SAFETY DATA SHEET
Diallyl Disulfide


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

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

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:
- Flammable Liquids, Category 3
- Acute Toxicity: Oral, Category 3
- Skin Corrosion/Irritation, Category 2
- Serious Eye Damage/Eye Irritation, Category 2
- Skin Sensitization, Category 1

2.2  Label Elements:

GHS Signal Word:  Danger

GHS Hazard Phrases:
H226: Flammable liquid and vapor.
H301: Toxic if swallowed.
H315: Causes skin irritation.
H317: May cause an allergic skin reaction.
H319: Causes serious eye irritation.

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

GHS Response Phrases:
P301+310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P302+352: IF ON SKIN: Wash with plenty of soap and water.
P303+361+353: IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy
to do. Continue rinsing.

P330: Rinse mouth.

P332+313: If skin irritation occurs, get medical advice/attention.
P333+313: If skin irritation or rash occurs, seek medical advice/attention.
P337+313: If eye irritation persists, get medical advice/attention.
P362+364: Take off contaminated clothing and wash it before reuse.

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

### 2.3 Adverse Human Health

**Effects and Symptoms:**
- Causes skin irritation.
- 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>GHS Classification</th>
</tr>
</thead>
</table>

### Section 4. First Aid Measures

#### 4.1 Description of First Aid Measures:

**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 available.
Autoignition Pt: No data.
Explosive Limits: LEL: No data. UEL: 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 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:
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. Avoid prolonged or repeated exposure.

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:

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.

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

No data available.
### Section 9. Physical and Chemical Properties

#### 9.1 Information on Basic Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical States</td>
<td>[ ] Gas</td>
</tr>
<tr>
<td>Appearance and Odor</td>
<td>A neat oil</td>
</tr>
<tr>
<td>pH</td>
<td>No data</td>
</tr>
<tr>
<td>Melting Point</td>
<td>No data</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>No data</td>
</tr>
<tr>
<td>Flash Pt</td>
<td>No data</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>No data</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive Limits LEL, UEL</td>
<td>No data, No data</td>
</tr>
<tr>
<td>Vapor Pressure (vs. Air or mm Hg)</td>
<td>No data</td>
</tr>
<tr>
<td>Vapor Density (vs. Air = 1)</td>
<td>No data</td>
</tr>
<tr>
<td>Specific Gravity (Water = 1)</td>
<td>No data</td>
</tr>
<tr>
<td>Solubility in Water</td>
<td>No data</td>
</tr>
<tr>
<td>Solubility Notes</td>
<td>~0.2 mg/ml in a 1:4 solution of DMF:PBS (pH 7.2); ~3 mg/ml in EtOH; ~5 mg/ml in DMSO; ~10 mg/ml in DMF;</td>
</tr>
<tr>
<td>Octanol/Water Partition Coefficient</td>
<td>No data</td>
</tr>
<tr>
<td>Autoignition Pt</td>
<td>No data</td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>No data</td>
</tr>
<tr>
<td>Viscosity</td>
<td>No data</td>
</tr>
</tbody>
</table>

#### 9.2 Other Information

- **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.

#### 10.4 Conditions To Avoid:

No data available.

#### 10.5 Incompatibility - Materials strong oxidizing agents To Avoid:

#### 10.6 Hazardous:

carbon dioxide

Decomposition or Byproducts:

carbon monoxide

sulfur oxides
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; Intraperitoneal TDLO (mouse): 42 mg/kg/3D (intermittent); Oral TDLO (mouse): 90 mg/kg/3D (intermittent);
- 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

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Hazardous Components (Chemical Name)</th>
<th>NTP</th>
<th>IARC</th>
<th>ACGIH</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>2179-57-9</td>
<td>Allyl disulfide</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

Section 12. Ecological Information

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

12.2 Persistence and Degradability: No data available.

12.3 Bioaccumulative Potential: No data available.

12.4 Mobility in Soil: No data available.

12.5 Results of PBT and vPvB assessment: No data available.

12.6 Other adverse effects: No data available.

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: UN2810 Packing Group: I

14.1 LAND TRANSPORT (European ADR/RID):
- ADR/RID Shipping Name: Toxic liquid, organic, n.o.s (Diallyl Disulfide)
- UN Number: 2810 Packing Group: I
- 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: I
- 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

<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>
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</thead>
<tbody>
<tr>
<td>2179-57-9</td>
<td>Allyl disulfide</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>2179-57-9</td>
<td>Allyl disulfide</td>
<td>CAA HAP,ODC: No; CWA NPDES: No; TSCA: Yes - Inventory; CA PROP.65: No</td>
</tr>
</tbody>
</table>

Regulatory Information: This SDS was prepared in accordance with 29 CFR 1910.1200 and Regulation (EC) No.1272/2008.

### Section 16. Other Information

Revision Date: 01/23/2019
Additional Information About This Product: No data available.

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