

1 Identification

Product identifier

Product name: Lithium tri-sec-butylborohydride, 1.0M solution in THF

Stock number: 43034

CAS Number:

38721-52-7

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

Identified use: SU24 Scientific research and development

Details of the supplier of the safety data sheet

Manufacturer/Supplier:

Alfa Aesar

Thermo Fisher Scientific Chemicals, Inc.

30 Bond Street

Ward Hill, MA 01835-8099

Tel: 800-343-0660

Fax: 800-322-4757

Email: tech@alfa.com

www.alfa.com

Information Department: Health, Safety and Environmental Department

Emergency telephone number:

During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660. After normal business hours, call Carechem 24 at (866) 928-0789.

2 Hazard(s) identification


Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)

 GHS02 Flame

Flam. Liq. 2 H225 Highly flammable liquid and vapor.

Pyr. Liq. 1 H250 Catches fire spontaneously if exposed to air.

Water-react. 1 H260 In contact with water releases flammable gases which may ignite spontaneously.

 GHS05 Corrosion

Skin Corr. 1B H314 Causes severe skin burns and eye damage.

Eye Dam. 1 H318 Causes serious eye damage.

Hazards not otherwise classified No information known.

Label elements

GHS label elements The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

Hazard pictograms



GHS02 GHS05

Signal word Danger

Hazard statements

H225 Highly flammable liquid and vapor.

H250 Catches fire spontaneously if exposed to air.

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

H314 Causes severe skin burns and eye damage.

Precautionary statements

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

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

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/...

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

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

WHMIS classification

B2 - Flammable liquid

B6 - Reactive flammable material

D2B - Toxic material causing other toxic effects

E - Corrosive material



Classification system

HMIS ratings (scale 0-4)

(Hazardous Materials Identification System)

HEALTH 3 Health (acute effects) = 3

FIRE 3 Flammability = 3

REACTIVITY 3 Physical Hazard = 3

Other hazards

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

3 Composition/information on ingredients

Chemical characterization: Substances

CAS# Description:

38721-52-7 Lithium tri-sec-butylborohydride, 1.0M solution in THF

Product name: Lithium tri-sec-butylborohydride, 1.0Msolution in THF

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4 First-aid measures

Description of first aid measures
General information Immediately remove any clothing soiled by the product.
After inhalation
Supply fresh air. If required, provide artificial respiration. Keep patient warm.
Seek immediate medical advice.
After skin contact
Immediately wash with water and soap and rinse thoroughly.
Seek immediate medical advice.
After eye contact Rinse opened eye for several minutes under running water. Then consult a doctor.
After swallowing Seek medical treatment.
Information for doctor
Most important symptoms and effects, both acute and delayed
Causes severe skin burns.
Causes serious eye damage.
Indication of any immediate medical attention and special treatment needed No further relevant information available.

5 Fire-fighting measures

Extinguishing media
Suitable extinguishing agents In case of fire, use sand, carbon dioxide or powdered extinguishing agent. Never use water.
For safety reasons unsuitable extinguishing agents Water
Special hazards arising from the substance or mixture
Reacts violently with water
Spontaneously flammable in air.
Contact with water releases hydrogen (explosive).
If this product is involved in a fire, the following can be released:
Carbon monoxide and carbon dioxide
Boron oxide
Lithium oxide
Advice for firefighters
Protective equipment:
Wear self-contained respirator.
Wear fully protective impervious suit.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
Keep away from ignition sources
Environmental precautions: Do not allow material to be released to the environment without proper governmental permits.
Methods and material for containment and cleaning up:
Keep away from ignition sources.
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Use neutralizing agent.
Dispose of contaminated material as waste according to section 13.
Ensure adequate ventilation.
Do not flush with water or aqueous cleansing agents
Prevention of secondary hazards: Keep away from ignition sources.
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

Handling
Precautions for safe handling
Handle under dry protective gas.
Keep container tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure good ventilation at the workplace.
Open and handle container with care.
Information about protection against explosions and fires:
Substance/product is self ignitable.
Keep ignition sources away.
Do not distill to dryness.
Explosive peroxides may form, handle container cautiously.
Conditions for safe storage, including any incompatibilities
Storage
Requirements to be met by storerooms and receptacles: Store in a cool location.
Information about storage in one common storage facility:
Store away from oxidizing agents.
Store away from air.
Store in the dark.
Store away from water/moisture.
Further information about storage conditions:
Store under dry inert gas.
This product is moisture sensitive.
This product is air sensitive.
Protect from humidity and water.
Store in cool, dry conditions in well sealed containers.
Protect from exposure to light.
Avoid contact with air/oxygen (formation of peroxide).
Check container pressure periodically to prevent explosive peroxides.
Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection

Additional information about design of technical systems:
Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

