

ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP) &amp; 2015/830

**SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING**
**1.1 Product identifier**

Product Name Lithium Manganese Iron Phosphate (LMFP) Powder  
 Synonyms LMFP, Lithium iron manganese phosphate, Lithium ferromanganese phosphate  
 Chemical Name Lithium Manganese Iron Phosphate  
 Chemical Formula  $\text{LiMn}_0.6\text{Fe}_0.4\text{PO}_4$   
 CAS No. 1354700-46-1  
 EC No. Not available.  
 Index No. Not available.  
 REACH Registration No. Not applicable.

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

Identified Use(s) PC21 Laboratory chemicals, Research and development use *only*

**1.3 Details of the supplier of the safety data sheet**

Company Identification Ossila Limited  
 Address of Supplier Solpro Business Park  
 Windsor Street  
 Sheffield  
 Postal code S4 7WB, UK  
 Telephone: +441142999180  
 E-mail info@ossila.com  
 Office hours 08:00 - 17:00

**1.4 Emergency telephone number**

Emergency Phone # +44 (0) 20 3885 0382 (CHEMTREC)

Other Regions	Emergency Phone Number (CHEMTREC)
Europe, Middle East, Africa	+44 20 3885 0382
North America	+1 703 527 3887
Central America	+52 55 8526 4930
South America	+55 11 4349 1359
Asia, India, and Oceania	+65 3163 8374

**SECTION 2: HAZARDS IDENTIFICATION**
**2.1 Classification of the substance or mixture**

Regulation (EC) No. 1272/2008 (CLP) STOT SE 3: May cause respiratory irritation  
 STOT SE 2: May cause damage to organs

**2.2 Label elements**

According to Regulation (EC) No. 1272/2008 (CLP)  
 Product Name Lithium Manganese Iron Phosphate (LMFP) Powder

Hazard Pictogram(s)



GHS07

GHS08

Signal Word(s)

Warning

Hazard Statement(s)

H335: May cause respiratory irritation  
 H371: May cause damage to organs

Precautionary Statement(s)

P260: Do not breathe dust or vapours.  
 P308 + P311: IF exposed or concerned: Call a POISON CENTER or doctor.  
 P312: Call a POISON CENTER or doctor if you feel unwell.

**2.3 Other hazards**

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

**2.4 Additional Information**

Not applicable.

**SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS**

**3.1 Substances**

Hazardous ingredient(s)	CAS No.	EC No.	%W/W	Hazard Statement(s)
Lithium Manganese Iron Phosphate	1354700-46-1	Not available.	≤ 100	STOT SE 3 H335 STOT SE 2 H371

**3.2 Mixtures**

Not applicable.

**SECTION 4: FIRST AID MEASURES**

**4.1 Description of first aid measures**

**General Advice** First aiders should ensure they have taken adequate steps to protect themselves from exposure (see Section 8 for recommended personal protection equipment) Show this safety data sheet to the doctor in attendance.

**Inhalation** Remove person to fresh air and keep comfortable for breathing. Get medical advice/attention if you feel unwell.

**Skin Contact** Rinse skin with water. If skin irritation occurs, get medical advice/attention.

**Eye Contact** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

**Ingestion** Rinse out mouth with water. Get medical advice/attention if you feel unwell.

**4.2 Most important symptoms and effects, both acute and delayed**

Most important symptoms and effects, both acute and delayed, are included on labelling (Section 2.2) and in Section 11.

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

Treat symptomatically.

**SECTION 5: FIREFIGHTING MEASURES**

**5.1 Extinguishing media**

Suitable Extinguishing media As appropriate for surrounding fire.

Unsuitable extinguishing media As appropriate for surrounding fire.

**5.2 Special hazards arising from the substance or mixture**

Lithium oxides  
Manganese/manganese oxides  
Iron oxides

**5.3 Advice for firefighters**

Fire fighters should wear complete protective clothing including self-contained breathing apparatus.

**SECTION 6: ACCIDENTAL RELEASE MEASURES**

**6.1 Personal precautions, protective equipment and emergency procedures**

Follow safe handling advice and personal protective equipment recommendations (as per section 8). Provide adequate ventilation.

**6.2 Environmental precautions**

Avoid release to the environment.

**6.3 Methods and material for containment and cleaning up**

Sweep up spilled substance - avoid making dust. Use vacuum equipment for collecting spilt materials, where practicable. Dispose of contents in accordance with local, state or national legislation.

**6.4 Reference to other sections**

See Also Section 8, 13.

**SECTION 7: HANDLING AND STORAGE**

**7.1 Precautions for safe handling**

**Advice on safe handling** Avoid inhalation, ingestion, and contact with skin and eyes. Use only in a well-ventilated area. Wear protective clothing as per section 8.

**Hygiene measures** Keep away from food and drink. Wash hands after handling, before breaks, and at the end of workday.

**7.2 Conditions for safe storage, including any incompatibilities**

Store in a well-ventilated place. Keep container tightly closed.

Storage temperature Ambient.

Storage life Stable under normal conditions.

Incompatible materials None known.

**7.3 Specific end use(s)**

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**

8.1.1 Occupational Exposure Limits

UK – EH40 Workplace Exposure Limits (WEL).

Occupational Exposure Limits

SUBSTANCE.	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m³)	STEL (ppm)	STEL (mg/m³)	Note
Manganese and its inorganic compounds (as Mn) Inhalable fraction Respirable fraction	1354700-46-1		0.2 0.05			
Iron salts (as Fe)	1354700-46-1		1		2	

Region Source  
EU EU Occupational Exposure Limits  
United Kingdom UK Workplace Exposure Limits EH40/2005 (Third edition, published 2018)

**8.2 Exposure controls**

8.2.1. Appropriate engineering controls Ensure adequate ventilation and/or exhaust. A washing facility/water for eye and skin cleaning purposes should be present.

