



LTS Research Laboratories, Inc.  
Safety Data Sheet  
Lithium Germanium Phosphorus Sulfur Chloride

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1. Product and Company Identification

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Trade Name: Lithium Germanium Phosphorus Sulfur Chloride  
Chemical Formula:  $\text{Li}_{10}\text{GeP}_2\text{S}_{12}\text{Cl}$   
Recommended Use: Scientific research and development

Manufacturer/Supplier: LTS Research Laboratories, Inc.  
Street: 37 Ramland Road  
City: Orangeburg  
State: New York  
Zip Code: 10962  
Country: USA  
Tel #: 855-587-2436 / 855-lts-chem

24-Hour Emergency Contact: 800-424-9300 (US & Canada)  
+1-703-527-3887 (International)

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2. Hazards Identification

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Signal Word:

Danger



Hazard Statements:

H228: Flammable solid  
H260: In contact with water releases flammable gases which may ignite spontaneously.  
H301: Toxic if swallowed  
H312: Harmful in contact with skin.  
H318: Causes serious eye damage  
H332: Harmful if inhaled.  
H335: May cause respiratory irritation  
H302 + H332: Harmful if swallowed or if inhaled  
H400: Very toxic to aquatic life.

Precautionary Statements:

P210 Keep away from heat/sparks/flame. No smoking.  
P223: Do not allow contact with water.  
P240: Ground/bond container and receiving equipment  
P241: Use explosion-proof electrical/ ventilating/ lighting/ equipment.  
P261 Avoid breathing dust/fume/vapor  
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/protective clothing/eye protection/face protection  
P231+P232 Handle under inert gas  
P302+P352 IF ON SKIN: Wash with soap and water  
P301+P312+P330 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth.  
P304 + P340 + P312: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.

P362: Take off contaminated clothing and wash before reuse  
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing  
P335 + P334: Brush off loose particles from skin. Immerse in cool water/ wrap in wet bandages.  
P370 + P378: In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.  
P391: Collect spillage.  
P402 + P404: Store in a dry place. Store in a closed container.  
P405: Store locked up  
P501 Dispose of contents/container in accordance with local/regional/national/international regulations

HMIS Health Ratings (0-4):

Health:	3
Flammability:	2
Physical:	2

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### 3. Composition

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Chemical Family:	Ceramic
Additional Names:	Thio-LISICON

Lithium Germanium Phosphorus Sulfur Chloride ( $\text{Li}_{10}\text{GeP}_2\text{S}_{12}\text{Cl}$ ):

Percentage:	100 wt.%
CAS #:	N/A
EC #:	N/A

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### 4. First Aid Procedures

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General Treatment:	Seek medical attention if symptoms persist.
Special Treatment:	None
Important Symptoms:	None

Inhalation:	Remove victim to fresh air. Supply oxygen if breathing is difficult. Keep victim warm. Seek medical attention immediately.
Ingestion:	Do NOT induce vomiting. Never induce vomiting or give anything by mouth to an unconscious person. Seek medical attention.
Skin:	Wash affected area with mild soap and water. Remove any contaminated clothing. Seek medical attention
Eyes:	Flush eyes with water, blinking often for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Seek medical attention.

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### 5. Firefighting Measures

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Flammability:	Flammable Reacts violently with water
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Extinguishing Media:	Do not use water – use $\text{CO}_2$ , sand, extinguishing powder.
Spec. Fire Fighting Procedure:	Use full-face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. See section 10 for decomposition products.

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## 6. Accidental Release Measures

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If Material Is Released/Spilled:	Wear appropriate respiratory and protective equipment specified in special protection information. Isolate spill area and provide ventilation. Vacuum up spill using a high efficiency particulate absolute (HEPA) air filter and place in a closed container for disposal. Take care not to raise dust.
Environmental Precautions:	Isolate runoff to prevent environmental pollution.

