

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision Date 25.07.2019

Version 7.4

SECTION 1. Identification of the substance/mixture and of the company/undertaking**1.1 Product identifier**

| | |
|---------------------------|--|
| Catalogue No. | 818876 |
| Product name | Lithium aluminium hydride (powder) for synthesis |
| REACH Registration Number | A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline. |
| CAS-No. | 16853-85-3 |

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

| | |
|-----------------|--|
| Identified uses | Chemical for synthesis Intermediate for use under strictly controlled conditions For additional information on uses please refer to the Merck Chemicals portal (www.merckgroup.com). |
|-----------------|--|

1.3 Details of the supplier of the safety data sheet

| | |
|------------------------|---|
| Company | Merck KGaA * 64271 Darmstadt * Germany * Phone: +49 6151 72-0 |
| Responsible Department | LS-QHC * e-mail: prodsafe@merckgroup.com |

1.4 Emergency telephone number **Please contact the regional company representation in your country.****SECTION 2. Hazards identification****2.1 Classification of the substance or mixture**
Classification (REGULATION (EC) No 1272/2008)

Substances, which in contact with water, emit flammable gases, Category 1, H260
Skin corrosion, Category 1A, H314

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

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

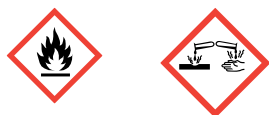
Catalogue No.
Product name

818876
Lithium aluminium hydride (powder) for synthesis

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms



Signal word

Danger

Hazard statements

H260 In contact with water releases flammable gases which may ignite spontaneously.

H314 Causes severe skin burns and eye damage.

EUH014 Reacts violently with water.

Precautionary statements

Prevention

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing.

P370 + P378 In case of fire: Use powder for extinction.

P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

Storage

P402 + P404 Store in a dry place. Store in a closed container.

Reduced labelling (≤ 125 ml)

Hazard pictograms



Signal word

Danger

Hazard statements

H314 Causes severe skin burns and eye damage.

EUH014 Reacts violently with water.

Precautionary statements

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P370 + P378 In case of fire: Use powder for extinction.

P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

Index-No. 001-002-00-4

2.3 Other hazards

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

| | |
|---------------|--|
| Catalogue No. | 818876 |
| Product name | Lithium aluminium hydride (powder) for synthesis |

None known.

SECTION 3. Composition/information on ingredients

3.1 Substance

| | | |
|------------|--------------------|----------------------------|
| Formula | LiAlH ₄ | H ₄ AlLi (Hill) |
| Index-No. | 001-002-00-4 | |
| EC-No. | 240-877-9 | |
| Molar mass | 37,95 g/mol | |

Hazardous components (REGULATION (EC) No 1272/2008)

Chemical name (Concentration)

| | | |
|---------|---------------------|----------------|
| CAS-No. | Registration number | Classification |
|---------|---------------------|----------------|

aluminium lithium hydride (<= 100 %)

16853-85-3 *)

Substances, which in contact with water, emit flammable gases, Category 1, H260
Skin corrosion, Category 1A, H314

*) A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

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

3.2 Mixture

Not applicable

SECTION 4. First aid measures

4.1 Description of first aid measures

General advice

First aider needs to protect himself.

After inhalation: fresh air. Call in physician.

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation). Call a physician immediately. Do not attempt to neutralise.

4.2 Most important symptoms and effects, both acute and delayed

Irritation and corrosion, Cough, Shortness of breath

Risk of corneal clouding.

Risk of blindness!

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.

818876

Product name

Lithium aluminium hydride (powder) for synthesis

The following applies to aluminium compounds in general: After swallowing: only slightly absorbable via the gastrointestinal tract. Serious disorders in man (from about 4000 mg aluminium up): phosphate metabolism, calcium metabolism.

The following applies to lithium compounds in general: when handled or used inappropriately, the absorption of large quantities is followed by CNS disorders, agitation, spasms, ataxia (impaired locomotor coordination) due to disturbed electrolyte balance.

4.3 Indication of any immediate medical attention and special treatment needed

No information available.

SECTION 5. Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Sand, Cement, Dry powder

Unsuitable extinguishing media

Water, Carbon dioxide (CO₂), Foam

5.2 Special hazards arising from the substance or mixture

Combustible.

Risk of dust explosion.

May not get in touch with:

Water

Caution! in contact with water product releases:

Hydrogen

Development of hazardous combustion gases or vapours possible in the event of fire.

