1. Product and Company Identification

**Product Name:** LPS

**CAS#:**
- Li$_2$S 12136-58-2
- P$_2$S$_5$ 1314-80-3

**Identified uses:** Laboratory chemicals, Synthesis of substances

**Contact Information:**
MTI Corporation
860 South 19th Street
Richmond, CA 94804, USA
Tel: 510-525-3070
Fax: 510-525-4705
Email: info@mtixtl.com
Website: www.mtixtl.com

**Non-emergency assistance:** 1-888-525-3070

**Emergency assistance:** Company: CHEMTEL (MTI Contract# MIS2559467) Day or Night
Tel (Within USA and Canada): 1-800-255-3924
Tel (Outside USA and Canada): 1-813-248-0585

2. Hazards Identification

**Emergency Overview: GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**
- Flammable solids (Category 1), H228
- Substances and mixtures, which in contact with water, emit flammable gases (Category 1), H260
- Acute toxicity, Oral (Category 4), H302
- Skin corrosion (Category 1B), H314
- Serious eye damage (Category 1), H318
- Acute toxicity, Inhalation (Category 4), H332
- Acute aquatic toxicity (Category 1), H400

For the full text of the H-Statements mentioned in this Section, see Section 16

**HMIS Rating**
- Health hazard: 3
- Chronic Health Hazard: *
- Flammability: 1
- Physical Hazard: 1

**NFPA Rating**
- Health hazard: 2
- Fire Hazard: 3
- Reactivity Hazard: 1
- Special hazard I: W
GHS Label elements, including precautionary statements

Pictogram

Signal Word  Danger

Hazard statement(s)
H228  Flammable solid.
H260  In contact with water releases flammable gases which may ignite spontaneously.
H301  Toxic if swallowed.
H302 + H332  Harmful if swallowed or if inhaled
H314  Causes severe skin burns and eye damage.
H318  Causes serious eye damage.
H400  Very toxic to aquatic life.

Precautionary statement(s)
P210  Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P223  Do not allow contact with water.
P231 + P232  Handle under inert gas. Protect from moisture.
P240  Ground/bond container and receiving equipment.
P241  Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P261  Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264  Wash skin thoroughly after handling.
P270  Do not eat, drink or smoke when using this product.
P271  Use only outdoors or in a well-ventilated area.
P273  Avoid release to the environment.
P280  Wear protective gloves/ eye protection/ face protection.
P301 + P310 + P330 + P331  IF SWALLOWED: Immediately call a POISON CENTER/doctor. Rinse mouth. Do NOT induce vomiting
P303 + P361 + P353  IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower
P304 + P340 + P312  IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
P305 + P351 + P338 + P310  IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician.
P335 + P334  Brush off loose particles from skin. Immerse in cool water/ wrap in wet bandages.
P363  Wash contaminated clothing before reuse.
P370 + P378  In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P391  Collect spillage.
P402 + P404 + P405  Store in a dry place. Store in a closed container. Store locked up.
P501  Dispose of contents/ container to an approved waste disposal plant.

Hazards not otherwise classified (HNOC) or not covered by GHS

Lachrymator, stench. Contact with water liberates toxic gas.
3. Composition/Information on Ingredients

**Substance Name:** Lithium Phosphorus Sulfide  
**Formula:** Li₇P₃S₁₁  
**Molecular weight:** 494.21 g/mol  
**CAS-No.:**  
- Li₂S  12136-58-2  
- P₂S₅  1314-80-3  
**EC-No.:**  
- Li₂S  235-228-1  
- P₂S₅  215-242-4

### Hazardous Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithium Sulfide</td>
<td>Acute Tox. 3; Skin Corr. 1B; Eye Dam. 1; H301, H314, H318</td>
<td>&lt;= 70%</td>
</tr>
<tr>
<td>Phosphorus pentasulfide</td>
<td>Flam. Sol. 1; Water-react. 1; Acute Tox. 4; Aquatic Acute 1; H228, H260, H302 + H332, H400</td>
<td>&lt;= 30%</td>
</tr>
</tbody>
</table>

4. First Aid Measures

#### 4.1 Description of first aid measures

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

**If inhaled**  
If breathed in, move person into fresh air. If not breathing, give artificial respiration.

**In case of skin contact**  
Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

**In case of eye contact**  
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

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

#### 4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

#### 4.3 Indication of any immediate medical attention and special treatment needed

No data available
5. Firefighting Measures

5.1 Extinguishing media

Suitable extinguishing media
Dry powder
Dry sand

Unsuitable extinguishing media
Do NOT use water jet.

5.2 Special hazards arising from the substance mixture
Sulfur oxides, Lithium oxides

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further Information
No data available

6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wetbrushing and place in container for disposal according to local regulations (see section 13). Do not flush with water. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

7. Handling and Storage

7.1 Precautions for safe handling
Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2. Keep away from sources of ignition - No smoking. Take measures to prevent the build-up of electrostatic charge.
7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place. Never allow product to get in contact with water during storage. Keep in a dry place.

