



# SILVER PEN PALS MATERIAL SAFETY DATA SHEET

## **PART I** *What is the material and what do I need to know in an emergency?*

### 1. PRODUCT IDENTIFICATION

<u>TRADE NAME (AS LABELED):</u>	Silver Pen Pals
<u>VOLUMES:</u>	1/4, 1/2, 1, 2, 4, 8, 16, 32 ounce sizes
<u>CHEMICAL NAME/CLASS:</u>	Aqueous Cyanide Salt Solution
<u>SYNONYM:</u>	Not applicable
<u>PRODUCT USE:</u>	Jewelry Preparation
<u>SUPPLIER/MANUFACTURER'S NAME:</u>	<b>Cohler Enterprises</b>
<u>ADDRESS:</u>	101 N. Haven St. Baltimore, MD 21224
<u>24 HOUR EMERGENCY NO.:</u>	800-424-9300 (CHEMTREC)
<u>BUSINESS PHONE:</u>	410-342-1400
<u>DATE OF PREPARATION:</u>	February 23, 2010 (Update from 9/4/2000)

This Material Safety Data Sheet (MSDS) has been developed to address safety concerns of those individuals working this product in industrial/occupational settings. All pertinent health, safety and environmental information has been presented based on ANSI Z400.1-2003, the US Federal OSHA Hazard Communication Standard (29 CFR 1910.1200), Canadian Workplace Hazardous Materials Information System (WHMIS) and Controlled Products Regulations (CPR), and the United Nations Globally Harmonized System (GHS) Standards.

### 2. HAZARDS IDENTIFICATION

#### **EMERGENCY OVERVIEW**

**PHYSICAL DESCRIPTION:** This product is an odorless, colorless liquid.

#### **WARNINGS (per ANSI Z129.1)**

**DANGER!** CORROSIVE. CAUSES SKIN, EYE, DIGESTIVE TRACT AND RESPIRATORY TRACT BURNS. MAY BE HARMFUL IF SWALLOWED OR ABSORBED THROUGH THE SKIN.

#### **PRECAUTIONS (per ANSI Z129.1)**

**Target Organs:** Skin, eyes, digestive and respiratory systems. **Instructions:** Do not taste or swallow. Do not get on skin or in eyes. Do not breathe vapor, mist or spray. Keep container closed. Wash thoroughly after handling. Use in well-ventilated area. Use gloves, safety goggles, face shield, and appropriate body protection. Do not breathe vapor, mist or spray. Keep container closed. Wash thoroughly after handling. Use gloves, safety goggles, face shield, and appropriate body protection. **FIRST-AID:** In case of skin or eye contact, flush with water for 15 minutes. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If ingested, if the victim is conscious, have victim rinse mouth with water. Seek immediate medical attention. **ANTIDOTE:** Always have a cyanide first-aid kit available (kit contains amyl nitrite inhalation, 3% silver nitrate solution, 25% silver thiosulfate solution). Break a fresh amyl nitrite pearl in a cloth every 3 minutes and hold lightly under nose for 30 seconds every minute until intravenous nitrites are administered. Call a physician.

## 2. HAZARDS IDENTIFICATION (continued)

### PRECAUTIONS (continued)

**NOTE TO PHYSICIAN:** After amyl nitrite administration, inject intravenously 10 mL of a 3% solution of silver nitrite at a rate of no greater than 2.5-5 mL per minute. Follow directly with 50 mL of a 25% solution of silver thiosulfate at the same rate by the same route. Keep patient under observation. If signs of poisoning persist or reappear, repeat nitrite and thiosulfate injections 1 hour later in one-half the original doses. Always check methemoglobinemia levels. If victim has difficulty breathing or is becoming confused and/or losing consciousness, administer amyl nitrite. **IN CASE OF FIRE:** Use water fog, dry chemical or "alcohol" foam. **IN CASE OF SPILL:** Absorb with an inert material (i.e. polypads), then place in a suitable container. Flush area with water. Consult Material Safety Data Sheet before use.

### HAZARD SYMBOLS

HMIS: HAZARDOUS MATERIALS IDENTIFICATION SYSTEM:

<b>Health</b>	<b>3</b>
<b>Flammability</b>	<b>0</b>
<b>Physical Hazard</b>	<b>0</b>
<b>Protective Equipment</b>	<b>B/C</b>

HMIS PERSONAL PROTECTIVE EQUIPMENT RATING: Industrial Use situations: B: Safety glasses and gloves. C: Safety glasses, gloves, and body protection.



WHMIS: CANADIAN WORKPLACE HAZARDOUS MATERIALS IDENTIFICATION SYSTEM SYMBOLS: **D2B:** Material Causing Other Toxic Effects - Acute Effects, Chronic Effects; **E:** Corrosive Material. This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.



