

SAFETY DATA SHEET



KROHN INDUSTRIES
Quality & Service Since 1955

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) and equivalent state Standards. It has also been developed in accordance with the United Nations Globally Harmonized System of Classification of Chemicals (GHS), and the Canadian Workplace Hazardous Materials Information System (WHMIS). 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: **BLACK-FREE**
- SYNONYMS: Not Applicable
- CHEMICAL NAME/CLASS: Aqueous salt solution.

1.2 RELEVANT IDENTIFIED USES OF THE MIXTURE OR USES ADVISED AGAINST

- IDENTIFIED USE: Electroplating Operations
- USES ADVISED AGAINST: None Specified

1.3 DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

- MANUFACTURER/
SUPPLIER: **KROHN INDUSTRIES.**
- ADDRESS: 303 Veterans Blvd.; Carlstadt, NJ; 07072
- BUSINESS PHONE: 201-933-9696
- EMERGENCY PHONE: 1-800-255-3924 (CHEMTEL; M-F 8:30-5:30)

1.4 OTHER PERTINENT INFORMATION

- This product is used as part of metal finishing and polishing processes in relatively small volume. 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
US OSHA HCS CANADA WHMIS	Respiratory sensitization (Category 1); Skin sensitization (Category 1); Germ cell mutagenicity (Category 2); Reproductive Toxicity (Category 1B); Carcinogenicity (Category 1B)

- BASED ON GLOBALLY HARMONIZED SYSTEM

Symbol: See symbol to the right.

Signal Word: DANGER!

Hazard Statements: May cause an allergic skin reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Suspected of causing genetic defects. May cause cancer. May damage fertility or the unborn child.



SECTION 2: HAZARDS IDENTIFICATION (Continued)

Precautionary Statements:

- Keep out of reach of children. Read label before use. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid breathing mist/ vapors/ spray. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves/ protective clothing/ eye protection/ face protection. In case of inadequate ventilation, wear respiratory protection.
- IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/ attention. Wash contaminated clothing before reuse. IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER/doctor. IF exposed or concerned: Get medical advice/ attention.
- Store locked up.
- Dispose of contents/container in accordance with local regulations.

2.3 OTHER PERTINENT DATA ON CHEMICAL AND PHYSICAL HAZARDS:

• OTHER HAZARDS:

- **Hazard Classification:** Aquatic Toxicity, Acute (Category 3); Aquatic Toxicity, Chronic (Category 3).
- **Symbol:** Not applicable.
- **Hazard Statements:** Harmful to aquatic life with long-lasting effects.
- **Precautionary Statements:** Avoid release to the environment. Dispose of contents/container in accordance with local regulations.

• 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. *Chronic Carcinogen, Reproductive Toxic, and Sensitization reactions may occur.
Flammability	0	
Physical Hazard	0	
Protective Equipment	B/C	

• CANADIAN REGULATORY STATUS

- WHMIS 2015: See Previous Section.
- Pre-2015 WHMIS: It is classified D2-A/B: Materials Causing Other Toxic Effects/Very Toxic and Toxic Material
- This SDS contains all the information required by the Hazardous Products Regulations.



SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1/3.2 SUBSTANCES/MIXTURES

COMPONENT	CAS NUMBER	GHS HAZARD CLASSIFICATION	% (w/w)
Potassium Salts	Proprietary ¹	Not classified.	1-10
Cobalt Compound		Respiratory sensitization (Category 1); Skin sensitization (Category 1); Germ cell mutagenicity (Category 2); Reproductive Toxicity (Category 1B); Carcinogenicity (Category 1B), Acute Toxicity, Oral (Category 4); Aquatic Toxicity, Acute (Category 1); Aquatic Toxicity, Chronic (Category 1).	< 1
Other components that do not contribute health or physical hazards at the concentrations present in the solution.			Balance

¹ The exact identify of the compounds and the percentage of composition has 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 if irritation occurs. **Skin:** Flush area with warm, running water for 15 minutes. Seek medical attention if symptoms develop. **Inhalation:** If mists or sprays of this product are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Seek medical attention promptly if allergic reaction or other symptoms occur. **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.
- **CHRONIC:** Due to the presence of Cobalt Compound, overexposures to relatively large doses of this product may cause respiratory difficulties, cardiac and blood circulation effects, ringing in the ears, auditory disturbances, and thyroid enlargement/affection.
- **TARGET ORGANS:** Acute: Skin, eyes. Chronic: Skin, respiratory system, reproductive system, thyroid.

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 product or clean-up procedures that generate substantial amounts of mists, sprays, or splashes.
- **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.

7.3 SPECIFIC END USES

- **RECOMMENDATIONS:** Place product away from children and animals.
- **INDUSTRIAL-SECTOR SPECIFIC SOLUTIONS: PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT** -- Follow practices indicated in Section 6 (Accidental Release Measures).

