SECTION 1            PRODUCT AND COMPANY INFORMATION

PRODUCT NAME:        Potassium Tetracyanonickelate (II) Hydrate
PRODUCT NUMBER:      2945
CAS NUMBER:          339527-86-5
SYNONYMS:            Dipotassium nickel tetracyanide hydrate, potassium nickel cyanide hydrate
MANUFACTURER:        Prochem, Inc.
                      826 Roosevelt Road
                      Rockford, IL  61109
                      PHONE:  815-398-1788
                      FAX:    815-398-1810
                      TOLL FREE: 800-795-8788

IN CASE OF TRANSPORTATION EMERGENCY CONTACT CHEM-TREC: 1-800-424-9300

SECTION 2           HAZARDS IDENTIFICATION

CLASSIFICATION OF SUBSTANCE OR MIXTURE

Pictogram

Signal Word          Danger

Hazard Statements

H300+H310+H330      Fatal if swallowed, in contact with skin, or if inhaled.
H317               May cause an allergic skin reaction.
H334               May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H350               May cause cancer.
H410               Very toxic to aquatic life with long lasting effects.

Precautionary Phrases

P260               Do not breathe dust or mist.
P262               Do not get in eyes, on skin, or on clothing.
P264               Wash skin thoroughly after handling.
P270               Do not eat, drink, or smoke when using this product.
P271               Use only outdoors or in a well-ventilated area.
P273               Avoid release into the environment.
P280               Wear protective gloves/protective clothing/eye protection/face protection.
P284               Wear respiratory protection.
P301+P310          IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P302+P352          IF ON SKIN: Wash with plenty of soap and water.
P304+P340          IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P361               Remove/take off immediately all contaminated clothing.
SECTION 2  HAZARDS IDENTIFICATION (Cont.)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>P363</td>
<td>Wash contaminated clothing before reuse.</td>
</tr>
<tr>
<td>P403+P233</td>
<td>Store in a well-ventilated place. Keep container tightly closed.</td>
</tr>
</tbody>
</table>

HMIS CLASSIFICATION:
Health: 4  Chronic: *  Fire: 0  Reactivity Hazard: 0

NFPA RATING:
Health: 4  Flammability: 0  Reactivity Hazard: 0

EYE CONTACT: May cause irritation of the eyes, redness, and pain.
SKIN CONTACT: May cause irritation of the skin with redness or rash. Prolonged contact with nickel salts may lead to dermatitis.
INHALATION: Dust may be irritating to the nose, mucous membranes, and respiratory tract.
INGESTION: Harmful if swallowed. Ingestion may lead to dizziness, abdominal cramps, vomiting, bloody diarrhea, weakness, and convulsions.

ACUTE HEALTH EFFECTS: Nickel salts may be irritating to skin, eyes, and respiratory tract, causing intestinal disorders, convulsions, asphyxia, sensitization dermatitis, allergic asthma, and pneumonitis.

SECTION 3  COMPOSITION / INFORMATION ON INGREDIENTS

Formula: $K_2Ni(CN)_4 \cdot xH_2O$

Molecular Weight: 240.99 (anhy.)

<table>
<thead>
<tr>
<th>CHEMICAL NAME</th>
<th>CAS#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium tetracyanonickelate (II) hydrate</td>
<td>339527-86-5</td>
<td>100</td>
</tr>
</tbody>
</table>

SECTION 4  FIRST AID MEASURES

EYE EXPOSURE: Immediately flush the eyes with copious amounts of water for at least 15 minutes. A victim may need assistance in keeping their eyelids open. Get immediate medical attention.

SKIN EXPOSURE: Wash the affected area with water. Remove contaminated clothes if necessary. Seek medical assistance if irritation persists.

INHALATION: Remove to fresh air and keep at rest. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

INGESTION: Seek medical attention immediately. Keep the victim calm. Give the victim water (only if conscious). Induce vomiting only if directed by medical personnel.

SECTION 5  FIREFIGHTING MEASURES

FLASH POINT: Product is not flammable
AUTO IGNITION TEMPERATURE: Not available
EXPLOSION LIMITS: Not available
EXTINGUISHING MEDIUM: Use fire fighting measures that suit the surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained, approved breathing apparatus and full protective clothing, including eye protection and boots.

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Carbon oxides, potassium oxides, nickel oxides, and hydrogen cyanide.

SECTION 6  ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: Wear all appropriate equipment when using this material. Ensure adequate ventilation. Avoid formation of dust. Avoid breathing dust.
ENVIRONMENTAL PRECAUTIONS: Prevent spillage from entering drains or allowing to be released into the environment.
METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP: Pick up and arrange disposal without creating dust. Sweep up and place in suitable container for proper disposal.

POTASSIUM TETRACYANONICKELATE (II) HYDRATE
SECTION 7  HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING: Wear appropriate personal protective equipment. Ensure adequate ventilation. Avoid contact with skin and eyes. Avoid formation of dust.

