



LITHIUM ALUMINUM DEUTERIDE (D4, 98%)

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

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DLM-356

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form	: Substance
Substance name	: LITHIUM ALUMINUM DEUTERIDE (D4, 98%)
EC Index-No.	: 001-002-00-4 (Unlabeled)
EC-No.	: 240-877-9 (Unlabeled)
CAS-No.	: 14128-54-2
Product code	: DLM-356
Formula	: LiAlD ₄
Synonyms	: LAH

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

1.2.1. Relevant identified uses

Main use category	: Professional use
Industrial/Professional use spec	: For professional use only

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Cambridge Isotope Laboratories, Inc.
50 Frontage Road
Andover, MA 01810
USA

USA: 1-800-322-1174 Int: 1-978-749-8000

cilsales@isotope.com www.isotope.com

Emergency telephone number

Emergency numbers:

Chemtrec: 1-800-424-9300 (24 hours)

International: 1-703-741-5970 (24 hours)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Water-react. 1 H260

Acute Tox. 3 (Oral) H301

Skin Corr. 1 H314

Full text of hazard classes and H-statements : see section 16

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

F; R15

T; R25

C; R35

Full text of R-phrases: see section 16

GHS-US classification

Water-react. 1 H260

Acute Tox. 3 (Oral) H301

Skin Corr. 1A H314

Full text of H statements : see section 16

Adverse physicochemical, human health and environmental effects

Kidney, Liver, Central nervous system.

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2.2. Label elements

Labeling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



Signal word (CLP) :

Danger

Hazard statements (CLP) :

H260 - In contact with water releases flammable gases which may ignite spontaneously
H301 - Toxic if swallowed
H314 - Causes severe skin burns and eye damage

Precautionary statements (CLP) :

P223 - Do not allow contact with water.
P231+P232 - Handle under inert gas. Protect from moisture
P260 - Do not breathe dust, fume, gas, mist, spray, vapors.
P264 - Wash hands, forearms and face thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P301+P310 - IF SWALLOWED: Immediately call a doctor, a POISON CENTER.
P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

GHS-US labeling

Hazard pictograms (GHS-US) :



Signal word (GHS-US) :

Danger

Hazard statements (GHS-US) :

H260 - In contact with water releases flammable gases which may ignite spontaneously
H301 - Toxic if swallowed
H314 - Causes severe skin burns and eye damage

Precautionary statements (GHS-US) :

P223 - Do not allow contact with water.
P231+P232 - Handle under inert gas. Protect from moisture
P260 - Do not breathe dust, fume, gas, mist, spray, vapors.
P264 - Wash hands, forearms and face thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P301+P310 - If swallowed: Immediately call a doctor
P301+P330+P331 - If swallowed: rinse mouth. Do NOT induce vomiting
P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
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 doctor
P321 - Specific treatment (see Hazardous component(s) for labeling on this label)
P330 - Rinse mouth.
P335+P334 - Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages.
P363 - Wash contaminated clothing before reuse.
P370+P378 - In case of fire: Use alcohol resistant foam, dry sand to extinguish.
P402+P404 - Store in a dry place. Store in a closed container.
P405 - Store locked up.
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

2.3. Other hazards

No additional information available

SECTION 3: Composition/Information on ingredients

3.1. Substances

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Name	Product identifier	%	Classification according to Directive 67/548/EEC
LITHIUM ALUMINUM DEUTERIDE (D4, 98%)	(CAS-No.) 14128-54-2 (EC-No.) 240-877-9 (Unlabeled) (EC Index-No.) 001-002-00-4 (Unlabeled)	100	F; R15 T; R25 C; R35

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
LITHIUM ALUMINUM DEUTERIDE (D4, 98%)	(CAS-No.) 14128-54-2 (EC-No.) 240-877-9 (Unlabeled) (EC Index-No.) 001-002-00-4 (Unlabeled)	100	Water-react. 1, H260 Acute Tox. 3 (Oral), H301 Skin Corr. 1, H314

Full text of R- and H- phrases: see section 16

Name	Product identifier	%	GHS-US classification
LITHIUM ALUMINUM DEUTERIDE (D4, 98%) (Main constituent)	(CAS-No.) 14128-54-2	100	Water-react. 1, H260 Acute Tox. 3 (Oral), H301 Skin Corr. 1A, H314

Full text of H-phrases: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	: If you feel unwell, seek medical advice (show the label where possible). Evacuate danger area.
First-aid measures after inhalation	: When symptoms occur: go into open air and ventilate suspected area. If not breathing, give artificial respiration. Get medical advice/attention.
First-aid measures after skin contact	: Wash with plenty of soap and water. Get immediate medical advice/attention.
First-aid measures after eye contact	: Rinse cautiously with water for several minutes.
First-aid measures after ingestion	: Never give anything by mouth to an unconscious person. Rinse mouth out with water. Get medical advice/attention.

