



LITHIUM BOROHYDRIDE (LBH) 4.1M IN THF

CAS No. 16949-15-8

QS-PDS-050 Revision: 01

**Product Names** Lithium Borohydride, LBH

**Formula**  $\text{LiBH}_4$

**Application** Lithium borohydride in THF is a mild reducing agent with excellent solubility in ethereal solvents. It is widely employed for selective reductions of aldehydes, ketones, etc. in the presence of other reducible groups, such as nitriles or nitro groups. For leading references, consult M. Fieser, *Reagents for Organic Synthesis, Vol. 14, 1989* John Wiley & Sons, p. 191.

**Product Specification**

Lithium Borohydride	<u>Guaranteed*</u>	
	9.5 – 10.5 wt.%	(3.9 – 4.3 Molar)

\* This product can be made to agreed upon customer specifications

**Solvent** Tetrahydrofuran (THF)

**Physical Properties**

Molecular weight	21.78
Density @20°C	0.896 g/mL (7.48 lb/gal)
Contained lithium borohydride	84.9 – 93.7 g/L (0.71 – 0.78 lb/gal)
Boiling point	66 – 67°C (THF)
Pyrophoricity	Non-pyrophoric

**Solubility** Reacts with water or protic solvents to liberate hydrogen gas.

**Thermal Stability** LBH solutions in THF, with exclusion of air and moisture are very stable at room temperature.



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**Toxicity/Safety Data** Flammable liquid. Water reactive. In case of fire do not use water or carbon dioxide. Corrosive to eyes (may cause blindness), skin, respiratory tract, mucous membranes. Inhalation of vapors may cause dizziness, nausea, anesthesia, numbness, motor weakness in fingers and toes, incoordination, and headache. If ingested, may produce a lung aspiration hazard.

*COMPLETE INFORMATION ON TOXICITY AND SAFETY IS CONTAINED IN THE OPTIMA MATERIAL SAFETY DATA SHEET (MSDS) AVAILABLE FOR THIS PRODUCT.*

**Handling/Storage/Disposal** Use in a closed system under argon or nitrogen. Do not get in eyes, on skin or clothing. Do not breathe vapors or mist. Store in a cool place. Keep container closed. Keep away from sources of ignition, water, air, acids and oxidizing agents.

<b>Shipping Containers</b>	Bulk containers	2500 – 20000 L
	Cylinders	#5 – 420 L
	Glass bottles	125 mL, 500 mL, and 1 L

**Shipping Limitations** Shipments of LBH solutions are described as "Organometallic Substance, Liquid, Water Reactive, Flammable, (*LITHIUM BOROHYDRIDE, TETRAHYDROFURAN SOLUTION*), 4.3 (3), UN 3399, PG I." Shipments require "Dangerous When Wet" and "Flammable" labels.

Post, Parcel	Not acceptable
Sea	Class 4.3 (3) (IMDG)
Air	Class 4.3 (3) (IATA) 1.0 L maximum per inner glass container. 1.0 L maximum per outer container. Cargo aircraft only
Road, Rail	Class 4.3 (3) (DOT, RID/ADR)

For shipments within Europe, labeling for supply requirements are:

F	Highly Flammable
C	Corrosive
R&S Phrases	See Material Safety Data Sheet

Responsible Care<sup>®</sup> initiative dictates that all shipments of lithium chemicals must be transported in a DOT-approved vehicle in a responsible manner (i.e., no flat bed trucks).

**Additional Resources** Refer to the Organometallics and Reactive Specialty Organics Safe Handling Guide available on-line at [www.optimachem.com](http://www.optimachem.com).