Diallyl Disulfide
SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006 as amended by (EC) No. 1272/2008

1. Product Code: 10012582
Product Name: Diallyl Disulfide
Synonyms: di-2-propen-1-yl-disulfide; Garlicin; NSC 29228; DADS;

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: Cayman Chemical Company +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]:
Flammable Liquids, Category 3
Acute Toxicity: Oral, Category 3
Skin Corrosion/Irritation, Category 2
Serious Eye Damage/Eye Irritation, Category 2A
Skin Sensitization, Category 1

2.1.2 Classification according to Directive 1999/45/EC:
T: Toxic
Risk Phrases: R10, R25, R36/38, R43
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:
H226: Flammable liquid and vapor.
H301: Toxic if swallowed.
H315: Causes skin irritation.
H319: Causes serious eye irritation.
H317: May cause an allergic skin reaction.

GHS Precaution Phrases:
P210: Keep away from {heat/sparks/open flames/hot surfaces}. - No smoking.
P280: Wear {protective gloves/protective clothing/eye protection/face protection}.
P264: Wash {hands} thoroughly after handling.
P362+364: Take off contaminated clothing and wash it before reuse.
P261: Avoid breathing {dust/fume/gas/mist/vapours/spray}.
P272: Contaminated work clothing should not be allowed out of the workplace.

GHS Response Phrases:
P303+361+353: IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
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.
P332+313: If skin irritation occurs, get medical advice/attention.
P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+313: If eye irritation persists, get medical advice/attention.
P333+313: If skin irritation or rash occurs, seek medical advice/attention.

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:

2.3 Adverse Human Health Causes skin irritation.
Effects and Symptoms: Causes serious eye irritation.

Material may be irritating to the mucous membranes and upper respiratory tract.
May be harmful by inhalation or skin absorption.
May cause an allergic skin reaction.
May cause respiratory system irritation.
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>
</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: Use water spray to cool fire-exposed containers.

Flash Pt: No data.

Explosive Limits: LEL: No data. UEL: No data.

Autoignition Pt: No data.

5.2 Flammable Properties and Hazards: No data available.

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 breathing vapors 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: Avoid prolonged or repeated exposure. 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>2179-57-9</td>
<td>Allyl disulfide</td>
<td>No data.</td>
<td>No data.</td>
<td>No data.</td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET
Diallyl Disulfide

8.2 Exposure Controls:

8.2.1 Engineering Controls: 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.
   (Specify Type):
   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 [ X ] Liquid [ ] Solid
   Appearance and Odor: A neat oil
   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.
   Autoignition Pt: No data.

9.2 Other Information
   Percent Volatile: No data.
   Molecular Formula & Weight: C6H10S2 146.3

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: strong oxidizing agents
10.6 Hazardous Decomposition Or Byproducts: carbon dioxide
   carbon monoxide
   sulfur oxides

Multi-region format
Section 11. Toxicological Information

11.1 Information on Toxicological Effects: The toxicological effects of this product have not been thoroughly studied.

- **Diallyl Disulfide - Toxicity Data:**
  - Oral LD50 (rat): 260 mg/kg; Skin LD50 (rabbit): 3600 mg/kg; Skin LD50 (rat): 1.826 mg/kg; Oral TDLO (rat): 878 mg/kg/6D (intermittent); Oral TDLO (rat): 280 mg/kg/4W (continuous);
  - Oral LD50 (rat): 1.826 mg/kg; Oral TDLO (rat): 878 mg/kg/6D (intermittent); Oral LD50 (rat): 280 mg/kg/4W (continuous);

- **Diallyl Disulfide - Irritation Data:**
  - Eyes (rabbit): 100% (24h) Moderate; Skin (rabbit): 100% (24h) Severe;

**Chronic Toxicological Effects:**

- Diallyl Disulfide - Investigated as a mutagen.

*Only select Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here. See actual entry in RTECS for complete information.*

**Diallyl Disulfide RTECS Number:** BB1000000

**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 liquid, organic, n.o.s (Diallyl Disulfide)
- **DOT Hazard Class:** 6.1 - POISON
- **UN/NA Number:** 2810
- **Packing Group:** III

14.1 LAND TRANSPORT (European ADR/RID):

- **ADR/RID Shipping Name:** Toxic liquid, organic, n.o.s (Diallyl Disulfide)
- **UN Number:** 2810
- **Packing Group:** III
- **Hazard Class:** 6.1 - POISON

14.3 AIR TRANSPORT (ICAO/IATA):

- **ICAO/IATA Shipping Name:** Toxic liquid, organic, n.o.s (Diallyl Disulfide)
- **UN Number:** 2810
- **Packing Group:** III
- **Hazard Class:** 6.1 - POISON
- **IATA Classification:** 6.1

**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>2179-57-9</td>
<td>Allyl disulfide</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>CAS #</th>
<th>Hazardous Components (Chemical Name)</th>
<th>Other US EPA or State Lists</th>
</tr>
</thead>
<tbody>
<tr>
<td>2179-57-9</td>
<td>Allyl disulfide</td>
<td>CAA HAP,ODC: No; CWA NPDES: No; TSCA: Inventory; CA PROP.65: No</td>
</tr>
</tbody>
</table>

#### European Community Hazard Symbol codes:

- **T**

#### European Community Risk and Safety Phrases:

- **R10**: Flammable.
- **R25**: Toxic if swallowed.
- **R36/38**: Irritating to eyes and skin.
- **R43**: May cause sensitization by skin contact.
- **S16**: Keep away from sources of ignition.
- **S24/25**: Avoid contact with skin and eyes.
- **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.

#### 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:** 04/09/2014

**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.