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

Symptoms/effects after inhalation	: May be harmful if inhaled. May cause respiratory irritation.
Symptoms/effects after skin contact	: Causes severe skin burns.
Symptoms/effects after eye contact	: Causes severe eye damage.
Symptoms/effects after ingestion	: Toxic if swallowed.

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

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Carbon dioxide, dry chemical powder, appropriate foam, do not use water.

5.2. Special hazards arising from the substance or mixture

Lithium oxides, aluminum oxide

5.3. Advice for firefighters

Firefighting instructions	: Fight fire with normal precautions from a reasonable distance. Wear a self contained breathing apparatus. Do not enter fire area without proper protective equipment, including respiratory protection.
Protection during firefighting	: Do not enter fire area without proper protective equipment, including respiratory protection. Wear recommended personal protective equipment.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Avoid breathing vapors, mist, gas. Avoid dust formation.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Prevent entry to sewers and public waters. Do not allow to enter drains or water courses. Avoid release to the environment.

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6.3. Methods and material for containment and cleaning up

- For containment : Take up mechanically (sweeping, shoveling) and collect in suitable container for disposal.
Methods for cleaning up : This material and its container must be disposed of in a safe way, and as per local legislation.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Provide adequate ventilation to minimize dust and/or vapor concentrations.
Hygiene measures : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

- Technical measures : Store in a well-ventilated place. Keep container tightly closed.
Storage conditions : Store at room temperature away from light and moisture.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Exposure controls

- Appropriate engineering controls : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.
Personal protective equipment : Gloves. Protective clothing. Protective goggles. Self-contained breathing apparatus.



- Materials for protective clothing : Wear suitable protective clothing and gloves.
Hand protection : Wear suitable protective clothing and gloves.
Eye protection : Wear eye protection. Chemical goggles or face shield with safety glasses.
Skin and body protection : Wear suitable protective clothing, gloves and eye/face protection.
Respiratory protection : In case of inadequate ventilation wear respiratory protection. Approved supplied air respirator.
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
Appearance : Powder
Molecular mass : 41.98 g/mol (Labeled)
Color : Gray
Odor : No data available
Odor threshold : No data available
pH : No data available
Relative evaporation rate (butyl acetate=1) : No data available
Melting point : 125 °C (257 °F) - dec
Freezing point : No data available
Boiling point : No data available
Flash point : No data available
Auto-ignition temperature : No data available
Decomposition temperature : No data available
Flammability (solid, gas) : No data available
Vapor pressure : No data available
Relative vapor density at 20 °C : No data available
Relative density : 0.92 g/cm³
Solubility : No data available

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Log Pow	: No data available
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Explosion limits	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available.

10.2. Chemical stability

Stable if stored under recommended conditions.

10.3. Possibility of hazardous reactions

Reacts violently with water.

10.4. Conditions to avoid

Exposure to moisture.

10.5. Incompatible materials

Strong oxidizing agents, alcohols, water, carboxylic acid, halogens, chlorinated solvents, peroxides.

10.6. Hazardous decomposition products

Lithium oxides, aluminum oxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Oral: Toxic if swallowed.

LITHIUM ALUMINUM DEUTERIDE (D4, 98%) (14128-54-2)	
LD50 Oral Mouse	85 mg/kg Remarks: Behavioral:Somnolence (general depressed activity). Lungs, Thorax, or Respiration:Other changes. Gastrointestinal:Ulceration or bleeding from stomach.
ATE CLP (oral)	100.000 mg/kg body weight
Additional information	LC50 Inhalation - Mammal - 70 mg/m3

Skin corrosion/irritation	: Causes severe skin burns and eye damage.
Serious eye damage/irritation	: Eye damage, category 1, implicit
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Lithium and its compounds are possible teratogens by analogy to lithium carbonate which has equivocal human teratogenic data and positive animal teratogenic data.
Specific target organ toxicity – single exposure	: Not classified
Specific target organ toxicity – repeated exposure	: Not classified
Aspiration hazard	: Not classified
Potential Adverse human health effects and symptoms	: This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product. Liver - Irregularities - Based on Human Evidence. Dizziness, prostration, kidney damage, dehydration, weight loss, dermatological effects, thyroid disturbances, slurred speech, blurred vision, ataxia, convulsions, diarrhea, vomiting, neuromuscular effects, tremors, clonus, hyperactive reflexes.
Symptoms/effects after inhalation	: May be harmful if inhaled. May cause respiratory irritation.
Symptoms/effects after skin contact	: Causes severe skin burns and eye damage.
Symptoms/effects after eye contact	: Causes severe skin burns and eye damage.
Symptoms/effects after ingestion	: Toxic if swallowed.

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SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional legislation (waste) : Waste materials should be disposed of under conditions which meet Federal, State, and local environmental control regulations.