(Contd. on page 3)
USA

Product name: Lithium tri-sec-butylborohydride, 1.0Msolution in THF

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Control parameters
Components with limit values that require monitoring at the workplace:

Tetrahydrofuran	
ppm	
ACGIH TLV	200; 250-STEL
Austria TWA	200
Belgium TWA	200; 250-STEL
Denmark TWA	200
Finland TWA	100; 150-STEL
France TWA	200
Germany TWA	200
Hungary TWA	200 mg/m3; 400 mg/m3-STEL
Netherlands TWA	100 (skin)
Russia TWA	200; 100 mg/m3-STEL
Sweden TWA	50
Switzerland TWA	200; 1000-STEL
United Kingdom TWA	100; 200-STEL (skin)
USA PEL	200

Additional information: No data

Exposure controls
Personal protective equipment
General protective and hygienic measures
The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Remove all soiled and contaminated clothing immediately.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
Maintain an ergonomically appropriate working environment.
Breathing equipment: Use suitable respirator when high concentrations are present.
Protection of hands:
Impervious gloves
Check protective gloves prior to each use for their proper condition.
The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.
Eye protection:
Tightly sealed goggles
Full face protection
Body protection: Protective work clothing.

9 Physical and chemical properties

Information on basic physical and chemical properties

General Information

Appearance:

Form:	Solution
Color:	Colorless
Odor:	Not determined
Odor threshold:	Not determined.

pH-value: Not determined.

Change in condition

Melting point/Melting range:	Not determined
Boiling point/Boiling range:	Not determined
Sublimation temperature / start:	Not determined

Flash point:	-17 °C (1 °F)
Flammability (solid, gaseous)	Not applicable.
Ignition temperature:	Not determined
Decomposition temperature:	Not determined
Auto igniting:	Spontaneously flammable in air.

Danger of explosion:	May form explosive peroxides. Do not distill to dryness.
Explosion limits:	
Lower:	Not determined
Upper:	Not determined
Vapor pressure:	Not determined
Density at 20 °C (68 °F):	0.87 g/cm ³ (7.26 lbs/gal)
Relative density	Not determined.
Vapor density	Not determined.
Evaporation rate	Not determined.
Solubility in / Miscibility with	
Water:	Reacts violently Contact with water releases flammable gases
Partition coefficient (n-octanol/water):	Not determined.
Viscosity:	
dynamic:	Not determined.
kinematic:	Not determined.
Other information	No further relevant information available.

10 Stability and reactivity

Reactivity

Reacts violently with water.
In contact with water releases flammable gases which may ignite spontaneously.
Catches fire spontaneously if exposed to air.
May form explosive peroxides.
Chemical stability Stable under recommended storage conditions.
Thermal decomposition / conditions to be avoided: Decomposition will not occur if used and stored according to specifications.
Possibility of hazardous reactions
Spontaneously flammable in air.
Contact with water releases flammable gases
Reacts violently with water
May form explosive peroxides.

