

SAFETY DATA SHEET



This Safety Data Sheet (SDS) complies with the requirements of the U.S. Federal Occupational Safety and Health Administration Hazard Communication Standard (29 CFR 1910.1200, as updated in 2012) 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

1.1 PRODUCT IDENTIFIER:

- PRODUCT NAME: **NICKEL-MIRROR™ PLATING SOLUTIONS**
- 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; 24 hours)

1.4 OTHER PERTINENT INFORMATION

- This product is used as part of metal finishing and polishing processes in relatively small volume (5 gallons or 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 HCS CANADA WHMIS	Acute toxicity, Oral (Category 4); Acute toxicity, Inhalation (Category 4); Skin irritation (Category 2); Eye irritation (Category 2B); Respiratory sensitization (Category 1); Skin sensitization (Category 1); Germ cell mutagenicity (Category 2); Carcinogenicity (Category 1A); Reproductive toxicity (Category 1B); Specific target organ toxicity - repeated exposure (Category 1)

2.2 LABEL ELEMENTS:

- BASED ON GLOBALLY HARMONIZED SYSTEM

Symbol: To the right.

Signal Word: DANGER.

Hazard statement(s): Harmful if swallowed or if inhaled. Causes skin and eye irritation. 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. Causes damage to lungs through prolonged or repeated exposure if inhaled.



SECTION 2: HAZARDS IDENTIFICATION (Continued)

Precautionary statement(s)

- Keep away from children. Read label before use. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe mist/ vapors/ spray. Wash skin thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Contaminated work clothing should not be allowed out of the workplace. Wear gloves/protective clothing/eye protection/face protection.
- IF SWALLOWED: Rinse mouth. Call a POISON CENTER or doctor/ physician if you feel unwell. IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/ attention. Take off contaminated clothing and wash it before reuse. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing. If eye irritation persists: Get medical advice or attention. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell. If exposed or concerned: Get medical advice/ attention.
- Store locked up.
- Dispose of contents/ container to an approved waste disposal plant.

OTHER HAZARDS

Symbol: To the right.

Signal Word: DANGER.

Hazard statement(s): Very toxic to aquatic life with long lasting effects.

Precautionary statement(s):

- Avoid release to the environment.
- Collect spillage.
- 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	2	HMIS Personal Protective Equipment Rating: Occupational Use situations: B/C; Safety glasses and gloves/ body protection suitable to specific circumstances of use should be considered.
Flammability	0	
Physical Hazard	0	
Protective Equipment	B/C	

CANADIAN REGULATORY STATUS

- WHMIS 2015: See Previous Section.
- Pre-2015 WHMIS: 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 SUBSTANCES/MIXTURES

COMPONENT	CAS NUMBER	GHS HAZARD CLASS	% (w/w)
Boron Compound	Proprietary ¹	Reproductive toxicity (Category 2)	30-40%
Nickel Compound #1		Acute toxicity, Oral (Category 3); Acute toxicity, Inhalation (Category 3); Skin irritation (Category 2); Respiratory sensitization (Category 1); Skin sensitization (Category 1); Germ cell mutagenicity (Category 2); Carcinogenicity (Category 1A); Reproductive toxicity (Category 1B); Specific target organ toxicity - repeated exposure (Category 1); Acute aquatic toxicity (Category 1); Chronic aquatic toxicity (Category 1)	1-5%
Nickel Compound #2		Acute toxicity, Oral (Category 4); Acute toxicity, Inhalation (Category 4); Skin irritation (Category 2); Respiratory sensitization (Category 1); Skin sensitization (Category 1); Germ cell mutagenicity (Category 2); Carcinogenicity (Category 1A); Reproductive toxicity (Category 1B); Specific target organ toxicity - repeated exposure, Inhalation (Category 1); Acute aquatic toxicity (Category 1); Chronic aquatic toxicity (Category 1)	10-20%
Aqueous solution, with components that are not hazardous or are below 1.0% in concentration (or below 0.1% in concentration for carcinogens, reproductive toxins, respiratory tract sensitizers, and mutagens). All ingredients are listed per the requirements of regulations pertinent to Safety Data Sheet requirements under various regulations.			Balance

