Material Safety Data Sheet

Section 1. Chemical Product and Company Identification

<table>
<thead>
<tr>
<th>Common Name/Trade Name</th>
<th>Cantharidin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturer</td>
<td>SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248</td>
</tr>
<tr>
<td>Commercial Name(s)</td>
<td>CAN; Cantharides camphor; Cantharidine; Cantharone; Kantaridin</td>
</tr>
<tr>
<td>Synonym</td>
<td>Hexahydro-3a,7a-dimethyl-4,7-epoxyisobenzofuran-1,3-dione; 4,7-Epoxyisobenzofuran-1,3-dione, hexahydro-3a,7a-dimethyl-, (3a-alpha,4-beta,7-beta,7a-alpha); exo-1,2-cis-Dimethyl-3,6-epoxyhexahydropthalic anhydride</td>
</tr>
<tr>
<td>Chemical Name</td>
<td>7-Oxabicyclo(2.2.1)heptane-2,3-dicarboxylic anhydride, 2,3-dimethyl-</td>
</tr>
<tr>
<td>Chemical Formula</td>
<td>C10H12O4</td>
</tr>
<tr>
<td>Supplier</td>
<td>SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248</td>
</tr>
<tr>
<td>Catalog Number(s)</td>
<td>C1304</td>
</tr>
<tr>
<td>CAS#</td>
<td>56-25-7</td>
</tr>
<tr>
<td>RTECS</td>
<td>RN8575000</td>
</tr>
<tr>
<td>TSCA</td>
<td>TSCA 8(b) inventory: Cantharidin</td>
</tr>
<tr>
<td>CI#</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

IN CASE OF EMERGENCY CHEMTREC (24hr) 800-424-9300
CALL (310) 516-8000

Section 2. Composition and Information on Ingredients

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>TWA (mg/m³)</th>
<th>STEL (mg/m³)</th>
<th>CEIL (mg/m³)</th>
<th>% by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Cantharidin</td>
<td>56-25-7</td>
<td></td>
<td></td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

Toxicological Data on Ingredients

Cantharidin
LD50: Not available.
LC50: Not available.

Section 3. Hazards Identification

Potential Acute Health Effects
Extremely hazardous in case of ingestion. Hazardous in case of skin contact (irritant), of eye contact (irritant). Slightly hazardous in case of inhalation. Severe over-exposure can result in death.

Potential Chronic Health Effects
CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC.
MUTAGENIC EFFECTS: Not available.
TERATOGENIC EFFECTS: Not available.
DEVELOPMENTAL TOXICITY: Not available.
Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Continued on Next Page
## Section 4. First Aid Measures

<table>
<thead>
<tr>
<th>的第一行</th>
<th>第二行</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eye Contact</strong></td>
<td>Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.</td>
</tr>
<tr>
<td><strong>Skin Contact</strong></td>
<td>In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.</td>
</tr>
<tr>
<td><strong>Serious Skin Contact</strong></td>
<td>Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.</td>
</tr>
<tr>
<td><strong>Inhalation</strong></td>
<td>If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.</td>
</tr>
<tr>
<td><strong>Serious Inhalation</strong></td>
<td>Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.</td>
</tr>
<tr>
<td><strong>Ingestion</strong></td>
<td>If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.</td>
</tr>
<tr>
<td><strong>Serious Ingestion</strong></td>
<td>Not available.</td>
</tr>
</tbody>
</table>

