

Lithium Borohydride	Pricing >
Lithium Borohydride Solution	Pricing >
Linear Formula	LiBH ₄
Pubchem CID	4148881
MDL Number	MFCD00011088
EC No.	241-021-7
IUPAC Name	lithium boranuide
Beilstein/Reaxys No.	N/A
SMILES	[Li+].[BH4-]
Inchl Identifier	InChI=1S/BH4.Li/h1H4;/q-1;+1
Inchl Key	UUKMSDRXCXNLYOO-UHFFFAOYSA-N
Signal Word	Danger
Hazard Statements	H260-H301-H311-H314-H331
Hazard Codes	F,T
Risk Codes	14/15-23/24/25-34
Safety Statements	26-36/37/39-43-45
RTECS Number	ED2725000
Transport Information	UN 1413 4.3/PG 1
WGK Germany	2

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SAFETY DATA SHEET

Date Accessed: 05/18/2024

Date Revised: 01/15/2022

SECTION 1. IDENTIFICATION

Product Identifiers: All applicable American Elements product codes for CAS #16949-15-8

Relevant identified uses of the substance:
Scientific research and development

SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable liquids (Category 2), H225

Substances and mixtures, which in contact with water, emit flammable gases (Category 1), H260

Acute toxicity, Oral (Category 4), H302

Acute toxicity, Inhalation (Category 4), H332

Skin corrosion (Category 1B), H314

Serious eye damage (Category 1), H318

Carcinogenicity (Category 2), H351

Specific target organ toxicity -single exposure (Category 3), Respiratory system, H335

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

GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

Hazard statement(s)

H225 Highly flammable liquid and vapor.

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

H302 + H332 Harmful if swallowed or if inhaled

H314 Causes severe skin burns and eye damage.

H335 May cause respiratory irritation.

H351 Suspected of causing cancer.

Precautionary statement(s)

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.

P223 Do not allow contact with water.

P231 + P232 Handle under inert gas. Protect from moisture.

P233 Keep container tightly closed.

P240 Ground/bond container and receiving equipment.

P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.

P242 Use only non-sparking tools.

P243 Take precautionary measures against static discharge.

P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.

P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.
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 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor/ physician.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
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 dry sand, dry chemical or alcohol-resistant foam to extinguish.
P402 + P404 Store in a dry place. Store in a closed container.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.
P501 Dispose of contents/ container to an approved waste disposal plant.
Hazards not otherwise classified (HNOC) or not covered by GHS
Reacts violently with water., May form explosive peroxides.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixtures

Formula: H4BLi

Molecular weight: 21.78 g/mol

Hazardous components

Component

Classification

Concentration
Tetrahydrofuran
CAS-No.
EC-No.
Index-No.
Registration number
109-99-9
203-726-8
603-025-00-0
01-2119444314-46-XXXX
Flam. Liq. 2; Acute Tox. 4; Eye Irrit. 2A; Carc. 2;
STOT SE 3; H225, H302, H319, H335, H351
>=90-<=100%
Lithium tetrahydroborate
CAS-No.
EC-No.
16949-15-8
241-021-7
Water-react. 1; Acute Tox. 3; Skin Corr. 1B; Eye Dam.
1; H260, H301 + H311 + H331,
>=5-<10%
H314
For the full text of the H-Statements mentioned in this
Section, see Section 16.

SECTION 4. FIRST AID MEASURES

Description of first aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

Move out of dangerous area.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

Continue rinsing eyes during transport to hospital.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11

Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5. FIREFIGHTING MEASURES

Extinguishing media
Suitable extinguishing media
Dry powder
Special hazards arising from the substance or mixture
Carbon oxides, Borane/boron oxides, Lithium oxides
Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.
Further information
No data available

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.
For personal protection see section 8.
Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.
Methods and materials for containment and cleaning up
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Do not flush with water.
Reference to other sections
For disposal see section 13.

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapor or mist.
Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.
For precautions see section 2.

Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Never allow product to get in contact with water during storage.
Handle and open container with care.
Moisture sensitive.
Dry residue is explosive.
Store under inert gas.
Test for peroxide formation periodically and before distillation.
Storage class (TRGS 510): Hazardous materials, which set free flammable gases upon contact with water
Specific end use(s)
Apart from the uses mentioned in section 1 no other specific uses are stipulated

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Components with workplace control parameters
Component
CAS-No.
Value
Control parameters
Basis
Tetrahydrofuran
109-99-9
TWA
50.000000 ppm
USA. ACGIH Threshold Limit Values (TLV)
Remarks
Central Nervous System impairment
Upper Respiratory Tract irritation
Kidney damage
Confirmed animal carcinogen with unknown relevance to humans
Danger of cutaneous absorption
STEL
100.000000 ppm
USA. ACGIH Threshold Limit Values (TLV)
Central Nervous System impairment
Upper Respiratory Tract irritation
Kidney damage
Confirmed animal carcinogen with unknown relevance to humans
Danger of cutaneous absorption
TWA

200.000000 ppm
590.000000 mg/m3
USA. NIOSH Recommended Exposure Limits
ST
250.000000 ppm
735.000000 mg/m3
USA. NIOSH Recommended Exposure Limits
TWA
200.000000 ppm
590.000000 mg/m3
USA. Occupational Exposure Limits (OSHA) -Table
Z-1 Limits for Air Contaminants
The value in mg/m3 is approximate.
Biological occupational exposure limits
Component
CAS-No.
Parameters
Value
Biological specimen
Basis
Tetrahydrofuran
109-99-9
Tetrahydrofuran
2.0000 mg/l
Urine
ACGIH - Biological
Exposure Indices
(BEI)
Remarks
End of shift (As soon as possible after exposure ceases)
Exposure controls
Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.
Personal protective equipment
Eye/face protection
Tightly fitting safety goggles.
Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.
Splash contact
Material: butyl-rubber
Minimum layer thickness: 0.3 mm
Break through time: 10 min
Material tested:Butoject® (KCL 897 / Aldrich

Z677647, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone
+49 (0)6659 87300, e-mail sales@kcl.de, test
method: EN374

If used in solution, or mixed with other substances,
and under conditions which differ from EN 374,
contact the supplier of the CE approved gloves. This
recommendation is advisory only and must be
evaluated by an industrial hygienist and safety officer
familiar with the specific situation of anticipated use by
our customers. It should not be construed as offering
an approval for any specific use scenario.