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. Exposure Control/ Personal Protection

8.1 Control parameters

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control Parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus pentasulfide</td>
<td>1314-80-3</td>
<td>TWA</td>
<td>1.000000 mg/m³</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Remarks Upper Respiratory Tract irritation</td>
</tr>
</tbody>
</table>

8.2 Exposure controls

Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Handle in accordance with good industrial hygiene and safety practice.
Personal protective equipment

Eye/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
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested: Dermatril®

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested: Dermatril®

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Complete suit protecting against chemicals, Flame retardant antistatic protective 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
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) 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).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.
9. Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

- **a) Appearance**
  - Form: powder

- **b) Odor**
  - Stench

- **c) Odor Threshold**
  - No data available

- **d) pH**
  - No data available

- **e) Melting point/freezing point**
  - No data available

- **f) Initial boiling point and boiling range**
  - No data available

- **g) Flash point**
  - No data available

- **h) Evaporation rate**
  - No data available

- **i) Flammability (solid, gas)**
  - No data available

- **j) Upper/lower flammability or explosive limits**
  - No data available

- **k) Vapor pressure**
  - No data available

- **l) Vapor density**
  - No data available

- **m) Relative density**
  - No data available

- **n) Water solubility**
  - No data available

- **o) Partition coefficient: n-octanol/water**
  - No data available

- **p) Auto-ignition temperature**
  - No data available

- **q) Decomposition temperature**
  - No data available

- **r) Viscosity**
  - No data available

- **s) Explosive properties**
  - No data available

- **t) Oxidizing properties**
  - No data available

9.2 Other safety information

- No data available

10. Stability and Reactivity

10.1 Reactivity

- No data available

10.2 Chemical stability

- Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

- Reacts violently with water.

10.4 Conditions to avoid

- Heat, flames and sparks. Exposure to moisture

10.5 Incompatible materials

- Strong oxidizing agents, acids, Alcohols, Reacts violently with water

10.6 Hazardous decomposition products

- Hazardous decomposition products formed under fire conditions. - Lithium oxides, Sulfur Oxides, Oxides of phosphorus

- Other decomposition products - No data available

In the event of fire: see section 5
11. Toxicological Information

11.1 Information on toxicological effects

Acute toxicity
No data available
Inhalation: No data available
Dermal: No data available
No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data 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.
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
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Additional Information
RTECS: Not available
Cough, Shortness of breath, Headache, Nausea, Vomiting, Pulmonary edema. Effects may be delayed., Hydrogen sulfide is strongly bound to methemoglobin in a manner similar to cyanide. Toxicologically, its reaction with enzymes in the blood stream inhibits cell respiration resulting in pulmonary paralysis, sudden collapse, and death. It is recognized by its characteristic odor of "rotten eggs". Large doses of lithium ion have caused dizziness and prostration and can cause kidney damage if sodium intake is limited. Dehydration, weight loss, dermatological effects, and thyroid disturbances have been reported. Central nervous system effects that include slurred speech, blurred vision, sensory loss, ataxia, and convulsions may occur. Diarrhea, vomiting, and neuromuscular effects such as tremor, clonus, and hyperactive reflexes may occur as a result of repeated exposure to lithium ion., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated., Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin.
12. Ecological Information

12.1 Toxicity
No data available

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 PBT/vPvB assessment
Not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
No data available

13. Disposal Considerations

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Contact a licensed professional waste disposal service to dispose of this material. Contaminated Packaging
Dispose of as unused product.

14. Transport Information

DOT (US)
UN number: 1340 Class: 4.3 (4.1) Packing group: II
Proper shipping name: Phosphorus pentasulfide
Reportable Quantity (RQ): 100 lbs
UN number: 2923 Class: 8 (6.1) Packing group: II
Proper shipping name: Corrosive solids, toxic, n.o.s. (Lithium sulfide)
Poison Inhalation Hazard: No

IMDG
UN number: 1340 Class: 4.3 (4.1) Packing group: II
Proper shipping name: PHOSPHORUS PENTASULFIDE
UN number: 2923 Class: 8 (6.1) Packing group: II
Proper shipping name: CORROSIVE SOLID, TOXIC, N.O.S. (Lithium sulfide)
Marine pollutant: yes

IATA
UN number: 1340 Class: 4.3 (4.1) Packing group: II
Proper shipping name: Phosphorus pentasulfide
UN number: 2923 Class: 8 (6.1) Packing group: II
Proper shipping name: Corrosive solid, toxic, n.o.s. (Lithium sulfide)
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 Hazards**
Reactivity Hazard, Acute Health Hazard, Chronic Health Hazard

**Massachusetts Right to Know Components**

- Phosphorus pentasulfide: CAS-No. 1314-80-3, Revision Date: 1993-04-24

**Pennsylvania Right to Know Components**

- Phosphorus pentasulfide: CAS-No. 1314-80-3, Revision Date: 1993-04-24

**New Jersey Right to Know Components**

- Phosphorus pentasulfide: CAS-No. 1314-80-3, Revision Date: 1993-04-24

**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.

16. Other Information

**Full text of H-Statements referred to under sections 2 and 3.**

- Acute Tox. Acute toxicity
- Aquatic Acute Acute aquatic toxicity
- Eye Dam. Serious eye damage
- Flam. Sol. Flammable solids
- H228 Flammable solid.
- H260 In contact with water releases flammable gases which may ignite spontaneously.
- H301 Toxic if swallowed
- H302 Harmful if swallowed.
- H302 + H332 Harmful if swallowed or if inhaled
- H314 Causes severe skin burns and eye damage
- H318 Causes serious eye damage
- H332 Harmful if inhaled.
- H400 Very toxic to aquatic life
- Skin Corr. Skin corrosion

The information above is believed to be accurate and represents the best information currently available to us. However, it does not represent any guarantee of the properties of the product. We make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we shall not be held liable for any damage resulting from handling or from contact with the above product. Users should make their own investigations to determine the suitability of the information for their particular purposes.