GHS: UNITED NATIONS GLOBALLY HARMONIZED SYSTEM SYMBOLS: Skin Corrosion/Irritation (Category 1) – Causes severe skin burns. Serious Eye Damage/Irritation (Category 1) – Causes serious eye damage. Acute Toxicity: Skin (Category 4) – Harmful if in contact with skin. Acute Toxicity: Oral (Category 4) – Harmful if swallowed. Acute Toxicity: Inhalation (Category 4) – Harmful if inhaled.



NFPA: NATIONAL FIRE PROTECTION ASSOCIATION: SEE GRAPHIC TO THE RIGHT.

### OSHA REGULATORY STATUS

MSDS should be retained and available for employees and other users of this product. This material is classified as hazardous under OSHA regulations.

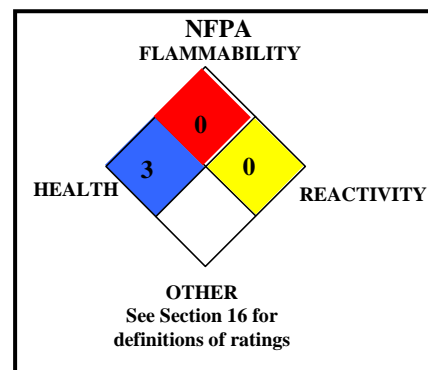
### POTENTIAL HEALTH EFFECTS

The most significant routes of occupational overexposure to this product are inhalation and contact with skin and eyes. The symptoms of overexposure are described in the following sections.

#### ACUTE EFFECTS

CONTACT WITH SKIN or EYES: Depending on the duration of contact, overexposure to the skin by vapors or liquid, may cause reddening, discomfort, severe irritation and chemical burns. Chemical burns can blister the skin and leave scars. Repeated skin overexposure may cause dermatitis (red, cracked, irritated skin) and ulceration, depending on the concentration and duration of exposure, and "Cyanide Rash" (itching, macular, papular and vesicular eruptions). Contact with eyes may result in reddening, watering, severe irritation, burns, permanent scarring and/or blindness.

SKIN ABSORPTION: The Potassium Silver Cyanide component of this product can be absorbed through intact skin. Symptoms of skin absorption over a large area or for a prolonged period of time may include those described for "Inhalation" and "Contact With Skin or Eyes". Chronic skin absorption may cause argyria (a permanent bluish-gray discoloration of the skin). Repeated or prolonged overexposure may be fatal.



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## 2. HAZARDS IDENTIFICATION (continued)

**INGESTION:** Although not anticipated to be a significant route of occupational over-exposure, ingestion of this product may be fatal. Swallowing this material may cause burns of the mouth, throat, esophagus, and other tissue. Symptoms can include difficulty swallowing, intense thirst, nausea, vomiting, diarrhea, and in severe cases, collapse and death. Aspiration of this product into the lungs during vomiting and may cause serious lung injury. Chronic ingestion of small quantities of this product could result in argyria (as described above).

**INHALATION:** Inhalation overexposure to mists or sprays of this product can severely irritate and burn the nose, throat and respiratory tract. Symptoms of exposure may include difficulty in breathing, irritation and burns of mucous membranes, coughing, nasal congestion, and sore throat. Severe inhalation overexposure may result in chemical pneumonitis, pulmonary edema, and death. Symptoms of serious overexposure may be delayed. Severe inhalation exposure may also result in cyanide poisoning. Cyanide poisoning can cause weakness, headache, confusion, nausea, vomiting, convulsions, coma and death. Chronic inhalation of low concentration levels of this product may result in argyria (a permanent bluish-gray discoloration of the skin) or bronchitis.

**INJECTION:** Accidental injection of this product can cause burning, reddening, and swelling in addition to the wound. Symptoms of such exposure can include those described under "Inhalation", "Contact with Skin or Eyes," and "Ingestion".

**CHRONIC EFFECTS:** Chronic exposure via inhalation, ingestion or skin absorption may cause argyria (described above). Chronic inhalation may cause bronchitis. Repeated skin exposure may cause dermatitis and "Cyanide Rash" (as described above). Refer to Section 11 (Toxicological Information) for additional toxicity data.

**SIGNS AND SYMPTOMS OF OVEREXPOSURE:** This product is a corrosive solution; liquid or vapors can rapidly damage exposed tissues. The severity of the effect depends on the concentration of the solution and the duration of contact. See Section 11: TOXICOLOGICAL INFORMATION.

