Section 1. Product and Company Identification

Product Name: L(+)-Alliin / 3-(2-Propenylsulfinyl) alanine
Product ID: A4443
Chemical Name (Synonyms):
- S-Allyl-L-cysteine sulfoxide
- 3-(Allylsulfinyl)alanin
- Alliin
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:
- Skin irritation (Category 2), H315
- Eye irritation (Category 2A), H319
- Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335

Pictogram: Warning
Signal word: Warning
Hazard and precautionary statements:

Hazard statements:
- H315 - Causes skin irritation.
- H319 - Causes serious eye irritation.
- H335 - May cause respiratory irritation.
Precautionary statements:
- P261 - Avoid breathing dust.
- P264 - Wash skin thoroughly after handling.
- P271 - Use only outdoors or in a well-ventilated area.
- P280 - Wear protective gloves, eye protection and face protection.
- P302 + P352 - IF ON SKIN: Wash with plenty of soap and water.
- P304 + P340 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P312 - Call a POISON CENTER or doctor if you feel unwell.
- P332 + P313 - If skin irritation persists: Get medical advice.
- P337 + P313 - If eye irritation persists: Get medical advice.
- P362 - Take off contaminated clothing and wash before reuse.
- P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.
- P405 - Store locked up.
- P501 - Dispose of contents/container to an approved waste disposal plant.

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

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

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

## Section 3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Substances</th>
<th>Formula</th>
<th>Formula Wt.</th>
<th>CAS No.</th>
<th>EC No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C₆H₁₁NO₃S</td>
<td>177.22</td>
<td>556-27-4</td>
<td>209-118-9</td>
</tr>
</tbody>
</table>

## 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 with soap and plenty of water for 15 minutes and consult a physician.

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

### Ingestion
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

## Section 5. Firefighting Measures

### Flash Point
Not available.

### Extinguishing Media
Use water spray, alcohol-resistant foam, dry chemical powder, carbon dioxide.

### Firefighting Procedures
Wear self-contained breathing apparatus and protective clothing for firefighting if necessary.

### Unusual Fire Hazards

## Section 6. Accidental Release Measures

### Personal Precautions
Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

### Environmental Precautions
Do not let product enter drains.

### Methods and materials for containment and cleanup
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

## Section 7. Handling and Storage

### Handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed.

### Storage Conditions
Keep container tightly closed in a dry and well-ventilated place. Recommended storage temperature: -20°C.

### Hazardous Decomposition Products
Carbon oxides, nitrogen oxides (NOx), sulfur oxides.

### Other Remarks
Synthetic
Section 8. Exposure Controls/Personal Protection

Personal protective equipment
EXPOSURE CONTROLS
Contains no substances with occupational exposure limit values.
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

PERSONAL PROTECTION
Eye/face protection - Safety glasses with side-shields conforming to EN 166. 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 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 and Splash contact - Material: Nitrile rubber, Minimum layer thickness: 0.11mm, Break through time: 480 min, Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M).
Body protection - Imperious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
Respiratory protection - For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator.
For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Section 9. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Physical State</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid.</td>
<td>Colorless crystalline solid.</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Boiling Point</th>
<th>Volatility</th>
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<tbody>
<tr>
<td>Not available.</td>
<td>Not available.</td>
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</table>

<table>
<thead>
<tr>
<th>Melting Point</th>
<th>Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>164˚C - 166˚C.</td>
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</table>

<table>
<thead>
<tr>
<th>Solubility</th>
<th>pH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soluble in water. Insoluble in ethanol or acetone. PBS to 10mg/mL.</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flash Point</th>
<th>Ignition temperature</th>
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</thead>
<tbody>
<tr>
<td>Not available.</td>
<td>Not available.</td>
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</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>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Upper explosion limit</th>
<th>Vapor pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not available.</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Water solubility</th>
<th>Odor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, soluble in water.</td>
<td>Not available.</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>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Relative vapor density</th>
<th>Evaporation rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not available.</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

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 oxides, nitrogen oxides (NOx), sulfur oxides.
Section 11. Toxicological Information

**Oral LD50**  Rat - 4,200 mg/kg

**Inhalation LC50**  Not available.

**Dermal LD50**  Not available.

**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**  Not available.

**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.

**Reproductive Toxicity**  Not available.

**Teratogenicity**  Not available.

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

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

**Aspiration Hazard**  Not available.

**Synergistic effects**  Not available.

**Signs and symptoms of exposure**  Not available.

**Additional Information**
RTECS: Not available.
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 tract irritation.
- **Skin:** May be harmful if absorbed through skin. Causes skin irritation.
- **Eyes:** Causes serious eye irritation.
- **Ingestion:** Harmful if swallowed.

**Section 12. Ecological Information**

**Toxicity**  Not available.

**Mobility in soil**  Not available.

**PBT and vPvB assessment**  PBT/PvB 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 to dispose of as unused product.

Section 14. Transport Information

**DOT (US)** Not dangerous goods.

**IATA** Not dangerous goods.

**IMDG** Not dangerous goods.

Section 15. Regulatory Information

**Reach No.**

**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** Acute health hazard.

**Massachusetts Right To Know Components** No components are subject to the Massachusetts Right to Know Act.

**Pennsylvania Right To Know Components** L(+)Alliiin / 3-(2-Propenylsulfanyl) alanine CAS #: 556-27-4 Revision Date:

**New Jersey Right To Know Components** L(+)Alliiin / 3-(2-Propenylsulfanyl) alanine CAS #: 556-27-4 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.
For emergencies in the USA, call CHEMTREC 800-424-9300