1. Product and Company Identification

Product Name: Lithium Hexafluorophosphate in EC/EMC 3:7
Catalog Codes: EQ-LBC-3015B-LD
CAS#: 21324-40-3
Identified uses: Laboratory chemicals, Synthesis of substances

Chemical Formula: LiPF₆

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 Liquids (Category 3), H226
Acute Toxicity, Oral (Category 4), H302
Skin corrosion (Category 1A), H314
Serious eye damage (Category 1), H318
Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335
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.

HMIS Rating
Health hazard: 3
Chronic Health Hazard: 3
Flammability: 3
Physical Hazard: 0

NFPA Rating
Health hazard: 3
Fire Hazard: 3
Reactivity Hazard: 0
GHS Label elements, including precautionary statements

<table>
<thead>
<tr>
<th>Pictogram</th>
<th><img src="image" alt="Pictogram" /></th>
</tr>
</thead>
<tbody>
<tr>
<td>Signal</td>
<td>Danger</td>
</tr>
<tr>
<td>Hazard statement(s)</td>
<td></td>
</tr>
<tr>
<td>H226</td>
<td>Flammable liquid and vapor.</td>
</tr>
<tr>
<td>H302</td>
<td>Harmful if swallowed.</td>
</tr>
<tr>
<td>H314</td>
<td>Causes severe skin burns and eye damage.</td>
</tr>
<tr>
<td>H318</td>
<td>Causes serious eye damage.</td>
</tr>
<tr>
<td>H335</td>
<td>May cause respiratory irritation.</td>
</tr>
<tr>
<td>H372</td>
<td>Causes damage to organs (Bone, Teeth) through prolonged or repeated exposure if inhaled.</td>
</tr>
<tr>
<td>Precautionary statement(s)</td>
<td></td>
</tr>
<tr>
<td>P210</td>
<td>Keep away from heat/sparks/open flames/hot surfaces. No smoking.</td>
</tr>
<tr>
<td>P233</td>
<td>Keep container tightly closed.</td>
</tr>
<tr>
<td>P240</td>
<td>Ground/bond container and receiving equipment.</td>
</tr>
<tr>
<td>P241</td>
<td>Use explosion-proof electrical/ventilating/lighting/equipment.</td>
</tr>
<tr>
<td>P242</td>
<td>Use only non-sparking tools.</td>
</tr>
<tr>
<td>P243</td>
<td>Take precautionary measures against static discharge.</td>
</tr>
<tr>
<td>P260</td>
<td>Do not breathe dust/fume/gas/mist/vapors/spray.</td>
</tr>
<tr>
<td>P264</td>
<td>Wash skin thoroughly after handling.</td>
</tr>
<tr>
<td>P270</td>
<td>Do not eat, drink or smoke when using this product.</td>
</tr>
<tr>
<td>P271</td>
<td>Use only outdoors or in a well-ventilated area.</td>
</tr>
<tr>
<td>P280</td>
<td>Wear protective gloves/protective clothing/eye protection/face protection.</td>
</tr>
<tr>
<td>P301 + P312 + P330</td>
<td>IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.</td>
</tr>
<tr>
<td>P301 + P330 + P331</td>
<td>IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.</td>
</tr>
<tr>
<td>P303 + P361 + P353</td>
<td>IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.</td>
</tr>
<tr>
<td>P304 + P340 + P310</td>
<td>IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.</td>
</tr>
<tr>
<td>P305 + P351 + P338 + P310</td>
<td>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.</td>
</tr>
<tr>
<td>P314</td>
<td>Get medical advice/attention if you feel unwell.</td>
</tr>
<tr>
<td>P363</td>
<td>Wash contaminated clothing before reuse.</td>
</tr>
<tr>
<td>P370 + P378</td>
<td>In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.</td>
</tr>
<tr>
<td>P403 + P233</td>
<td>Store in a well-ventilated place. Keep container tightly closed.</td>
</tr>
<tr>
<td>P403 + P235</td>
<td>Store in a well-ventilated place. Keep cool.</td>
</tr>
<tr>
<td>P405</td>
<td>Store locked up.</td>
</tr>
<tr>
<td>P501</td>
<td>Dispose of contents/container to an approved waste disposal plant.</td>
</tr>
</tbody>
</table>

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

Strong hydrogen fluoride releaser
3. Composition/Information on Ingredients

**Substance Name:**
Lithium hexafluorophosphate in Ethylene carbonate/Ethyl methyl carbonate

<table>
<thead>
<tr>
<th>Ingredient Name</th>
<th>CAS#</th>
<th>SARA 313:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithium hexafluorophosphate</td>
<td>21324-40-3</td>
<td>No</td>
</tr>
<tr>
<td>Ethylene carbonate</td>
<td>96-49-1</td>
<td>No</td>
</tr>
<tr>
<td>Ethyl methyl carbonate</td>
<td>131373-97-2</td>
<td>No</td>
</tr>
</tbody>
</table>

**Mixtures**

- **Synonyms**: 1.0M LiPF6 EC/EMC 3:7
- **Formula**: LiPF6

**Hazardous Components**

<table>
<thead>
<tr>
<th>Ingredient Name</th>
<th>CAS-NO.</th>
<th>Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylene carbonate</td>
<td>96-49-1</td>
<td>Acute Tox. 4; Eye Irrit. 2A; STOT RE 2; H302, H319, H373</td>
</tr>
<tr>
<td>Ethyl methyl carbonate</td>
<td>131373-97-2</td>
<td>Flam. Liq. 3; Skin Irrit. 2, Eye Irrit. 2A; STOT SE 3; H226, H315, H319, H335</td>
</tr>
<tr>
<td>Lithium hexafluorophosphate</td>
<td>21324-40-3</td>
<td>Acute Tox. 3; Skin Corr. 1A; Eye Dam. 1; STOT RE 1; H301, H314, H372</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. 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.

