SAFETY DATA SHEET

SECTION 1. Identification of the Substance and Manufacturer

Product: **Phosphorous-Copper Powder**

Company Name: Krohn Industries, Inc.
303 Veterans Boulevard
Carlstadt, NJ 07072
1 (201) 933-9696 (Phone)
1 (201) 933-9684 (Fax)

Emergency Contact Information: ChemTel 1 (800) 255-3924
Krohn Industries, Inc. 1 (201) 933-9696

SECTION 2. Hazard Identification

Classification System:
The classification is based on the criteria in the UN Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

GHS Label Elements Warning

May cause skin, eye and respiratory irritation

Prevention:
Avoid breathing dust
Use only in a well-ventilated area
Wash hands thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician if you feel unwell
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing
If eye irritation persists get medical advice/attention

Disposal:
Dispose of contents/container in accordance with local/national/international regulations.

SECTION 3. Composition/Information of Ingredients

Ingredient	%	EC Number	CAS No.
Copper	91 - 92	231-159-6	7440-50-8
Phosphorous	8 – 9	215-236-1	7723-14-0

SECTION 4. First Aid Measures

INHALATION:	Remove to fresh air. Lay patient down. Cover with blanket.
INGESTION:	If swallowed call physician immediately, . DO NOT induce vomiting unless directed by physician. Rinse mouth with water if person is conscious.
SKIN CONTACT:	For skin exposure, remove contaminated clothing and wash with water for minimum of 15 minutes.
EYE CONTACT:	If irritated, flush eyes and skin with large volumes of fresh water for 15 minutes. Have person seek medical attention.
MEDICAL NOTES:	Skin and respiratory disorders may be aggravated by prolonged exposure.

SECTION 5. Fire-Fighting Measures

Extinguishing Media:	CO_2, ABC extinguisher, or water spray.
Special Fire Fighting Procedures:	Material is non-flammable. Use firefighting measures appropriate to surrounding materials..
Personal Protective Equipment:	Wear self-contained breathing apparatus.

SECTION 6. Accidental Release Measures

Personal Precautions:	Spilled material may produce dust hazard if not handled correctly. Wear appropriate personal protective equipment: coveralls, gloves & eye protection..
Methods for Clean Up:	Contain spillages and clean up with vacuum or conventional tools and attempt to minimize dusting. Place in a suitable container for recycling or disposal in accordance with local and national waste regulations.
Method of Disposal:	Place in a suitable container for recycling or disposal in accordance with local, state, and/or federal regulations.

SECTION 7. Handling and Storage

Handling:	Only use in a well-ventilated area and prevent the creation of dusts. If concentrations exceed the occupational exposure limits, use suitable respiratory protection.
Storage:	Store in a cool, dry, well-ventilated place. Keep away from food, drink and animal feeding stuffs. Keep lids of container tightly sealed.

SECTION 8. Exposure Controls/Personal Protection

Occupational Exposure Standards: 8-hour TWA

1. Copper Powder as dust and mist
   OSHA PEL: 1 mg/m^3 and ACGIH TLV: 1 mg/m^3
2. Phosphorous
   OSHA PEL: 0.1 mg/m^3 and ACGIH-TVL: 0.01 mg/m^3

Occupational Exposure Controls: All personal protective equipment, including respiratory equipment, used to control exposure to hazardous substances must be selected to meet the requirements of national personal protective equipment regulations.

Ventilation: To keep below the U.S.A. OSHA and EU exposure limits, use general dilution type ventilation.

Personal Protection

Respiratory Protection: Cartridge type particulate filter respirator or dust-mask conforming to U.S.A. NIOSH. Refer to Respiratory Protective Devices approved by NIOSH under 42 CFR 84 and the appropriate European standard.

Hand Protection: Wear if skin contact is probable and skin is sensitive.

Eye Protection: Safety glasses or goggles.

Skin Protection: Long sleeve shirt(s) if contact is probable and skin is sensitive..

