

Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 10/20/2010

Reviewed on 10/19/2010

1 Identification of substance:

Product details:

Product name: Lithium triethylborohydride, 1M in THF

Stock number: 42491

Manufacturer/Supplier:

Alfa Aesar, A Johnson Matthey Company
Johnson Matthey Catalog Company, Inc.
30 Bond Street
Ward Hill, MA 01835-8099
Emergency Phone: (978) 521-6300
CHEMTREC: (800) 424-9300
Web Site: www.alfa.com

Information Department: Health, Safety and Environmental Department

Emergency information:

During normal hours the Health, Safety and Environmental Department. After normal hours call Chemtrec at (800) 424-9300.

2 Hazards identification

Hazard description:



C Corrosive
F Highly flammable

Information pertaining to particular dangers for man and environment

R 11 Highly flammable.
R 14/15 Reacts violently with water, liberating extremely flammable gases.
R 19 May form explosive peroxides.
R 34 Causes burns.

Classification system

HMIS ratings (scale 0-4)
(Hazardous Materials Identification System)

HEALTH	3	Health (acute effects) = 3
FIRE	3	Flammability = 3
REACTIVITY	3	Reactivity = 3

GHS label elements



Danger

2.6/2 - Highly flammable liquid and vapour.
2.12/1 - In contact with water releases flammable gases which may ignite spontaneously.



Danger

3.2/1B - Causes severe skin burns and eye damage.

Prevention:

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

Response:

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

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.

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

Storage:

Store in a dry place. Store in a closed container.

3 Composition/Data on components:

Chemical characterization:

Description: (CAS#)

Lithium triethylborohydride (CAS# 22560-16-3): 10-12%
Tetrahydrofuran (CAS# 109199-9): 88-90%

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4 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 immediate medical advice.

5 Fire fighting measures

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 caused by the material, its products of combustion or resulting gases:

Contact with water releases hydrogen (explosive).

In case of fire, the following can be released:

Carbon monoxide and carbon dioxide

Lithium oxide

Boron oxide

Reacts violently with water

Protective equipment:

Wear self-contained respirator.

Wear fully protective impervious suit.

6 Accidental release measures

Person-related safety precautions:

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Keep away from ignition sources

Measures for environmental protection:

Do not allow material to be released to the environment without proper governmental permits.

Measures for cleaning/collecting:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Use neutralizing agent.

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

Do not flush with water or aqueous cleansing agents

Keep away from ignition sources.

Additional information:

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

Information 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:

Keep ignition sources away.

Protect against electrostatic charges.

Fumes can combine with air to form an explosive mixture.

Do not distill to dryness.

Explosive peroxides may form, handle container cautiously.

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.

Do not store together with acids.

Store in the dark.

Store away from water/moisture.

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Further information about storage conditions:

Store under dry inert gas.
 This product is moisture sensitive.
 Store in cool, dry conditions in well sealed containers.
 Protect from humidity and water.
 Protect from exposure to light.
 Avoid contact with air/oxygen (formation of peroxide).
 Check container pressure periodically to prevent explosive peroxides.

8 Exposure controls and 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.

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**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.

Breathing equipment: Use suitable respirator when high concentrations are present.**Protection of hands:** Impervious gloves**Eye protection:**

Safety glasses
 Tightly sealed goggles
 Full face protection

Body protection: Protective work clothing.**9 Physical and chemical properties:****General Information**

Form:	Liquid
Color:	Colorless
Odor:	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)**Ignition temperature:** Not determined**Decomposition temperature:** Not determined

Danger of explosion: May form explosive peroxides.
 Do not distill to dryness.

Explosion limits:

Lower:	Not determined
Upper:	Not determined

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Vapor pressure:	Not determined
Density at 20°C (68°F):	0.892 g/cm ³
Solubility in / Miscibility with Water:	Reacts violently Contact with water releases flammable gases

10 Stability and reactivity

Thermal decomposition / conditions to be avoided:

Decomposition will not occur if used and stored according to specifications.

Materials to be avoided:

Water/moisture
Acids
Oxidizing agents
Light

Dangerous reactions

Contact with water releases flammable gases
Reacts violently with water
May form explosive peroxides.

Dangerous products of decomposition:

Hydrogen
Carbon monoxide and carbon dioxide
Boron oxide
Lithium oxide

11 Toxicological information

Acute toxicity:

Primary irritant effect:

on the skin: Corrosive effect on skin and mucous membranes.

on the eye: Strong corrosive effect.

Sensitization: No sensitizing effects known.

Subacute to chronic toxicity:

THF is irritating to eyes and mucous membranes and may cause narcosis in high concentrations.
May cause liver and kidney injury.

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.

Subacute to chronic toxicity:

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.

Additional toxicological information:

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

Swallowing will lead to a strong corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.

EPA-I: Data are inadequate for an assessment of human carcinogenic potential.

12 Ecological information:

Additional ecological information:

General notes:

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Do not allow material to be released to the environment without proper governmental permits.

13 Disposal considerations

Product:

Recommendation Consult state, local or national regulations to ensure proper disposal.

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Uncleaned packagings:

Recommendation: Disposal must be made according to official regulations.

14 Transport information

DOT regulations:



Hazard class: 4.3
Identification number: UN3399
Packing group: I
Proper shipping name (technical name): ORGANOMETALLIC SUBSTANCE, LIQUID, WATER REACTIVE, FLAMMABLE

Label S
4.3+3

Land transport ADR/RID (cross-border)



ADR/RID class: 4.3 (WF1) Substances which, in contact with water, emit flammable gases
Danger code (Kemler): x323
UN-Number: 3399
Packaging group: I
Description of goods: 3399 ORGANOMETALLIC SUBSTANCE, LIQUID, WATER REACTIVE, FLAMMABLE

S

Maritime transport IMDG:



IMDG Class: 4.3
UN Number: 3399
Label 4.3+3
Packaging group: I
Marine pollutant: No
Proper shipping name: ORGANOMETALLIC SUBSTANCE, LIQUID, WATER-REACTIVE, FLAMMABLE

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Air transport ICAO-TI and IATA-DGR:



ICAO/IATA Class:	4.3
UN/ID Number:	3399
Label	4.3+3
Packaging group:	I
Proper shipping name:	ORGANOMETALLIC SUBSTANCE, LIQUID, WATER-REACTIVE, FLAMMABLE

UN "Model Regulation":
UN3399, ORGANOMETALLIC SUBSTANCE, LIQUID, WATER REACTIVE, FLAMMABLE

S, 4.3 (3), I

15 Regulations

Product related hazard informations:

Hazard symbols:

C Corrosive
F Highly flammable

Risk phrases:

11 Highly flammable.
14/15 Reacts violently with water, liberating extremely flammable gases.
19 May form explosive peroxides.
34 Causes burns.

Safety phrases:

16 Keep away from sources of ignition - No smoking.
26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
43 In case of fire, use sand, carbon dioxide or powdered extinguishing agent. Never use water.
45 In case of accident or if you feel unwell, seek medical advice immediately.

National regulations

This product is not listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical Substance Inventory. Use of this product is restricted to research and development only.

Some or all of the components of this product are not listed on the Canadian Domestic Substances List (DSL) or the Canadian Non-Domestic Substances List (NDSL).

Information about limitation of use: For use only by technically qualified individuals.

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 MSDS: Health, Safety and Environmental Department.

Contact: Ryan P. Wilson

Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

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ICAO: International Civil Aviation Organization
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
CAS: Chemical Abstracts Service (division of the American Chemical Society)
HMIS: Hazardous Materials Identification System (USA)

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