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. Seek medical attentions if irritation persists or rash develops. **Inhalation:** If mists/sprays of this product are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. **Ingestion:** Contact a Poison Control Center or physician for instructions. If professional advice is not available, do not induce vomiting. Victim should drink milk, egg whites, or large quantities of water. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or who cannot swallow.

4.2 MOST IMPORTANT ACUTE AND CHRONIC EXPOSURE SYMPTOMS

- **ACUTE:** Contact can cause mild to moderate eye or skin irritation, depending on point of contact and duration of exposure. Eye contact can cause redness, pain, and tearing. Skin contact may result in redness and irritation. If the product is swallowed, irritation of the mouth, throat, and other tissues of the gastrointestinal system may occur. Ingestion of large amounts can cause irritation, pain, vomiting, and diarrhea. Overexposure to mists or sprays of this product may cause irritation to the respiratory tract. Symptoms of such exposure can cause coughing, wheezing, and inflammation of the tissues of the nose, throat, and other respiratory system organs.
- **CHRONIC:** Borates (e.g., Boron Compound, a component of this product) can cause severe, adverse effects if swallowed in large quantities. Swallowing this product can cause gastric disturbances, electrolyte imbalances, and potentially cyanosis (a bluish discoloration of the skin due to deficient oxygenation of the blood). Borate poisoning begins with nausea, vomiting, and diarrhea. There is a red rash followed by exfoliation of rash area and mucous membranes. Kidney injury and central nervous system effects have been observed in cases of severe adult and pediatric. Due to the presence of Nickel compounds, this product may cause allergic skin and/or respiratory reactions and it may also cause cancer based on animal studies.
- **TARGET ORGANS:** Acute - eyes, skin, respiratory system. Chronic – skin, respiratory system, reproductive system, liver, kidneys, central nervous system.

4.3 INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

- **RECOMMENDATIONS TO PHYSICIANS:** Treat symptoms and eliminate exposure.
- **MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:** Conditions impacting target organs..

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

SECTION 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 liquid or clean-up procedures that generate substantial amounts of mists/sprays.
- **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 mists/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. 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 (ppm)	NIOSH REL (ppm)	OTHER
Boron Compound (as borate compound)	2mg/m ³ TWA; 6 mg/m ³ STEL	NE	NE	NE.
Nickel Compound #1 and Nickel Compound #2 (as Nickel, soluble compounds)	TWA= 0.1 mg/m ³	1 mg/m ³ , as Ni	TWA= 0.015 mg/m ³	NE

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

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION (Continued)

- **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:** Light green liquid.
- (b) **ODOR:** Odorless.
- (c) **ODOR THRESHOLD:** Not determined.
- (d) **pH:** 4.0
- (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):** > 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; 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

- Thermal decomposition of this product generates carbon monoxide, carbon dioxide and compounds of nickel, chlorine and sulfur.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 INFORMATION ON TOXICOLOGICAL EFFECTS

- **ACUTE TOXICITY:**

- **PRODUCT ESTIMATED TOXICITY:**

- Acute Toxicity Estimate (Oral): 1494 mg/kg
 - Acute Toxicity Estimate (Derma) > 2000 mg/kg
 - Acute Toxicity Estimate (Inhalation): 3.94 /g/L

- **TOXICOLOGY DATA:** The following data are available for hazardous components in this product greater than 1% in concentration:

NICKEL COMPOUND #1:

Oral-Rat LD50:186 mg/kg
Irritancy Test (Eyes – rabbit); Result: Mild eye irritation (OECD Test Guideline 405)