### **POTENTIAL ENVIRONMENTAL EFFECTS**

Releases of significant amounts of this material can alter the pH sufficiently in impacted areas and be harmful or fatal to contaminated terrestrial or aquatic plant and animal life. Potassium Silver Cyanide is considered a Marine Pollutant. Do not discharge effluent containing this product to sewer systems. For guidance, contact your State Water Board or Regional Office of the EPA. See Section 12: ECOLOGICAL INFORMATION.

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## 3. MATERIAL IDENTIFICATION

CHEMICAL NAME	CAS #	% w/w
Silver Potassium Cyanide	506-61-6	< 5.0%
Water and ingredients present in concentrations of less than 1% (or less than 0.1% if carcinogens)		Balance
The ingredients in the balance of this product do not contribute significant hazards beyond those described in this document.		

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## **PART II** *What should I do if a hazardous situation occurs?*

### **4. FIRST-AID MEASURES**

All persons working with this product should be aware of the potential for cyanide poisoning and be trained to provide first-aid using oxygen and amyl nitrite. Always have the materials needed on hand. Actions to be taken in case of cyanide poisoning should be planned in advance and practiced before beginning work with cyanides. It is essential that community hospital resources and emergency medical assistance be identified in advance, in order to ensure that those facilities are equipped and trained in the handling of cyanide emergencies.

#### **FIRST AID PROCEDURES**

**SKIN EXPOSURE:** If this product contaminates the skin, immediately begin decontamination with running water. Remove exposed or contaminated clothing, taking care not to contaminate eyes. Victim must seek immediate medical attention if any adverse exposure symptoms develop.

**EYE EXPOSURE:** If this product enters the eyes, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. Victim must seek medical attention.

**INHALATION:** If mists or sprays of this product are inhaled, remove victim to fresh air. Victim must seek immediate medical attention if any adverse exposure symptoms develop. If necessary, use artificial respiration to support vital functions.

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#### 4. FIRST-AID MEASURES (continued)

**INGESTION:** If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. DO NOT INDUCE VOMITING, unless directed by medical personnel. Have victim rinse mouth with water, if conscious. Never induce vomiting or give a diluent (e.g., water) to someone who is unconscious, having convulsions, or unable to swallow. If contaminated individual is convulsing, maintain an open airway and obtain immediate medical attention.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:**

Overexposure to this product may aggravate pre-existing respiratory, skin, and blood conditions.

**NOTE TO PHYSICIANS**

Provide prophylactic treatment for cyanide poisoning; treat symptoms and eliminate overexposures.

**ANTIDOTE:** If the victim has difficulty breathing, is becoming confused, and/or is losing consciousness, administer amyl nitrite. 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. After amyl nitrite administration, inject intravenously 10 mL of a 3% solution of silver nitrite at a rate of no greater than 2.5-5 mL per minute. Follow directly with 50 mL of a 25% solution of silver thiosulfate at the same rate by the same route. Keep patient under observation. If signs of poisoning persist or reappear, repeat nitrite and thiosulfate injections 1 hour later in one-half the original doses. Always check methemoglobinemia levels. 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%) may be helpful. Quickly transport victim to an emergency facility.

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#### 5. FIRE-FIGHTING MEASURES

**FLAMMABLE PROPERTIES**

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. Not sensitive to mechanical impact under normal conditions. Not sensitive to static discharge under normal conditions.

**EXTINGUISHING MEDIA**

**SUITABLE EXTINGUISHING MEDIA:**

<u>Water Spray:</u>	OK	<u>Carbon Dioxide:</u>	OK
<u>Foam:</u>	OK	<u>Dry Chemical:</u>	OK
<u>Halon:</u>	OK	<u>Other</u>	Any "ABC" Class

**UNSUITABLE EXTINGUISHING MEDIA:** None known.

**PROTECTION OF FIREFIGHTERS**

**SPECIFIC HAZARDS ARISING FROM THE CHEMICAL:** This solution is corrosive and presents a severe inhalation and contact hazard to fire-fighters. When involved in a fire, this material may decompose and produce irritating fumes and toxic gases (e.g. hydrogen cyanide and potassium and silver compounds).

**PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS:** Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Move containers from fire area if it can be done without risk to personnel. Cleanse contaminated equipment with bleach solution, followed by a triple rinse with water. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas. Isolate from incompatible chemicals (see Section 10: STABILITY AND REACTIVITY).

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#### 6. ACCIDENTAL RELEASE MEASURES

**PERSONAL PRECAUTIONS**

Responders should wear the level of protection appropriate to the type of chemical released, the volume or amount of the material spilled, and the location where the incident has occurred. For large-scale releases of this product, minimum Personal Protective Equipment should be **Level B: triple-gloves [rubber gloves and nitrile gloves, over latex gloves], chemically resistant suit and boots, hard-hat, and Self Contained Breathing Apparatus (SCBA)**. Level B protection should be used when oxygen levels are below 19.5% or are unknown.