5.3 Advice for firefighters

Special protective equipment for firefighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information

Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders:

Protective equipment see section 8.

6.2 Environmental precautions

Do not let product enter drains. Risk of explosion.

6.3 Methods and materials for containment and cleaning up

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.

818876

Product name

Lithium aluminium hydride (powder) for synthesis

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

Keep under protective gas. Self-ignition possible without protective gas.

6.4 Reference to other sections

Indications about waste treatment see section 13.

SECTION 7. Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

Observe label precautions.

Keep workplace dry. Do not allow product to come into contact with water.

Hygiene measures

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Dry. Tightly closed. Keep away from heat and sources of ignition.

Recommended storage temperature see product label.

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

8.2 Exposure controls

The product is registered for use under strictly controlled conditions as defined in Article 18(4) of Regulation (EC) No. 1907/2006 (REACH) and must therefore be handled as such. Refer to the industry guidance prepared by Concawe, Cefic and EFCG for advice on the confirmation of strictly controlled conditions

Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

See section 7.1.

Individual protection measures

Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.
Product name

818876
Lithium aluminium hydride (powder) for synthesis

Eye/face protection

Tightly fitting safety goggles

Hand protection

full contact:

Glove material: Nitrile rubber
Glove thickness: 0,11 mm
Break through time: 480 min

splash contact:

Glove material: Nitrile rubber
Glove thickness: 0,11 mm
Break through time: 480 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 741 Dermatril® L (full contact), KCL 741 Dermatril® L (splash contact).

The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Other protective equipment

protective clothing

Respiratory protection

required when dusts are generated.

Recommended Filter type: Filter P 2 (acc. to DIN 3181) for solid and liquid particles of harmful substances

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer.

These measures have to be properly documented.

Environmental exposure controls

Do not let product enter drains.

Risk of explosion.

SECTION 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

| | |
|-----------------|---------------------------|
| Form | powder |
| Colour | white to light grey |
| Odour | odourless |
| Odour Threshold | Not applicable |

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

| | |
|---------------|--|
| Catalogue No. | 818876 |
| Product name | Lithium aluminium hydride (powder) for synthesis |

| | |
|--|--------------------------------------|
| pH | alkaline |
| Melting point | 125 °C (decomposition) |
| Boiling point/boiling range | Not applicable |
| Flash point | No information available. |
| Evaporation rate | No information available. |
| Flammability (solid, gas) | No information available. |
| Lower explosion limit | No information available. |
| Upper explosion limit | No information available. |
| Vapour pressure | Not applicable |
| Relative vapour density | Not applicable |
| Density | 0,917 g/cm ³ at 20 °C |
| Relative density | No information available. |
| Water solubility | at 20 °C (rigorous decomposition) |
| Partition coefficient: n-octanol/water | Not applicable |
| Auto-ignition temperature | No information available. |
| Decomposition temperature | > 125 °C |
| Viscosity, dynamic | Not applicable |
| Explosive properties | Not classified as explosive. |
| Oxidizing properties | none |

9.2 Other data

| | |
|----------------------|-----------------------|
| Bulk density | 400 kg/m ³ |
| Viscosity, kinematic | Not applicable |

SECTION 10. Stability and reactivity

10.1 Reactivity

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.

818876

Product name

Lithium aluminium hydride (powder) for synthesis

Risk of dust explosion.

10.2 Chemical stability

sensitive to moisture

10.3 Possibility of hazardous reactions

Risk of ignition or formation of inflammable gases or vapours with:

Water, Oxygen, Alcohols, acids

Risk of explosion with:

boron compounds, Ether, Dioxane, Organic Substances, Oxidizing agents, amides, hydrogen peroxide, Esters, acetonitrile, Peroxides

Exothermic reaction with:

Aldehydes, pyridine

10.4 Conditions to avoid

Heat

Moisture.

10.5 Incompatible materials

no information available

10.6 Hazardous decomposition products

no information available

SECTION 11. Toxicological information

11.1 Information on toxicological effects

Acute oral toxicity

Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach.

Acute inhalation toxicity

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract, Mucous membranes, Lungs

Acute dermal toxicity

This information is not available.

Skin irritation

Causes severe burns.

Eye irritation

Causes serious eye damage. Risk of corneal clouding.
Risk of blindness!

Sensitisation

This information is not available.

Germ cell mutagenicity

This information is not available.

Carcinogenicity

This information is not available.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.

818876

Product name

Lithium aluminium hydride (powder) for synthesis

Reproductive toxicity

This information is not available.

