Section 1. Product and Company Identification

Product Name: Allyl disulfide
Product ID: A4544

Chemical Name (Synonyms):
- 2-Propenyl disulfide
- 2-Propenyl disulphide
- 4,5-Dithia-1,7-octadiene
- AI3-35128
- Allyl disulfide, BRN 1699241
- CCRIS 6290
- Di(2-propenyl) disulfide
- Diallyl disulfide
- Disulfide, di-2-propenyl

Supplier:
LKT Laboratories, Inc
545 Phalen Blvd.
St. Paul, MN 55130 USA
Ph: 651-644-8424 Fax: 651-644-8357
www.lktlabs.com - getinfo@lktlabs.com

Emergency Phone #: 1-800-424-9300

Section 2. Hazards Identification

GHS Classification:
- H227 - Flammable liquids (Category 4)
- H301 - Acute toxicity, Oral (Category 3)
- H315 - Skin irritation (Category 2)
- H319 - Eye irritation (Category 2A)
- H335 - Respiratory system Specific target organ toxicity - single exposure (Category 3)

Pictogram:
- Danger

Signal word: Danger

Hazard and precautionary statements:
- H227 - Combustible liquid
- H301 - Toxic if swallowed.
- H315 - Causes skin irritation.
- H319 - Causes serious eye irritation.
- H335 - May cause respiratory irritation.

Precautionary statements:
- P210 - Keep away from heat, sparks, open flames and hot surfaces. - No smoking.
- P261 - Avoid breathing dust, fumes, gas, mist, vapors and spray.
- P264 - Wash skin thoroughly after handling.
- P271 - Use only outdoors or in a well-ventilated area.
- P280 - Use protective gloves, protective clothing, eye protection and face protection.
- P301 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P332 + P313 - If skin irritation persists: Get medical advice and or attention.
- P362 - Take off contaminated clothing and wash before reuse.
- P370 + P378 - In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
- P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.
- P405 - Store locked up.
- P501 - Dispose of contents and send the container to an approved waste disposal plant.

HMIS Classification:
- Health hazard: 2
- Chronic health hazard: *
- Flammability: 2
- Physical hazard: 0

NFPA Rating:
- Health hazard: 2
- Fire hazard: 2
- Reactivity hazard: 0

Potential Health Effects:
- Inhalation: Harmful if inhaled. May cause respiratory irritation.
- Skin: Causes skin irritation. May be harmful if absorbed through skin.
- Eyes: Causes serious eye irritation.
Ingestion: Acute toxicity. Toxic if swallowed.

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**Section 3. Composition/Information on Ingredients**

<table>
<thead>
<tr>
<th>Substances</th>
<th>Diallyl disulfide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formula</td>
<td>C₆H₁₀S₂</td>
</tr>
<tr>
<td>CAS No.</td>
<td>2179-57-9</td>
</tr>
<tr>
<td>Formula Wt.</td>
<td>146.28</td>
</tr>
<tr>
<td>EC No.</td>
<td>218-548-6</td>
</tr>
</tbody>
</table>

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**Section 4. First Aid Measures**

**General advice**
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

**Eye Contact**
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

**Skin Contact**
Wash off soap and plenty of water. Take victim immediately to hospital. Consult a physician.

**Inhalation**
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

**Ingestion**
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

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**Section 5. Firefighting Measures**

**Flash Point**
62˚C (144˚F) closed cup

**Extinguishing Media**
Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide. Use water spray to cool unopened containers.

**Firefighting Procedures**
Wear self-contained breathing apparatus for fire fighting and protective clothing if necessary.

**Unusual Fire Hazards**
Carbon oxides and sulfur oxides.

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**Section 6. Accidental Release Measures**

**Personal Precautions**
Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

**Environmental Precautions**
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

**Methods and materials for containment and cleanup**
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal.

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**Section 7. Handling and Storage**

**Handling**
Avoid contact with skin and eyes. Avoid inhalation of vapor or mist. Keep away from sources of ignition. No smoking. Take measures to prevent the build up of electrostatic charge. For precautions see section 2.2.

**Storage Conditions**
Store under nitrogen. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Handle under nitrogen, protect from moisture. Storage class (TRGS 510): Non-combustible, acute toxic Cat.3/ toxic hazardous materials causing chronic effects.

**Hazardous Decomposition Products**
Carbon monoxide, carbon dioxide, sulfur oxides.

**Other Remarks**
None.
Section 8. Exposure Controls/Personal Protection

**Personal protective equipment**

Contains no substances with occupational exposure limit values.