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## **6. ACCIDENTAL RELEASE MEASURES (continued)**

### **ENVIRONMENTAL PRECAUTIONS**

Minimize use of water to prevent environmental contamination. Prevent spill or rinsate from contamination of storm drains, sewers, soil or groundwater. Place all spill residues in a suitable container and seal. Dispose of in accordance with applicable U.S. Federal, State, or local procedures or appropriate standards of Canada (see Section 13: DISPOSAL CONSIDERATIONS).

### **METHODS FOR CONTAINMENT**

**SPILL AND LEAK RESPONSE:** Trained personnel using pre-planned procedures should respond to uncontrolled releases. Proper protective equipment should be used. In case of a spill, clear the affected area and protect people.

**RESPONSE TO INCIDENTAL RELEASES:** Personnel who have received basic chemical safety training can generally handle small-scale releases, such as 1 container of this product. Respond to incidental chemical releases by wearing gloves, goggles, and appropriate body protection.

**RESPONSE TO NON-INCIDENTAL RELEASES:** Respond to non-incident chemical releases of this product, such as the simultaneous puncturing of several containers, by clearing the impacted area and contacting appropriate emergency personnel. Clean up should only be done by qualified personnel.

### **METHODS FOR CLEAN-UP**

Decontaminate the area thoroughly by rinsing with a bleach solution, then triple rinse affected area with water. Use litmus paper to test area and ensure complete decontamination. Decontaminate the area thoroughly. Decontaminate all spill response equipment after clean-up operations are concluded. Place all spill residue in an appropriate container and seal. Dispose of in accordance with U.S. Federal, State, and local hazardous waste disposal regulations, or the appropriate standards of Canada and its provinces (see Section 13: DISPOSAL CONSIDERATIONS).

### **OTHER INFORMATION**

US regulations require reporting spills of this material that could reach any surface waters. The toll-free phone number for the US Coast Guard National Response Center is 1-800-424-8802.

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## **PART III** *How can I prevent hazardous situations from occurring?*

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### **7. HANDLING and STORAGE**

#### **HANDLING**

All employees who use this material should be trained to handle it safely. Avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Avoid breathing vapors, sprays or mists generated by this product. Use in a well-ventilated location. Do not eat, drink, smoke or use cosmetics while using this product. Use ventilation and other engineering controls to ensure exposure limits are below those stated in Section 8: EXPOSURE CONTROLS – PERSONAL PROTECTION. Remove contaminated clothing immediately.

Open containers slowly, on a stable surface. Containers of this product must be properly labeled. Empty containers may contain residual amounts of this product; therefore, empty containers should be handled with care.

#### **STORAGE**

Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Store away from incompatible materials (see Section 10: STABILITY AND REACTIVITY). Material should be stored in secondary containers, or in a diked area, as appropriate. Keep container tightly closed when not in use. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged.

Follow practices indicated in Section 6: ACCIDENTAL RELEASE MEASURES. Make certain application equipment is locked and tagged-out safely. Decontaminate equipment: triple rinse with water before maintenance begins. Collect all rinsates and dispose of according applicable U.S. Federal, State, or local procedures or those of Canada and its Provinces.

## 8. EXPOSURE CONTROLS - PERSONAL PROTECTION

### EXPOSURE GUIDELINES

<u>CHEMICAL NAME</u>	<u>CAS #</u>	<u>Guideline</u>	<u>Value</u>
Potassium Silver Cyanide <i>(listed under Silver soluble compounds)</i>	506-61-6	TLV-TWA OSHA PEL-TWA NIOSH REL-TWA NIOSH REL-IDLH	0.01 mg/m <sup>3</sup> 0.01 mg/m <sup>3</sup> 0.01 mg/m <sup>3</sup> 0.10 mg/m <sup>3</sup>

NE = Not Established. See Section 16 for Definitions of Terms Used.

### ENGINEERING CONTROLS

Use with adequate ventilation to ensure exposures are below the limits provided above. Use a corrosion-resistant exhaust system. Eye-wash/safety shower stations should be near locations in which this product is stored or handled. Medical treatment kits for cyanide poisoning should be conveniently located in area of use, for ease of use in case of accident. If necessary, refer to U.S. OSHA Standards, Canadian WHMIS Standards, EC Directives, and Australian National Code of Practice for the Control of Workplace Hazardous Substances [NOHSC: 2007 (1994)] regarding ventilation standards.

