

SAFETY DATA SHEET

1. PRODUCT

1.1 Product identifiers

Name: Lithium hexafluorophosphate

CAS-No.: 21324-40-3

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 3), H301


Skin corrosion (Category 1A), H314

Serious eye damage (Category 1), H318

Specific target organ toxicity - repeated exposure, Inhalation (Category 1), Bone, Teeth, H372

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

2.2 GHS Label elements, including precautionary statements

| | |
|----------------------------|--|
| Pictogram |  |
| Signal word | Danger |
| Hazard statement(s) | H301 Toxic if swallowed. H314 Causes severe skin burns and eye damage. H318 Causes serious eye damage. H372 Causes damage to organs (Bone, Teeth) through prolonged or repeated exposure if inhaled. |
| Precautionary statement(s) | P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray. P264 Wash skin thoroughly after handling. P270 Do not eat, drink or smoke when using this product. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. P301 + P310 + P330 IF SWALLOWED: Immediately call a POISON CENTER/doctor. Rinse mouth. P301 + P330 + P331 IF SWALLOWED: 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 + P310 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/ physician. 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/doctor. P314 Get medical advice/ attention if you feel unwell. P363 Wash contaminated clothing before reuse. P405 Store locked up. P501 Dispose of contents/ container to an approved waste disposal plant. |

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

Strong hydrogen fluoride-releaser

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Formula: F₆LiP
Molecular weight: 151.91 g/mol
CAS-No.: 21324-40-3
EC-No.: 244-334-7

Hazardous components

| Component | Classification | Concentration |
|--|--|---------------|
| Lithium hexafluorophosphate(1-) | | |
| | Acute Tox. 3; Skin Corr. 1A; Eye Dam. 1; STOT RE 1; H301, H314, H372 | <= 100 % |

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

4. FIRST AID MEASURES

4.1 Description of first aid measures

| |
|--|
| General advice |
| Hydrofluoric (HF) acid burns require immediate and specialized first aid and medical treatment. Symptoms may be delayed up to 24 hours depending on the concentration of HF. After decontamination with water, further damage can occur due to penetration/absorption of the fluoride ion. Treatment should be directed toward binding the fluoride ion as well as the effects of exposure. Skin exposures can be treated with a 2.5% calcium gluconate gel repeated until burning ceases. More serious skin exposures may require subcutaneous calcium gluconate except for digital areas unless the physician is experienced in this technique, due to the potential for tissue injury from increased pressure. Absorption can readily occur through the subungual areas and should be considered when undergoing decontamination. Prevention of absorption of the fluoride ion in cases of ingestion can be obtained by giving milk, chewable calcium carbonate tablets or Milk of Magnesia to conscious victims. Conditions such as hypocalcemia, hypomagnesemia and cardiac arrhythmias should be monitored for, since they can occur after exposure. 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. Consult a physician. |
| 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. First treatment with calcium gluconate paste. |
| 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

4.2 Indication of any immediate medical attention and special treatment needed

No data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

No data available

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.

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.

6.3 Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. 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

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. 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.

Provide appropriate exhaust ventilation at places where dust is formed.

For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place.

Handle and store under inert gas. Hydrolyses readily. Air and moisture sensitive. Keep in a dry place. Do not store in glass

Storage class (TRGS 510): Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects

7.3 Specific end use(s)

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

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

| Component | CAS-No. | Value | Control parameters | Basis |
|---------------------------------|------------|---------------------------------|--------------------|---|
| Lithium hexafluorophosphate(1-) | 21324-40-3 | TWA | 2.500000 mg/m3 | USA. Occupational Exposure Limits (OSHA) -Table Z-1 Limits for Air Contaminants |
| | Remarks | CAS number varies with compound | | |
| | | TWA | 2.500000 mg/m3 | USA. Occupational Exposure Limits (OSHA) -Table Z-2 |
| | | Z37.28-1969 | | |
| | | TWA | 2.500000 mg/m3 | USA. ACGIH Threshold Limit Values (TLV) |

| Component | CAS-No. | Value | Control parameters | Basis |
|-----------|---------|---|--------------------|---|
| | | Bone damage Fluorosis Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Not classifiable as a human carcinogen varies | | |
| | | TWA | 2.500000 mg/m3 | USA. ACGIH Threshold Limit Values (TLV) |
| | | Bone damage Fluorosis Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Not classifiable as a human carcinogen varies | | |
| | | TWA | 2.5 mg/m3 | USA. Occupational Exposure Limits (OSHA) -Table Z-1 Limits for Air Contaminants |
| | | CAS number varies with compound | | |
| | | TWA | 2.5 mg/m3 | USA. ACGIH Threshold Limit Values (TLV) |
| | | Bone damage Fluorosis Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Not classifiable as a human carcinogen varies | | |
| | | PEL | 2.5 mg/m3 | California permissible exposure limits for chemical contaminants (Title 8, Article 107) |

Biological occupational exposure limits

| Component | CAS-No. | Parameters | Value | Biological specimen | Basis |
|---------------------------------|------------|--|--------------|---------------------|--|
| Lithium hexafluorophosphate(1-) | 21324-40-3 | Fluoride | 3.0000 mg/g | Urine | ACGIH -Biological Exposure Indices (BEI) |
| | Remarks | Prior to shift (16 hours after exposure ceases) | | | |
| | | Fluoride | 10.0000 mg/g | Urine | ACGIH -Biological Exposure Indices (BEI) |
| | | End of shift (As soon as possible after exposure ceases) | | | |
| | | Fluoride | 3.0000 mg/g | Urine | ACGIH -Biological Exposure Indices (BEI) |
| | | Prior to shift (16 hours after exposure ceases) | | | |
| | | Fluoride | 10.0000 mg/g | Urine | ACGIH -Biological Exposure Indices (BEI) |
| | | End of shift (As soon as possible after exposure ceases) | | | |
| | | Fluoride 2 mg/l Urine ACGIH -Biological Exposure Indices (BEI) | | | |
| | | Prior to shift (16 hours after exposure ceases) | | | |
| | | Fluoride | 3 mg/l | Urine | ACGIH -Biological Exposure Indices (BEI) |
| | | End of shift (As soon as possible after exposure ceases) | | | |

