



SAFETY DATA SHEET

LITHIUM ORTHOPHOSPHATE, TERTIARY

1. Identification of the Substance/Mixture and of the Company/Undertaking:

- 1.1 **Product Identifier:** Lithium Orthophosphate, Tertiary
- 1.1.1 **Substances** Not applicable.
- Alternate names and trade name** Catalytic Lithium Phosphate, Trilithium Phosphate, Tribasic Lithium Phosphate
- 1.1.2 **Mixture name:** Lithium Orthophosphate, Tertiary
- 1.2 **Relevant Identified Uses of the Substance or Mixture and Uses Advised Against:**
Formulation and chemical synthesis in industrial manufacturing operations;
Additive for preparations and articles for industrial and consumer use;
Active ingredient in pharmaceutical preparations.
Do not use for private purposes (household).

1.3 **Details of the Supplier of the Safety Data Sheet**

North America

FMC Corporation
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Charlotte, NC 28208
Phone: +1.704.426.5300
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1.888.lithium

Europe

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Commercial Road
Bromborough, Merseyside
CH62 3NL, England
Phone: +44.151. 334.8085
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Asia Pacific

FMC Asia Innovation Center
No 3 Building No. 4560
Jinke Road
Shanghai, China 201203
T: +86.21.2067.5888

Email: lithium.info@fmc.com

Web: www.fmclithium.com

1.4 **Emergency Telephone Number:**

North America

CHEMTREC: +1.800.424.9300
+1.703.527.3887
Plant: +1.704.629.5361
Medical: +1.303.595.9048

Europe

24 hr Specialist advice number:
CHEMTREC: +44 870 8200418

Asia Pacific

Phone: +86.21.2067.5888

2. Hazards Identification

2.1 **Classification of the Substance or mixture:**

2.1.1 GHS Classification [EC Regulation No 1272/2008 and US OSHA regulations]

Acute Toxicity, Category 4

Reproductive toxicity; Category 1B

2.2.2 EC: Classification according to 67/548/EEC or 1999/45/EC [DSD/DPD]

Xn, R22; Repr. Cat 2, R60-61

2.2 **Label Elements:**

2.2.3 Hazard Pictograms



2.2.4 Signal Word:

Danger

Hazard Statement

Harmful if swallowed

H302

May damage fertility. May damage the unborn child.

H360FD

Precautionary Statement(s):

Wash hands thoroughly after handling.

P264

Use personal protective equipment as required.

P281

Obtain special instructions before use.

P201

Do not handle until all safety precautions have been read and understood.

P202

Do not eat, drink or smoke when using this product.

P270

IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel

P301 + P312

unwell.

Rinse mouth.

P330

Additional Precautionary Statement(s):

IF exposed or concerned: Get medical advice / attention.

P308 + P313

Store locked up.

P405

Dispose of contents/ container to an approved waste disposal plant

P501

2.3 Other Hazards

None.

3. Composition / Information on Ingredients

3.1 Substances Not applicable.

3.2 Mixtures

3.2.1 GHS Classification [EC: Regulation No 1272/2008; US: OSHA regulations]

Chemical Name	CAS #	EC No	EC Index No	REACH Reg No	Wt. %	Classification, Hazard Statement Codes	
Lithium orthophosphate, tertiary	10377-52-3	233-823-0	not avail.	not available	99	Acute Tox. 4	H302
lithium tetraborate	12007-60-2	234-514-3	not avail.	not available	<3	Acute Tox. 4 Repr. 1B	H302 H360FD

3.2.2 EC: Classification according to 67/548/EEC or 1999/45/EC [DSD/DPD]

Chemical Name	CAS #	EC No	Wt. %	Symbols	R-phrases
Lithium orthophosphate, tertiary	10377-52-3	233-823-0	99	Xn	R22
lithium tetraborate	12007-60-2	234-514-3	<3	Xn R60-61	R22 Repr. Cat 2

(see Section 16 for abbreviations and R-phrase text)

4. First Aid Measures

4.1 Description of First Aid Measures

EYES: Flush with water for at least 15 minutes. If irritation occurs and persists, contact a medical doctor.

SKIN: Remove contaminated clothing and thoroughly wash with soap and water. If irritation occurs and persists, contact a medical doctor.

INGESTION: Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. If any discomfort persists, obtain medical attention.

INHALATION: Remove to fresh air. If breathing difficulty or discomfort occurs and persists, obtain medical attention.

4.2 Most Important Symptoms and effects, both acute and delayed

This product is expected to have low acute oral toxicity. It may be irritating to the skin, eyes, respiratory tract and mucous membranes. Contains a borate salt, which is considered a reproductive toxin.

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

Notes to medical doctor:

Effects of overexposure to lithium ion are well documented in the medical literature. Low toxicity is anticipated. In such cases, standard protocols for overdosage are suggested. Treatment is otherwise symptomatic and supportive.