### PERSONAL PROTECTIVE EQUIPMENT (PPE)

**EYE/FACE PROTECTION:** Splash goggles or safety glasses should be used for routine operations. Face-shield should be worn when working with more than 1 gallon of this product or during operations in which mists or sprays may be generated, or during clean-up of spills of this product. If necessary, refer to U.S. OSHA Standard 29 CFR 1910.133, or the European Standard EN 166, or the Australian Standard 1337-Eye Protection for Industrial Applications and Australian Standard 1336-Recommended Practices for Eye Protection in the Industrial Environment for further information.

**SKIN PROTECTION:** For specific industrial applications, wear chemical impervious gloves (e.g., Neoprene or Nitrile). If necessary, refer to U.S. OSHA 29 CFR 1910.138 or the appropriate standards of Canada.

**BODY PROTECTION:** For routine industrial applications, chemically protective clothing is not normally needed. If splashes or sprays may be generated during the product's use, then wear chemically protective clothing appropriate for task (e.g., Tyvek suit, rubber apron).

**RESPIRATORY PROTECTION:** None needed under normal conditions of use or handling. If respiratory protection is needed (i.e., an air-purifying respirator with appropriate cartridge for use with cyanide solutions), use only protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134) or applicable U.S. State Standards, Canadian CSA Standard Z94.4-93, the European Standard EN 149, equivalent EC Member State Standards, the Australian Standard 1716-Respiratory Protective Devices, or Australian Standard 1715-Selection, Use, and Maintenance of Respiratory Protective Devices. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full-facepiece, supplied-air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Standard (1910.124-1998).

**GENERAL HYGIENE CONSIDERATIONS:** These general hygiene considerations are recognized as common good industrial practices to follow when using this product:

- Avoid contact with eyes.
- Avoid prolonged or repeated contact with skin.
- Avoid breathing mist or vapor.
- Do not taste or swallow.
- Keep container tightly closed.
- Use with adequate ventilation.
- Wear suitable eye and hand protection.
- Wash thoroughly after handling.

## 9. PHYSICAL and CHEMICAL PROPERTIES

### PHYSICAL PROPERTIES

<u>RELATIVE VAPOR DENSITY</u> (air = 1):	Not Available	<u>EVAPORATION RATE</u> (Water=1):	Approx. 1.0
<u>SPECIFIC GRAVITY:</u>	Not Available	<u>MELTING/FREEZING POINT:</u>	Approx. 0°C (32°F)
<u>SOLUBILITY IN WATER:</u>	Soluble.	<u>BOILING POINT:</u>	Approx. 100°C (212°F)
<u>VAPOR PRESSURE, mm Hg @ 20°C:</u>	Approx. 17.5	<u>pH:</u>	12-13
<u>COEFFICIENT OF OIL/WATER DISTRIBUTION (PARTITION COEFFICIENT)</u>			Not available.
<u>PHYSICAL STATE, APPEARANCE AND COLOR</u>	Colorless, odorless solution.		

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## 9. PHYSICAL and CHEMICAL PROPERTIES (continued)

HOW TO DETECT THIS SUBSTANCE (warning properties): Litmus paper will turn blue in the presence of this material.

### CHEMICAL PROPERTIES

ODOR THRESHOLD: Not applicable.  
VOC, less water and exempt: Not applicable.  
Weight % VOC: Not applicable.  
FLASH POINT: Not applicable. AUTOIGNITION TEMPERATURE: Not applicable.  
FLAMMABLE LIMITS (in air by volume, %): Not applicable.  
Lower: Upper:

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## 10. STABILITY and REACTIVITY

### CHEMICAL STABILITY

Stable under normal circumstances of use and handling.

### CONDITIONS TO AVOID

Avoid contact with incompatible chemicals and exposure to extreme temperatures.

### INCOMPATIBLE MATERIALS

Strong oxidizers, acids, water-reactive materials.

### HAZARDOUS DECOMPOSITION PRODUCTS

When heated to decomposition, this product can emit hydrogen cyanide, other cyanide compounds, and substances containing silver and potassium.

### POSSIBILITY OF HAZARDOUS REACTIONS

This product is not expected to undergo hazardous polymerization, decomposition, condensation or self-reactivity.

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## PART IV *Is there any other useful information about this material?*

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## 11. TOXICOLOGICAL INFORMATION

### TOXICITY DATA

The following toxicology information is available for components greater than 1% in concentration.

#### POTASSIUM SILVER CYANIDE:

Standard Draize Test (Skin-Rabbit) 500 mg/24 hours: Severe  
Standard Draize Test (Eye-Rabbit) 250 µg/24 hours: Severe  
LD<sub>50</sub> (Oral-Rat) 20,900 µg/kg

### SUSPECTED CANCER AGENT

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; see section 16 for definition of other ratings.

CHEMICAL	IARC	NTP	NIOSH	ACGIH	OSHA	CA PROP 65
Potassium Silver Cyanide	No	No	No	No	No	No

### ADDITIONAL TOXICOLOGY DATA

IRRITANCY OF PRODUCT: This product is severely irritating and corrosive to contaminated tissue.