8.2.2. Personal protection equipment

Eye Protection Wear eye protection with side protection tested and approved under appropriate government standards such as EN166 (EU).

Hand protection Handle with gloves. Gloves must be inspected prior to use and proper glove removal techniques should be used. The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it.

Body protection Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Respiratory protection Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N99 (US) or type P2 (EN 143) respirator cartridges as a backup to engineering controls.

Thermal hazards None known.

8.2.3. Environmental Exposure Controls Avoid release to the environment.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

**9.1 Information on basic physical and chemical properties**

Physical State Solid: Powder.  
 Colour Black/Brown.  
 Odour Not known.  
 Odour threshold Not known.  
 Melting point/freezing point Not known.  
 Initial boiling point and boiling range Not known.  
 Flammability Not known.  
 Lower and upper explosion limit Not known.  
 Flash Point Not known.  
 Auto-ignition temperature (°C) Not known.  
 Decomposition temperature (°C) Not known.  
 pH Not known.  
 Kinematic viscosity Not known.  
 Solubility(ies) Solubility (Water): Not known.  
 Solubility (Other): Not known.  
 Partition coefficient: n-octanol/water (log value) Not known.  
 Vapour pressure Not known.  
 Density Not known.  
 Relative density Not known.  
 Relative vapour density Not known.  
 Particle characteristics Not known.

**9.2 Other information**

None.

**SECTION 10: STABILITY AND REACTIVITY**

**10.1 Reactivity**

None anticipated.

**10.2 Chemical Stability**

Stable under recommended storage conditions.

**10.3 Possibility of hazardous reactions**

Not known.

**10.4 Conditions to avoid**

Not known.

**10.5 Incompatible materials**

Not known.

**10.6 Hazardous decomposition products**

In the event of fire: see Section 5

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**SECTION 11: TOXICOLOGICAL INFORMATION**

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**11.1 Information on toxicological effects**

Acute toxicity - Ingestion	No data available.
Acute toxicity - Skin Contact	No data available.
Acute toxicity - Inhalation	No data available.
Skin corrosion/irritation	No data available.
Serious eye damage/irritation	No data available.
Skin sensitization data	No data available.
Respiratory sensitization data	No data available.
Germ cell mutagenicity	No data available.
Carcinogenicity	No data available.
Reproductive toxicity	No data available.
Lactation	No data available.
STOT - single exposure	No data available.
STOT - repeated exposure	No data available.
Aspiration hazard	No data available.

**11.2 Information on other hazards****11.2.1 Endocrine disrupting properties**

None known.

**11.2.2. Information on other hazards**

None known.

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**SECTION 12: ECOLOGICAL INFORMATION**

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**12.1 Toxicity**

Toxicity - Aquatic invertebrates	No data available.
Toxicity - Fish	No data available.
Toxicity - Algae	No data available.
Toxicity - Sediment Compartment	Not classified.
Toxicity - Terrestrial Compartment	Not classified.

**12.2 Persistence and Degradation**

Not known.

**12.3 Bioaccumulative potential**

Not known.

**12.4 Mobility in soil**

Not known.

**12.5 Results of PBT and vPvB assessment**

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

**12.6 Endocrine disrupting properties**

Not known.

**12.7 Other adverse effects**

Not known.

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**SECTION 13: DISPOSAL CONSIDERATIONS**

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**13.1 Waste treatment methods**

Dispose of contents in accordance with local, state or national legislation. Recycle only completely emptied packaging. Normal disposal is via incineration operated by an accredited disposal contractor. Send to a licensed recycler, reclaimer or incinerator.

**13.2 Additional Information**

Disposal should be in accordance with local, state or national legislation.

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**SECTION 14: TRANSPORT INFORMATION**

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IATA/IMO/RID/ADR

Not classified as hazardous for transport.

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**SECTION 15: REGULATORY INFORMATION**

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

European Regulations - Authorisations and/or Restrictions On Use  
Candidate List of Substances of Very High Concern for Authorisation Not listed

REACH: ANNEX XIV list of substances subject to authorisation Not listed

REACH: Annex XVII Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles Not listed

Community Rolling Action Plan (CoRAP) Regulation (EC) N° 850/2004 of the European Parliament and of the Council on persistent organic pollutants Not listed

Regulation (EC) N° 1005/2009 on substances that deplete the ozone layer Not listed

Regulation (EU) N° 649/2012 of the European Parliament and of the Council concerning the export and import of hazardous chemicals Not listed

#### National regulations

Other Not known.

#### 15.2 Chemical Safety Assessment

A REACH chemical safety assessment has not been carried out.

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### SECTION 16: OTHER INFORMATION

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The following sections contain revisions or new statements:

#### LEGEND

##### Acronyms

ADN : European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways  
ADR : European Agreement concerning the International Carriage of Dangerous Goods by Road  
CAS : Chemical Abstracts Service  
CLP : Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures  
DNEL : Derived No Effect Level  
EC : European Community  
EINECS : European Inventory of Existing Commercial Chemical Substances  
IATA : International Air Transport Association  
IBC : Intermediate Bulk Container  
ICAO : International Civil Aviation Organization  
IMDG : International Maritime Dangerous Goods  
LTEL : Long term exposure limit  
PBT : Persistent, Bioaccumulative and Toxic  
PNEC : Predicted No Effect Concentration  
REACH : Registration, Evaluation, Authorisation and Restriction of Chemicals  
RID : Regulations concerning the International Carriage of Dangerous Goods by Rail  
STEL : Short term exposure limit  
STOT : Specific Target Organ Toxicity  
UN : United Nations  
vPvB : very Persistent and very Bioaccumulative

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