

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.

Toxicity/Safety Data In contact with water releases flammable gases, which may ignite spontaneously. Highly flammable liquid and vapour. Causes severe skin burns and eye damage. Harmful if inhaled. Suspected of causing cancer. May cause respiratory irritation.

Handle under inert gas. Protect from moisture. In case of fire: Use dry chemical for extinction. Wear protective gloves/protective clothing/eye protection/ face protection. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. 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.

COMPLETE INFORMATION ON TOXICITY AND SAFETY IS CONTAINED IN THE SAFETY DATA SHEET (SDS) AVAILABLE FOR THIS PRODUCT.

Handling/Storage/Disposal KEEP AWAY FROM WATER, AIR AND OXIDIZING MATERIALS. Wear full face protection and gloves. Use in a closed system under argon or nitrogen. Keep away from heat, sparks and flame. Protect storage container from leaks and physical damage.

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 “UN3399, Organometallic substance, liquid, water-reactive, flammable (*TRI-TERT-BUTOXYALUMINUM LITHIUM HYDRIDE IN TETRAHYDROFURAN*) 4.3 (3), PG I.” Shipments require “Dangerous When Wet” and “Flammable Liquid” labels.

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