## Section 5. Fire and Explosion Data

<table>
<thead>
<tr>
<th>第一行</th>
<th>第二行</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Flammability of the Product</strong></td>
<td>May be combustible at high temperature.</td>
</tr>
<tr>
<td><strong>Auto-Ignition Temperature</strong></td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Flash Points</strong></td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Flammable Limits</strong></td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Products of Combustion</strong></td>
<td>These products are carbon oxides (CO, CO2).</td>
</tr>
<tr>
<td><strong>Fire Hazards in Presence of Various Substances</strong></td>
<td>Slightly flammable to flammable in presence of heat.</td>
</tr>
<tr>
<td><strong>Fire Fighting Media and Instructions</strong></td>
<td>SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.</td>
</tr>
<tr>
<td><strong>Special Remarks on Fire Hazards</strong></td>
<td>When heated to decomposition it emits acrid smoke and irritating fumes. As with most organic solids, fire is possible at elevated temperatures</td>
</tr>
<tr>
<td><strong>Special Remarks on Explosion Hazards</strong></td>
<td>Not available.</td>
</tr>
</tbody>
</table>

## Section 6. Accidental Release Measures

<table>
<thead>
<tr>
<th>第一行</th>
<th>第二行</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Small Spill</strong></td>
<td>Use appropriate tools to put the spilled solid in a convenient waste disposal container.</td>
</tr>
<tr>
<td><strong>Large Spill</strong></td>
<td>Poisonous solid. Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal.</td>
</tr>
</tbody>
</table>

Continued on Next Page
Section 7. Handling and Storage

Precautions
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes.

Storage
Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8. Exposure Controls/Personal Protection

Engineering Controls
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection
Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits
Not available.

Section 9. Physical and Chemical Properties

Physical state and appearance
Solid. (Crystals solid.)

Molecular Weight
196.21 g/mole

pH (1% soln/water)
Not applicable.

Boiling Point
Not available.

Melting Point
218°C (424.4°F)

Critical Temperature
Not available.

Specific Gravity
Not available.

Vapor Pressure
Not applicable.

Vapor Density
Not available.

Volatility
Not available.

Odor Threshold
Not available.

Water/Oil Dist. Coeff.
Not available.

Ionicity (in Water)
Not available.

Dispersion Properties
See solubility in water, acetone.

Solubility
Partially soluble in acetone. Very slightly soluble in hot water, diethyl ether. Insoluble in cold water. Solubility in Acetone: 1 g/40 ml Solubility in Ether: 1 g/560 ml Solubility in Chloroform: 1 g/65 ml Solubility in Ethyl Acetate: 1 g/150 ml Soluble in concentrated Sulfuric acid, Acetic acid. Slightly soluble in Benzene, alcohol.

Continued on Next Page
**Section 10. Stability and Reactivity Data**

<table>
<thead>
<tr>
<th>Stability</th>
<th>The product is stable.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instability Temperature</td>
<td>Not available.</td>
</tr>
<tr>
<td>Conditions of Instability</td>
<td>Excess heat, incompatible materials</td>
</tr>
<tr>
<td>Incompatibility with various substances</td>
<td>Not available.</td>
</tr>
<tr>
<td>Corrosivity</td>
<td>Non-corrosive in presence of glass.</td>
</tr>
<tr>
<td>Special Remarks on Reactivity</td>
<td>Not available.</td>
</tr>
<tr>
<td>Special Remarks on Corrosivity</td>
<td>Not available.</td>
</tr>
<tr>
<td>Polymerization</td>
<td>Will not occur.</td>
</tr>
</tbody>
</table>

**Section 11. Toxicological Information**

**Routes of Entry**
- Inhalation.
- Ingestion.

**Toxicity to Animals**
- LD50: Not available.
- LC50: Not available.

**Chronic Effects on Humans**
- CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC.

**Other Toxic Effects on Humans**
- Extremely hazardous in case of ingestion.
- Hazardous in case of skin contact (irritant).
- Slightly hazardous in case of inhalation.