5. Fire-Fighting Measures

5.1 Extinguishing media Dry chemical, CO₂, water spray or regular foam.

5.2 Special hazards arising from the substance or mixture

Hazardous combustion products None

General Hazard No known physical hazard, non-combustible.

Properties contributing to

<u>Flammability</u>	None
<u>Flashpoint</u>	Not applicable
<u>Flammable limits in air</u>	Upper: Not available Lower: Not available.
<u>Auto ignition temperature</u>	Not applicable
<u>Sensitivity to static discharge</u>	Not applicable
<u>Sensitivity to static impact</u>	Not applicable

5.3 Advice for fire-fighters

Wear full protective clothing and self-contained breathing apparatus (SCBA) approved for fire fighting. This is necessary to protect against the hazards of heat, products of combustion and oxygen deficiency. Do not breathe smoke, gases or vapors generated.

COMMENTS:

(See Section 10, Stability and Reactivity)

6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Before cleanup measures begin, review the entire SDS with particular attention to Section 2, Hazards Identification; and Section 8, Exposure Controls/Personal Protection.

6.2 Environmental precautions

Do not wash into drains. Dispose of at qualified waste disposal facility.

6.3 Methods and material for containment and cleaning up

Sweep up and place in suitable container. Dispose of waste according to local and Federal laws and regulations.

6.4 Reference to other sections

Before cleanup measures begin, review the entire SDS with particular attention to Section 2, Hazards Identification; and Section 8, Exposure Controls/Personal Protection.

6.5 Additional information

Not specified.

7. Handling and Storage

7.1 Precautions for safe handling

Avoid contact with eyes, skin or clothing. Use with adequate ventilation. Wear safety glasses or goggles and rubber gloves. Wash thoroughly after handling.

7.2 Conditions for safe storage, including any incompatibilities

Keep container closed.

7.3 Specific end use(s)

Not available. Chemical safety assessment has not been completed for this product.

8. Exposure Controls / Personal Protection

8.1 Control parameters

DNEL

Not available

PNEC

Not available.

EXPOSURE LIMITS

<u>Chemical Name</u>	EU		EH40 (UK WEL)		USA (ACGIH)		USA (OSHA)	
	TWA	STEL	TWA	STEL	TWA	STEL/Ceiling	PEL	STEL/Ceiling
Lithium orthophosphate	none*		none*		none*		none*	

* No occupational exposure limit value

8.2 Exposure controls

Engineering controls:

Use local exhaust ventilation to keep airborne concentrations below exposure limits.

Personal protective equipment

Eyes and Face:

Safety glasses or goggles

Respiratory:

When engineering controls are not adequate, wear a respirator approved for

protection against inorganic dusts.

US: NIOSH or MSHA approved

Europe: CEN Class P type

Protective Clothing:

Gloves: Nitrile/Neoprene/PVC/Natural Rubber (permeation breakthrough not detected during 6 hr test)

These glove recommendations should not be used as the absolute basis for glove selection. Actual in-use conditions may vary glove performance from the controlled conditions of laboratory tests. Factors such as concentration and temperature, glove thickness and glove reuse, may affect performance. Other glove requirements, such as length, dexterity, cut, abrasion, puncture and snag resistance, or glove grip need to be considered in making your final selection.

Other: Not specified.

Work Hygienic Practices:

Quick-drench eyewash and safety shower.

9. Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

<u>Appearance:</u>	White powder
<u>Odor:</u>	Odorless
<u>Odor threshold:</u>	None
<u>pH:</u>	Not available
<u>Melting point:</u>	1205°C (2201°F)
<u>Boiling point:</u>	Not applicable
<u>Flash point:</u>	Not applicable
<u>Evaporation rate(butyl acetate = 1):</u>	Not applicable
<u>Flammability:</u>	Not combustible
<u>Flammable limits:</u>	Not applicable
<u>Vapor pressure:</u>	Not applicable
<u>Vapor density (air = 1):</u>	Not applicable
<u>Specific gravity:</u>	2.5 g/cc
<u>Solubility in water:</u>	% by wt. @ 20°C (68°F): 0.03
<u>Partition coefficient n-octanol/ water:</u>	Not available
<u>Autoignition temperature:</u>	Not applicable
<u>Decomposition temperature:</u>	Not available
<u>Viscosity:</u>	Not applicable
<u>Explosive properties:</u>	Not explosive
<u>Oxidizing properties:</u>	Not an oxidizer

9.2 Other information

<u>Self-reactive properties</u>	Does not meet classification criteria.
<u>Pyrophoric properties</u>	Does not meet classification criteria.
<u>Self-heating properties</u>	Does not meet classification criteria.
<u>Water reactive properties</u>	Does not meet classification criteria.
<u>Corrosive to metals</u>	Does not meet classification criteria.
<u>Molecular weight:</u>	115.79

