

SECTION 1: PRODUCT & COMPANY IDENTIFICATION

1.1 Product Identifiers

Product Name / Description: Lithium Phosphorus Sulfide (LPS) powder
CAS Number: A CAS number has not been assigned to this material

1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Identified Uses: Solid electrolyte material for Li-ion batteries

1.3 Details of the Supplier of the Safety Data Sheet

Company: NEI Corporation
Address: 400 Apgar Drive, Unit E | Somerset, NJ 08873 – USA
Phone: +1 (732) 868-3141 Fax: +1 (732) 868-3143
Email: productinfo@neicorporation.com

1.4 Emergency Telephone Numbers

Manufacturer: +1 (732) 868-3142 (9am to 6pm EST / UTC -0500)
U.S. Poison Control Center: +1-800-222-1222
ChemTel (North America): +1 (800) 255-3924 (during transportation only)
ChemTel (International): +1 (813) 248-0585 (during transportation only – collect calls accepted)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the Substance or Mixture

Emergency Overview

Note: The information in this SDS is related to the formulation ingredients of the material and may not reflect all the hazards of the product.

OSHA Hazards: Water Reactive, Toxic by Ingestion, Corrosive, Teratogen, Target Organ Effect, Toxic By Inhalation, Flammable Solid

Target Organs: Lungs, Nerves, Skin

GHS Classification

Skin corrosion (Category 1B) – H314
Serious eye damage (Category 1) – H314
Acute aquatic toxicity (Category 1) – H400
Flammable solids (Category 1) – H228
Substances, which in contact with water, emit flammable gases (Category 1) – H260
Acute toxicity, Oral (Category 3) – H301
Acute toxicity, Inhalation (Category 4) – H332

2.2 Label Elements

GHS Label Elements, including precautionary statements

Pictogram(s): 

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
H314 Causes severe skin burns and eye damage
H332 Harmful if inhaled
H400 Very toxic to aquatic life

Precautionary Statement(s):

- P210 Keep away from heat / sparks / open flames / hot surfaces – No smoking
- P223 Keep away from any possible contact with water because of violent reaction and possible flash fire.
- P231 + P232 Handle under inert gas. Protect from moisture.
- P273 Avoid release to the environment.
- P280 Wear protective gloves, protective clothing, & eye protection.
- P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P310 Immediately call a POISON CENTER or doctor/physician.
- P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
- P422 Store contents under inert gas.

2.3 Other Hazards (not otherwise classified) or not covered in GHS

None

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances

Component	Formula	Synonyms	CAS #	Concentration
Lithium Phosphorus Sulfide	Li _x P _y S _z	LPS	n/a	100%

SECTION 4: FIRST AID MEASURES

4.1 Description of First Aid Measures

General Advice:

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

After Inhalation:

Remove to fresh air. If not breathing give artificial respiration. Seek medical attention.

After Skin Contact:

Wash with soap and copious amounts of water. Seek medical attention if irritation develops.

After Eye Contact:

Immediately flush eyes copiously with water for at least 15 minutes. Seek medical attention.

After Swallowing:

Never give anything by mouth to an unconscious person. Rinse mouth with water. Seek medical attention.

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) To the best of our knowledge the acute and chronic toxicity of this substance is not fully known. See section 8.1 for details. No classification data on carcinogenic properties of this material is available from EPA, IRAC, NTP, OSHA or ACGIH.

4.3 Indication of Any Immediate Medical Attention and Special Treatment Needed

No Data Available

SECTION 5: FIREFIGHTING MEASURES

5.1 Suitable Extinguishing Media

Dry powder

5.2 Special hazards arising from the substance or mixture

Metal oxides, metal sulfides, hydrogen sulfide, phosphorus sulfide, phosphorus oxide, sulfur oxides (SO_x)

5.3 Advice for Firefighters

Wear full protective clothing and self-contained breathing apparatus approved for firefighting. Do not breathe smoke, gases, or vapors generated.

5.4 Further Information

Flammable in the presence of a source of ignition, through friction or retained heat. May burn in presence of air, or emit a flammable gas in the presence of water or water vapor. Keep away from heat / sparks / open flame / hot surface. No smoking.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment, and Emergency Procedures

Use personal protective equipment. Avoid dust formation. Ensure adequate ventilation. Keep unprotected persons away. Avoid breathing dust. Evacuate personnel to safe areas. For more personal protection information, see Section 8.

6.2 Environmental Precautions

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

6.3 Methods and Materials for Containment and Cleaning Up

Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

6.4 Reference to Other Sections

For disposal see Section 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for Safe Handling

Appropriate personal protective equipment should be used at all times. Provide good ventilation or extraction. Avoid contact with eyes and skin. Wash hands thoroughly after handling. For precautions, see section 2.2.

