaging the developing fetus in an overexposed female. Reproductive toxin: Substance capable of adversely affecting male or female reproductive organs or functions. **TOXICOLOGY DATA:** LD<sub>xx</sub>or LC<sub>xx</sub>: The Lethal Dose or Lethal Concentration of a substance which will be fatal to a given percentage (xx) of exposed test animals by the designate route of administration. This value is used to access the toxicity of chemical substances to humans. TD<sub>xx</sub>or TC<sub>xx</sub>: The Toxic Dose or Toxic Concentration of a substance which will cause an adverse effect to a given percentage (xx) of exposed test animals by the designate route of administration.

**SECTION 12:** **TLm** – Median Tolerance Limit

**SECTION 13:** **RCRA:** Resource Conservation and Recovery Act. The regulations promulgated under this act under Act are found in 40 CFR, Sections 260 ff, and define the requirements of hazardous waste generation, transport, treatment, storage, and disposal. **EPA RCRA Waste Codes:** Defined in 40 CFR Section 261.

**SECTION 15:** **CERCLA:** Comprehensive Environmental Response Compensation and Liability Act (a.k.a. “Superfund”) and SARA: (Superfund Amendment and Reauthorization Act). The regulations promulgated under this Act are located under 40 CFR 300 ff. and provide “community right-to-know” requirements. **DSL/NDL:** Canadian Domestic Substances and Non-Domestic Substances Lists.