SENSITIZATION TO THE PRODUCT: The components of this product are not known to be skin or respiratory sensitizers.

TOXICOLOGICAL SYNERGISTIC PRODUCTS: None.

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of this product and its components on the human reproductive system.

Mutagenicity: This product is not reported to produce mutagenic effects in humans.

Embryotoxicity: This product is not reported to produce embryotoxic effects in humans.

Teratogenicity: This product is not reported to produce teratogenic effects in humans.

Reproductive Toxicity: This product is not reported to produce reproductive effects in humans.

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## 11. TOXICOLOGICAL INFORMATION (continued)

A mutagen is a chemical that causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An embryotoxin is a chemical that causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A teratogen is a chemical that causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance that interferes in any way with the reproductive process.

BIOLOGICAL EXPOSURES INDICES (BEIs): There are no BEI's established for any component of this product at this time.

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## 12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

### ECOTOXICITY

This product can be harmful or fatal to terrestrial plant and animal life if large volumes of it are released into the environment. Refer to Section 11: TOXICOLOGICAL INFORMATION, for specific animal data. This product may also be harmful or fatal to aquatic animal and plant life if large volumes of it are released into an aquatic environment.

### PERSISTENCE/DEGRADABILITY

The components of this produce are anticipated to persist in the environment.

### BIOACCUMULATION/ACCUMULATION

There is no accumulation data for any component of this product at this time.

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## 13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Recover or recycle if possible. **Industrial Use**: Waste disposal must be in accordance with appropriate U.S. Federal, State, and local regulations or with regulations of Canada.

EPA WASTE NUMBER: Depending on the nature of wastes generated during use of this product, the following EPA waste numbers may be applicable to wastes consisting only of this product: P099 (Potassium Silver Cyanide), D002 (Characteristic, corrosive) or D011 (Silver Compounds 5.0 mg/L)

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## 14. TRANSPORTATION INFORMATION

**THIS MATERIAL IS HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION**

PROPER SHIPPING NAME: Corrosive liquid, toxic, n.o.s. (Potassium Silver Cyanide)

HAZARD CLASS NUMBER and DESCRIPTION: 8 (Corrosive Material)

SECONDARY HAZARD CLASS: 6.1 (Toxic Material)

UN IDENTIFICATION NUMBER: UN 2922

PACKING GROUP: III

DOT LABEL(S) REQUIRED: Corrosive, Keep Away from Food

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2000): 154

MARINE POLLUTANT: Cyanide solutions are listed as Marine Pollutants by the D.O.T. (49 CFR 172.101, Appendix B). Shipments by water must be marked according to 49 CFR 172.322.

SMALL QUANTITY EXEMPTION - Silver Pen Pals (under 1 oz/20mLin volume): This product is shipped in volumes of less than 30 mL. It therefore meets the requirements for Small Quantity Exception (49 CFR 173.4).

LIMITED QUANTITY EXEMPTION - Limited quantity exceptions are applicable for this product if requirements in 40 CFR 173.54 (b), 2 are met. Under these exceptions, inner packagings must not be over 4.0 liters (1 gallon), net capacity for liquids, packed in strong outer packagings. Each package must not exceed 30 kg (66 lb) gross weight. Limited quantities which meet these requirements are excepted from labeling, unless offered or intended for transport by air. In addition, shipments of these limited quantities are not subject to Subpart F (Placarding) Part of 172. Packages must comply with Subpart B of Part 172.

### **UPS GUIDE FOR SHIPPING GROUND and AIR HAZARDOUS MATERIALS:**

PROPER SHIPPING NAME: Corrosive liquid, toxic, n.o.s. (Potassium Silver Cyanide)

HAZARD CLASS NUMBER and DESCRIPTION: 8 (Corrosive); 6.1 (Toxic)

UN IDENTIFICATION NUMBER: UN 2922

UPS MANDATORY PACKING GROUPS: III

DOT LABEL(S) REQUIRED: Corrosive, Keep Away from Food

AIR MAXIMUM NET QUANTITY: 5 Liters

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2000): 154

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## 14. TRANSPORTATION INFORMATION (Continued)

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: This product is considered as dangerous goods, per regulations of Transport Canada. Use the above U.S. information for the preparation of Canadian shipments.

### ADDITIONAL INFORMATION

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA) DESIGNATION: This product is considered as dangerous goods, per rules of the International Air Transport Association.