**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

4.3 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 mixture
Carbon oxides, oxides of phosphorus, Hydrogen fluoride, Lithium oxides

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

5.4 Further Information
Use water spray to cool unopened containers.

6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas. 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
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

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 inhalation of vapor or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the buildup of electrostatic charge. 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. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Do not store in glass. Air and moisture sensitive. Hygroscopic. Handle and store under inert gas. Do not store in glass.
Storage class (TRGS 510): Flammable liquids

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>Lithium hexafluorophosphate(1-)</td>
<td>21324-40-3</td>
<td>TWA</td>
<td>2.500000 mg/m³</td>
<td>USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
<td></td>
<td></td>
<td>CAS number varies with compound</td>
</tr>
<tr>
<td>TWA</td>
<td></td>
<td></td>
<td>2.500000 mg/m³</td>
<td>USA. Occupational Exposure Limits (OSHA) - Table Z-2</td>
</tr>
<tr>
<td>Z37.28-1969</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TWA</td>
<td></td>
<td></td>
<td>2.500000 mg/m³</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td>Bone damage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluorosis Substances for which there is a Biological Exposure Index or Indices (see BEI® section)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not classifiable as a human carcinogen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PEL</td>
<td></td>
<td></td>
<td>2.500000 mg/m³</td>
<td>California permissible exposure limits for chemical contaminants</td>
</tr>
</tbody>
</table>

Hazardous components without workplace control parameters

Biological occupational exposure limits

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Parameters</th>
<th>Value</th>
<th>Biological Specimen</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithium hexafluorophosphate(1-)</td>
<td>21324-40-3</td>
<td>Fluoride</td>
<td>2 mg/l</td>
<td>Urine</td>
<td>ACGIH - Biological Exposure Indices (BEI)</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Prior to shift (16 hours after exposure ceases)</td>
</tr>
<tr>
<td>Fluoride</td>
<td></td>
<td></td>
<td>3.0000 mg/g</td>
<td>Urine</td>
<td>ACGIH - Biological Exposure Indices (BEI)</td>
</tr>
<tr>
<td>End of shift (As soon as possible after exposure ceases)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8.2 Exposure controls

**Appropriate engineering controls**

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

**Personal protective equipment**

**Eye/face protection**

Tightly fitting safety goggles. Faceshield (8-inch minimum). 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.
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 respirator with multipurpose combination (US) or type ABEK (EN 14387) 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
a) Appearance
   Liquid
b) Odor
   No data available
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
   26.1°C (79.0°F)
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**
Vapors may form explosive mixture with air.

10.4 **Conditions to avoid**
Heat, flames and sparks.
Reacts dangerously with glass.

10.5 **Incompatible materials**
Strong oxidizing agents, Acids, Bases, Reducing agents, Steel (all types and surface treatments) glass

10.6 **Hazardous decomposition products**
Hazardous decomposition products formed under fire conditions. - Carbon oxides, Oxides of phosphorus, Hydrogen fluoride, Lithium oxides
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**
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
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.
Fluoride ion can reduce serum calcium levels possibly causing fatal hypocalcemia
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
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. 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: 2920 Class: 8 (3) Packing group: I
Proper shipping name: Corrosive liquids, flammable, N.O.S. (Lithium hexafluorophosphate, Ethyl methyl carbonate)
Poison Inhalation Hazard: No

IMDG
UN number: 2920 Class: 8 (3) Packing group: II EMS-No: F-E, S-C
Proper shipping name: CORROSIVE LIQUID, FLAMMABLE, N.O.S. (Lithium hexafluorophosphate, Ethyl methyl carbonate)

IATA
UN number: 2920 Class: 8 (3) Packing group: II
Proper shipping name: Corrosive liquid, flammable, N.O.S. (Lithium hexafluorophosphate, Ethyl methyl carbonate)
ALL INNER PACKAGINGS MUST BE PACKED WITH ABSORBANT MATERIAL IN TIGHTLY CLOSED METAL OR RIGID PLASTIC RECEPTACLES, PLASTIC INNER PACKAGINS MUST BE IN METAL CANS FOR EXPORT OUT OF THE US

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
Fire Hazard, Acute Health Hazard

Massachusetts Right to Know Components
Ethylene carbonate 96-49-1 1993-04-24

Pennsylvania Right to Know Components
Ethylene carbonate 96-49-1 1993-04-24
Ethyl methyl carbonate 1313734-97-2
Lithium hexafluorophosphate(1-) 21324-40-3 2008-06-01

New Jersey Right to Know Components
Ethylene carbonate 96-49-1 1993-04-24
Ethyl methyl carbonate 1313734-97-2
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
H226 Flammable liquid and vapor.
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H335 May cause respiratory irritation
H372 Causes damage to organs through prolonged or repeated exposure if inhaled.

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.