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

**PERSONAL PROTECTION**

**Eye and face protection:** Face shield and safety glasses. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

**Skin protection:** Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

**Full contact:**

<table>
<thead>
<tr>
<th>Material</th>
<th>Minimum layer thickness</th>
<th>Break through time</th>
<th>Material tested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluorinated rubber</td>
<td>0.7 mm</td>
<td>480 min</td>
<td>Vitoject® (KCL 890/Aldrich Z677698, Size M)</td>
</tr>
<tr>
<td>Nitrile rubber</td>
<td>0.4 mm</td>
<td>36 min</td>
<td>Camatril® (KCL 730/Aldrich Z677442, Size M)</td>
</tr>
</tbody>
</table>

**Body protection:** Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory protection:** Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multipurpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

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Section 9. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Physical State</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquid.</td>
<td>Yellowish liquid.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Boiling Point</th>
<th>Volatility</th>
</tr>
</thead>
<tbody>
<tr>
<td>180°C-195°C (356 - 383 °F)</td>
<td>Not available.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Melting Point</th>
<th>Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not available.</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Solubility</th>
<th>pH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soluble in ethanol and oil.</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flash Point</th>
<th>Ignition temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>62°C (144°F) closed cup</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lower explosion limit</th>
<th>Autoignition temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not available.</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Upper explosion limit</th>
<th>Vapor pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not available.</td>
<td>1 hPa (1 mmHg) at 20°C (68°F)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Water solubility</th>
<th>Odor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insoluble in water.</td>
<td>Stench.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Partition coefficient: n-octanol/water</th>
<th>Odor Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not available.</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Relative vapor density</th>
<th>Evaporation rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.05 (Air = 1.0)</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

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Section 10. Stability and Reactivity

**Stability**

Stable under recommended storage conditions.

**Materials To Avoid**

Keep away from heat and strong oxidizing agents.

**Hazardous Decomposition Products**

Carbon monoxide, carbon dioxide, sulfur oxides.
Section 11. Toxicological Information

**Oral LD50**  
Rat 260 - mg/kg

**Inhalation LC50**  
Not available.

**Dermal LD50**  
Rabbit - 3,600 mg/kg

**Other information on acute toxicity**  
Not available.

**Skin corrosion/irritation**  
Not available.

**Serious eye damage/irritation**  
Not available.

**Respiratory or skin sensitization**  
Not available.

**Germ cell mutagenicity**  
Hamster - ovary and sister chromatid exchange.  
Hamster - ovary and cytogenetic analysis.

**Reproductive Toxicity**  
Not available.

**Aspiration Hazard**  
Not available.

**Specific organ toxicity single exposure (GHS)**  
Inhalation - May cause respiratory irritation.

**Specific organ toxicity repeated exposure (GHS)**  
Not available.

**Teratogenicity**  
Not available.

**Synergistic effects**  
Not available.

**Additional Information**  
RTECS: BB1000000  
To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated.

**Potential Health Effects**  
Inhalation: Harmful if inhaled. May cause respiratory irritation.  
Skin: Causes skin irritation. May be harmful if absorbed through skin.  
Eyes: Causes serious eye irritation.  
Ingestion: Acute toxicity. Toxic if swallowed.

**Carcinogenicity**  
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by IARC.  
ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.  
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.  
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Section 12. Ecological Information

**Toxicity**  
Not available.

**Mobility in soil**  
Not available.

**PBT and vPvB assessment**  
PBT/vPvB assessment not available as chemical safety assessment not required/not
Section 13. Disposal Considerations

**Waste Disposal**

Dispose of material according to all federal, state, and local regulations. Offer material to a licensed, professional waste disposal company. This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Dispose of this material as unused product.

Section 14. Transport Information

**DOT (US)**

UN number: 1992  Class: 3  Packing group: III  Proper shipping name: Flammable liquid, Toxic, n.o.s. (Diallyl disulfide)  Reportable quantity (RQ): Marine pollutant: No; Poison inhalation hazard: No

**IATA**

UN number: 2810  Class: 6.1  Packing group: III  Proper shipping name: Toxic, liquids, organic, n.o.s. (Diallyl disulfide)

**IMDG**

UN number: 2810  Class: 6.1  Packing group: III  EMS-No: F-A, S-A  Proper shipping name: TOXIC, LIQUID, ORGANIC, N.O.S. (Diallyl disulfide)  Marine pollutant: No

Further Information

Section 15. Regulatory Information

**SARA 302 Components**

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 313 Components**

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

**SARA 311/312 Components**

Fire hazard, acute health hazard

**Massachusetts Right To Know Components**

No components are subject to the Massachusetts Right to Know Act.

**Pennsylvania Right To Know Components**

Diallyl disulfide  CAS No. 2179-57-9  Revision Date

**New Jersey Right To Know Components**

Diallyl disulfide  CAS No. 2179-57-9  Revision Date

**California Prop 65 Components**

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

Section 16. Other Information

**Other information**

The information in this document is believed to be correct but is not necessarily complete. LKT does not guarantee the accuracy of the information. The burden of verifying the information in this document rests solely upon the user.