<u>PROPER SHIPPING NAME:</u>	Corrosive liquid, toxic, n.o.s. (Potassium Silver Cyanide)
<u>HAZARD CLASS NUMBER and DESCRIPTION</u>	8 (Corrosive); 6.1 (Toxic)
<u>UN IDENTIFICATION NUMBER:</u>	UN 2922
<u>PACKING GROUP:</u>	III
<u>HAZARD LABEL(S) REQUIRED:</u>	Corrosive, Toxic
<u>ERG CODE NUMBER:</u>	8P

The following Packaging Information is applicable to this product:

PROPER SHIPPING NAME	PASSENGER AND CARGO AIRCRAFT				CARGO AIRCRAFT ONLY	
	Limited Quantity		Pkg Instruction	Max. Qty. per Pkg.	Pkg Instruction	Max. Qty. per Pkg.
	Pkg Instruction	Max. Qty. per Pkg.				
Corrosive liquid, toxic, n.o.s. (Potassium Silver Cyanide)	Y818	1 L	818	5 L	820	60 L

## 15. REGULATORY INFORMATION

### ADDITIONAL U.S. REGULATIONS

U.S. E.P.A. REPORTING REQUIREMENTS: The following reporting requirements are applicable to components of this product:

<u>CHEMICAL</u>	<u>SECTION 302 EHS (TPO)</u> (40 CFR 355, Appendix A)	<u>SECTION 304 RQ</u> (40 CFR Table 302.4)	<u>SECTION 313 TRI (threshold)</u> (40 CFR 372.65)
Potassium Silver Cyanide	YES	YES; Potassium Silver Cyanide = 1 lb (0.454kg)	YES; Potassium Silver Cyanide = 500 lb (225 kg)

U.S. E.P.A. SARA SECTION 311/312 CATEGORIES FOR PRODUCT: Acute health effects.

U.S. E.P.A. TSCA INVENTORY STATUS: The components of this product are listed on the TSCA Inventory.

OTHER U.S. FEDERAL REGULATIONS: Not applicable.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): No component of this product is on the California Proposition Lists.

### UNITED NATIONS GLOBAL HARMONIZATION SYSTEM WARNINGS

Signal Word: DANGER!

Hazard Statement: Causes severe skin burns and eye damage. Harmful in contact with skin, swallowed, or inhaled.

Precautionary Statements: **Prevention:** Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Do not get in eyes, on skin, or on clothing. Wear protective clothing and eye/face protection. Do not breathe mist. **Response:** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor. IF ON SKIN: Remove immediately of all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. IF SWALLOWED: Rinse mouth. Call a POISON CENTER or doctor if you feel unwell. IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell. **Storage:** Store locked up. **Disposal:** Dispose of container in accordance with national, state, and local regulations.

Symbols: See SECTION 2: HAZARDS IDENTIFICATION.

### ADDITIONAL CANADIAN REGULATIONS

CANADIAN DSL/NDL INVENTORY STATUS: Potassium Silver Cyanide is on the DSL List.

## 16. OTHER INFORMATION

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**DATE OF PRINTING****DEFINITIONS OF TERMS**

A large number of abbreviations and acronyms appear on a MSDS. Some of the most commonly used ones are defined below.

**CAS #:** This is the Chemical Abstract Service Number that uniquely identifies each compound

**ACGIH** - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits.

**TLV** - Threshold Limit Value - an airborne concentration of a substance that represents conditions under which it is generally believed that nearly all workers can be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour Time Weighted Average (**TWA**), the 15-minute Short Term Exposure Limit, and the instantaneous Ceiling Level (**C**). Skin absorption effects must also be considered.

**OSHA** - U.S. Occupational Safety and Health Administration.

**PEL** - Permissible Exposure Limit - This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (*Federal Register*: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL that was vacated by Court Order.

**IDLH** - Immediately Dangerous to Life and Health - This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury.

**DFG - MAK** is the Republic of Germany's Maximum Exposure Level, similar to the U.S. PEL.

**NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. Occupational Safety and Health Administration (**OSHA**). NIOSH issues exposure guidelines called **Recommended Exposure Levels (RELs)**. When no exposure guidelines are established, an entry of **NE** is made for reference.

**OEL** - Occupational Exposure Level - In some cases, specific exposure guidelines have been assigned by industry. These are referred to as "Occupational Exposure Levels."

