

SAFETY DATA SHEET

according to regulation (EG) Nr. 1907/2006



Date of issue: 09.10.2013

Revision date: 24.07.2017

Version: 2.4

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY / UNDERTAKING

1.1 Product identifiers

Product name: Lithium hydroxide monohydrate (Li-7 labeled)
EC-No. (natural): 215-183-4
CAS-No.(natural): 1310-66-3
CAS-No.(labeled): 76576-68-6
REACH Registration no.: Substance is pre-registered

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

Identified uses: Neutralization medium, pH-value regulation in power plants.

1.3 Details of the supplier of the safety data sheet

Supplier: NUKEM Isotopes GmbH,
Industriestrasse 13,
63755 Alzenau, Germany
Telephone: +49 (0)6023 91 1726
Telefax: +49 (0)6023 91 1614
Email: Christian.Schuch@nukemisotopes.de

1.4 Emergency telephone number

24 hr. Emergency Telephone: **+1-703-253-4254** (English / Contract No.: 01009)

2. HAZARDS INDICATION

2.1 Classification of the substance or mixture

Classification according to regulation (EC) No 1272/2008

Acute toxicity, Category 4, oral, H302
Serious eye damage, Category 1, H318
Skin corrosion, Category 1A, H314
H302: Harmful if swallowed.
H318: Causes serious eye damage.
H314: Causes severe skin burns and eye damage.

2.2 Label elements

Labeling according to regulation (EG) No. 1272/2008

The substance is classified and labeled according to the CLP regulation.

Hazard Pictograms:



GHS05



GHS08

Signal word:

Danger

Hazard statements:

H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.

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Precautionary statements:

P260	Do not breathe dust/fume/spray.
P264	Wash hands thoroughly after handling.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
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.
P310	Immediately call a POISON CENTER/doctor.
P405	Store locked up.
P501	Dispose of contents/ container to the official regulations.

2.3 Other hazards

All chemicals are potentially dangerous. They should only be handled by specially trained personnel.

Results of PBT- und vPvB-assessment:

PBT: Not applicable.

vPvB: Not applicable.

3. COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Chemical characterization

Substance:

CAS No. (description):	76576-68-6 (Li-7 labeled lithium hydroxide monohydrate)
CAS No. (natural):	1310-66-3
EG-No.(non-labeled):	215-183-4
Formula:	${}^7\text{LiOH}\cdot\text{H}_2\text{O}$
Molar mass [g/mol]:	42,0

4. FIRST AID MEASURES

4.1 Description of first aid measures

General information:

First Aider: Pay attention to self-protection! Remove any clothing soiled by the product.

Oral exposure

If swallowed, wash out mouth with water provided person is conscious. Do not induce vomiting.

Call a physician immediately.

Inhalation exposure

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

Seek medical advice immediately. Call a physician.

Dermal exposure

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

Eye exposure

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

4.2 Most important symptoms and effects, both acute and delayed

Irritation and corrosion. Blindness. Coughing. Breathing difficulty

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The most important known symptoms and effects are described in the labeling (see section 2.2 and/or section 11).

4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing agents:

Use water spray, carbon dioxide, dry chemical powder or appropriate foam. Use fire extinguishing methods suitable to surrounding conditions.

5.2 Special hazards arising from the substance or mixture

Product is non-combustible. In the event of fire development of hazardous combustion gases or vapors possible.

In case of fire, the following can be released:

Lithium oxides, carbon monoxide and carbon dioxide.

5.3 Advice for firefighters

Protective equipment:

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Specific hazard(s):

Substance emits toxic fumes under fire conditions.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Avoid formation of dust. Do not breathe dust. Avoid contact with the eyes and skin. Wear protective equipment. Keep unprotected persons away. Ensure adequate ventilation. Evacuate area.

6.2 Environmental precautions

Do not allow to enter sewers/ground water or penetrate the soil.

6.3 Methods and material for containment and cleaning up

Pick up mechanically. Dispose of the material collected according to regulations. Use neutralizing agent carefully. Dispose contaminated material as waste according to section 13. Ensure adequate ventilation.

