

# 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: **Cohler Gold Plating Solution**
- SYNONYMS: Colors are listed below:
  - 14K
  - 18K
  - 24K
  - Rose
- VOLUMES: 1 quart

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

- IDENTIFIED USE: Jewelry Plating
- USES ADVISED AGAINST: None Specified

### 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: 1-800-255-3924/813-248-0573(CHEMTEL;24hours/International)

### 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)	Acute Toxicity – Oral (Category 4); Acute Toxicity – Dermal (Category 3); Acute Toxicity – Inhalation (Category 4); Specific Target Organ Toxicity - Repeated Exposure (Category 1, thyroid); H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled. H341: Suspected of causing genetic defects. H350: May cause cancer. H360: May damage fertility or the unborn child. Corrosive to Metals (Category 1)
HAZARDOUS NOT OTHERWISE CLASSIFIED	Aquatic Toxicity – Acute (Category 1); Aquatic Toxicity – Chronic (Category 1)

### 2.2 LABEL ELEMENTS

**Symbol:** To the right.  
**Signal Word:** Danger.  
**Hazard statement(s)**



- H302 + 332: Harmful if swallowed or inhaled. H311: Toxic in contact with skin. H341: Suspected of causing genetic defects. H350: May cause cancer. H360: May damage fertility or the unborn child. H372: Causes damage to organs (Thyroid) through prolonged or repeated exposure via ingestion. H290: May be corrosive to metals. H410: Very toxic to aquatic life with long-lasting effects.

## SECTION 2: HAZARDS IDENTIFICATION (Continued)

### 2.3 LABEL ELEMENTS (Continued)

#### Precautionary statement(s)

- P102: Keep out of reach of children.
- P201: Obtain special instructions before use.
- P202: Do not handle until all safety precautions have been read and understood.
- P260: Do not breathe the mist, vapors or spray.
- P264: Wash thoroughly after handling.
- P270: Do not eat, smoke or drink when using this product.
- P271: Use in well-ventilated areas.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P284 In case of inadequate ventilation wear respiratory protection.
- P301 + P330: IF SWALLOWED: Rinse mouth.
- P302+352: IF ON SKIN: Wash with plenty of water.
- P304 +P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing
- P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P308: P310: ALL ROUTES OF EXPOSURE: If exposed or concerned, immediately call a POISON CENTER/doctor.
- P312: Call a POISON CENTER/doctor/physician if you feel unwell.
- P321: Specific treatment (see Antidote on this label).
- P362+364: Take off contaminated clothing and wash it before reuse.
- P391 Collect spillage.
- P405: Store locked up.
- P501 Dispose of contents/ container to an approved waste disposal plant; precious metal reclamation should be considered.

**Antidote:** If breathing is difficult or victim is unconscious, administer amyl nitrite. See Safety Data Sheet for full details.

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

#### HAZARDOUS MATERIALS IDENTIFICATION SYSTEM

Health	3*	HMIS Personal Protective Equipment Rating: Occupational Use situations: <b>C</b> - Safety glasses and gloves, and body protection suitable to specific circumstances of use. <b>J</b> - If needed, safety goggles/respiratory protection should be added.  * SPECIFIC TARGET ORGAN EFFECT – REPEATED EXPOSURE (Thyroid)
Flammability	0	
Physical Hazard	0	
Protective Equipment	C/J	

#### 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)
Sodium Cyanide	143-33-9	Corrosive to metals (Category 1); Acute Toxicity - Oral (Category 1); Acute Toxicity- Inhalation (Category 1); Acute Toxicity - Dermal (Category 1); Specific target organ toxicity - repeated exposure (Category 1, Thyroid) Aquatic Toxicity – Acute (Category 1); Aquatic Toxicity – Chronic (Category 1) M = 10	1-2 %
Cobalt Acetate	71-48-7	Acute toxicity, Oral (Category 4); Respiratory sensitization (Category 1), Skin sensitization (Category 1), Germ cell mutagenicity (Category 2), Carcinogenicity (Category 1B), Reproductive toxicity (Category 1B), Aquatic Toxicity – Acute (Category 1); Aquatic Toxicity – Chronic (Category 1); M = 10	0.1-0.5