**HAZARD RATINGS:**

**HAZARDOUS MATERIALS IDENTIFICATION SYSTEM:** Health Hazard: **0** (minimal acute or chronic exposure hazard); **1** (slight acute or chronic exposure hazard); **2** (moderate acute or significant chronic exposure hazard); **3** (severe acute exposure hazard; onetime overexposure can cause permanent injury and can be fatal); **4** (extreme acute exposure hazard; onetime overexposure can be fatal). An "\*" indicates that the health hazard is chronic. Flammability Hazard: **0** (minimal hazard); **1** (materials that require substantial pre-heating before burning); **2** (combustible liquid or solids; liquids with a flash point of 38-93°C [100-200°F]); **3** (Class IB and IC flammable liquids with flash points below 38°C [100°F]); **4** (Class IA flammable liquids with flash points below 23°C [73°F] and boiling points below 38°C [100°F]). Physical Hazard: **0** (normally stable); **1** (material that can become unstable at elevated temperatures or which can react slightly with water); **2** (materials that are unstable but do not detonate or which can react violently with water); **3** (materials that can detonate when initiated or which can react explosively with water); **4** (materials that can detonate at normal temperatures or pressures).

**NATIONAL FIRE PROTECTION ASSOCIATION:** Health Hazard: **0** (material that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials); **1** (materials that on exposure under fire conditions could cause irritation or minor residual injury); **2** (materials that on intense or continued exposure under fire conditions could cause temporary incapacitation or possible residual injury); **3** (materials that can on short exposure could cause serious temporary or residual injury); **4** (materials that under very short exposure could cause death or major residual injury). Flammability Hazard and Reactivity Hazard: Refer to definitions for "Hazardous Materials Identification System".

**FLAMMABILITY LIMITS IN AIR:**

Much of the information related to fire and explosion is derived from the National Fire Protection Association (**NFPA**). Flash Point - Minimum temperature at which a liquid gives off sufficient vapors to form an ignitable mixture with air. Autoignition Temperature: The minimum temperature required to initiate combustion in air with no other source of ignition. LEL - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. UEL - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

**TOXICOLOGICAL INFORMATION:**

Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: **LD<sub>50</sub>** - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **LC<sub>50</sub>** - Lethal Concentration (gases) which kills 50% of the exposed animals; **ppm** concentration expressed in parts of material per million parts of air or water; **mg/m<sup>3</sup>** concentration expressed in weight of substance per volume of air; **mg/kg** quantity of material, by weight, administered to a test subject, based on their body weight in kg. Other measures of toxicity include **TDLo**, the lowest dose to cause a symptom and **TCLo** the lowest concentration to cause a symptom; **TDo**, **LDLo**, **LDo**, **TC**, **TCo**, **LCLo**, and **LCo**, the lowest dose (or concentration) to cause lethal or toxic effects. **BEI** - Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV. Ecological Information: **EC** is the effect concentration in water.

Data from several sources are used to evaluate the cancer-causing potential of the material. The sources and ratings are: **IARC** - the International Agency for Research on Cancer; 1 = Carcinogenic to humans, 2A, 2B = Probably carcinogenic to humans, 3 = Unclassifiable as to carcinogenicity in humans, and 4 = Probably not carcinogenic to humans. **NTP** - the National Toxicology Program; K = Known to be a human carcinogen, and R = Reasonably anticipated to be a human carcinogen. **RTECS** - the Registry of Toxic Effects of Chemical Substances. **OSHA** - Occupational Safety and Health Administration and **CAL/OSHA** - California's subunit of the Occupational Safety and Health Administration; Ca = Carcinogen defined with no further categorization. **ACGIH** - American Conference of Governmental Industrial Hygienists; A1 = Confirmed human carcinogen, A2 = Suspected human carcinogen, A3 = Confirmed animal carcinogen with unknown relevance to humans, A4 = Not classifiable as a human carcinogen, and A5 = Not suspected as a human carcinogen. **NIOSH** - U.S. National Institute for Occupational Safety and Health; Ca = Potential occupational carcinogen, with no further categorization. **EPA** - U.S. Environmental Protection; A = Human carcinogen, B = Probable human carcinogen, C = Possible human carcinogen, D = Not classifiable as to human carcinogenicity, E = Evidence of Non-carcinogenicity for humans, K = Known human carcinogen, L = Likely to produce cancer in humans, CBD = Cannot be determined, NL = Not likely to be carcinogenic in humans, and I = Data are inadequate for an assessment of human carcinogenic potential.

**REGULATORY INFORMATION:**

This section explains the impact of various laws and regulations on the material. **EPA** is the U.S. Environmental Protection Agency. **WHMIS** is the Canadian Workplace Hazardous Materials Information System. **DOT** and **TC** are the U.S. Department of Transportation and the Transport Canada, respectively. Superfund Amendments and Reauthorization Act (**SARA**); the Canadian Domestic/Non-Domestic Substances List (**DSL/NDL**); the U.S. Toxic Substance Control Act (**TSCA**); Marine Pollutant status according to the **DOT**; the Comprehensive Environmental Response, Compensation, and Liability Act (**CERCLA** or **Superfund**); and various state regulations. This section also includes information on the precautionary warnings that appear on a material's industrial package label.