8.2 Exposure controls

Appropriate engineering controls

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

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 | <p>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.</p> <p>Full contact Material: Nitrile rubber Minimum layer thickness: 0.11 mm Break through time: 480 min Material tested: Dermatrill® (KCL 740 / Aldrich Z677272, Size M)</p> <p>Splash contact Material: Nitrile rubber Minimum layer thickness: 0.11 mm Break through time: 480 min Material tested: Dermatrill® (KCL 740 / Aldrich Z677272, Size M) data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374</p> <p>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.</p> |
| 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 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. |
|-----------------------------------|--|

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

| | |
|--|--|
| Appearance | Form: powder Colour: white |
| Odour | No data available |
| Odour Threshold | No data available |
| pH | No data available |
| Melting point/freezing point | Melting point/range: 200 °C (392 °F) - dec. |
| Initial boiling point and boiling range | No data available |
| Flash point | Not applicable |
| Evaporation rate | No data available |
| Flammability (solid, gas) | The product is not flammable. - Flammability (solids) |
| Upper/lower flammability or explosive limits | No data available |
| Vapour pressure | No data available |
| Vapour density | No data available |
| Relative density | 2.83 g/cm ³ at 25 °C (77 °F) |
| Water solubility | No data available |
| Partition coefficient: n-octanol/water | No data available |
| Auto-ignition temperature | No data available |
| Decomposition temperature | > 175 °C (> 347 °F) - |
| Viscosity | No data available |
| Explosive properties | Not explosive |
| Oxidizing properties | The product has been shown not to be oxidizing in a test following Directive |

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

No data available

10.4 Conditions to avoid

Exposure to moisture

Reacts dangerously with glass.

10.5 Incompatible materials

Strong oxidizing agents, Strong acids/glass

10.6 Hazardous decomposition products

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

Other decomposition products - No data available

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

| |
|---|
| Acute toxicity |
| LD50 Oral - Rat - female - > 50 - 300 mg/kg (OECD Test Guideline 423) Inhalation: No data available Dermal: No data available No data available |
| Skin corrosion/irritation |
| Skin - Human Result: Causes severe burns. (Skin corrosion: Human Skin Model Test) |
| Serious eye damage/eye irritation |
| No data available |
| Respiratory or skin sensitisation |
| in vivo assay - Mouse Result: Does not cause skin sensitisation. (OECD Test Guideline 429) |
| Germ cell mutagenicity |
| Ames test S. typhimurium Result: negative |
| 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 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 |
| Repeated dose toxicity - No data available(Lithium hexafluorophosphate(1-)) RTECS: Not available Fluoride ion can reduce serum calcium levels possibly causing fatal hypocalcemia. burning sensation, Cough, wheezing, laryngitis, Shortness of breath, spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. |

12. ECOLOGICAL INFORMATION

12.1 Toxicity

| | |
|---|---|
| Toxicity to fish | No data available |
| Toxicity to daphnia and other aquatic invertebrates | static test EC50 - Daphnia magna (Water flea) - > 100 mg/l - 48 h (OECD Test Guideline 202) |
| Toxicity to algae | static test EC50 - Pseudokirchneriella subcapitata - > 100 mg/l - 76 h (OECD Test Guideline 201) |
| Toxicity to bacteria | Respiration inhibition EC50 - Sludge Treatment - > 1,000 mg/l - 3 h (OECD Test Guideline 209) |

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. 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. |
| Contaminated packaging |
| Dispose of as unused product. |

14. TRANSPORT INFORMATION

DOT (US)

UN number: 2923 Class: 8 (6.1) Packing group: I

Proper shipping name: Corrosive solids, toxic, n.o.s. (Lithium hexafluorophosphate(1-))

Reportable Quantity (RQ):

Poison Inhalation Hazard: No

IMDG

UN number: 2923 Class: 8 (6.1) Packing group: I EMS-No: F-A, S-B

Proper shipping name: CORROSIVE SOLID, TOXIC, N.O.S. (Lithium hexafluorophosphate(1-))

IATA

UN number: 2923 Class: 8 (6.1) Packing group: I

Proper shipping name: Corrosive solid, toxic, n.o.s. (Lithium hexafluorophosphate(1-))

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

Acute Health Hazard

Massachusetts Right To Know Components

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

Pennsylvania Right To Know Components

| Component | CAS-No. | Revision Date |
|---------------------------------|------------|---------------|
| Lithium hexafluorophosphate(1-) | 21324-40-3 | 2008-06-01 |

New Jersey Right To Know Components

| Component | CAS-No. | Revision Date |
|---------------------------------|------------|---------------|
| Lithium hexafluorophosphate(1-) | 21324-40-3 | 2008-06-01 |

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

Eye Dam. Serious eye damage

H301 Toxic if swallowed.

H314 Causes severe skin burns and eye damage.

H318 Causes serious eye damage.

H372 Causes damage to organs through prolonged or repeated exposure if inhaled.

Skin Corr. Skin corrosion

STOT RE Specific target organ toxicity - repeated exposure

HMIS Rating

Health hazard: 3

Chronic Health Hazard:

Flammability: 0

Physical Hazard 0

NFPA Rating

Health hazard: 3

Fire Hazard: 0

Reactivity Hazard: 0