Teratogenicity

This information is not available.

Specific target organ toxicity - single exposure

This information is not available.

Specific target organ toxicity - repeated exposure

This information is not available.

Aspiration hazard

This information is not available.

11.2 Further information

Decomposition of the substance with tissue moisture.

The following applies to lithium compounds in general: when handled or used inappropriately, the absorption of large quantities is followed by CNS disorders, agitation, spasms, ataxia (impaired locomotor coordination) due to disturbed electrolyte balance.

The following applies to aluminium compounds in general: After swallowing: only slightly absorbable via the gastrointestinal tract. Serious disorders in man (from about 4000 mg aluminium up): phosphate metabolism, calcium metabolism.

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

SECTION 12. Ecological information

12.1 Toxicity

No information available.

12.2 Persistence and degradability

Biodegradability

The methods for determining the biological degradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water

Not applicable

12.4 Mobility in soil

No information 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

Additional ecological information

Biological effects:

Harmful effect due to pH shift.

Forms corrosive mixtures with water even if diluted.

Discharge into the environment must be avoided.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.

818876

Product name

Lithium aluminium hydride (powder) for synthesis

SECTION 13. Disposal considerations

Waste treatment methods

See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14. Transport information

Land transport (ADR/RID)

| | |
|--|---------------------------|
| 14.1 UN number | UN 1410 |
| 14.2 Proper shipping name | LITHIUM ALUMINIUM HYDRIDE |
| 14.3 Class | 4.3 |
| 14.4 Packing group | I |
| 14.5 Environmentally hazardous | -- |
| 14.6 Special precautions for user | yes |
| Tunnel restriction code | E |

Inland waterway transport (ADN)

Not relevant

Air transport (IATA)

| | |
|--|------------------------------------|
| 14.1 UN number | UN 1410 |
| 14.2 Proper shipping name | LITHIUM ALUMINIUM HYDRIDE |
| 14.3 Class | 4.3 |
| 14.4 Packing group | I |
| 14.5 Environmentally hazardous | -- |
| 14.6 Special precautions for user | yes |
| IATA (Passenger) | Not permitted for transport |

Sea transport (IMDG)

| | |
|--|---------------------------|
| 14.1 UN number | UN 1410 |
| 14.2 Proper shipping name | LITHIUM ALUMINIUM HYDRIDE |
| 14.3 Class | 4.3 |
| 14.4 Packing group | I |
| 14.5 Environmentally hazardous | -- |
| 14.6 Special precautions for user | yes |
| EmS | F-G S-M |

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.
Product name

818876
Lithium aluminium hydride (powder) for synthesis

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not relevant

SECTION 15. Regulatory information

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

EU regulations

Major Accident Hazard SEVESO III
Legislation OTHER HAZARDS
O1
Quantity 1: 100 t
Quantity 2: 500 t

SEVESO III
OTHER HAZARDS
O2
Quantity 1: 100 t
Quantity 2: 500 t

Occupational restrictions Take note of Dir 94/33/EC on the protection of young people at work.

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer not regulated

Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC not regulated

Substances of very high concern (SVHC) This product does not contain substances of very high concern according to Regulation (EC) No 1907/2006 (REACH), Article 57 above the respective regulatory concentration limit of $\geq 0.1\%$ (w/w).

National legislation

Storage class 4.3

15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.
Product name

818876
Lithium aluminium hydride (powder) for synthesis

SECTION 16. Other information

Full text of H-Statements referred to under sections 2 and 3.

H260 In contact with water releases flammable gases which may ignite spontaneously.
H314 Causes severe skin burns and eye damage.

Training advice

Provide adequate information, instruction and training for operators.

Labelling

Hazard pictograms



Signal word
Danger

Hazard statements

H260 In contact with water releases flammable gases which may ignite spontaneously.
H314 Causes severe skin burns and eye damage.
EUH014 Reacts violently with water.

Precautionary statements

Prevention

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing.

P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

Storage

P402 + P404 Store in a dry place. Store in a closed container.

Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at www.wikipedia.org.

Regional representation

This information is given on the authorised Safety Data Sheet for your country.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.

818876

Product name

Lithium aluminium hydride (powder) for synthesis

The information contained herein is based on the present state of our knowledge. It characterises the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.

The branding on the header and/or footer of this document may temporarily not visually match the product purchased as we transition our branding. However, all of the information in the document regarding the product remains unchanged and matches the product ordered. For further information please contact mlsbranding@sial.com.