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## SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS (Continued)

### 3.1 SUBSTANCES/MIXTURES

COMPONENT	CAS NUMBER	GHS HAZARD CLASSIFICATION	% (w/w)
Potassium Cyanide	151-50-8	Corrosive to metals (Category 1); Acute Toxicity - Oral (Category 1); Acute Toxicity- Inhalation (Category 1); Acute Toxicity - Dermal (Category 1); Specific target organ toxicity - repeated exposure (Category 1, Thyroid) Aquatic Toxicity – Acute (Category 1); Aquatic Toxicity – Chronic (Category 1) M = 10	0-2%
Silver Cyanide	506-64-9	Corrosive to metals (Category 1); Acute toxicity, Oral (Category 2); Acute toxicity, Inhalation (Category 2); Acute toxicity, Dermal (Category 1); Eye Damage (Category 1); Acute aquatic hazard (Category 1) Chronic aquatic hazard (Category 1; M = 100)	0-0.7%
Potassium Gold Cyanide	13967-50-5	Corrosive to metals (Category 1); Acute Toxicity- Oral (Category 2); Acute Toxicity- Dermal (Category 1); Acute Toxicity- Inhalation (Category 2); Eye Damage (Category 1); Skin Irritation (Category 2); Acute aquatic hazard (Category 1); Aquatic Toxicity – Chronic (Category 1)	0.06-0.24%
Copper Cyanide	544-92-3	Acute toxicity, Oral (Category 2); Acute toxicity, Inhalation (Category 2); Acute toxicity, Dermal (Category 1); Acute aquatic hazard (Category 1) Chronic aquatic hazard (Category 1; M = 10)	0-0.5%
Potassium Copper Cyanide	14263-73-1	Acute toxicity, Oral (Category 2); Acute toxicity, Inhalation (Category 2); Acute toxicity, Dermal (Category 1); Acute aquatic hazard (Category 1) Chronic aquatic hazard (Category 1; M = 10)	0-0.7%
Water and other components that do not contribute health or physical hazards at the concentrations present in the solution.			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. **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. **Ingestion:** Contact a Poison Control Center or physician for instructions. If professional advice is not available, do not induce vomiting. **All Routes of Exposure:** Seek medical attention immediately.

### 4.2 MOST IMPORTANT ACUTE AND CHRONIC EXPOSURE SYMPTOMS

- **ACUTE:** The following sections describe acute symptoms by route of exposure.
  - **Inhalation:** Over-exposure to mists or sprays of this product by inhalation may cause irritation of the nose, throat and respiratory tract. Inhalation over-exposures to this product may result in symptoms associated with cyanide poisoning (headache, confusion, nausea, vomiting, and other serious health effects).
  - **Skin and Eyes:** Brief contact with the skin may irritate and result in “Cyanide Rash” (i.e., itching, macular, papular and vesicular eruptions). If splashed into the eyes, the solution may cause irritation. Symptoms of such over-exposure include discomfort, tearing, and blurring of vision. Because cyanides can be directly absorbed through intact skin, dermal and eye exposure can result in the symptoms of cyanide poisoning described in inhalation.
  - **Ingestion:** Though not anticipated to be a significant route of occupational exposure, ingestion of this is toxic. The symptoms of “Cyanide Poisoning” are described under “Inhalation”.
- **CHRONIC:** Repeated exposure to this solution can cause adverse effects on the thyroid. Cobalt Acetate may cause allergy or asthma symptoms or breathing difficulties if inhaled.
- **TARGET ORGANS:** Skin, eyes, thyroid.