NICKEL COMPOUND #2

LD50 Intraperitoneal - mouse - 20.894 mg/kg

BORON COMPOUND

Skin-Human 15 mg/3D-1 Mild irritation effects
Microorganisms-Escherichia coli 17,000 ppm/24H
Sperm Morphology-Rat-Oral 6 mg/kg
Oral-Rat TDLo:45 g/kg (90D male):Reproductive effects
Oral-Child TDLo:500 mg/kg: Gastrointestinal tract effects
Oral-Man LDLo:429 mg/kg: Cardiovascular effects, Systemic effects

BORON COMPOUND (Continued)

Oral-Child TDLo: 500 mg/kg;
Skin-Infant LDLo:1200 mg/kg
Skin-Child LDLo:4 g/kg/4D
Skin-Man LDLo:2430 mg/kg
Skin-Child LDLo:1500 mg/kg
Subcutaneous-Infant LDLo:1100 mg/kg
Unreported-Man TDLo:170 mg/kg: Gastrointestinal tract effects
Unreported-Man LDLo:147 mg/kg
Oral-Rat LD50:2660 mg/kg
Inhalation-Rat LCLo:28 mg/m3/4H
Inhalation-Rat LCLo:28 mg/m3/4H
Subcutaneous-Rat LD50:1400 mg/kg
Intravenous-Rat LD50:1330 mg/kg
Oral-Mouse LD50:3450 mg/kg
Intraperitoneal-Mouse LDLo:800 mg/kg
Subcutaneous-Mouse LD50:1740 mg/kg
Intravenous-Mouse LD50:1240 mg/kg
Subcutaneous-Dog, adult LDLo:1000 mg/kg
Parenteral-Dog, adult LDLo:1 g/kg

- **DEGREE OF IRRITATION:** Mild to moderate, depending on duration of exposure.
 - **SENSITIZATION:** Due to the presence of Nickel compounds in this product, repeated contact may cause an allergic skin reaction. It may also cause allergy or asthma symptoms or breathing difficulties if inhaled.
 - **REVIEW OF ACUTE SYMPTOMS AND EFFECTS:** See Section 2 (Hazards Information) and Section 4 (First-Aid Measures) for further details.
 - **EYES:** Can cause mild to moderate irritation.
 - **SKIN:** Can cause mild to moderate irritation.
 - **INHALATION:** Mists/sprays of 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 and cause other 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
Boron Compound (as borate compound)	NO	NO	NO	NO	NO
Nickel Compound #1 and Nickel Compound #2 (as Nickel, soluble compounds)	IARC-1 Known to be a Human Carcinogen	NTP-1 Known to be a Human Carcinogen	Carcinogen	NO	MAK: Substances that can cause cancer in man.

- **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. The following components have been reported to have reproductive effects:

SECTION 11: TOXICOLOGICAL INFORMATION (Continued)

- **BORON COMPOUND.** Developmental effects were observed in mice, rats and rabbits after oral administration of Boron Compound. However, these effects were considered secondary to maternal toxicity (e.g., adverse liver and kidney effects).: Boron Compound was found to induce testicular atrophy and effects on spermatogenesis in rats and mice in various studies. Effects occurred at dose-levels (27 mg/kg) without general toxicity. Boron Compound has selectively damaged the testes, sperm production and fertility in rats and dogs after ingestion of relatively large doses.
- **NICKEL COMPOUND #2/NICKEL COMPOUND #1:** Nickel compounds may potentially cause harm to the unborn.
- **MUTAGENIC EFFECTS:** The components of this product may cause mutagenic effects, based on animal testing.
 - **NICKEL COMPOUND #2:** Germ cell mutagenicity: - Genotoxicity in vitro; Hamster/Other cell types/ Morphological transformation.
 - **BORON COMPOUND:** Mutagenic for bacteria and/or yeast.
- **SPECIFIC TARGET ORGAN TOXICITY – SINGLE EXPOSURE:** Not applicable.
- **SPECIFIC TARGET ORGAN TOXICITY – REPEATED EXPOSURE:** Lungs are a potential target organ for repeated exposures.
- **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 or fatal to contaminated aquatic plants or animals.
- There are the following aquatic toxicity data available for components of this product that are over 1 percent in concentration.