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USA

Product name: Lithium tri-sec-butylborohydride, 1.0Msolution in THF	
<div><div>Conditions to avoid</div><div>No further relevant information available.</div><div>Incompatible materials:</div><div>Alcohols</div><div>Oxidizing agents</div><div>Air</div><div>Water/moisture</div><div>Light</div><div>Hazardous decomposition products:</div><div>Carbon monoxide and carbon dioxide</div><div>Metal oxide fume</div><div>Boron oxide</div><div>Lithium oxide</div></div> <div>(Contd. of page 3)</div>	
11 Toxicological information <div><div>Information on toxicological effects</div><div>Acute toxicity: Swallowing will lead to a strong corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.</div><div>LD/LC50 values that are relevant for classification: No data</div><div>Skin irritation or corrosion: Causes severe skin burns.</div><div>Eye irritation or corrosion: Causes serious eye damage.</div><div>Sensitization: No sensitizing effects known.</div><div>Germ cell mutagenicity: No effects known.</div><div>Carcinogenicity: EPA-I: Data are inadequate for an assessment of human carcinogenic potential.</div><div>Reproductive toxicity: No effects known.</div><div>Specific target organ system toxicity - repeated exposure: No effects known.</div><div>Specific target organ system toxicity - single exposure: No effects known.</div><div>Aspiration hazard: No effects known.</div><div>Subacute to chronic toxicity:</div><div>THF is irritating to eyes and mucous membranes and may cause narcosis in high concentrations. May cause liver and kidney injury.</div><div>Large amounts of lithium compounds may cause vomiting, diarrhea, ataxia, intestinal irritation, kidney injury, central nervous system depression and a drop in blood pressure. Central nervous system effects may include slurred speech, blurred vision, dizziness, sensory loss, convulsions and stupor. Chronic intake may cause neuromuscular effects such as tremor, ataxia, weakness, clonus and hyperactive reflexes. Lithium can cause kidney damage, gastrointestinal disturbances, fatigue, dehydration, weight loss, dermatological effects and thyroid damage. Lithium ion has shown teratogenic effects in rats and mice.</div><div>Subacute to chronic toxicity: No effects known.</div><div>Subacute to chronic toxicity:</div><div>Boron affects the central nervous system. Boron poisoning causes depression of the circulation, persistent vomiting and diarrhea, followed by profound shock and coma. The temperature may become subnormal and a scarletina form rash may cover the entire body.</div><div>Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.</div></div>	
12 Ecological information <div><div>Toxicity</div><div>Aquatic toxicity: No further relevant information available.</div><div>Persistence and degradability</div><div>No further relevant information available.</div><div>Bioaccumulative potential</div><div>No further relevant information available.</div><div>Mobility in soil</div><div>No further relevant information available.</div><div>Additional ecological information:</div><div>General notes:</div><div>Do not allow material to be released to the environment without proper governmental permits.</div><div>Do not allow undiluted product or large quantities to reach ground water, water course or sewage system.</div><div>Avoid transfer into the environment.</div><div>Results of PBT and vPvB assessment</div><div>PBT: Not applicable.</div><div>vPvB: Not applicable.</div><div>Other adverse effects</div><div>No further relevant information available.</div></div>	
13 Disposal considerations <div><div>Waste treatment methods</div><div>Recommendation</div><div>Consult state, local or national regulations to ensure proper disposal.</div><div>Uncleaned packagings:</div><div>Recommendation:</div><div>Disposal must be made according to official regulations.</div></div>	
14 Transport information	
UN-Number	UN3394
DOT, IMDG, IATA	
UN proper shipping name	Organometallic substance, liquid, pyrophoric, water-reactive (Lithium tri-sec-butylborohydride/THF solution)
DOT	ORGANOMETALLIC SUBSTANCE, LIQUID, PYROPHORIC, WATER- REACTIVE (Lithium tri-sec-butylborohydride/THF solution)
IMDG, IATA	
Transport hazard class(es)	
DOT	
	
Class	4.2 Substances liable to spontaneous combustion.
Label	4.2+4.3
Class	4.2 (SW) Substances liable to spontaneous combustion
Label	4.2+4.3
IMDG, IATA	
	
Class	4.2 Substances liable to spontaneous combustion.
Label	4.2+4.3
Packing group	
DOT, IMDG, IATA	I

Product name: Lithium tri-sec-butylborohydride, 1.0Msolution in THF	
(Contd. of page 4)	
Environmental hazards:	Not applicable.
Special precautions for user	Warning: Substances liable to spontaneous combustion
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.	
Transport/Additional information:	
DOT	No
Marine Pollutant (DOT):	
UN "Model Regulation":	UN3394, Organometallic substance, liquid, pyrophoric, water-reactive (Lithium tri-sec-butylborohydride/THF solution), 4.2 (4.3), I

15 Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture
GHS label elements The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)
Hazard pictograms



Signal word Danger
Hazard statements
H225 Highly flammable liquid and vapor.
H250 Catches fire spontaneously if exposed to air.
H260 In contact with water releases flammable gases which may ignite spontaneously.
H314 Causes severe skin burns and eye damage.
Precautionary statements
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
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/...
P370+P378 In case of fire: Use for extinction: Fire-extinguishing powder.
P402+P404 Store in a dry place. Store in a closed container.

National regulations
All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.
The components of this product are listed on the Canadian Domestic Substances List (DSL) and/or the Canadian Non-Domestic Substances List (NDSL).
SARA Section 313 (specific toxic chemical listings) Substance is not listed.
California Proposition 65
Prop 65 - Chemicals known to cause cancer Substance is not listed.
Prop 65 - Developmental toxicity Substance is not listed.
Prop 65 - Developmental toxicity, female Substance is not listed.
Prop 65 - Developmental toxicity, male Substance is not listed.
Information about limitation of use: For use only by technically qualified individuals.
Other regulations, limitations and prohibitive regulations
Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006. Substance is not listed.
The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.
Substance is not listed.
Annex XIV of the REACH Regulations (requiring Authorisation for use) Substance is not listed.
Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing SDS: Global Marketing Department
Date of preparation / last revision 11/24/2015 / -
Abbreviations and acronyms:
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
ICAO: International Civil Aviation Organization
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
CAS: Chemical Abstracts Service (division of the American Chemical Society)
HMIS: Hazardous Materials Identification System (USA)
WHMIS: Workplace Hazardous Materials Information System (Canada)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
vPvB: very Persistent and very Bioaccumulative
ACGIH: American Conference of Governmental Industrial Hygienists (USA)
OSHA: Occupational Safety and Health Administration (USA)
NTP: National Toxicology Program (USA)
IARC: International Agency for Research on Cancer
EPA: Environmental Protection Agency (USA)