Product/Packaging disposal recommendations : Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Ecology - waste materials : Dispose of as unused product.

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

14.1. UN number

UN-No.(DOT) : 1410

DOT NA no. UN1410

14.2. UN proper shipping name

Proper Shipping Name (DOT) : Lithium aluminum hydride

Class (DOT) : 4.3 - Class 4.3 - Dangerous when wet material 49 CFR 173.124

Hazard labels (DOT) : 4.3 - Dangerous when wet



Packing group (DOT) : I - Great Danger

DOT Special Provisions (49 CFR 172.102) : A19 - Combination packaging consisting of outer fiber drums or plywood drums, with inner plastic packaging, are not authorized for transportation by aircraft.

DOT Packaging Exceptions (49 CFR 173.xxx) : None

DOT Packaging Non Bulk (49 CFR 173.xxx) : 211

DOT Packaging Bulk (49 CFR 173.xxx) : 242

14.3. Additional information

Emergency Response Guide (ERG) Number : 138

Other information : No supplementary information available.

Special transport precautions : Not dangerous.

Overland transport

Packing group (ADR) : I

Class (ADR) : 4.3 - Substances which, in contact with water, emit flammable gases

Classification code (ADR) : W2

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Hazard labels (ADR) : 4.3 - Substances which, in contact with water, emit flammable gases



Tunnel restriction code (ADR) : E
Limited quantities (ADR) : 0
EAC : 4W
Excepted quantities (ADR) : E0

Transport by sea

DOT Vessel Stowage Location : E - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length, but is prohibited from carriage on passenger vessels in which the limiting number of passengers is exceeded.
DOT Vessel Stowage Other : 13 - Keep as dry as reasonably practicable, 52 - Stow "separated from" acids
MFAG-No : 138

Air transport

DOT Quantity Limitations Passenger aircraft/rail : Forbidden
(49 CFR 173.27)
DOT Quantity Limitations Cargo aircraft only (49 : 15 kg
CFR 175.75)
Civil Aeronautics Law : Combustible materials/Substances which, in contact with water, emit flammable gases

14.4. Environmental hazards

Other information : No supplementary information available.

14.5. Special precautions for user

Special transport precautions : Not dangerous.

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

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

LITHIUM ALUMINUM DEUTERIDE (D4, 98%) (14128-54-2)	
SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302.
SARA Section 311/312 Hazard Classes	Reactive hazard Immediate (acute) health hazard Delayed (chronic) health hazard
SARA Section 313 - Emission Reporting	Not subject to reporting requirements of the United States SARA Section 313.

15.2. International regulations

CANADA

LITHIUM ALUMINUM DEUTERIDE (D4, 98%) (14128-54-2)	
Listed on the Canadian DSL (Domestic Substances List)	

15.2.1. National regulations

No additional information available

15.3. US State regulations

LITHIUM ALUMINUM DEUTERIDE (D4, 98%)(14128-54-2)	
U.S. - California - Proposition 65 - Carcinogens List	No
U.S. - California - Proposition 65 - Developmental Toxicity	No

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LITHIUM ALUMINUM DEUTERIDE (D4, 98%)(14128-54-2)	
U.S. - California - Proposition 65 - Reproductive Toxicity - Female	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No
State or local regulations	U.S. - Pennsylvania - RTK (Right to Know) List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Massachusetts - Right To Know List

SECTION 16: Other information

Other information : This product is not radioactive. The data given for this product are those of the corresponding unlabeled compound, unless specifically indicated otherwise. Health and safety data for labeled compounds are generally not available, but are assumed to be similar or identical to the corresponding unlabeled compound.

Full text of R-, H- and EUH-phrases:

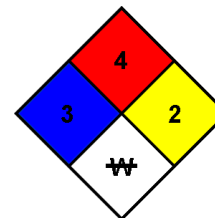
Acute Tox. 3 (Oral)	Acute toxicity (oral) Category 3
Skin Corr. 1	Skin corrosion/irritation Category 1
Water-react. 1	Substances and mixtures which in contact with water emit flammable gases Category 1
H260	In contact with water releases flammable gases which may ignite spontaneously
H301	Toxic if swallowed
H314	Causes severe skin burns and eye damage
R15	Contact with water liberates extremely flammable gases
R25	Toxic if swallowed
R35	Causes severe burns
C	Corrosive
F	Highly flammable
T	Toxic

NFPA health hazard : 3 - Materials that, under emergency conditions, can cause serious or permanent injury.

NFPA fire hazard : 4 - Materials that rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air and burn readily.

NFPA reactivity : 2 - Materials that readily undergo violent chemical change at elevated temperatures and pressures.

NFPA specific hazard : W - Materials that react violently or explosively with water.



Hazard Rating

Health : 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given

Flammability : 4 Severe Hazard

Physical : 2 Moderate Hazard

CIL Substance SDS

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product