SECTION 9. Physical and Chemical Properties

Appearance:	Silver Blue metallic	Odor:	None
	Copper	**Phosphorous**	
Boiling Point:	2567°C	280°C	
Melting Point:	1083°C	610°C	
Specific Gravity:	8.94	1.82	
Vapor Pressure:	NA	NA	
Vapor Density:	NA	NA	
Evaporation Rate:	NA	NA	
Solubility in water:	Insoluble	Insoluble	
Volatile by Volume, %:	0	0	

SECTION 10. Stability and Reactivity

Stable__X_____ Unstable_____

Conditions & Materials to Avoid:

- Uncontrolled exposures to extreme temperatures

Hazardous Decomposition Products: Metal fumes will be released if heated above the elements melting point

Hazardous Polymerization: Will Not Occur

SECTION 11. Toxicological Information

Signs, symptoms, and effect of over exposure:

Eyes: Redness, tearing, itching, burning and conjunctivitis

Ingestion: Irritation and burning sensations of mouth and throat, nausea, abdominal pain with possible diarrhea.

Inhalation: Irritation of the mucous membranes, coughing, wheezing, shortness of breath. Prolonged exposure may cause metallic taste.

Acute Health Effects:

This product is not listed by NTP, IARC or regulated as a carcinogen by OSHA.

SECTION 12. Ecological Information

None Established

SECTION 13. Disposal Considerations

PACKAGING: Dispose of in accordance with procedures applying to the disposal of the product.

PRODUCT: Dispose of surplus and contaminated materials (including sawdust) at an approved landfill or in accordance with other national or regional provisions.

SECTION 14. Transportation Information

US DOT: Not a hazardous material for transportation.

DOT regulations:
Hazardous Class: Not Applicable
Land transport ADR/RID (cross-border)
Hazardous Class: Not Applicable
Maritime transport - IMDG:
Hazardous Class: Not Applicable
Marine Pollutant: Not Applicable

SECTION 15. Regulatory Information

The components of this product are subject to the reporting requirements of Sections 302, 304 and 313 Title III of the Superfund Amendments and Reauthorization Act as follows:

Chemical Name	SARA 302 (40 CFR 355, Appendix A)	SARA 304 (40 CFR Table 302.4)	SARA 313 (40 CFR 372.65)
Copper	No	Yes	Yes
Phosphorous	Yes	Yes	Yes

U.S. EPA CERCLA REPORTABLE QUANTITY (RQ): Copper = 5000 lbs.; Phosphorous (<100 micron) 1 lb.

SECTION 16. Other Information

Keep out of reach of children. Read and follow all label instructions. This information is based on our present knowledge. However, this is not a guarantee of specific product features. It is the user's responsibility to satisfy themselves as to the suitability and completeness of this information for their own particular use.

Company Name: Krohn Industries, Inc.
303 Veterans Boulevard
Carlstadt, NJ 07072
1 (201) 933-9696 (Phone)
1 (201) 933-9684 (Fax)

Emergency Contact Information	ChemTel	1 (800) 255-3924
	Krohn Industries, Inc.	1 (201) 933-9696

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: **FLUX-BINDER**
- CODES: P101, P501, P107, P507, and P105
- CHEMICAL NAME/CLASS: Organic compound mixture with fluorides and borates.

1.2 RELEVANT IDENTIFIED USES OF THE MIXTURE OR USES ADVISED AGAINST

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

1.3 DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

- MANUFACTURER/ SUPPLIER: **KROHN INDUSTIRES.**
- 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 and polishing processes in relatively small volume (1 quart and less 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)	Reproductive toxicity (Category 1B) NOTE: If the product is heated into a molten form, thermal burns are possible upon contact.

2.2 LABEL ELEMENTS

- BASED ON GLOBALLY HARMONIZED SYSTEM

Symbol: See information to the right.

Signal Word: Danger.

Hazard statement(s): H360: May damage fertility or the unborn child.

Precautionary statement(s): P201: Obtain special instructions before use. P202: Do not handle until all safety precautions have been read and understood. P280: Wear protective gloves/protective clothing/eye protection/face protection. P308+311: IF exposed or concerned: Get medical advice/ attention. P405: Store locked up. P501: Dispose of contents/ container to an approved waste disposal plant.