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 CONTROL PARAMETERS

- AIRBORNE EXPOSURE LIMITS:**

COMPONENT	ACGIH TLV	OSHA PEL	NIOSH REL	OTHER
COBALT COMPOUND (as Cobalt, Inorganic Compounds)	0.02 mg/m ³	Not applicable to this form.	Not applicable to this form.	NE

- BIOLOGICAL OCCUPATIONAL EXPOSURE LIMITS:** The following Biological Exposure Indices (BEIs) for components of this product are listed:

- **COBALT COMPOUND** (as Cobalt, Inorganic Compounds): Cobalt in Urine – End of Shift = 15 µL. Cobalt in Blood – End of Shift = 1 µL

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. If necessary, refer to U.S. OSHA 29 CFR 1910.138, or appropriate local, state, or national standards.
- **EYE PROTECTION:** Splash goggles or safety glasses. If necessary, refer to U.S. OSHA 29 CFR 1910.133, or appropriate local, state, or national standards.
- **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) **APPEARANCE:** Lavender liquid.
- (b) **ODOR:** Odorless.
- (c) **ODOR THRESHOLD:** Not determined.
- (d) **pH:** 10.2
- (e) **MELTING POINT/FREEZING POINT:** Approx. 0°C (32 °F).
- (f) **INITIAL BOILING POINT AND BOILING RANGE:** Approximately 100°C (212°F).
- (g) **FLASH POINT:** Not applicable.
- (h) **EVAPORATION RATE (water=1):** Approx. 1
- (i) **FLAMMABILITY:** Not flammable.
- (j) **UPPER/LOWER FLAMMABILITY OR EXPLOSIVE LIMITS:** Not applicable.
- (k) **VAPOR PRESSURE (mmHg @ 20°C):** Not applicable.
- (l) **VAPOR DENSITY:** Not applicable.
- (m) **RELATIVE DENSITY (water=1):** Approximately 1.0.
- (n) **SOLUBILITY:** Soluble in water.
- (o) **PARTITION COEFFICIENT: N-OCTANOL/WATER:** Not determined.
- (p) **AUTO-IGNITION TEMPERATURE:** Not applicable.
- (q) **DECOMPOSITION TEMPERATURE:** Not determined.
- (r) **VISCOSITY:** Not applicable.
- (s) **EXPLOSIVE PROPERTIES:** Not applicable.
- (t) **OXIDIZING PROPERTIES:** 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.

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 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 can include carbon monoxide, carbon dioxide and compounds of cobalt, potassium, and other inorganic compounds.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 INFORMATION ON TOXICOLOGICAL EFFECTS

- **ACUTE TOXICITY:**

- **PRODUCT ESTIMATED TOXICITY:**

- Acute Toxicity Estimate (Oral) > 5000 mg/kg
 - Acute Toxicity Estimate (Derma) > 5000 mg/kg

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

COBALT COMPOUND

LD50 (Oral, Rat) >700 mg/kg
LD50 (Skin, rabbit) > 2000 mg/kg

POTASSIUM SALT

LD50 (Oral, Rat) > 2000 mg/kg
LD50 (Skin, rabbit) > 4640 mg/kg

- **DEGREE OF IRRITATION:** Mild to moderate after prolonged exposure.
 - **SENSITIZATION:** Due to the presence of Cobalt Compound, this solution may cause allergic skin and respiratory 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
COBALT COMPOUND (as Cobalt Compound)	Group 2B: Possibly carcinogenic to humans	NO	NO	NO	NO

SECTION 11: TOXICOLOGICAL INFORMATION (Continued)

- **REPRODUCTIVE TOXICITY INFORMATION:** The components of this product are not anticipated to cause reproductive effects under typical circumstances of exposure for this product. The following data are available for components of this product, obtained in laboratory studies.
 - **COBALT COMPOUND:** Presumed human reproductive toxicant.
- **MUTAGENIC EFFECTS** The components of this product are not anticipated to cause mutagenic effects under typical circumstances of exposure.
 - **COBALT COMPOUND:** Germ cell mutagenicity; In vitro tests showed mutagenic effects; Mouse mammary gland; Mutation in mammalian somatic cells.
- **SPECIFIC TARGET ORGAN TOXICITY – SINGLE EXPOSURE:** Not applicable.
- **SPECIFIC TARGET ORGAN TOXICITY – REPEATED EXPOSURE:** Not applicable.
- **ASPIRATION HAZARD:** 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 is not anticipated to be harmful or fatal to contaminated terrestrial/aquatic plants or animals.
- Based on concentration of components within the product, this is rated as: Aquatic Toxicity, Acute (Category 3); Aquatic Toxicity, Chronic (Category 3).
- The following aquatic toxicity data are available for components of this product:

