1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MSDS Name: Thiamine hydrochloride
Synonyms: Vitamin B1 hydrochloride
Company Identification: Sisco Research Laboratories Pvt. Ltd.
Andheri (East), Mumbai – 400 099.
Tel : +91 22 2687 2601
Fax : +91 22 2687 8241
Website : www.srlchem.com

2 - COMPOSITION, INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Chemical Name:</th>
<th>%</th>
<th>EINECS#</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-03-8</td>
<td>Thiamine hydrochloride</td>
<td>98.5-101.5</td>
<td>200-641-8</td>
</tr>
</tbody>
</table>

3 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

*Irritating to eyes, respiratory system and skin.*

Potential Health Effects

Eye: Causes eye irritation.

Skin: Contact with skin causes irritation and possible burns, especially if the skin is wet or moist. May be harmful if absorbed through the skin.

Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea. Low hazard for usual industrial handling.

Inhalation: Dust is irritating to the respiratory tract. May be harmful if inhaled.

Chronic: Prolonged or repeated skin contact may cause dermatitis.

4 - FIRST AID MEASURES

**Eyes:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

**Skin:** Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists.

**Ingestion:** If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid. Wash mouth out with water.

**Inhalation** Remove from exposure and move to fresh air immediately. If not
breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician: Treat symptomatically and supportively.

5 - FIRE FIGHTING MEASURES

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Containers may explode when heated. Dangerous fire hazard in the form of dust when exposed to heat or flame.

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or chemical foam.

6 - ACCIDENTAL RELEASE MEASURES

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container.

7 – HANDLING AND STORAGE

Handling: Avoid breathing dust, vapor, mist, or gas. Avoid ingestion and inhalation.

Storage: Store in a cool, dry place. Store in a tightly closed container.

8 – EXPOSURE CONTROLS, PERSONAL PROTECTION

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

CAS# 67-03-8:

Personal Protective Equipment

Eyes: Wear chemical splash goggles.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR
1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

9 - PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>Crystalline powder</td>
</tr>
<tr>
<td>Color</td>
<td>white - almost white</td>
</tr>
<tr>
<td>pH</td>
<td>2.7-3.4 (10 g/L)</td>
</tr>
<tr>
<td>Freezing/Melting Point</td>
<td>246 - 254 deg C(decom)</td>
</tr>
<tr>
<td>Solubility in water</td>
<td>1 g/ml</td>
</tr>
<tr>
<td>Molecular Formula</td>
<td>C12H17ClN4OS.HCl</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>337.26</td>
</tr>
</tbody>
</table>

10 - STABILITY AND REACTIVITY

<table>
<thead>
<tr>
<th>Stability</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Stability</td>
<td>Light sensitive. Hygroscopic: absorbs moisture or water from the air. May decompose violently on heating.</td>
</tr>
<tr>
<td>Conditions to Avoid</td>
<td>Incompatible materials, excess heat, exposure to moist air or water, direct sunlight.</td>
</tr>
<tr>
<td>Incompatibilities with Other Materials</td>
<td>Metals, strong oxidizing agents, strong oxidizing agents, reducing agents, bases, nitro compounds (organic, e.g. nitrobenzene, nitroglycerine, picric acid, trinitrotoluene), iodine, tannin, mercury bichloride, sulfides.</td>
</tr>
<tr>
<td>Hazardous Decomposition Products</td>
<td>Hydrogen chloride, nitrogen oxides, carbon monoxide, oxides of sulfur, carbon dioxide, nitrogen.</td>
</tr>
<tr>
<td>Hazardous Polymerization</td>
<td>Will not occur.</td>
</tr>
</tbody>
</table>

11 - TOXICOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>RTECS#</th>
<th>CAS# 67-03-8: X17350000</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50/LC50</td>
<td>RTECS:</td>
</tr>
<tr>
<td>CASE# 67-03-8: Oral, mouse: LD50 = 8224 mg/kg; Oral, rat: LD50 = 3710 mg/kg;</td>
<td></td>
</tr>
</tbody>
</table>
Carcinogenicity: Thiamine hydrochloride - Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.

Other: See actual entry in RTECS for complete information. The toxicological properties have not been fully investigated.

12 - ECOLOGICAL INFORMATION

Ecotoxicity: Fish: Rainbow trout: > 100 mg/L; 96H; LC50
             Daphnia: Daphnia: > 100 mg/L; 48H; EC50
             Algae: > 100 mg/L; 72H; EBC50

13 - DISPOSAL CONSIDERATIONS

Dispose of in a manner consistent with federal, state, and local regulations.

14 - TRANSPORT INFORMATION

Hazard Class: UN Number: Packing Group:

15 - REGULATORY INFORMATION

European/International Regulations

   European Labeling in Accordance with EC Directives
   Hazard Symbols: XI
   Risk Phrases:
       R 36/37/38 Irritating to eyes, respiratory system and skin.
   Safety Phrases:
       S 26 In case of contact with eyes, rinse immediately with plenty of water
           and seek medical advice.
       S 37/39 Wear suitable gloves and eye/face protection.
   WGK (Water Danger/Protection)
       CAS# 67-03-8: 1
   Canada
       CAS# 67-03-8 is listed on Canada's DSL List

US Federal
TSCA

CAS# 67-03-8 is listed on the TSCA Inventory.

16 - ADDITIONAL INFORMATION

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