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: **ACID COPPER PLATING SOLUTION**

1.2 RELEVANT IDENTIFIED USES OF THE MIXTURE OR USES ADVISED AGAINST

- IDENTIFIED USE: Electroplating
- USES ADVISED AGAINST: Any off-label use.

1.3 DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

- MANUFACTURER/ SUPPLIER: **KROHN INDUSTRIES, INC.**
- ADDRESS 303 Veterans Blvd.; Carlstadt, NJ; 07072
- BUSINESS PHONE: 201-933-9696
- EMERGENCY PHONE: 1-800-255-3924(CHEMTEL; 24 hours)

1.4 OTHER PERTINENT INFORMATION

- This product is used as part of metal finishing processes in relatively small volume (less than 1 liter in size). 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)	Skin corrosion (Category 1C); Acute toxicity, Oral (Category 4)

2.2 LABEL ELEMENTS

- BASED ON GLOBALLY HARMONIZED SYSTEM

Symbol: To the right.
Signal Word: Danger.

Hazard statement(s)

- H314: Causes severe skin burns and eye damage. H318: Causes serious eye damage. H302: Harmful if swallowed.

SECTION 2: HAZARDS IDENTIFICATION (Continued)

- BASED ON GLOBALLY HARMONIZED SYSTEM (Continued)

Precautionary statement(s)

- P102: Keep out of reach of children.
- P260: Do not breathe mist/ vapors/ spray.
- P264: Wash skin thoroughly after handling.
- P270: Do not eat, drink or smoke when using this product.
- P280: Wear protective gloves/protective clothing/eye protection/face protection.
- P301 + P330+P331 IF SWALLOWED: Rinse mouth. Do not induce vomiting
- P303+P361+P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.
- P405: Store locked up.
- P501 Dispose of contents/ container to an approved waste disposal plant.

- OTHER HAZARDS

Symbol: To the right.
Hazard statement(s): H410: Very toxic to aquatic life with long lasting effects.
Precautionary statement(s):

- P273: Avoid release to the environment.
- P391: Collect spillage.
- P501: Dispose of contents/ container to an approved waste disposal plant.

2.3 OTHER PERTINENT DATA ON CHEMICAL AND PHYSICAL HAZARDS

- **HAZARDOUS MATERIALS IDENTIFICATION SYSTEM**

Health	**3**
Flammability	**0**
Physical Hazard	**0**
Protective Equipment	**C**

HMIS Personal Protective Equipment Rating:
Occupational Use situations: C; Safety glasses and gloves, and body protection suitable to specific circumstances of use.

- **CANADIAN REGULATORY STATUS**
  - This product is classified as hazardous under Canadian Hazardous Products regulations (SOR 2015-17). See the above sections for classification.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1/3.2 SUBSTANCES/MIXTURES

COMPONENT	CAS NUMBER	GHS HAZARD CLASSIFICATION	% (w/w)
Copper Sulfate	7758-99-8	Acute toxicity, Oral (Category 3); Skin irritation (Category 2), Eye irritation (Category 2A); Acute aquatic toxicity (Category 1; M factor 10); Chronic aquatic toxicity (Category 1)	1-5%
Sulfuric Acid	7664-93-9	Skin corrosion (Category 1A); Serious eye damage (Category 1)	Less than 5%
None of the other constituents contribute physical or health hazards at the concentrations present in this product.			Balance

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 vapors, mists, or sprays of this product are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. I**ngestion:** 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:** Contact with this product can cause chemical burns and severe irritation of the contaminated tissues (skin, eyes, and mucous membranes). Inhalation of vapors or liquid may cause lung injury, the effects of which may not be apparent for up to 48 hours. This product may be fatal if inhaled or swallowed.
- **CHRONIC:** Prolonged or repeated inhalation over-exposures can cause burns and ulcers to the nose and throat, dental erosion, bronchitis, and stomach pain. Prolonged or repeated skin exposure can cause dermatitis.
- **TARGET ORGANS:** Eyes, skin.

4.3 INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

- **RECOMMENDATIONS TO PHYSICIANS**: Treat symptoms and eliminate exposure.
- **MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:** Disorders of the target organs may be aggravated by over-exposure to this product.

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:** Though not flammable, when heated to decomposition, this product can emit acid mists and toxic gases (including oxides of sulfur and copper oxides). This product will generate heat when in contact with water. Contact with many inorganic and organic chemicals can cause potentially vigorous reactions.