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

- **CYANIDE EXPOSURE PREPAREDNESS:** All persons working with this product should be aware of the potential for cyanide poisoning and trained to provide First-Aid using oxygen and amyl nitrite. Always have on-hand the materials needed. Actions to be taken in case of cyanide poisoning should be planned and practiced before beginning work with cyanides. Identification of community hospital resources and emergency medical assistance in order that they be equipped and trained on the handling of cyanide emergencies is essential.

## SECTION 4: FIRST AID MEASURES (Continued)

- **ANTIDOTE:** If the victim has difficulty breathing, is becoming confused and/or is losing consciousness, administer amyl nitrite. The following procedure is recommended:
  - Crush one pearl of amyl nitrite onto a cloth and hold to the victim's nose for 15 seconds, then take away for 15 seconds. Repeat 5-6 times, using a new pearl every 5 minutes (0.3 mg size) or every 3 minutes (0.18 mg size), until patient regains consciousness.
  - While amyl nitrite is being used, monitor the victim's blood pressure. If it drops below 80/60, stop the amyl nitrite and obtain the opinion of physician immediately.
  - If breathing has stopped, trained personnel should begin artificial respiration or, if the heart has stopped, begin cardiopulmonary resuscitation (CPR) immediately (avoid mouth to mouth contact). If breathing is difficult, oxygen (preferably 100 percent) may be helpful.
  - Quickly transport victim to an emergency facility.
  - Physicians should refer to Section 11 (Toxicology Information) for additional information.

## 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. If heated to decomposition, this solution may produce toxic vapors containing hydrogen cyanide and sodium, cobalt, silver, copper and potassium 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 (e.g., under 1 quart or less in size). For small releases, the minimum personal protection should include rubber gloves and rubber apron, splash goggles or safety glasses, and face shield. Use caution during clean-up; avoid stepping into spilled product or clean-up procedures that generate substantial amounts of splashes or sprays.
- **RESPONSE TO NON-INCIDENTAL RELEASES:** For large-scale releases of this product, minimum personal protection should include triple-gloves, eye/face protection, and appropriate body and respiratory protection. Refer to Section 8 for additional guidance on respiratory protection.
- **RESPONSE PROCEDURES FOR ANY RELEASE:** Absorb spilled liquid with polypads or other suitable absorbent materials. Rinse area or any potentially contaminated item 10% bleach solution.

### 6.2 ENVIRONMENTAL PRECAUTIONS

- Avoid response actions that can cause a release of this product into the environment.

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

- **SPILL RESPONSE EQUIPMENT:** Polypad/sponge; 10% bleach solution

### 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/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	NIOSH REL	OTHER
Sodium Cyanide, Potassium Cyanide, Silver Cyanide, Potassium Gold Cyanide, Copper Cyanide, Potassium Copper Cyanide (Cyanides, as CN)	5 mg/m <sup>3</sup> , Ceiling (as Cyanide Salts); Skin	TWA - 5 mg/m <sup>3</sup> ; Skin	C - 5 mg/m <sup>3</sup> ; Skin (10 minute)	NIOSH IDLH: 25 mg/m <sup>3</sup> CA  PEL: TWA - 5 mg/m <sup>3</sup> ; Skin
Cobalt Acetate (as Cobalt, Inorganic Compounds)	0.02 mg/m <sup>3</sup> (Dermal and Respiratory sensitizer)	Not applicable to this form.	Not applicable to this form.	NE

- **BIOLOGICAL OCCUPATIONAL EXPOSURE LIMITS:** The following Biological Exposure Indices (BEIs) for components of this product are listed:
  - **COBALT ACETATE** (as Cobalt, Inorganic Compounds): Cobalt in Urine – End of Shift = 15 µL. Cobalt in Blood – End of Shift = 1 µL

### 8.2 EXPOSURE CONTROLS

- **ENGINEERING CONTROLS:** Use this product in well-ventilated environment. Safety showers, eye wash stations, and hand-washing equipment should be available.
- **RESPIRATORY PROTECTION:** None needed under normal conditions of use. Use NIOSH approved respirators if ventilation is inadequate to control sprays or mists. The following NIOSH recommendations are for Sodium Cyanide are provided for additional guidance:
  - **Up to 25 mg/m<sup>3</sup>:**  
(APF = 10) Any supplied-air respirator  
(APF = 50) Any self-contained breathing apparatus with a full facepiece
  - **Emergency or planned entry into unknown concentrations or IDLH conditions:**  
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode  
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
  - **Escape:**  
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern and having an N100, R100, or P100 filter.