6.4 Reference to other sections

See Section 7 for information on safe handling. See Section 8 for information on personal protection equipment. See Section 13 for disposal information.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Keep containers, equipment and working place clean. Handle and open container with care. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at place where dust is formed.

Do not breathe dust. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

Wear respiratory mask with dust filter when handling Lithium Hydroxide!

7.2 Conditions for safe storage, including any incompatibilities

Do not store direct in aluminum, tin or zinc containers (without plastic cover). Store away from foodstuffs. Keep container tightly sealed. Store in cool place (15-25 °C). Product is air (CO₂) and moisture sensible.

7.3 Specific end use(s)

No further relevant information available.

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8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control Parameters

Occupational exposure limits:

Not available.

Additional exposure limits under the conditions of use:

Not available.

DNEL/DMEL and PNEC-Values:

DNEL (inhalation-local effects): 1.52 mg/m³

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 the workday.

Individual protection measures, such as personal protective equipment:

Body protection:

Depending on the risk, wear a tight, long apron and boots or suitable chemical protection clothing. Wear dust tight protective clothing. The protection clothing should be alkali resistant.

Respiratory protection:

In an emergency (e.g.: unintentional release of the substance) respiratory protection must be worn. Consider the maximum period for wear.

Respiratory protection: Particle filters P2 or P3, color code white. Use insulating device for concentrations above the usage limits for filter devices, for oxygen concentrations below 17% volume, or in circumstances which are unclear.

Eye protection:

Sufficient eye protection must be worn. Wear chemical safety goggles. If the face is at risk a protective shield must also be worn.

Hand protection:

Use protective gloves. The glove material must be sufficiently impermeable and resistant to the substance. Check the tightness before wear. Gloves should be well cleaned before being removed, then stored in a well-ventilated location. Pay attention to skin care. Skin protection crèmes do not protect sufficiently against the substance. Textile or leather gloves are completely unsuitable.

The following information is valid for aqueous, saturated solutions of the substance and the following materials are suitable for protective gloves (Permeation time \geq 8 hours):

- Natural rubber/Natural latex - NR (0,5 mm) (use non-powdered and allergen free products)
- Polychloroprene - CR (0,5 mm)
- Nitrile rubber/Nitrile latex - NBR (0,35 mm)
- Butyl rubber - Butyl (0,5 mm)
- Fluoro carbon rubber - FKM (0,4 mm)
- Polyvinyl chloride - PVC (0,5 mm)

8.3 Environmental exposure control

Avoid discharge into the environment.

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9. PHYSICAL/CHEMICAL PROPERTIES

General Information

Appearance:	Form: Powder
	Color: White
Odor:	Odorless
Odor threshold:	No information available.
pH-value (50 g/l) at 50 °C:	~ 12
Melting point/Melting range:	462 °C
Boiling point/Boiling range:	920 °C
Flash point:	No information available.
Flammability (solid, gaseous):	Product is not flammable.
Ignition temperature:	No information available.
Decomposition temperature:	> 100 °C (release of crystalline water).
Self-igniting:	No information available.
Danger of explosion:	Product does not present an explosion hazard.
Explosion limits:	Lower: No information available. Upper: No information available.
Oxidizing properties:	No information available.
Vapor pressure:	No information available.
Density at 20 °C:	1.51 g/cm ³
Vapor density:	No information available.
Evaporation rate:	No information available.
Solubility in / Miscibility with water at 20 °C:	109 g/l
Partition coefficient (n-octanol/water):	No information available.
Viscosity, dynamic:	No information available.

10. STABILITY AND REACTIVITY

10.1 Reactivity

See section 10.3.

10.2 Chemical stability

Thermal decomposition / conditions to be avoided:

Absorbing CO₂. Humidity. No decomposition if used and stored according to specifications.

10.3 Possibility of hazardous reactions

Strong reaction possible with: Acids

10.4 Conditions to avoid

Contact with moisture.

