SAFETY DATA SHEET
(±)-Thalidomide

according to Regulation (EC) No. 1907/2006 as amended by (EC) No. 1272/2008

Section 1. Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product Code: 14610
Product Name: (±)-Thalidomide
Synonyms: 2-(2,6-dioxo-3-piperidinyl)-1H-isoindole-1,3(2H)-dione; Contergan; Kevadon; NSC 66847; NSC 527179;

1.2 Relevant identified uses of the substance or mixture and uses advised against:
Relevant identified uses: For research use only, not for human or veterinary use.

1.3 Details of the Supplier of the Safety Data Sheet:
Company Name: Cayman Chemical Company
1180 E. Ellsworth Rd.
Ann Arbor, MI 48108
Web site address: www.caymanchem.com
Information: +1 (734)971-3335

1.4 Emergency telephone number:
Emergency Contact: CHEMTREC Within USA and Canada: +1 (800)424-9300
CHEMTREC Outside USA and Canada: +1 (703)527-3887

Section 2. Hazards Identification

2.1 Classification of the Substance or Mixture:
2.1.1 Classification according to Regulation (EC) No 1272/2008 [CLP]:
Acute Toxicity: Oral, Category 3
Acute Toxicity: Skin, Category 4
Germ Cell Mutagenicity, Category 1A
Toxic To Reproduction, Category 1A

2.1.2 Classification according to Directive 1999/45/EC:
T: Toxic
Reproductive Hazard: 1
Mutagenic Hazard: 2
Risk Phrases: R21, R25, R46, R61, R62
For full text of R-phrases: see SECTION 15.

2.2 Label Elements:
2.2.1 Labeling according to Regulation (EC) No 1272/2008 [CLP]:

GHS Signal Word: Danger
GHS Hazard Phrases:
H301: Toxic if swallowed.
H312: Harmful in contact with skin.
H340: May cause genetic defects.
H360: May damage fertility or the unborn child.

GHS Precaution Phrases:
P264: Wash {hands} thoroughly after handling.
P280: Wear {protective gloves/protective clothing/eye protection/face protection}.
P362+364: Take off contaminated clothing and wash it before reuse.
P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.
P281: Use personal protective equipment as required.
GHS Response Phrases:
P301+310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P330: Rinse mouth.
P302+352: IF ON SKIN: Wash with plenty of soap and water.
P312: Call a {POISON CENTER/doctor/...} if you feel unwell.
P321: Specific treatment {see ... on this label}.
P308+313: IF exposed or concerned: Get medical attention/advice.

GHS Storage and Disposal Phrases:
Please refer to Section 7 for Storage and Section 13 for Disposal information.

2.2.2 Labeling according to Directive 1999/45/EC:

T

Reproductive Hazard: 1; Mutagenic Hazard: 2

2.3 Adverse Human Health Harmful in contact with skin.
Effects and Symptoms:
Material may be irritating to the mucous membranes and upper respiratory tract.
- May be harmful by inhalation.
- May cause eye, skin, or respiratory system irritation.
- May cause genetic defects.
- May damage fertility or the unborn child.
- Toxic if swallowed.
To the best of our knowledge, the toxicological properties have not been thoroughly investigated.

Section 3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>CAS # / RTECS #</th>
<th>Hazardous Components (Chemical Name)/ REACH Registration No.</th>
<th>Concentration</th>
<th>EC No./ EC Index No.</th>
<th>Risk Phrases/ GHS Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-35-1 TI4375000</td>
<td>Thalidomide</td>
<td>100.0 %</td>
<td>200-031-1 NA</td>
<td>T; Rp:1, Mu:2, R21-25-46-61-62</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Acute Tox.(O) 3: H301</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Acute Tox.(D) 4: H312</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Toxic Repro. 1A: H360</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Mutagen 1A: H340</td>
</tr>
</tbody>
</table>
Section 4. First Aid Measures

4.1 Description of First Aid Measures:
No data available.

In Case of Inhalation: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Get immediate medical attention.

In Case of Skin Contact: Immediately wash skin with soap and plenty of water for at least 15 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.

In Case of Eye Contact: Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Have eyes examined and tested by medical personnel.

In Case of Ingestion: Wash out mouth with water provided person is conscious. Never give anything by mouth to an unconscious person. Get medical attention. Do NOT induce vomiting unless directed to do so by medical personnel.

Section 5. Fire Fighting Measures

5.1 Suitable Extinguishing Media: Use alcohol-resistant foam, carbon dioxide, water, or dry chemical spray.

Unsuitable Extinguishing Media: Use water spray to cool fire-exposed containers.

5.2 Flammable Properties and Hazards:
Flash Pt: No data.
Explosive Limits: LEL: No data. UEL: No data.
Autoignition Pt: No data.

5.3 Fire Fighting Instructions: As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent), and full protective gear to prevent contact with skin and eyes.

Section 6. Accidental Release Measures

6.1 Protective Precautions, Protective Equipment and Emergency Procedures:
Avoid raising and breathing dust, and provide adequate ventilation. As conditions warrant, wear a NIOSH approved self-contained breathing apparatus, or respirator, and appropriate personal protection (rubber boots, safety goggles, and heavy rubber gloves).

6.2 Environmental Precautions: Take steps to avoid release into the environment, if safe to do so.

6.3 Methods and Material For Containment and Cleaning Up: Contain spill and collect, as appropriate. Transfer to a chemical waste container for disposal in accordance with local regulations.

Section 7. Handling and Storage

7.1 Precautions To Be Taken in Handling: Avoid breathing dust/fume/gas/mist/vapours/spray.

7.2 Precautions To Be Taken in Storing: Keep container tightly closed.

Store in accordance with information listed on the product insert.