SECTION 2: HAZARDS IDENTIFICATION (Continued)

2.3 OTHER PERTINENT DATA ON CHEMICAL AND PHYSICAL HAZARDS

- **HAZARDOUS MATERIALS IDENTIFICATION SYSTEM**

Health	**1***	* Toxic to Reproduction
Flammability	**1**	(Personal Protective Equipment Rating: Occupational Use situations: B: Safety glasses/gloves C: Add body protection if splashes/spays can occur. See section 8 for details.)
Physical Hazard	**0**	
Protective Equipment	**B/C**	

- **CANADIAN REGULATORY STATUS**
  - This product is classified as hazardous under Canadian Hazardous Products regulations (SOR 2015-17). See the above section for classification.
    - This SDS contains all the information required by the HPR.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 SUBSTANCES/MIXTURES

COMPONENT	CAS NUMBER	GHS HAZARD CLASSIFICATION	% (w/w)
Boric acid	10043-35-3	Reproductive toxicity (Category 1B)	3.8 - 12.0
Potassium fluoride	7789-23-3	Acute toxicity, Oral (Category 3), Acute toxicity, Inhalation (Category 3), Acute toxicity, Dermal (Category 3)	3.8 – 10.0
Potassium tetraborate	1332-77-0	Reproductive toxicity (Category 2)	3.8 - 12.0
None of the components of this product contribute health or physical hazards, as defined in OSHA Hazard Communication Standard (29 CFR 1910.1200, Appendices A and B).			Balance

SECTION 4: FIRST AID MEASURES

4.1 DESCRIPTION OF FIRST AID MEASURES

AREA EXPOSED

Eye Contact — Flush with copious amounts of water for 15 minutes. "Roll" eyes during flush. Check for and remove contact lenses. Seek medical attention if irritation persists.

Skin Contact — Flush area with warm, running water for several minutes. Seek medical attention if irritation persists.

Inhalation — Obtain fresh air. See medical attention if symptoms persist or develop after exposure ends.

Ingestion — If conscious only: Rinse mouth with water. Do not induce vomiting. Contact a Poison Control Center or physician for instructions.

Thermal burns — Rinse area thoroughly with cold water. Cover with a clean bandage and obtain appropriate medical treatment.

4.2 MOST IMPORTANT ACUTE AND CHRONIC EXPOSURE SYMPTOMS

- **ACUTE HEALTH EFFECTS:**

AREA EXPOSED

Eye Contact — May cause mild eye irritation, depending on duration of contact.

Skin Contact — May cause mild skin irritation, depending on duration of contact.

Inhalation — May cause mild respiratory tract irritation; symptoms may include coughing and sneezing depending on volume of mist/spray inhaled.

Ingestion — May cause gastrointestinal system irritation; symptoms may include pain, diarrhea, nausea and vomiting if large volumes are ingested

- **CHRONIC HEALTH EFFECTS:** Boric acid/Borates are reported to be a reproductive toxin in animal studies involving long-term exposure to relatively high doses. See Section 11 for additional information.
- **TARGET ORGANS:** Reproductive system.

SECTION 4: FIRST AID MEASURES (Continued)

4.3 INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

- **RECOMMENDATIONS TO PHYSICIANS**: Treat symptoms and eliminate exposure.
- **MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:** None reported.

SECTION 5: FIREFIGHTING MEASURES

5.1 EXTINGUISHING MEDIA

- **RECOMMENDED FIRE EXTINGUISHING MEDIA:** Dry Powder, Foam, Carbon Dioxide, or any other suited to organic liquids.
- **UNSUITABLE FIRE EXTINGUISHING MEDIA:** Water jet, which may spread the fire.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

- **NFPA FLAMMABILITY CLASSIFICATION:** Not normally flammable. May ignite only under high heat conditions, such as when involved in a fire. See NFPA 704 rating to right.

- **UNUSUAL HAZARDS IN FIRE SITUATIONS:** When involved in a fire, this material may produce irritating vapors and toxic gases (e.g., carbon monoxide, carbon dioxide, as well as boron and fluoride compounds).
    - 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. For small releases, the minimum Personal Protective Equipment should be rubber gloves and, splash goggles or safety glasses. Use caution during clean-up; contaminated floors and items may be slippery. NOTE: Allow heated material to cool before attempting to clean.
- **RESPONSE TO NON-INCIDENTAL RELEASES:** Use recommendations above for incidental releases.
- **RESPONSE PROCEDURES FOR ANY RELEASE**: Absorb spilled material with polypads or other suitable absorbent materials. If needed, 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 or other absorbent material.