**Special Remarks on Toxicity to Animals**
- Lethal Dose/Conc 50% Kill:
  - LD50 [Mouse] - Route: Intraperitoneal; Dose: 1 mg/kg.
  - No oral LD50 toxicity data is available. However, the usual fatal dose for ingestion of Cantharidin is 10 mg.
- Lowest Published Lethal Dose/Conc:
  - LDL[Human] - Route: Oral; Dose: 428 ug/kg
  - LDL[Rabbit] - Route: Oral; Dose: 20 mg/kg
  - LDL[Dog] - Route: Oral; Dose: 50 mg/kg

**Special Remarks on Chronic Effects on Humans**
- Not available.

**Special Remarks on other Toxic Effects on Humans**
- Acute Potential Health Effects:
  - Skin: Causes skin irritation.
  - Eyes: Causes eye irritation. It can cause conjunctivitis, edema of the eyelids, keratitis and iritis.
  - Inhalation: May cause respiratory tract irritation.
  - Ingestion: May be fatal if swallowed. Can cause gastroenteritis with nausea, vomiting, difficulty swallowing, purging, diarrhea, burning in the throat and stomach, abdominal pain, erosion and hemorrhage of the upper gastrointestinal tract, shock and circulatory collapse. It can irritate the bladder and urethra and cause urgency of urination (frequent micturition). Irritation of the urethra may result in Priapism. It may affect the kidneys and cause nephritis, painful and difficulty urination, uremia, hematuria. It may affect the cardiovascular system (sinus tachycardia, myocardial damage, hypotension, cardiac arrhythmias), behavior/central nervous system (ataxia, delirium, depression, brief loss of consciousness, respiration [increase respiratory rate]). It may cause anorexia.

**Section 12. Ecological Information**

**Ecotoxicity**
- Not available.

**BOD5 and COD**
- Not available.

**Products of Biodegradation**
- Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation**
- The products of degradation are less toxic than the product itself.

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Continued on Next Page
Section 13. Disposal Considerations

Waste Disposal

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14. Transport Information

DOT Classification

CLASS 6.1: Poisonous material.

Identification

UNNA: 2811 : Toxic solid, organic, n.o.s. (Cantharidin)   PG: I

Special Provisions for Transport

Not available.

DOT (Pictograms)

POISON

Section 15. Other Regulatory Information and Pictograms

Federal and State Regulations

New York release reporting list: Cantharidin
Pennsylvania RTK: Cantharidin
Massachusetts RTK: Cantharidin
Massachusetts spill list: Cantharidin
New Jersey: Cantharidin
New Jersey spill list: Cantharidin
California Director's List of Hazardous Substances: Cantharidin
TSCA 8(b) inventory: Cantharidin
SARA 302/304/311/312 extremely hazardous substances: Cantharidin
CERCLA: Hazardous substances.: Cantharidin: 100 lbs. (45.36 kg)

California Proposition 65

Warnings

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found.
California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.

Other Regulations

EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances (EINECS No. 200-263-3).
Canada: Listed on Canadian Non-Domestic Substance List (NDSL).
China: Listed on National Inventory.
Japan: Not listed on National Inventory (ENCS).
Korea: Not listed on National Inventory (KECI).
Philippines: Not listed on National Inventory (PICCS).
Australia: Not listed on AICS.

Other Classifications

WHMIS (Canada) CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC).

DSCL (EEC) R28- Very toxic if swallowed.
R36/38- Irritating to eyes and skin.

S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39- Wear suitable protective clothing, gloves and eye/face protection.
S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

HMIS (U.S.A.)

Health Hazard 4
Fire Hazard 1
Reactivity 0
Personal Protection E

National Fire Protection Association (U.S.A.)

Flammability
Reactivity
Specific hazard

Continued on Next Page
### Protective Equipment
- Gloves.
- Lab coat.
- Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.
- Splash goggles.

### Section 16. Other Information

<table>
<thead>
<tr>
<th>MSDS Code</th>
<th>C3542</th>
</tr>
</thead>
<tbody>
<tr>
<td>References</td>
<td>Not available.</td>
</tr>
<tr>
<td>Other Special Considerations</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

Validated by Sonia Owen on 10/27/2011.

Verified by Sonia Owen.


**CALL (310) 516-8000**

**Notice to Reader**

All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It shall be the user’s responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum Quality Products, Inc. assumes no responsibility for the completeness or accuracy of the information contained herein.