- Sulfuric Acid (a component of this product) is not flammable; in contact with metals, however, it will liberate hydrogen gas that may form an explosive mixture with air.
    - 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 1 gallon). For small releases, the minimum Personal Protective Equipment should be rubber gloves and rubber apron, splash goggles or safety glasses. In the event a release situation during which there is a potential for inhalation of mists or sprays, respiratory protection should be worn. If necessary, use air-purifying respirator with aid gas cartridges. Use caution during clean-up; contaminated floors and items may be slippery.
- **RESPONSE TO NON-INCIDENTAL RELEASES:** If oxygen levels are below 19.5% or are unknown, or if the release is deemed non-incidental, clear the affected area, protect people, and respond with trained personnel. Minimum Personal Protective Equipment should be Level B: triple-gloves (rubber gloves and nitrile gloves, over latex gloves), chemically resistant suit and boots, hard-hat, and Self-Contained Breathing Apparatus (SCBA). SCBA should be worn when oxygen levels are below 19.5% or are unknown. Neutralize residue with sodium bicarbonate or other neutralizing agent for acids. Ensure that the contaminated area is neutralized (pH 5-9) before releasing the area.
- **RESPONSE PROCEDURES FOR ANY RELEASE**: Absorb spilled liquid with polypads or other suitable absorbent materials. Neutralize residue or any potentially contaminated item with sodium bicarbonate or sodium bicarbonate solution. Use litmus paper to confirm contaminated items and areas are neutralized.

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 or other absorbent material. Sodium bicarbonate, as needed, to neutralize area. Litmus paper for pH testing.

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 vapors, mists and sprays. 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. When diluting this solution, slowly add the product to the water, to prevent splattering. Keep containers closed when not in use.

7.2 CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMAPTIBILITIES

- **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 liquid; 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. Storage areas should be made of corrosion-resistant materials. If appropriate, post warning signs in storage and use areas. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged.

SECTION 7: HANDLING AND STORAGE (Continued)

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

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

COMPONENT	ACGIH TLV	OSHA PEL (ppm)	NIOSH REL (ppm)	OTHER
Copper Sulfate (as Copper and its inorganic compounds)	NE	NE	NE	Sigma Aldrich: TWA = 1 mg/m^3
Sulfuric Acid	TWA= 0.2 mg/m^3 [T, Thoracic fraction of the aerosol]	TWA= 1.0 mg/m^3	TWA= 1.0 mg/m^3	NIOSH IDLH = 15 mg/m^3

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

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 mists. Maintain airborne contaminate concentrations below guidelines listed in Section 3 (Composition and Information on Ingredients). If respiratory protection is needed, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), equivalent U.S. State standards, or Canadian CSA Standard Z94.4-93. The following NIOSH Respiratory Guideline Protection Equipment recommendations for Sulfuric Acid:
    - Up to 15 mg/m^3: Any Supplied-Air Respirator (SAR) operated in a 3 continuous-flow mode; any Powered, Air-Purifying Respirator (PAPR) with acid gas cartridge(s) in combination with a high-efficiency particulate (HEPA) filter; any chemical cartridge respirator with a full facepiece and acid gas cartridge(s) in combination with a HEPA filter; any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- o back-mounted acid gas canister having a HEPA filter; any Self-Contained Breathing Apparatus (SCBA) with a full facepiece; or any SAR with a full facepiece.
    - Emergency or Planned Entry into Unknown Concentrations or IDLH Conditions: Any SCBA that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode or any SAR that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary SCBA operated in pressure demand or other positive-pressure mode.
    - Escape: Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted acid gas canister/Any appropriate escape-type, self-contained breathing apparatus.
- **HAND PROTECTION:** Neoprene or nitrile rubber 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 the appropriate standards of Canada.
- **EYE PROTECTION:** Splash goggles or safety glasses. If more than 1 gallon of this product is to be used, a face shield should be considered. If necessary, refer to U.S. OSHA 29 CFR 1910.133, Canadian 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 splashes, sprays, or prolonged exposure could occur in occupational settings.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

(a) APPEARANCE: Dark brown liquid.
(b) ODOR: Acrid.
(c) ODOR THRESHOLD: Not determined.
(d) pH: 1.0.
(e) MELTING POINT/FREEZING POINT: Not available.
(f) INITIAL BOILING POINT AND BOILING RANGE: Approximately 110 °C (230 °F).
(g) FLASH POINT: Not applicable.
(h) EVAPORATION RATE (water=1): Approximately 1.0.
(i) FLAMMABILITY: Not flammable.
(j) UPPER/LOWER FLAMMABILITY OR EXPLOSIVE LIMITS: Not applicable.
(k) VAPOR PRESSURE (mmHg @ 20°C): Not determined.
(l) VAPOR DENSITY: Not determined.
(m) RELATIVE DENSITY (water=1): Approximately 1.12
(n) SOLUBILITY: Soluble.
(o) PARTITION COEFFICIENT: N-OCTANOL/WATER: Not determined.
(p) AUTO-IGNITION TEMPERATURE: Not applicable.
(q) DECOMPOSITION TEMPERATURE: Not determined.
(r) VISCOSITY: Not determined.
(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; contact with water can generate some amount of 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; it 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