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

- **HAND PROTECTION:** 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 state, local, or national standards.
- **EYE PROTECTION:** Splash goggles or safety glasses with side-shields. A face-shield should be worn if there is a possibility of splashes, sprays, or aerosols being generated. If necessary, refer to U.S. OSHA 29 CFR 1910.133, or appropriate state, local, 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 yellow solution.
- (b) **ODOR:** Slight, almond-like odor.
- (c) **ODOR THRESHOLD:** Not determined.
- (d) **pH:** Approximately 10.
- (e) **MELTING POINT/FREEZING POINT:** Not available.
- (f) **INITIAL BOILING POINT AND BOILING RANGE:** Not available.
- (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 1.0
- (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.

### 10.2 CHEMICAL STABILITY

- Normally stable under standard temperatures and pressures.

### 10.3 POSSIBILITY OF HAZARDOUS REACTIONS

- This product is not self-reactive or air-reactive.
- This product will not undergo hazardous polymerization.

### 10.4 CONDITIONS TO AVOID

- Avoid contact with incompatible chemicals and exposure to adverse storage conditions.

### 10.5 INCOMPATIBLE MATERIALS

- This product is not compatible with oxidizers or strong acids. Contact of this product with acids or acid salts can release toxic hydrogen cyanide gas. This product is also not compatible with strong oxidizing agents or bases.
- This product is corrosive to metals.

### 10.6 HAZARDOUS DECOMPOSITION PRODUCTS

- The products of thermal decomposition include hydrogen cyanide and sodium, cobalt, silver, copper and potassium compounds.

## SECTION 11: TOXICOLOGICAL INFORMATION

### 11.1 INFORMATION ON TOXICOLOGICAL EFFECTS

- **ACUTE TOXICITY:**

- **PRODUCT ESTIMATED TOXICITY:**

- Acute Toxicity Estimate (Oral) = 350-950 mg/kg
    - Acute Toxicity Estimate (Dermal) = 350-750 mg/kg
    - Acute Toxicity Estimate (Dermal) = 3.5-4.5 mg/L/ 4 hours

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

- **SODIUM CYANIDE**

- LDLo - Oral-Human: 2800 ug/kg
      - LDLo - Oral: Human - man: 6557 ug/kg:
      - LDLo - Oral - Human: 2857 ug/kg
      - TDLo - Oral: Human - man: 714 ug/kg:
      - LDLo - Unreported: Human - man: 2206 ug/kg
      - LD<sub>50</sub> - Oral - rat: 5.733 mg/kg
      - LD<sub>50</sub> Dermal-rabbit: 10.4 mg/kg
      - LC<sub>50</sub> = 0.05 mg/L,4 hours]

- **SILVER CYANIDE**

- LD<sub>50</sub> Oral – rat - 123 mg/kg
      - LD<sub>50</sub> Dermal-rabbit – 5 mg/kg (estimated)
      - LC<sub>50</sub> Inhalation – rat – 0.5 mg/L;4 hours (estimated)

- **POTASSIUM GOLD CYANIDE**

- LD<sub>50</sub> Oral – rat - 29 mg/kg
      - LD<sub>50</sub> Dermal-rabbit – 5 mg/kg (estimated)
      - LC<sub>50</sub> Inhalation – rat – 0.5 mg/L;4 hours (estimated)

- **COBALT ACETATE**

- LD<sub>50</sub> - Oral - rat: 503 mg/kg
      - LD<sub>50</sub> Dermal - Rat - male and female - > 2,000 mg/kg

