



LITHIUM TRI-*TERT*-BUTOXYALUMINUM HYDRIDE (TBLAH) IN THF CAS No. 17476-04-9

QS-PDS-017 Revision: 03

Product Names Lithium tri-*tert*-butoxyaluminum hydride, Tri-*tert*-butoxyaluminumlithium hydride, TBLAH

Formula $\text{LiAlH}(\text{OC}_4\text{H}_9)_3$

Appearance Colorless to grey solution

Application Lithium tri-*tert*-butoxyaluminum hydride is less reactive than lithium aluminum hydride (LAH) and is very useful in selective reductions of acyl halides, aldehydes, ketones, and esters. This reagent generally shows increased solubility, particularly at low temperatures in organic solvents. For reviews see: 1) H.C. Brown; *J.Am.Chem.Soc.* **1964**, 86, 1089; 2) J. Malek; M. Cerny, *Synthesis*, **1972**, 217; and 3) J. Malek, *Org. React.* **1985**, 34,1.

Product Specification

	<u>Guaranteed*</u>
Lithium tri- <i>tert</i> -butoxyaluminum hydride, wt%	28 +/- 3%

* This product can be made to agreed upon customer specifications

Solvent Tetrahydrofuran (THF)

Physical Properties	Molecular weight	254.26
	Density @20°C	0.90 g/cc
	Boiling point of pure solvent	66°C (THF)
	Volatiles, % by weight	69 - 75%
	Pyrophoricity	Non-pyrophoric

Solubility Lithium tri-*tert*-butoxyaluminum hydride is incompatible with water, acids, alcohols and oxidizers.

Thermal Stability Lithium tri-*tert*-butoxyaluminum hydride is stable at ambient temperature. However, it is very susceptible to oxidation and must be maintained under an inert atmosphere. Contact with moisture or humidity can cause the release of flammable hydrogen gas and lead to pressure build-up in the container.

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CAS No. 17476-04-9

Toxicity/Safety Data

Flammable liquid. Water reactive. In case of fire, do not use water or carbon dioxide. Clear to slightly turbid solution, colorless to grey.

Corrosive to the eyes (may cause blindness), skin, mucous membranes and upper respiratory tract. Inhalation of vapors may cause dizziness, nausea, anesthesia, numbness, motor weakness in fingers and toes, incoordination, and headache.

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, air, acids and oxidizing agents.

Containers may build pressure over time. Caution should be used in opening cylinders and bottles. Samples kept over 30 days should be regularly checked for pressure.

Shipping Containers

Cylinders	#5 – 420 L
Glass bottles	125 mL, 500 mL, and 1L

Shipping Limitations

Shipments of Lithium tri-*tert*-butoxyaluminum hydride are described as "Organometallic substance, liquid, water-reactive, flammable (*TRI-TERT-BUTOXYALUMINUM LITHIUM HYDRIDE IN TETRAHYDROFURAN*) 4.3 (3), UN3399, PG I." Shipments require "Dangerous When Wet" and "Flammable Liquid" labels.

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

For shipments within Europe, labeling for supply requirements are:

F	Highly Flammable
Xi	Irritant
R&S phrases	See Material Safety Data Sheet

Responsible Care® initiative dictates that all shipments 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.fmclithium.com.