Section 8. Exposure Controls/Personal Protection

8.1 Exposure Parameters:

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Partial Chemical Name</th>
<th>Britain EH40</th>
<th>France VL</th>
<th>Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-35-1</td>
<td>Thalidomide</td>
<td>No data.</td>
<td>No data.</td>
<td>No data.</td>
</tr>
</tbody>
</table>
8.2 Exposure Controls:

8.2.1 Engineering Controls (Ventilation etc.): Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

8.2.2 Personal protection equipment:

Eye Protection: Safety glasses
Protective Gloves: Compatible chemical-resistant gloves
Other Protective Clothing: Lab coat

Respiratory Equipment: NIOSH approved respirator, as conditions warrant.

Work/Hygienic/Maintenance Practices: Facilities storing or utilizing this material should be equipped with an eyewash and a safety shower.
Wash thoroughly after handling.

Section 9. Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Physical States: [ ] Gas [ ] Liquid [ X ] Solid
Appearance and Odor: A white to off-white solid
Melting Point: No data.
Boiling Point: No data.
Flash Pt: No data.
Evaporation Rate: No data.
Explosive Limits: LEL: No data. UEL: No data.
Vapor Pressure (vs. Air or mm Hg): No data.
Vapor Density (vs. Air = 1): No data.
Specific Gravity (Water = 1): No data.
Solubility in Water: No data.
Solubility Notes: ~25 mM in DMSO;
Autoignition Pt: No data.

9.2 Other Information

Percent Volatile: No data.
Molecular Formula & Weight: C13H10N2O4 258.2

Section 10. Stability and Reactivity

10.1 Reactivity: No data available.
10.2 Stability: Unstable [ ] Stable [ X ]
10.3 Stability Note(s): Stable if stored in accordance with information listed on the product insert.
Polymerization: Will occur [ ] Will not occur [ X ]
10.4 Conditions To Avoid: No data available.
10.5 Incompatibility - Materials To Avoid: No data available.
10.6 Hazardous Decomposition Or: carbon dioxide
Byproducts: carbon monoxide
Nitrogen oxides
Section 11. Toxicological Information

11.1 Information on Toxicological Effects:
(±)-Thalidomide - Toxicity Data: Oral LD50 (rat): 113 mg/kg; Skin LD50 (rat) 1550 mg/kg; Intraperitoneal LD50 (rat): >6 g/kg; Oral LD50 (mouse): 2 g/kg; Intraperitoneal LD50 (mouse): 800 mg/kg; Subcutaneous LD50 (mouse): >5 g/kg; Subcutaneous LDLO (mouse): 40 mg/kg; Intraperitoneal TDLO (rat): 15 mg/kg; Subcutaneous TDLO (rat): 45 mg/kg; Oral TDLO (rat): 100 mg/kg;

Chronic Toxicological Effects: (±)-Thalidomide - Investigated as a mutagen, reproductive effector, and tumorigen. Only select Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here. See actual entry in RTECS for complete information. (±)-Thalidomide RTECS Number: TI4375000

Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No

Section 12. Ecological Information

12.1 Toxicity: Avoid release into the environment. Runoff from fire control or dilution water may cause pollution.

Section 13. Disposal Considerations

13.1 Waste Disposal Method: Dispose in accordance with local, state, and federal regulations.

Section 14. Transport Information

14.1 LAND TRANSPORT (US DOT):
DOT Proper Shipping Name: Toxic solid, organic, n.o.s. ((±)-Thalidomide)
DOT Hazard Class: 6.1 POISON
UN/NA Number: 2811 Packing Group: III

14.1 LAND TRANSPORT (European ADR/RID):
ADR/RID Shipping Name: Toxic solid, organic, n.o.s. ((±)-Thalidomide)
UN Number: 2811 Packing Group: III Hazard Class: 6.1 - POISON

14.3 AIR TRANSPORT (ICAO/IATA):
ICAO/IATA Shipping Name: Toxic solid, organic, n.o.s. ((±)-Thalidomide)

Additional Transport Information: Transport in accordance with local, state, and federal regulations. When sold in quantities of less than or equal to 1 mL, or 1 g, with an Excepted Quantity Code of E1, E2, E4, or E5, this item meets the De Minimis Quantities exemption, per IATA 2.6.10. Therefore packaging does not have to be labeled as Dangerous Goods/Excepted Quantity.
Section 15. Regulatory Information

EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Hazardous Components (Chemical Name)</th>
<th>S. 302 (EHS)</th>
<th>S. 304 RQ</th>
<th>S. 313 (TRI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-35-1</td>
<td>Thalidomide</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Hazardous Components (Chemical Name)</th>
<th>Other US EPA or State Lists</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-35-1</td>
<td>Thalidomide</td>
<td>CAA HAP,ODC: No; CWA NPDES: No; TSCA: No; CA PROP.65: Yes</td>
</tr>
</tbody>
</table>

European Community Hazard Symbol codes:

![Hazard Symbol](image)

Reproductive Hazard: 1; Mutagenic Hazard: 2

European Community Risk and Safety Phrases:

- **R21** Harmful in contact with skin.
- **R25** Toxic if swallowed.
- **R46** May cause heritable genetic damage.
- **R61** May cause harm to the unborn child.
- **S22** Do not breathe dust.
- **S24/25** Avoid contact with skin and eyes.
- **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 whenever possible.)
- **S53** Avoid exposure - obtain special instructions before use.

Regulatory Information Statement:

This SDS was prepared in accordance with Regulation (EC) No.1272/2008 and European Directive 67/548/EEC as amended.

Section 16. Other Information

Revision Date: 03/03/2014

Additional Information About This Product:

No data available.

Company Policy or Disclaimer:

DISCLAIMER: This information is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.