- **COPPER CYANIDE**

- LD<sub>50</sub> Oral – rat – 8.35 mg/kg
      - LD<sub>50</sub> Dermal-rabbit – 5 mg/kg (estimated)
      - LC<sub>50</sub> Inhalation – rat – 0.5 mg/L;4 hours (estimated)

- **POTASSIUM CYANIDE**

- LDLO Oral – Human - 2.857 mg/kg
      - LD<sub>50</sub> Oral – mouse - 8.5 mg/kg
      - LD<sub>50</sub> Oral – rabbit - 5 mg/kg
      - LD<sub>50</sub> Oral – rat – 7.49 mg/kg
      - LD<sub>50</sub> Dermal-rabbit – 14.29 mg/kg
      - LC<sub>50</sub> = 0.05 mg/L/4 hours

- **POTASSIUM COPPER CYANIDE**

- LD<sub>50</sub> Oral – rat – 10 mg/kg
      - LD<sub>50</sub> Dermal-rabbit – 14.29 mg/kg (estimated)
      - LC<sub>50</sub> Inhalation – rat – 0.5 mg/L;4 hours

- **DEGREE OF IRRITATION:** The primary effect of skin or eyes would be the result of cyanide exposure, via absorption by direct contact.
  - **SENSITIZATION:** Cobalt Acetate may 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 details.

- **Inhalation:** Inhalation over-exposures to this product may result in symptoms associated with cyanide poisoning (headache, confusion, nausea, vomiting, and other serious health effects).
        - **Skin and Eyes:** Brief contact with the skin or eyes may irritate and result in “Cyanide Rash” (i.e., itching, macular, papular and vesicular eruptions). If Because cyanides can be directly absorbed through contact, dermal and eye exposure can result in the symptoms of cyanide poisoning described in inhalation.
        - **Ingestion:** Though not anticipated to be a significant route of occupational exposure, ingestion of this is toxic. The symptoms of “Cyanide Poisoning” are described under “Inhalation”.

- **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
Cyanides	NO	NO	NO	NO	NO
Cobalt Acetate (As Cobalt Compound)	Group 2B: Possibly carcinogenic to humans	RAHC - Reasonably anticipated to be a human carcinogen [cobalt (II)-acetate]	NO	NO	NO

## SECTION 11: TOXICOLOGICAL INFORMATION (Continued)

- **REPRODUCTIVE TOXICITY INFORMATION:** The components of this product may cause adverse reproductive effects. The following data are available for components of this product, obtained in laboratory studies.
  - **COBALT ACETATE:** May damage fertility.
  - **CYANIDE COMPOUNDS:** Listed as California Proposition 65 Reproductive Toxins (Male).
- **MUTAGENIC EFFECTS** The components of this product may cause mutagenic effects under typical circumstances of exposure. The following data are available for this product
  - **COBALT ACETATE:** Suspected of causing genetic effects.
- **SPECIFIC TARGET ORGAN TOXICITY – SINGLE EXPOSURE:** Not applicable.
- **SPECIFIC TARGET ORGAN TOXICITY – REPEATED EXPOSURE:** Not applicable.
- **ASPIRATION HAZARD:** Not applicable.
- **OTHER INFORMATION**
  - **TOXICOLOGICALLY SYNERGISTIC PRODUCTS:** None known.
  - **ADDITIONAL TOXICOLOGY:** Not applicable.

