Section 1 Chemical Product and Company Identification

Product Name: THIOPHANATE-METHYL ULV (TOPSIN M ULV)

Chemical Name: Suspension concentrate (ultra low volume formulation) containing thiophanate-methyl as active ingredient

Primary Use: Fungicide for agricultural use

Distributor

Name
Address
TEL. No. Fax No.

Manufacturer

Name: Nippon Soda Co., Ltd.
Address: 2-1, 2-Chome, Ohtemachi, Chiyoda-ku, Tokyo 100-8165, Japan
TEL. No.: +81-3-3245-6041 Fax No.: +81-3-3245-6287

Emergency

TEL. No.: +1-800-424-9300(CHEMTREC) Fax No.: 

Date Prepared: Aug. 6, 2010 Date Revised:

Section 2 Hazardous Identification

Route of Entry

Skin : yes Inhalation : yes Ingestion : yes

Emergency Overview

Pale brown viscous liquid with a faint odor as sulfur-containing compounds.
Stable in normal condition.
Harmful if inhaled.
May cause mild eye irritation.
Suspected of causing genetic defects.
Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Potential Health Effects

Eye: Mild irritant.
Skin: Very slight irritant.
Dermal sensitization is negative.
Inhalation: Harmful if inhaled.
Ingestion: Low acute oral toxicity.

Signs and Symptoms

Not available.

Chronic

The date for active ingredient is following.
NOEL(mouse) : 16mg/kg/day(male), 64 mg/kg/day(female)
NOEL(rat) : 8.8 mg/kg/day(male), 10.2 mg/kg/day(female)

Target Organs: Not available.

Other Comments

Micronucleus test was positive (active ingredient).

Section 3 Composition/Information on Ingredient

<table>
<thead>
<tr>
<th>Component</th>
<th>% (w/v)</th>
<th>Exposure Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OSHA PEL (mg/m³)</td>
</tr>
<tr>
<td>Active Ingredient</td>
<td>50.0</td>
<td>Not listed.</td>
</tr>
</tbody>
</table>

Dimethyl 4,4’-(o-phenylene)bis(3-thioallopophanate) ; {1,2-di-(3-methoxycarbonyl-2-thioureido)benzene} ; {Dimethyl [1,2-phenylenebis(iminocarbonothioyl)bis-carbamate] ; (CAS No.23564-05-8)

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Material Safety Data Sheet

Section 4 First Aid Measures

Eye
Immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

Skin
Immediately flush skin with soap and plenty of water. Remove contaminated clothing and shoes. Call a physician if irritation develops or persists. Wash clothing before reuse.

Inhalation
Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a physician if you feel unwell.

Ingestion
Do not induce vomiting without medical advice. Wash out mouth with water and get immediate medical aid. Never give anything by mouth to an unconscious person.

Note to Physicians
Not known.

Section 5 Fire Fighting Measures

Flammable Properties
Not flammable.

Unusual Fire & Explosion Hazards
Thermal decomposition or combustion may produce carbon dioxide, carbon monoxide, sulfur oxides and nitrogen oxides.

Extinguishing Media
Water spray, foam, dry chemicals, carbon dioxide.

Fire Fighting Instructions
Protective equipment
Wear self-contained breathing apparatus and complete personal protective equipment.

Fire-Fighting procedure
Move containers away from fire area if it can be done. If impossible to remove containers from fire zone, cool them with water spray.

Section 6 Accidental Release Measures

Protective equipment
Wear personal protective equipment. Refer to Section 8 for personal protective equipment.

Personal precaution
Avoid breathing fume.

Environment precaution
Prevent from releasing it to the environment as this product is harmful to aquatic organisms.

Cleaning procedure
Obey all Federal, State or local regulations for health & safety and environmental protection when the accidental release is treated. Sweep up, place in a bag and hold for waste disposal. Wash spill site with soap and plenty of water after the recovery of material was completed. Do not discharge to river, sea, lake, waterway or sewer systems directly.

Section 7 Handling and Storage

Handling
Wear personal protective equipment. Refer to Section 8 for personal protective equipment. Handle as a combustible organic liquid. Avoid breathing fume. Use only in a well ventilated areas, or chemical fume hood.

Thiophanate-methyl (ISO name)

<table>
<thead>
<tr>
<th>Inactive Ingredient</th>
<th>12.0</th>
<th>15 (total dust)</th>
<th>10</th>
<th>Not listed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glycerin (CAS No.56-81-5)</td>
<td></td>
<td>5 (respirable dust)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additives (Surfactant etc)</td>
<td>4.6</td>
<td>Not listed.</td>
<td>Not listed.</td>
<td>Not listed.</td>
</tr>
</tbody>
</table>
**Section 8 Exposure Control/Personal protection**

| Specific Engineering Controls | Use general and/or local exhaust ventilation to control exposure levels below airborne exposure limits. Provide safety shower and eyewashes. |

| Personal Protection Equipment | Respiratory Use NIOSH/MSHA-approved respiratory protection when handling. |
|                               | Gloves Rubber gloves |
| Eye/Face                      | Use safety goggles. |
|                               | Footwear Working shoes with socks. |
| Clothing                      | Wear protective clothing. |
|                               | Others None |