CONDITIONS FOR SAFE STORAGE: Store in cool, dry, and well-ventilated area. Store away from oxidizing agents. Do not store together with acids.

SECTION 8  EXPOSURE CONTROLS AND PERSONAL PROTECTION

EXPOSURE CONTROLS:

<table>
<thead>
<tr>
<th>Component</th>
<th>Exposure Limits</th>
<th>Basis</th>
<th>Entity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium tetracyanonickelate</td>
<td>0.015 mg/m³³</td>
<td>REL</td>
<td>NIOSH</td>
</tr>
<tr>
<td>(II) hydrate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(As CN)</td>
<td>5 mg/m³³</td>
<td>TLV</td>
<td>ACGIH</td>
</tr>
<tr>
<td>(As CN)</td>
<td>5 mg/m³³</td>
<td>PEL</td>
<td>OSHA</td>
</tr>
<tr>
<td>(As Ni)</td>
<td>0.1 mg/m³³</td>
<td>TLV</td>
<td>ACGIH</td>
</tr>
<tr>
<td>(As Ni)</td>
<td>0.1 mg/m³³</td>
<td>PEL</td>
<td>OSHA</td>
</tr>
</tbody>
</table>

TLV: Threshold Limit Value over 8 hours of work. REL: Recommended Exposure Limit PEL: Permissible Exposure Limit

EYE PROTECTION: Wear chemical safety glasses or goggles and face shield.

SKIN PROTECTION: Wear nitrile or rubber gloves, and a complete suit protecting against chemicals.

VENTILATION: Provide local exhaust, preferably mechanical.

RESPIRATOR: Use an approved respirator.

SECTION 9  PHYSICAL AND CHEMICAL PROPERTIES

COLOR AND FORM: Yellow to orange crystalline

ODOR: None

MOLECULAR WEIGHT: 240.96

BOILING POINT: No data available

MELTING POINT: 100°C

SPECIFIC GRAVITY: 1.875 gm/ml

SOLUBILITY: Soluble

SECTION 10  STABILITY AND REACTIVITY

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: None

INCOMPATIBILITY: Strong oxidizing agents and acids

DECOMPOSITION PRODUCTS: Carbon oxides, potassium oxides, nickel oxides, and hydrogen cyanide

SECTION 11  TOXICOLOGICAL DATA

ACUTE TOXICITY: LD50 Oral – mouse – 275 mg/kg.

CARCINOGENIC EFFECTS: According to ACGIH, NTP, and OSHA, no components of this product present at levels greater than or equal to 0.1% is identified as a carcinogen. According to IARC, this product is carcinogenic to humans.

MUTAGENIC EFFECTS: Not available

TETRATOGIC EFFECTS: Not available

CHRONIC TOXICITY: Nickel and nickel compounds may cause a form of dermatitis known as nickel itch. They may also cause intestinal disorders, convulsions, and asphyxia. Airborne nickel contaminated dusts are regarded as carcinogenic to the respiratory tract. Cyanides may cause symptoms of salivation, nausea without vomiting, anxiety, confusion, vertigo, giddiness, lower jaw stiffness, convulsions, opisthotonos, paralysis, coma, cardiac arrhythmias, and respiratory failure. They typically cause death through asphyxia. Skin contact may cause itching, macular, popular, and vesicular eruptions.

To the best of our knowledge the toxicological effects of this compound have not been fully investigated.
SECTION 12    ECOLOGICAL DATA

AQUATIC VERTEBRATE: LC50 – Poecilia reticulate (guppy) – 39 mg/L – 96h.
AQUATIC INVERTEBRATE: Not available
TERRESTRIAL: Not available

SECTION 13    DISPOSAL CONSIDERATIONS

Dispose of in according to local, state, and federal regulations.

SECTION 14    TRANSPORTATION DATA

UN1588
Cyanides, inorganic, solid, n.o.s.
(Potassium tetracyanonickelate (II) hydrate)
CLASS 6.1
PG II

Marine Pollutant: No

SECTION 15    REGULATORY INFORMATION

TSCA: Listed in the TSCA inventory
SARA 302/304: Not Listed
SARA 311/312: Acute Health Hazard, Chronic Health Hazard
SARA (TITLE 313): Potassium tetracyanonickelate (II) hydrate

CALIFORNIA PROP. 65: Potassium tetracyanonickelate (II) hydrate

WHMIS CANADA: Class D-1B: Toxic material causing immediate and serious toxic effects. Class D-2A: Very toxic material causing other toxic effects.

NEW JERSEY RIGHT TO KNOW COMPONENTS: Potassium tetracyanonickelate (II) hydrate

PENNSYLVANIA RIGHT TO KNOW COMPONENTS: Potassium tetracyanonickelate (II) hydrate

SECTION 16    OTHER INFORMATION

DISCLAIMER: The information herein is believed to be accurate and reliable as of the date compiled. However, Prochem, Inc. makes no representation, warranty, or guarantee of any kind with respect to the information in this document or any use of the product based on the information.

DATE PREPARED: 10/14