## SECTION 12: ECOLOGICAL INFORMATION

### 12.1 TOXICITY

- Based on available data, this product is anticipated to be very toxic to contaminated terrestrial/aquatic plants or animals, with the potential for long-lasting effects.
- This product is classified as Aquatic Toxicity – Acute (Category 1); Aquatic Toxicity – Chronic (Category 1).
- The following aquatic toxicity data are available for components of this product:

#### **SODIUM CYANIDE**

TLm (bluegill) 96 hours = 0.15 ppm  
LC50 (prawn) 48 hours = 0.25 ppm  
LC50 (*Pimephales promelas*) 96 hours = 0.32 mg/L  
LC50 (*Salmo gairdneri*) 96 hours = 0.0521-0.0748 mg/L  
LC50 (*Dinophilus gyrociliatus*) 96 hours = 5.94-7.57 mg/L  
LC50 (*Daphnia magna*) 96 hours = 0.17 mg/L  
LC50 (*Helisoma trivolvis*) 96 hours = > 100 mg/L  
LC50 (*Gammarus fasciatus*) 96 hours = 1.7 mg/L  
LC50 (*Lumbriculus variegatus* worm) 96 hours = 21 mg/l

#### **COBALT ACETATE**

LC50 (*Pimephales promelas*) 96 hours = 1.86 mg/L  
LC50 (*Ceriodaphnia dubia* water flea) 48 hours = 0.385 mg/L  
ErC50 (*Pseudokirchneriella subcapitata*) 72 hours = .095 mg/L  
EC50 - activated sludge – 330 minutes = 120 mg/l

#### **POTASSIUM CYANIDE**

LC<sub>50</sub> (*Salmo salar* atlantic salmon) 24 hours = 0.08-068 mg/L  
EC0 (*Salmo gairdneria* rainbow trout) 40 minutes = 0.001 mg/L  
TLm (bluegill) 48 hours = 0.16 ppm  
TLm (zebrafish) 48 hours = 0.49 ppm

### 12.2 PERSISTENCE AND DEGRADABILITY

- The following data are available for components of this product:
  - **COBALT ACETATE:** Biodegradability aerobic - Exposure time 28 days. Result: 74.55 % - Biodegradable
  - **SILVER CYANIDE:** Bioaccumulation *Cyprinus carpio* (Carp) - 41 d - 0.41 µg/L

### 12.3 BIOACCUMULATIVE POTENTIAL

- The following data are available for components of this product:
  - **SILVER CYANIDE:** Bioconcentration Factor = 866.

### 12.4 MOBILITY IN SOIL

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

## SECTION 13: DISPOSAL CONSIDERATION

### 13.1 WASTE TREATMENT METHODS

- **WASTE HANDLING RECOMMENDATIONS:** Prepare, transport, treat, store, and dispose of waste product according to all applicable local, 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.



## SECTION 13: DISPOSAL CONSIDERATION (Continued)


### 13.2 DISPOSAL CONSIDERATIONS

- EPA RCRA WASTE CODE: P029, P030, P098, P104, P106, D011, applicable to wastes consisting only of this product.


## SECTION 14: TRANSPORT INFORMATION

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

- DEPARTMENT OF TRANSPORTATION HAZARDOUS MATERIALS SHIPPING REGULATIONS:**
  - 14K, 18K**

UN/NA Number	Proper Shipping Name	Packing Group	Hazard Class	Label	North American Emergency Response Guide #	Marine Pollutant Status
UN2922	Corrosive liquids, toxic, n.o.s. (Sodium Cyanide, Potassium Cyanide)	III	8, 6.1		154	Cyanide mixtures are listed specifically as a DOT Severe Marine Pollutant.

- ROSE, 24K**

UN/NA Number	Proper Shipping Name	Packing Group	Hazard Class	Label	North American Emergency Response Guide #	Marine Pollutant Status
UN2922	Corrosive liquids, toxic, n.o.s. (Sodium Cyanide, Potassium Gold Cyanide)	III	8, 6.1		154	Cyanide mixtures are listed specifically as a DOT Severe Marine Pollutant.

- CANADIAN TRANSPORTATION INFORMATION:** This product is regulated by Transport Canada as dangerous goods under Canadian transportation standards. Refer to above information.
- IATA DESIGNATION:** This product is regulated as dangerous goods by the International Air Refer to above information.
- IMO DESIGNATION:** This product is regulated as dangerous goods by the International Maritime Organization. Refer to above information.

