SECTION 1    PRODUCT AND COMPANY INFORMATION

PRODUCT NAME:   Thallium (I) Bromide
PRODUCT NUMBER: 3529
CAS NUMBER: 7789-40-4
SYNONYMS: Thalious Bromide

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 |

Signal Word

Hazard Statements

<table>
<thead>
<tr>
<th>Hazard Statement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H300+H330</td>
<td>Fatal if swallowed or if inhaled.</td>
</tr>
<tr>
<td>H373</td>
<td>May cause damage to organs through prolonged or repeated exposure.</td>
</tr>
<tr>
<td>H411</td>
<td>Toxic to aquatic life with long lasting effects.</td>
</tr>
</tbody>
</table>

Precautionary Phrases

<table>
<thead>
<tr>
<th>Precautionary Phrase</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>P260</td>
<td>Do not breathe dust or mist.</td>
</tr>
<tr>
<td>P264</td>
<td>Wash skin thoroughly after handling.</td>
</tr>
<tr>
<td>P270</td>
<td>Do not eat, drink, or smoke when using this product.</td>
</tr>
<tr>
<td>P271</td>
<td>Use only outdoors or in a well-ventilated area.</td>
</tr>
<tr>
<td>P273</td>
<td>Avoid release into the environment.</td>
</tr>
<tr>
<td>P284</td>
<td>Wear respiratory protection.</td>
</tr>
<tr>
<td>P301+P310</td>
<td>IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.</td>
</tr>
<tr>
<td>P304+P340</td>
<td>IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.</td>
</tr>
<tr>
<td>P310</td>
<td>Immediately call a POISON CENTER or doctor/physician.</td>
</tr>
<tr>
<td>P391</td>
<td>Collect Spillage.</td>
</tr>
<tr>
<td>P403+P233</td>
<td>Store in a well-ventilated place.</td>
</tr>
<tr>
<td>P405</td>
<td>Store locked up.</td>
</tr>
<tr>
<td>P501</td>
<td>Dispose of contents/container to an approved waste disposal plant.</td>
</tr>
</tbody>
</table>
SECTION 2      HAZARDS IDENTIFICATION (Cont.)

HMIS CLASSIFICATION:
Health: 3  Chronic: *  Fire: 0  Reactivity Hazard: 0

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

EYE CONTACT: May cause slight to mild irritation of the eyes.
SKIN CONTACT: May cause slight to mild irritation of the skin.
INHALATION: May be irritating to the nose, mucous membranes, and respiratory tract. Thallium poisoning may occur.
INGESTION: Ingestion may result in swelling of the feet and legs, mental confusion, paralysis, angina-like pains, wasting, and weakness.

CHRONIC HEALTH EFFECTS: Prolonged exposure to thallium compounds has been reported to lead to discoloration of the hair, which later falls out, joint pain, loss of appetite, fatigue, severe pain in legs, albuminuria, and optic neuritis. Possible mutagen.

ACUTE HEALTH EFFECTS: Acute poisoning, after 1-10 days, results in pain of the extremities, fever, difficulty in moving, nausea and vomiting, followed by jumbled speech, tremors, convulsions, kidney failure, and pulmonary edema.

SECTION 3      COMPOSITION / INFORMATION ON INGREDIENTS

Formula: TiBr
Molecular Weight: 284.29

<table>
<thead>
<tr>
<th>CHEMICAL NAME</th>
<th>CAS#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thallium (I) Bromide</td>
<td>7789-40-4</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. Assure flushing under eyelids. A victim may need assistance in keeping their eyelids open. Get immediate competent medical attention.

SKIN EXPOSURE: Wash 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 if necessary.

INGESTION: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. If conscious, wash out mouth with water. Get medical attention if necessary.

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: Hydrogen bromide and thallium oxides

SECTION 6      ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: Wear all appropriate equipment when using this material. Ensure adequate ventilation.
ENVIRONMENTAL PRECAUTIONS: Prevent spillage from entering drains or allowing to be released into the environment.
METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP: Small spills can be mixed with diatomaceous earth, sand, vermiculite, or other suitable inert materials and swept up.