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## 7. Handling and Storage

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Handling Conditions:	Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Wash thoroughly after handling.
Storage Conditions:	Store in a cool dry place in a tightly sealed container. Store apart from materials and conditions listed in section 10.
Work/Hygienic Maintenance:	Do not use tobacco or food in work area. Wash thoroughly before eating and smoking. Do not blow dust off clothing or skin with compressed air.
Ventilation:	Provide sufficient ventilation to maintain concentration at or below threshold limit.

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## 8. Exposure Controls and Personal Protection

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Permissible Exposure Limits:	1 mg/m <sup>3</sup> as P <sub>2</sub> S <sub>5</sub> , long-term value
Threshold Limit Value:	N/A
Special Equipment:	None
Respiratory Protection:	Dust Respirator
Protective Gloves:	Nitrile rubber, NBR 0.11mm thick.
Penetration time of glove material:	480 minutes
Eye Protection:	Safety glasses or goggles
Body Protection:	Protective work clothing. Wear close-toed shoes and long sleeves/pants.

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## 9. Physical and Chemical Characteristics

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Color	N/A
Form:	Powder, Granules, Pellets, Sputtering target, Custom parts
Odor:	N/A
Water Solubility:	Reacts violently
Boiling Point:	N/A
Melting Point:	N/A
Flash Point:	N/A
Autoignition Temperature:	N/A
Density:	N/A
Molecular weight:	N/A

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## 10. Reactivity

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Stability:	Stable under recommended storage conditions
Reacts with:	Reactions are violent with Water, Acids, Bromine trifluoride, Oxidizing agents
Incompatible Conditions/Materials:	Alcohols, Acids, Water/Moisture, Oxidizing agents, Heat, flame, sparks, other ignition sources
Hazardous Decomposition Products:	Metal oxide fume, Hydrogen sulfide, Germanium oxides, Phosphorus oxides, Lithium oxide, Sulfur oxide

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## 11. Toxicological Information

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### Potential Health Effects:

Eyes:	Causes serious eye irritation
Skin:	Causes skin irritation
Ingestion:	Toxic
Inhalation:	May cause irritation
Chronic:	N/A

### Signs & Symptoms:

N/A

### Aggravated Medical Conditions:

N/A

### Median Lethal Dose:

1200 mg/kg to mouse by mouth  
240 mg/kg to rat by mouth

### Carcinogen:

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.

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## 12. Ecological Information

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### Aquatic Toxicity:

Toxicity to fish static test EC50 - *Oncorhynchus mykiss* (rainbow trout)- 158 mg/l - 96 h (OECD Test Guideline 203)

Toxicity to daphnia and other aquatic invertebrates EC50 - *Daphnia magna* (Water flea) - 249 mg/l

### Persistent Bioaccumulation Toxicity:

N/A

### Very Persistent, Very Bioaccumulative:

N/A

### Notes:

Do not allow material to be released to the environment without proper governmental permits  
Do not allow undiluted product or large quantities to reach ground water, water course or sewage system.  
Avoid transfer into the environment.  
Very toxic to aquatic life.

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## 13. Disposal Considerations

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Dispose of in accordance with local, state, national, and international regulations.

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## 14. Transportation Data

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### Hazardous:

Hazardous for transportation.



### Hazard Class:

4.3 Substances which in contact with water release flammable gases

### Secondary Class:

6.1 Toxic substances

### Packing Group:

II

### UN Number:

UN3134

### Proper Shipping Name:

Water-reactive solid, n.o.s. (Lithium germanium phosphorus sulfur chloride)

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## 15. Regulatory Information

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Sec 302 Extremely Hazardous:	N/A
Sec 304 Reportable Quantities:	N/A
Sec 313 Toxic Chemicals:	N/A

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## 16. Other Information

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This safety data sheet should be used in conjunction with technical sheets. It does not replace them. The information given is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfill his obligations regarding the use of hazardous products.

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