This product is not compatible with oxidizers, bases, halides, and organic materials. Avoid contact with metals and water-reactive materials. This product can react with water to generate heat.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS

- Products of thermal decomposition of this product can include oxides of sulfur and copper.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 INFORMATION ON TOXICOLOGICAL EFFECTS

- **ACUTE TOXICITY:**
  - **PRODUCT TOXICITY DATA:**
    - Acute Toxicity Estimate (oral): 300-2000 mg/kg
    - Acute Toxicity Estimate (dermal) > 2000 mg/kg
  - **COMPONENT TOXICITY DATA:** The following data are available for hazardous components in this product greater than 1% in concentration.

SULFURIC ACID
Irritant (eye, rabbit) = 1.38 mg; severe effect
Irritant (eye, rabbit) = 100 mg with rinse, severe effect
TCLo (inhalation, rabbit) = 20 mg/m^3
TCLo (inhalation, human) = 3 mg/m^3/24 weeks
LDLo (unreported, man) = 135 mg/kg
LD50 (oral, rat) = 2140 mg/kg
LC50 (inhalation, rat) = 510 mg/m^3/2 hr
LC50 (inhalation, mouse) = 320 mg/m^3/2 hr
LC50 (inhalation, guinea pig) = 18 mg/m^3

COPPER SULFATE
LD50 (Oral, mouse) = 369 mg/kg
LD50 (Oral, mouse) = 87 mg/kg
LD50 (Oral, rat) = 300 mg/kg
LD50 (Oral, rat) = 960 mg/kg

SECTION 11: TOXICOLOGICAL INFORMATION (Continued)

- **DEGREE OF IRRITATION:** Moderate to severe especially after prolonged exposure.
- **SENSITIZATION:** Not reported to have skin or respiratory sensitization effects.
- **REVIEW OF ACUTE SYMPTOMS AND EFFECTS:** See Section 2 (Hazards Information) and Section 4 (First-Aid Measures) for further details.
  - **EYES:** May cause moderate to severe eye irritation and chemical burns.
  - **SKIN**: May cause moderate to severe skin irritation, and chemical burns.
  - **INHALATION:** Mists or vapors of this product can cause nasal irritation, sore throat, choking, coughing, and breathing difficulties. Though unlikely to occur due to this product's small volume, it is important to note that inhalation of mists of this product (even for a few minutes) can cause severe lung damage with potentially life-threatening pulmonary edema (accumulation of fluid in the lungs). Symptoms of pulmonary edema include shortness of breath and chest pains; symptoms can be delayed for up to 48 hours after exposure. Prolonged or repeated over-exposures to this solution can cause burns and ulcers to the nose and throat, dental erosion, bronchitis and stomach pain.
  - **INGESTION:** Although not anticipated to be a significant route of occupational over-exposures, ingestion of this product may be fatal. Swallowing this material may cause burns in the mouth, throat, esophagus, and other tissue.

- **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 Sulfate	NO	NO	NO	NO	For "Copper and its Inorganic Compounds" = EPA-D: Not classifiable as to human carcinogenicity.
Sulfuric Acid NOTE: The following information is pertinent to *Sulfuric in Inorganic Acid Mist* only!	Carc. to humans	Known to be Human Carc.	NO	NO	TLV-A2: Suspected Human Carcinogen. MAK-4: No Significant Contribution to Human Cancer Risk. California Prop. 65

  - **REPRODUCTIVE TOXICITY INFORMATION:** The components of this product are not reported to cause reproductive effects under typical circumstances of exposure at the concentrations present in this product. Clinical studies on test animals exposed to relatively high doses of Sulfuric Acid (a component of this product) indicate teratogenic effects.
  - **MUTAGENIC EFFECTS:** No mutagenic effects have been reported for the constituents of this product.
  - **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:** None known.

SECTION 12: ECOLOGICAL INFORMATION

12.1 TOXICITY

- Based on available data, this product is anticipated to be harmful or fatal to contaminated terrestrial plants or animals.
- Based on available data, this product is anticipated to be harmful or fatal to contaminated aquatic plants or animals. It has the potential to significantly lower the pH of the surrounding local water systems.

SECTION 12: ECOLOGICAL INFORMATION (Continued)

- There are following aquatic toxicity data are available for components of this product.