SECTION 7      HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING: Wear appropriate personal protective equipment. Avoid contact with skin and eyes. Use with adequate ventilation. Avoid formation of dusts and aerosols.
CONDITIONS FOR SAFE STORAGE: Store in cool, dry, and well-ventilated area. Store in a tightly sealed container.
SECTION 8    EXPOSURE CONTROLS AND PERSONAL PROTECTION

EXPOSURE CONTROLS: Contains no substances with occupational exposure limit values.

<table>
<thead>
<tr>
<th>Component</th>
<th>Exposure Limits</th>
<th>Basis</th>
<th>Entity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thallium (I) Bromide</td>
<td>0.1 mg/m³</td>
<td>TLV</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td>0.02 mg/m³</td>
<td>TLV</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td>0.1 mg/m³</td>
<td>PEL</td>
<td>OSHA</td>
</tr>
<tr>
<td></td>
<td>0.1 mg/m³</td>
<td>REL</td>
<td>NIOSH</td>
</tr>
</tbody>
</table>

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

EYE PROTECTION: Wear chemical safety glasses or goggles and face shield.
SKIN PROTECTION: Wear nitrile or rubber gloves, apron, or lab coat.
VENTILATION: Provide local exhaust, preferably mechanical.
RESPIRATOR: Use an approved respirator.
ADDITIONAL PROTECTION: Provide eyewash stations, quick-drench showers and washing facilities accessible to areas of use and handling.

SECTION 9    PHYSICAL AND CHEMICAL PROPERTIES

COLOR AND FORM: White powder
ODOR: Not available
MOLECULAR WEIGHT: 284.29
BOILING POINT: 815°C
MELTING POINT: 460°C
SPECIFIC GRAVITY: 7.5 gm/ml
VAPOR DENSITY: No data available
SOLUBILITY: Insoluble

SECTION 10    STABILITY AND REACTIVITY

STABILITY: Stable
HAZARDOUS POLYMERIZATION: Will not occur
CONDITIONS TO AVOID: Not available
INCOMPATIBILITY: Strong oxidizing agents, potassium, sodium oxides, and alkali metals.
DECOMPOSITION PRODUCTS: Thallium oxides and hydrogen bromide

SECTION 11    TOXICOLOGICAL DATA

ACUTE TOXICITY: Not available
CARCINOGENIC EFFECTS: No components of this product present at levels greater than or equal to 0.1% is identified a carcinogen.
MUTAGENIC EFFECTS: Not available
TETRATOGENIC EFFECTS: Not available
CHRONIC TOXICITY: Thallium exposure may lead to alopecia. Cutaneous effects may include dry scaly skin and impairment of nail growth resulting in the appearance of crescent-shaped strips across fingernails and toenails (Mees’ line). Acute poisoning results in swelling of the feet and legs, arthralgia, vomiting, insomnia, hyperesthesia and paresthesia of the hands and feet, mental confusion, polyneuritis with severe pain in the legs and loins, partial paralysis of the legs, angina-like pains, nephritis, wasting and weakness, and lymphocytosis and eosinophilia. In chronic poisoning, central and peripheral nervous system abnormalities may persist including ataxia, tremor, incoordination, paralysis of extremities, endocrine disorders, memory loss, and psychoses may develop.

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

SECTION 12    ECOLOGICAL DATA

Toxic to aquatic organisms. Do not allow product to reach ground water, water course or sewage system, even in small quantities. Danger to drinking water if even extremely small quantities leak in the ground. May cause long lasting harmful effects to aquatic life.
SECTION 13 DISPOSAL CONSIDERATIONS

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

SECTION 14 TRANSPORTATION DATA

DOT: UN1707
Thallium compounds, n.o.s.
(Thallium bromide)
CLASS 6.1
PG II

IATA: UN1707
Thallium compound, n.o.s.
(Thallium bromide)
CLASS 6.1
PG II

Marine Pollutant: No

SECTION 15 REGULATORY INFORMATION

TSCA: Listed in the TSCA inventory
DSCL (EEC): Listed on the DSCL inventory
SARA 302/304: Not Listed
SARA 311/312: Acute Health Hazard, Chronic Health Hazard
SARA (TITLE 313): Thallium (I) Bromide
CALIFORNIA PROP. 65: Not Listed
PENNSYLVANIA RIGHT TO KNOW: Thallium (I) Bromide
NEW JERSEY RIGHT TO KNOW: Thallium (I) Bromide
WHMIS CANADA: Not Listed

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: 09/14