NICKEL COMPOUND #1

Toxicity to fish mortality- NOEC - *Oncorhynchus mykiss* (rainbow trout) - 4.9 mg/l - 96.0 hours
Toxicity to daphnia and EC50 - *Daphnia magna* (Water flea) - 6.0 - 9.3 mg/l - 48 hours
Other aquatic invertebrates; Toxicity to algae EC50 - *Pseudokirchneriella subcapitata* (green algae) - 0.006 - 0.012 mg/l - 96

NICKEL COMPOUND #2

EC50 (freshwater algae) = 0.75 mg/L for 72 hours
LC50 (*Brachydanio rerio*) > 100 mg/L for 24 hours
LC50 (*Oncorhynchus mykiss*) = 1.28 mg/L for 96 hours
EC50 (water flea) = 1 mg/L for 48 hours

BORON COMPOUND

EC50 (*Daphnia magna*); 48 hours, 133 mg/L
LC50 Fish (*Lepomis machochris-Bluegill*); 96 hours/ > 1021 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.

12.3 BIOACCUMULATIVE POTENTIAL

- The following bioaccumulation data are available for components of this product.

NICKEL COMPOUND #1: *Oncorhynchus mykiss* (rainbow trout) - 180 days - 1,000 µg/l; Bioconcentration factor : 4

NICKEL COMPOUND #2: *Cyprinus carpio* (Carp) - 46.5 hours - 3,200 µg/l; Bioconcentration factor: 11.3

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 standards.
- **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
This product is a Marine Pollutant. Confer with supplier if there are questions regarding shipment. Normally volumes are shipped below regulated limits.						

- **CANADIAN TRANSPORTATION INFORMATION:** Refer to above information.
- **IATA DESIGNATION:** Refer to the above information.
- **IMO DESIGNATION:** Refer to the above information.

14.2 ENVIRONMENTAL HAZARDS

- Marine pollutant.

14.3 SPECIAL PRECAUTIONS FOR USERS

- Not applicable.

14.4 TRANSPORT IN BULK

- Not applicable.

SECTION 15: REGULATORY INFORMATION

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

- **OTHER IMPORTANT U.S. REGULATIONS**

- **U.S. SARA THRESHOLD PLANNING QUANTITY:** Not applicable.
- **U.S. SARA HAZARD CATEGORIES (SECTION 311/312, 40 CFR 370-21):** Acute toxicity; Eye Damage/Irritation; Respiratory sensitization; Skin sensitization; Germ cell mutagenicity; Carcinogenicity; Reproductive toxicity; Specific target organ toxicity - repeated exposure
- **U.S. CERCLA REPORTABLE QUANTITY (RQ):** Nickel Compound #2 = 45.5 kg (100 lb). Nickel Compound #1 = 45.5 kg (100 lb)..
- **U.S. TSCA INVENTORY STATUS:** All components of this product are listed on the TSCA Inventory.
- **U.S. SARA 313 COMPONENTS:** The following components are subject to reporting levels established by SARA Title III, Section 313 – Nickel Compound #2, Nickel Compound #1.
- **CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) STATUS:** Nickel Compounds are found on the Proposition 65 Carcinogen List.



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

SECTION 15: REGULATORY INFORMATION (Continued)

INTERNATIONAL REGULATIONS

- **CANADIAN DSL/NDSL INVENTORY STATUS:** The listed components of this product are on the DSL/NDSL Inventory.
- **CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES 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 (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/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:** 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: 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/NDSL: Canadian Domestic Substances and Non-Domestic Substances Lists.