Body Protection

Complete suit protecting against chemicals, Flame
retardant antistatic protective clothing., The type of
protective equipment must be selected according to
the concentration and amount of the dangerous
substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators
are appropriate use a full-face respirator with multi-
purpose combination (US) or type ABEK (EN 14387)
respirator cartridges as a backup to engineering
controls.

If the respirator is the sole means of protection, use a
full-face supplied air respirator. Use respirators and
components tested and approved under appropriate
government standards such as NIOSH (US) or CEN
(EU).

Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do
not let product enter drains.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance

Form: liquid

Odor: No data available

Odor Threshold: No data available

pH: No data available

Melting point/freezing point: No data available

Initial boiling point and boiling range: No data
available

Flash point: -18 °C (0 °F)-closed cup

Evaporation rate: No data available

Flammability (solid, gas): No data available

Upper/lower flammability or explosive limits: No data
available

Vapor pressure: No data available

Vapor density: No data available

Relative density: 0.896 g/cm³

Water solubility: No data available
Partition coefficient: n-octanol/water: No data available
Auto-ignition temperature: No data available
Decomposition temperature: No data available
Viscosity: No data available
Explosive properties: No data available
Oxidizing properties: No data available
Other safety information: No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity
No data available
Chemical stability
Stable under recommended storage conditions.
Possibility of hazardous reactions
Vapors may form explosive mixture with air. Reacts violently with water.
Conditions to avoid
Heat, flames and sparks. Exposure to moisture
Incompatible materials
Strong bases, Oxidizing agents, Strong oxidizing agents, Amines, Ammonia, Strong acids, Oxygen, Chloroformates, Halogens, Phosphorus halides
Hazardous decomposition products
Other decomposition products - No data available
In the event of fire: see section 5

SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects
Acute toxicity
No data available
Inhalation: No data available
Dermal: No data available
No data available
Skin corrosion/irritation
No data available
Serious eye damage/eye irritation
No data available
Respiratory or skin sensitisation
No data available
Germ cell mutagenicity
No data available
Carcinogenicity
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
NTP: No component of this product present at levels

greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
Reproductive toxicity
No data available
No data available
Specific target organ toxicity -single exposure
No data available
Specific target organ toxicity -repeated exposure
No data available
Aspiration hazard
No data available
Additional Information
RTECS: Not available
Central nervous system depression, Exposure to high airborne concentrations can cause anesthetic effects., Cough, chest pain, Difficulty in breathing, Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated., burning sensation
Stomach-Irregularities-Based on Human Evidence
Stomach-Irregularities-Based on Human Evidence
Stomach-Irregularities-Based on Human Evidence
(Lithium tetrahydroborate)

SECTION 12. ECOLOGICAL INFORMATION

Toxicity
No data available
Persistence and degradability:
No data available
Bioaccumulative potential:
No data available
Mobility in soil:
No data available
Results of PBT and vPvB assessment:
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted
Other adverse effects
No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Product

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable.

Offer surplus and non-recyclable solutions to a licensed disposal company.

Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging

Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

DOT (US)

UN number: 3399

Class: (3)

Packing group: I

Proper shipping name: Organometallic substance, liquid, water-reactive, flammable

(Tetrahydrofuran, Lithium tetrahydroborate)

Reportable Quantity (RQ): 1000lbs

Poison Inhalation Hazard: No

IMDG

UN number: 3399

Class: (3)

Packing group: I

EMS-No: F-G, S-N

Proper shipping name: ORGANOMETALLIC SUBSTANCE, LIQUID, WATER-REACTIVE, FLAMMABLE

(Lithium tetrahydroborate, Tetrahydrofuran)

IATA

UN number: 3399

Class: (3)

Packing group: I

Proper shipping name: Organometallic substance, liquid, water-reactive, flammable

(Lithium tetrahydroborate, Tetrahydrofuran)

IATA Passenger: Not permitted for transport

SECTION 15. REGULATORY INFORMATION

SARA 302 Components

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels

established by SARA Title III, Section 313.
SARA 311/312 Hazards
Fire Hazard, Reactivity Hazard, Acute Health Hazard,
Chronic Health Hazard
Massachusetts Right To Know Components
Tetrahydrofuran
CAS-No.
109-99-9
Revision Date
1993-04-24
Pennsylvania Right To Know Components
Tetrahydrofuran
CAS-No.
109-99-9
Revision Date
1993-04-24
Lithium tetrahydroborate
16949-15-8
2007-03-01
New Jersey Right To Know Components
Tetrahydrofuran
CAS-No.
109-99-9
Revision Date
1993-04-24
Lithium tetrahydroborate
16949-15-8
2007-03-01
California Prop. 65 Components
This product does not contain any chemicals known to
State of California to cause cancer, birth defects, or
any other reproductive harm.

16. OTHER INFORMATION

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH). 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. It does not represent any guarantee of the properties of the product. American Elements shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. COPYRIGHT 1997-2022 AMERICAN ELEMENTS. LICENSED GRANTED TO MAKE UNLIMITED PAPER COPIES FOR INTERNAL USE ONLY.