**Section 9 Physical and Chemical Properties**

| Appearance          | Pale brown viscous liquid. |
| Odor                | Faint sulfur odor. |
| Density             | Not applicable. |
| Specific Gravity    | 1.10～1.30 (20/4℃) |
| Melting Point       | Not applicable. |
| Boiling Point       | Not available. |
| Vapor Density       | Not applicable. |
| Vapor Pressure      | Not available. |
| Evaporation Rate    | Not applicable. |
| pH                  | 6.0-9.0 |
| Solubility in water | Insoluble but dispersible. |
| Solubility in solvent | Not available. |
| Log Po/w            | 1.44 (active ingredient) |
| Flash Point         | Not applicable. |
| Autoignition Temp.  | Not applicable. |
| Dust Explosion Limit| Not applicable. |

**Section 10 Stability and Reactivity**

| Chemical Stability | Stable | If unstable, condition to avoid unstable reaction. Stable in normal conduction. |
|                   | Unstable |
| Hazardous Polymerization | May occur | If polymerization may occur, condition to avoid it. |
|                     | Will not occur | x |
| Reactivity          | May react with strong oxidizing agents. |
## Section 11. Toxicological Information

**Effect of Acute Exposure**
- **Acute Toxicity**
  - Oral (rat) \( LD_{50} \) 5000 mg/kg (male), 3800 mg/kg (female)
  - Oral (mouse) \( LD_{50} \) 3416 mg/kg (male), 3271 mg/kg (female)
  - Dermal (rat) \( LD_{50} \) >5000 mg/kg (male, female)
  - Inhalation (rat) \( LD_{50} \) Not available

(The following data is for Thiophanate-Methyl)
- Inhalation (rat) \( LC_{50} \) (4hr) 1.7mg/L (male), 1.9mg/L (female)

- **Sensitization (skin):**
  - Negative

- **Irritation:**
  - Eyes (rabbit): Mild
  - Dermal (rabbit): Very slight

- **Mutagenicity (Active ingredient):**
  - Ames test: Negative
  - UDS test: Negative

- **Chromosomal aberration test:**
  - Negative

- **Mutagenicity (Active ingredient):**
  - Micronucleus test: Positive

**Carcinogenicity**
- NTP: no
- IARC: no
- ACGIH Regulated: no

**Subacute Toxicity (Active ingredient)**
- 90-days repeated dose test
  - NOEL (rat): 13.9mg/kg/day, 90 days

**Chronic Toxicity and Carcinogenicity (Active ingredient)**
- Chronic toxicity/Carcinogenicity test (2years)
  - NOEL (mouse): 16mg/kg/day (male), 64mg/kg/day (female)
  - NOEL (rat): 8.8mg/kg/day (male), 10.2mg/kg/day (female)

**Teratogenicity (Active ingredient)**
- Teratogenicity (rat): Negative
- Teratogenicity (rabbit): Negative

**Reproductive Toxicity (Active ingredient)**
- 3 generations reproductive test (rat):
  - Reproductive Toxicity: Negative

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**Section 12 Ecological Information**

**Environmental Fate**
Bio-Degradability (Active ingredient): Not good degradability.

Bio-Accumulative Potential (Active ingredient): Since the value of logPo/w is low, it is estimated that bio-accumulative potential is low.

### Ecological Toxicity

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Toxicity to Fish</td>
<td>LC50 (Carp) 82 mg/L (96hrs)</td>
</tr>
<tr>
<td>Acute Toxicity to Daphnia</td>
<td>EC50 (Daphnia Magna) 19.3 mg/L (48hrs)</td>
</tr>
<tr>
<td>Acute Toxicity to Algae</td>
<td>ErC50 (Green Algae) &gt;1000 mg/L (72hrs)</td>
</tr>
</tbody>
</table>

### Section 13 Disposal Considerations

1) Mix the material with sawdust or combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.
2) Do not discharge into waterway or sewer systems unless permission has been obtained by the local authority and suitable dilution has been established.
3) Contaminated empty containers must be disposed of as chemical waste.
4) Obey all Federal, State and local regulations concerning health & safety and environmental protection.

### Section 14 Transport Information

- **International marine transportation (IMDG)**: Not classified as dangerous goods in IMDG
- **Marine pollutant**: Not applicable

- **ICAO/IATA Dangerous Goods Regulations**: Not classified as dangerous goods in ICAO/IATA-DGR.

- **DOT Regulations**: Not classified as dangerous goods in DOT Regulations.

### Section 15 Regulatory Information

<table>
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<tr>
<th>Agency</th>
<th>Status</th>
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<tbody>
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<td>TSCA</td>
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<tr>
<td>OSHA</td>
<td>Not listed (CAS No.: 23564-05-8) Listed (CAS No.: 56-81-5)</td>
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<td>SARA</td>
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<tr>
<td>CERCLA</td>
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<tr>
<td>Others</td>
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### Section 16 Other Information
<table>
<thead>
<tr>
<th>Label Information</th>
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<tbody>
<tr>
<td><strong>NFPA Rating</strong></td>
<td>Health: 1, Flammability: 1, Instability: 0</td>
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</table>

<table>
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<tr>
<th>Revised Information</th>
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<tbody>
<tr>
<td><strong>ENCS(JAPAN)</strong></td>
<td>Not listed(CAS No.: 23564-05-8 (Not applicable(pesticide)))</td>
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<td>Listed(CAS No.: 56-81-5)</td>
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<tr>
<td><strong>EINECS(EU)</strong></td>
<td>Listed(CAS No.: 23564-05-8, 56-81-5)</td>
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<tr>
<td><strong>DSL(Canada)</strong></td>
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<tr>
<td><strong>IECSC(China)</strong></td>
<td>Listed(CAS No.: 23564-05-8, 56-81-5)</td>
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</tbody>
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Revised Information
This MSDS was prepared according to ANSI Z400.1-2003

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