SULFURIC ACID

LC50 Gambusia affinis (Mosquito fish) 42 mg/l 96 hours
Fish: Bluegill/Sunfish: 49 mg/L; 48Hr; TLm (tap water @ 20C)
Fish: Bluegill/Sunfish: 24.5 ppm; 48Hr; TLm (fresh water)

COPPER SULFATE

Fish: Rainbow trout: LC50 = 0.1- 2.5 mg/L; 96 hours; Unspecified
Fish: Bluegill/Sunfish: LC50 = 0.6 mg/L; 48 hours; 15 mg/L
Fish: Bluegill/Sunfish: LC50 = 8.0 mg/L; 48 hours; 68 mg/L
Fish: Bluegill/Sunfish: LC50 = 10.0 mg/L; 48 hours; 100 mg/L
Fish: Bluegill/Sunfish: LC50 = 45.0 mg/L; 48 **hours;** 132 mg/L

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. Specific environmental fate data for components of this product are as follows:

COPPER SULFATE: *Persistence: May persist at toxic levels indefinitely. Biodegradation: No evidence was found to indicate that there is any biotransformation process for copper compounds which would have a significant bearing on the fate of copper in aquatic environments (soluble copper salts). Terrestrial Fate: In soil, Copper Sulfate is partly washed down to lower levels, partly bound by soil components, and partly oxidatively transformed. Aquatic Fate: Several processes determine the fate of copper in the aquatic environment: complex formation, especially with humic substances; sorption to hydrous metal oxides, clays, and organic materials; and bioaccumulation. The formation of complexes with organic ligands modifies the solubility and precipitation behavior of copper such that solid copper species probably do not precipitate under normal circumstances. Furthermore, complexed copper is more easily adsorbed by clay and other surfaces than the free (hydrated) cation. The aquatic fate of copper is highly dependent on such variables as pH, Eh /oxidation-reduction potential in millivolts/, concentrations of organic materials and adsorbents, availability of precipitating iron and manganese oxides, biological activity, and competition with other heavy metals.*

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. 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, U.S. State and U.S. Federal regulations, or the applicable Canadian standards.
- **PRECIOUS METAL RECLAMATION:** 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:** D002

SECTION 14: TRANSPORT INFORMATION

14.1 DANGEROUS GOODS BASIC DESCRIPTION AND OTHER TRANSPORT INFORMATION

- **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
UN3264	Corrosive liquid, acidic, inorganic, n.o.s. (Sulfuric Acid, Copper Sulfate)	II	8	See Other Relevant Information	154	Marine Pollutant; However, qualifies for LTD QTY exceptions.

- **LIMITED QUANTITY:** This product qualifies for limited quantity exceptions to DOT regulations.
- **CANADIAN TRANSPORTATION INFORMATION**: This product is regulated by Transport Canada as dangerous goods under Canadian transportation standards. Refer to above information.

SECTION 14: TRANSPORT INFORMATION

- **IATA DESIGNATION**: This product is regulated as dangerous goods by the International Air Transport Association.
- **IMO DESIGNATION**: This product is 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 PRODUCT

- **OTHER IMPORTANT U.S. REGULATIONS**
  - **U.S. SARA THRESHOLD PLANNING QUANTITY**: Sulfuric Acid = 454kg (1000 lb.)
  - **U.S. SARA HAZARD CATEGORIES (SECTION 311/312, 40 CFR 370-21):** Eye Damage/Irritation. Skin Corrosion/Irritation.
  - **U.S. CERCLA REPORTABLE QUANTITY (RQ):** Sulfuric Acid = 454kg (1000 lb.).
  - **U.S. TSCA INVENTORY STATUS:** All components are listed on the TSCA Inventory.
  - **US SARA 313:** Sulfuric acid (aerosol forms only) is subject to reporting requirements; not pertinent to this product.
  - **CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) STATUS:** Sulfuric Acid, Inorganic Mists is on the Proposition 65 list as a compound known to the State of California to cause cancer. This form is not pertinent to the product. However, this product does contain a trace amount of Formaldehyde.

WARNING: This product can expose you to trace amounts of formaldehyde, a chemical known to the state of California to cause cancer. For more information, go to **www.p65Warnings.ca.gov**

- **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 17, 2020
- **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 WARRANY 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.
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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 (Fl.P.) and boiling point (BP) to classify flammable or combustible liquids. Class IA: Fl.P. below 73°F and BP below 100°F. Class IB: Fl.P. below 73°F and BP at or above 100°F. Class IC: Fl.P. at or above 73°F and BP at or above 100°F. Class II: Fl.P. at or above 100°F and below 140°F. Class IIIA: Fl.P. at or above 140°F and below 200°F. Class IIIB: Fl.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^3: 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: LD*xx* or LC*xx*: 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. TD*xx* or TC*xx*: 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 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/NDSL: Canadian Domestic Substances and Non-Domestic Substances Lists.