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. 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).

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:** The following exposure limits are applicable.

COMPONENT	ACGIH TLV	OSHA PEL	NIOSH REL	OTHER
Potassium Fluoride (as Fluorides)	2.5mg/m^3 TWA	2.5mg/m^3 TWA	2.5mg/m^3 TWA	NE.
Boric Acid/Potassium Tetraborate (as Borate compounds)	2mg/m^3 TWA; 6 mg/m^3 STEL (Inhalable Fraction of Aerosol)	NE	NE.	NE.

- **BIOLOGICAL OCCUPATIONAL EXPOSURE LIMITS:** The following Biological Exposure Indices (BEIs) are for components of this product.
  - Potassium Fluoride (as Fluoride): Fluoride in urine prior to shift = 2 mg/L; Fluoride in urine end of shift = 3 mg/L.

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 spatter. For situations in which spattering or sprays may occur, an air-purifying respirator with a high-efficiency particulate filter.
- **HAND PROTECTION:** Neoprene gloves should be used. 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 there is a potential for eye contact. If necessary, refer to U.S. OSHA 29 CFR 1910.133, or appropriate 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.
- **THERMAL PROTECTION:** Wear hand, eye, and body protection appropriate to task when working with product above 40 °C (104 °F) (e.g., thermally protective gloves, splash goggles, long sleeves).

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

(a) APPEARANCE: Grey to brown semi-solid.
(b) ODOR: Odorless.
(c) ODOR THRESHOLD: Not determined.
(d) pH: Not applicable.
(e) MELTING POINT/FREEZING POINT: 35 – 80 °C (85 – 176 °F).
(f) INITIAL BOILING POINT AND BOILING RANGE: > 230 °C (446 °F)
(g) FLASH POINT: >93.4 °C (200 °F).
(h) EVAPORATION RATE (water=1): Not determined.
(i) FLAMMABILITY: Not flammable.
(j) UPPER/LOWER FLAMMABILITY OR EXPLOSIVE LIMITS: Not applicable.
(k) VAPOR PRESSURE (mmHg @ 20˚C): <0.1 kPa at 20 °C
(l) VAPOR DENSITY: Not determined.
(m) DENSITY: 0.75 – 0.87 g/cm^3 at 100 °C (212 °F).
(n) SOLUBILITY: Insoluble.
(o) PARTITION COEFFICIENT: N-OCTANOL/WATER: Not determined.
(p) AUTO-IGNITION TEMPERATURE: Not applicable.
(q) DECOMPOSITION TEMPERATURE: Not determined.
(r) VISCOSITY: 5 – 30 mm^2/s at 100 °C (212 °F).
(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; 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.
- 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

- This product is not compatible with strong oxidizers, strong acids and water-reactive substances.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS

- Products of thermal decomposition include carbon monoxide, carbon dioxide, as well as boron and fluoride compounds.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 INFORMATION ON TOXICOLOGICAL EFFECTS

- **PRODUCT TOXICOLOGY DATA:** The following are calculated estimates for the product:
  - Acute Toxicity Estimate (Oral) > 2000 mg//kg
  - Acute Toxicity Estimate (Dermal) > 2500 mg/kg
  - Acute Toxicity Estimate (Inhalation) > 5 mg/L (Dust and Mist)

SECTION 11: TOXICOLOGICAL INFORMATION (Continued)

- **COMPONENT TOXICITY DATA**: The following data are available for components of this product.