10.5 Incompatible materials

Aluminum, lead, tin, zinc. Acids. Strong oxidizing agents

10.6 Hazardous decomposition products

In case of fire: See section 5.

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11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity:

LD/LC50 values relevant for classification for Lithium Hydroxide:

- Oral LD50: 210 mg/kg (rat) (ECHA, reg. dossier, GESTIS)
- Inhalative LC50/4h, dust: > 3.41 mg/L (rat) (ECHA, reg. dossier)

LD/LC50 values relevant for classification for Lithium Hydroxide Monohydrate:

- Oral LD50: 368 mg/kg (rat) (ECHA, reg. dossier, GESTIS)
- Inhalative LC50/4h, dust: > 6.15 mg/L (rat) (ECHA, reg. dossier)

Primary irritant effect:

On the skin:

- Strong caustic effect on skin and mucous membranes.

On the eye:

- Burns, risk of blindness.

After inhalation:

- Burns of the mucous membranes, coughing and dyspnoea.

Sensitization:

- No sensitizing effects known.

Germ cell mutagenicity:

- No information available.

Carcinogenicity:

- No information available.

Reproductive toxicity:

- No information available.

Aspiration hazard:

- No information available.

Specific target organ toxicity - single exposure:

- No information available.

Specific target organ toxicity - repeated exposure:

- No information available.

11.2 Additional toxicological information

Systemic effects:

CNS-disorders. Spasms. Irritation.

After swallowing:

Burns in the mouth. Burns in the throat. Risk of perforation. Burns in the gastrointestinal tract

Further information:

The product should be handled with the care usual when dealing with chemicals.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No data available.

12.2 Persistence and degradability

No data available.

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12.3 Bioaccumulative potential

No further relevant information available.

12.4 Mobility in soil

Remark:

- Do not allow to enter waters, waste water, or soil!
- Must not reach sewage water or drainage ditch undiluted or unneutralized.

12.5 Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

12.6 Other adverse effects

No information available.

13. DISPOSAL CONSIDERATIONS

13.1 Waste Treatment methods

Recommendation:

Must not be disposed together with household garbage. Do not allow product to reach sewage system. Reutilize if possible or contact a waste processor for recycling or safe disposal.

Uncleaned packaging (Recommendation):

Disposal according to official regulations. Packaging that may not be cleansed are to be disposed of in the same manner as the product. Wash with water to be treated before disposal.

Waste disposal key:

The European Union does not establish uniform rules for the disposal of chemical waste, which are special waste. Their treatment and elimination of the domestic legislation of each country. So, in each case, you should contact the relevant authorities, or those companies legally authorized for elimination of waste.

14. TRANSPORT INFORMATION

14.1 UN-Number

ADR/RID, IMDG, IATA: 2680

14.2 UN proper shipping name

ADR/RID: LITHIUM HYDROXIDE

IMDG: LITHIUM HYDROXIDE

IATA: Lithium hydroxide

14.3 Transport hazard class(es)

ADR/RID, IMDG, IATA:

Class: 8 Corrosive substances

Label: 8



14.4 Packing group

ADR/RID, IMDG, IATA: II

14.5 Environmental hazards:

ADR/RID: no

IMDG Marine pollutant: no

IATA: no

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14.6 Special precautions for user Warning: Corrosive substances.

Danger code (Kemler): 80
EmS: F-A, S-B
Segregation groups: Alkalis

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

Not applicable.

14.8 Transport/Additional information

ADR:

Limited quantities (LQ): 1 kg
Transport category: 2
Tunnel restriction code: E
UN "Model Regulation": UN2680, LITHIUM HYDROXIDE, 8, II

15. REGULATORY INFORMATION

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

National regulations:

Information about limitation of use: In dealing with chemicals the national laws must be observed.
Water hazard class: Water hazard class 1 (Self-assessment): slightly hazardous for water.

15.2 Chemical safety assessment

A chemical safety assessment has not been carried out.

16. OTHER INFORMATION

Disclaimer

Product is supplied for research and laboratory use only. Not for drug, household or other uses.

Warranty

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. See invoice or packing slip for additional terms and conditions of sale.