7.2 Conditions for Safe Storage (including any incompatibilities)

Keep container tightly sealed. Store in cool, dry, well-ventilated place. Store under inert gas. Protect from moisture. Never allow product to get in contact with water during storage.

7.3 Specific End Uses

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control Parameters

Occupational exposure limit values are unknown for this product.

8.2 Exposure Controls

Appropriate Engineering Controls

Handle under inert gas. Handle in accordance with good industrial hygiene and safety practice. Keep away from food and beverages. Remove all soiled and contaminated clothing immediately. Wash hands before breaks and at the end of workday.

Personal Protective Equipment

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).

Eye / Face Protection:

Face shield and/or safety glasses should be worn. Use eye protection equipment that is tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Hand 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.

Skin and 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.

Control of Environmental Exposure

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

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on Basic Physical and Chemical Properties

Physical State:	Solid (powder)
Color:	Grey
Odor:	Rotten eggs (sulfur) smell
Odor Threshold:	No Data Available
pH:	No Data Available
Melting Point / Range:	No Data Available
Boiling Point / Range:	No Data Available
Flash Point:	No Data Available
Evaporation Rate:	No Data Available
Flammability:	No Data Available
Upper Explosion Limit:	No Data Available
Lower Explosion Limit:	No Data Available
Vapor Pressure:	No Data Available
Vapor Density:	No Data Available
Relative Density:	No Data Available
Water Solubility:	Insoluble
Partition Coefficient:	No Data Available
Auto-ignition Temperature:	No Data Available
Decomposition Temperature:	No Data Available
Viscosity:	No Data Available

9.2 Other Information

No additional information available

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

No Data Available

10.2 Chemical Stability

Stable under recommended storage conditions (see Section 7.2); handle under inert gas

10.3 Possibility of Hazardous Reactions

Contact with water releases flammable gases which may ignite spontaneously

10.4 Conditions to Avoid

Heat, flames, and sparks. Avoid exposure to moisture

10.5 Incompatible Materials

Avoid contact with water, acids, strong oxidizing agents, or combustible materials which may result in ignition.

10.6 Hazardous Decomposition Products

In the event of fire: Lithium oxides, hydrogen sulfide, phosphorus sulfide, phosphorus oxide, sulfur oxides (SO_x)

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects

Acute Toxicity

Oral LD50: No Data Available
Inhalation LC50: No Data Available
Dermal LD50: No Data Available
Other Information: 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

No Data Available

Carcinogenicity

No Data Available

Reproductive toxicity

No Data Available

Teratogenicity

No Data Available

Specific target organ toxicity - single exposure (Globally Harmonized System)

No Data Available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)

No Data Available

Aspiration hazard

No Data Available

Additional Information

RTECS: No Data Available; To the best of our knowledge, the chemical, physical, and toxicological properties of this product have not been thoroughly investigated.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

The toxicological properties of this material have not been investigated.

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 conducted

12.6 Other Adverse Effects

No Data Available

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods – Product

Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company.

13.2 Waste Treatment Methods – Contaminated Packaging

Dispose of as unused product, clean residue from packaging (do not allow in drains), & dispose of properly.

SECTION 14: TRANSPORT INFORMATION

14.1 Department of Transportation (DOT - US)

UN number: 3131 Class: 4.3 (8) Packing Group: II
Proper Shipping Name: Water-reactive solid, corrosive, n.o.s. (Lithium Phosphorous Sulfide)

14.2 International Maritime Dangerous Goods (IMDG)

UN number: 3131 Class: 4.3 (8) Packing Group: II
Proper Shipping Name: Water-reactive solid, corrosive, n.o.s. (Lithium Phosphorous Sulfide)

14.3 International Air Transport Association (IATA)

UN number: 3131 Class: 4.3 (8) Packing Group: II
Proper Shipping Name: Water-reactive solid, corrosive, n.o.s. (Lithium Phosphorous Sulfide)

14.4 Additional Transport Information

HS Code (first 6 digits) / HTS-US (9 digits) #: 2830.90.9000

SECTION 15: REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture

No Data Available

15.2 Chemical Safety Assessment

A chemical safety assessment was not carried out for this product.

SECTION 16: OTHER INFORMATION

REACH Number

A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

HMIS Classification

Health Hazard: 3
Flammability Hazard: 1
Physical Hazard: 1

NFPA Rating

Health Hazard: 3
Flammability Hazard: 1
Reactivity Hazard: 1

Further Information

NEI has attempted to provide current and accurate information to the best of its knowledge. NEI makes no representations regarding the accuracy or completeness of the information and assumes no liability for any loss, damage, injury of any kind which may result from or arise out of the use of or reliance on the information by any person. Employers should use this information only as a supplement to other information gathered by them and should make independent judgment of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty and any use of the product not in conformance with this Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

– END OF SDS –