BORIC ACID
LD50 (oral, rat) = 3500 – 4100 mg/kg
LD50 (dermal, rat) = 2000 mg/kg
LC5-(inhalation, rat) = >2.03 mg/L Rat/4 hours

POTASSIUM FLUORIDE
LD50 (oral, rat) = 245 mg/kg
LD50 (dermal, rat) = 300 mg/kg (estimate)
LC5-(inhalation, rat) = 0.5 mg/L Rat/4 hours (Dust/Mist; Estimate)

POTASSIUM TETRABORATE
LD50 (oral, rat) > 2500 mg/kg
LD50 (dermal, rat) > 2000 mg/kg
LC5-(inhalation, rat) > 2.04 mg/L Rat/4 hours

- **DEGREE OF IRRITATION:** May cause mild skin or eye irritation, depending on duration of 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 mild irritation.
  - **SKIN**: May cause mild irritation.
  - **INHALATION:** Inhalation this product can cause mild to moderate nasal irritation.
  - **INGESTION:** Although not anticipated to be a significant route of occupational over-exposures, ingestion of this product may irritate the mouth, throat, and other contaminated tissue.

- **CHRONIC TOXICITY:**
  - **CARCINOGENICITY STATUS:** No component of this product is listed as a carcinogen by IARC, NTP, NIOSH, or OSHA.
  - **REPRODUCTIVE TOXICITY INFORMATION: REPRODUCTIVE TOXICITY INFORMATION:** The components of this product are not reported to cause reproductive effects under typical circumstances of exposure associated with use of the product as directed. The following data are available, in terms or reproductive toxicity effects:
    - **POTASSIUM TETRABORATE:** Suspected human reproductive toxicant Suspected of damaging the unborn child, based on studies involving test animals exposed to relative high doses of borate compounds.
    - **BORIC ACID:** Animal feeding studies in rat, mouse and dog, at high doses, have demonstrated effects on fertility and testes. Studies with the chemically related boric acid in the rat, mouse and rabbit, at high doses, demonstrate developmental effects on the fetus, including fetal weight loss and minor skeletal variations. The doses administered were many times in excess of those to which humans would normally be exposed. Human epidemiological studies show no increase in pulmonary disease in occupational populations with chronic exposures to boric acid dust and sodium borate dust. A recent epidemiological study under the conditions of normal occupational exposure to borate dusts indicated no effect on fertility.
  - **MUTAGENIC EFFECTS:** The components of this product are not reported to cause reproductive effects under typical circumstances of exposure at the concentrations present in this product.
  - **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:** None known.

SECTION 12: ECOLOGICAL INFORMATION

12.1 TOXICITY

- Based on available data, this product may be harmful to contaminated terrestrial plants or animals.
- Based on available data, this product may be harmful to contaminated aquatic plants or animals.
- The following aquatic toxicity data are available for components of this product

SECTION 12: ECOLOGICAL INFORMATION (Continued)

BORIC ACID
LC50 - Ptychocheilus lucius - 279 mg/l - 96 hours
LC0 - Lepomis macrochirus (Bluegill) - > 1,021 mg/l - 96 hours
LC50 - Daphnia magna (Water flea) - 53.2 mg/l - 21 days
EC50 - Daphnia magna (Water flea) - 133 mg/l - 48 hours

POTASSIUM TETRABORATE
LC50 - Gila elegans - 280 mg/l - 96 hours
LC50 - Daphnia magna (Water flea) - 133 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

- 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 according to all applicable local, U.S. state and federal regulations, or applicable Canadian standards.

13.2 DISPOSAL CONSIDERATIONS

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

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
NOT APPICABLE. NOT CLASSIFIED HAS HAZARDOUS BY DOT.						

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

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):** Reproductive toxicity.
  - **U.S. CERCLA REPORTABLE QUANTITY (RQ):** Not applicable.
  - **U.S. TSCA INVENTORY STATUS:** All components are listed on the TSCA Inventory.

SECTION 15: REGULATORY INFORMATION (Continued)

- **US SARA 313:** Not applicable.
- **CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) STATUS:** Not applicable.

- **INTERNATIONAL REGULATIONS**
  - **CANADIAN DSL/NDSL INVENTORY STATUS:** Components 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 10, 2019
- **SUPERCEDES:** Not applicable.
- **CHANGE INDICATED:** Not applicable.

16.2 KEY LITERATURE REFERENCES AND SOURCES FOR DATA

- SAFETY DATA SHEETS FOR COMPONENT PRODUCTS.
- 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.
-

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.