COBALT COMPOUND

LC50 - Cyprinus carpio (Carp) - 0.33 mg/l - 96.0 hours
EC50 - Daphnia magna (Water flea) - 1.1 - 1.6 mg/l - 48 hours
EC50 - Chlorella vulgaris (Fresh water algae) - 0.5 mg/l - 96 hours

POTASSIUM SALT

LC50 - Pimephales promelas (fathead minnow) - 880 mg/l - 96 hours
NOEC - Pimephales promelas (fathead minnow) - 500 mg/l - 7 days
LOEC - Pimephales promelas (fathead minnow) - 1,000 mg/l - 7 days
EC50 - Daphnia magna (Water flea) - > 440 mg/l - 48 hours

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

- This product is not anticipated to bioaccumulate significantly.

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. Product spreads on the water surface.

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, state, or national waste regulations.
- **PRECIOUS METAL RECLAMATION:** When applicable and practical, users of the product may wish to utilize precious metal reclamation services for final disposition of wastes.

13.2 DISPOSAL CONSIDERATIONS

- **EPA RCRA WASTE CODE:** Not applicable.

SECTION 14: TRANSPORT INFORMATION

14.1 TRANSPORTATION REGULATIONS

- **DEPARTMENT OF TRANSPORTATION HAZARDOUS MATERIALS SHIPPING REGULATIONS:**

UN/NA Number	Proper Shipping Name	Packing Group	Hazard Class	Label	North American Emergency Response Guide #	Marine Pollutant Status
NOT APPLICABLE.						

- **CANADIAN TRANSPORTATION INFORMATION:** This product is not regulated by Transport Canada as dangerous goods under Canadian transportation standards. Refer to above information.
- **IATA DESIGNATION:** This product is not regulated as dangerous goods by the International Air Transport Association. See information for IMO Designation below.
- **IMO DESIGNATION:** This product is not regulated as dangerous goods by the International Maritime Organization.

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):** Respiratory sensitization; Skin sensitization; Germ cell mutagenicity; Reproductive Toxicity; Carcinogenicity.
- **U.S. CERCLA REPORTABLE QUANTITY (RQ):** Not applicable.
- **U.S. TSCA INVENTORY STATUS:** All components of this product are listed on the TSCA Inventory.
- **SARA 313 COMPONENTS:** Cobalt 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.

- **INTERNATIONAL REGULATIONS**

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

15.2 CHEMICAL SAFETY ASSESSMENT.

- No information available.

SECTION 16: OTHER INFORMATION

16.1 INDICATION OF CHANGE.

- **ORIGINAL DATE OF ISSUE:** June 30, 2018
- **SUPERCEDES:** Not applicable.
- **CHANGE INDICATED:** Not applicable.

16.2 KEY LITERATURE REFERENCES AND SOURCES FOR DATA

- SAFETY DATA SHEETS FOR COMPONENT PRODUCTS.
- Federal OSHA Hazard Communication Standard: 29 CFR 1910.1200
- SAX – Dangerous Properties of Industrial Materials
- RTECS – Registry of Effects of Toxic Chemicals

16.3 CLASSIFICATION AND PROCEDURE USED TO DERIVE THE CLASSIFICATIONS FOR MIXTURES

- **CLASSIFICATION:** Section 2 (Hazards Information) provides all relevant classification information used for this product. The assignments were based on data available for the component products, calculations, expert judgment, and weight of evidence.

16.4 WARRANTY AND COPYRIGHT

- **WARRANTY:** 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. Krohn Industries 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, Krohn Industries 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.
- **COPYRIGHT** - © 2018 by Krohn Industries

16.5 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

SECTION 2: 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 3: CAS Number: Chemical Abstract Service Number, which is used by the American chemical Society to uniquely identify a chemical.

SECTION 5: NFPA: National Fire Protection Association. **NFPA**

FLAMMABILITY CLASSIFICATION: The NFPA uses the flash point (F.P.) and boiling point (BP) to classify flammable or combustible liquids. Class IA: F.P. below 73°F and BP below 100°F. Class IB: F.P. below 73°F and BP at or above 100°F. Class IC: F.P. at or above 73°F and BP at or above 100°F. Class II: F.P. at or above 100°F and below 140°F. Class IIIA: F.P. at or above 140°F and below 200°F. Class IIIB: F.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/m³:** Milligrams per cubic meter. **mppcf:** Millions of Particles per Cubic Foot. **BEI:** Biological Exposure Limit.

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:** LDxx or LCxx: 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 assess the toxicity of chemical substances to humans. TDxx or TCxx: 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: T_{Lm} – Median Tolerance Limit

SECTION 13: RCRA: Resource Conservation and Recovery Act. The regulations promulgated under this 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.