10. Stability and Reactivity

10.1 <u>Reactivity</u>	Generally stable and non reactive
10.2 <u>Chemical stability</u>	Stable
10.3 <u>Possibility of hazardous reaction</u>	Hazardous polymerization will not occur.
10.4 <u>Conditions to avoid</u>	None
10.5 <u>Incompatible materials</u>	None
10.6 <u>Hazardous decomposition products</u>	None

11. Toxicological Information

11.1 Information on toxicological effects

(a) acute toxicity	No information available.
(b) skin corrosion/irritation	Classified as not irritating to skin on the basis of lithium orthophosphate

(c) serious eye damage/irritation	Classified as irritant to eyes on the basis of lithium orthophosphate
(d) respiratory/skin sensitisation	Classed as not sensitizing to skin on the basis of lithium orthophosphate.
(e) germ cell mutagenicity	Classified as not mutagenic based on lithium orthophosphate.
(f) carcinogenicity	Classified as not carcinogenic based on lithium orthophosphate.
(g) reproductive toxicity	Classified as Reproductive toxin, Category 1B based on 3% maximum lithium tetraborate concentration.
(h) STOT-single exposure	Classified as not causing organ damage based on lithium orthophosphate.
(i) STOT-repeated exposure	Classified as not causing organ damage on repeat exposure based on lithium orthophosphate.
(j) aspiration hazard	Lithium orthophosphate, a solid, does not present an aspiration hazard.

The lithium salts, lithium carbonate and lithium hydroxide, have been extensively studied for EU REACH registration.

Acute Effects From Overexposure:

No data available for the formulation.
No envisaged effects other than acute effects from local irritation

Chronic Effects From Overexposure:

Borate salts are considered reproductive toxins, Category 1B, and are present at a maximum level of 3 wt%.

Carcinogenicity Listings

EH40: Not listed.
IARC: Not listed.
NTP: Not listed.
OSHA: Not considered a carcinogen under OSHA.
ACGIH: Borate compounds are listed as A4 – Not classifiable as a Human Carcinogen.

12. Ecological Information

- 12.1 **Toxicity:** No classification
Based on the available data, the classification criteria are not met.
- 12.2 **Persistence and degradability**
Inorganic salt.
- 12.3 **Bioaccumulative potential**
Inorganic. Lithium salts are not bioaccumulative
- 12.4 **Mobility in soil**
No data available for the product.
- 12.5 **Results of PBT and vPvB assessment**
Not available for the product
- 12.6 **Other adverse effects**
None

13. Disposal Considerations

- 13.1 **Waste treatment methods**
Use a qualified industrial waste disposal facility. Dispose of waste according to local and Federal laws and regulations.

14. Transport Information

- 14.1 **UN Number** None
- 14.2 **UN proper shipping name (IMDG, ICAO, ADR, DOT)** None
- 14.3 **Transport hazard class(es) (IMDG, ICAO, ADR, DOT)** Based on available data, the classification criteria are not met.
- 14.4 **Packing group (IMDG, ICAO, ADR, DOT)** None
- 14.5 **Environmental hazards** Based on available data, the classification criteria are not met.
- 14.6 **Special precautions for user** None

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

None

15. Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EUROPEAN UNION:

German Wassergefährdungsklasse (water hazard class)

Lithium orthophosphate, tertiary	1
Lithium tetraborate	1

UNITED STATES:

Section 311 Hazard Category (40 CFR 370):
Section 313 Reportable Ingredients (40 CFR 372):

Immediate (acute) health hazard,
This product does not contain a toxic chemical subject to the reporting requirements of Section 313 of Emergency Planning and Community Right-To-Know Act of 1986.
Not listed

Section 302 Extremely Hazardous Substances (40 CFR 355):

Not listed

CERCLA Hazardous Substance (40 CFR 302.4):

TSCA Sec 12b Export Notification:

This product is not subject to TSCA 12 (b) Export Notification Requirements.

NFPA Rating:

Health: 1 Flammability: 0 Reactivity: 0 Special: None

INTERNATIONAL INVENTORY STATUS:

<u>Inventory/Country</u>	<u>Product Status</u>
EINECS (EU)	Listed
TSCA (US)	Listed
ECL (Korea)	Listed
DSL (Canada)	Not listed. Lithium orthophosphate is on the NDSL.

15.2 Chemical Safety Assessment

A Chemical Safety Assessment has not been completed for this product.

16. Other Information

European Union:

R Phrases:

Harmful if swallowed	R22
May impair fertility	R60
May cause harm to the unborn child	R61

List of Abbreviations used in this SDS:

PBT	Persistent, Bioaccumulative and Toxic
vPvB	very Persistent, very Bioaccumulative
PEC	Predicted environmental concentration
PNEC	Predicted no effect concentration
DNEL	Derived no effect level

REVISION SUMMARY: Revision #1. Format modified. Sections 1-16 changed. Hazard classification revised. Regular review completed.

This SDS has been prepared to meet U. S. OSHA Hazard Communication Standard requirements.
type 1b

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Specific uses identified for Exposure Scenarios

None