### 14.2 ENVIRONMENTAL HAZARDS

- This product is a Marine Pollutant. However, because of the volume of packaging, the product is exempt from the requirements for Marine Pollutants [49 CFR 171.4 of the USDOT HMR.; Special Provision A197 of the IATA DGR; 2.10.2.7 of the IMO Dangerous Goods Code].

### 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

- **U.S. SARA THRESHOLD PLANNING QUANTITY:** Sodium Cyanide = 100 lb. (45.4 kg); Potassium Cyanide = 100 lb. (45.4 kg)
- **U.S. SARA HAZARD CATEGORIES (SECTION 311/312, 40 CFR 370-21):** Acute Toxicity; Specific Target Organ Effects/Single and Repeated Exposure; Skin/Respiratory sensitization; Carcinogenicity; Reproductive Toxicity.
- **U.S. CERCLA REPORTABLE QUANTITY (RQ):** Sodium Cyanide = 10 lb. (4.54 kg); Potassium Cyanide = 10 lb. (4.54 kg) Silver Cyanide = 1 lb. (4.54 kg); Copper Cyanide = 10 lb.; All Other Cyanide = 10 lb. (4.54 kg).
- **U.S. TSCA INVENTORY STATUS:** All components of this product are listed on the TSCA Inventory.
- **US SARA 313:** This material contains cyanide and cobalt compounds that are subject to the requirements of SARA Title III and 40 CFR Part 373.
- **CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) STATUS:**



**WARNING:** This product can expose you to cyanide salts, chemicals known to the state of California to cause reproductive harm. For more information, go to [www.p65Warnings.ca.gov](http://www.p65Warnings.ca.gov).

### 15.2 INTERNATIONAL REGULATIONS

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

## SECTION 16: OTHER INFORMATION

### 16.1 INDICATION OF CHANGE.

- **DATE OF ISSUE:** January 4, 2021
- **SUPERCEDES:** November 8, 2018
- **CHANGE INDICATED:** Change in formulation.

### 16.2 KEY LITERATURE REFERENCES AND SOURCES FOR DATA

- SAFETY DATA SHEETS FOR COMPONENT PRODUCTS.
- Federal OSHA Hazard Communication Standard: 29 CFR 1910.1200

### 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.
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## SECTION 16: OTHER INFORMATION (Continued)

### 16.5 ABBREVIATIONS AND ACRONYMS.

**ALL SECTIONS:** OSHA: U.S. Federal Occupational Safety and Health Administration. WHMIS: Canadian Workplace Hazardous Materials Standard. GHS: Globally Harmonized System of Classification of Chemical Substances

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

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

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

**SECTION 8:** NE: Not established. ACGIH: American Conference of Government Industrial Hygienists; TWA: Time-Weighted Average (over an 8-hour work day); STEL: Short-Term Exposure Limit (15-minute average, no more than 4-times daily and each exposure separated by one-hour minimally); C: Ceiling Limit (concentration not to be exceeded in a work environment). PEL: Permissible Exposure Limit. NIOSH: National Institute of Occupational Safety and Health; REL: Recommended Exposure Limit; IDLH: Immediately Dangerous to Life and Health Concentrations. *Note*: In July 1992, a court ruling vacated the more protective PELs set by OSHA in 1989. Because OSHA may enforce the more protective levels under the "general duty clause", both the current and vacated levels are presented in this document. ppm: Parts per Million. mg/m<sup>3</sup>: Milligrams per cubic meter. mppcf: Millions of Particles per Cubic Foot. BEI: Biological Exposure Limit. CA PEL: California TABLE AC-1 PERMISSIBLE EXPOSURE LIMITS FOR CHEMICAL CONTAMINANTS.

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

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

**SECTION 12:** T<sub>Lm</sub> – Median Tolerance Limit. EC<sub>50</sub>: Effect Concentration, 50% of test population; ErC<sub>50</sub>: Effect on Growth Rate.

**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.