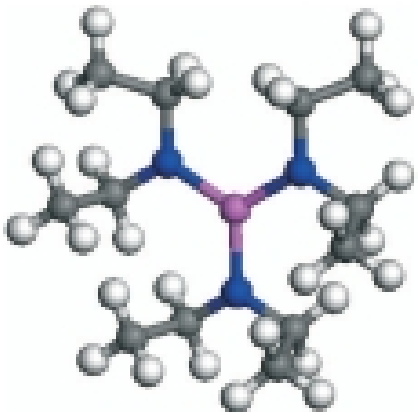
AIR LIQUIDE
ELECTRONICS

ALOHA™ Special Precursors



TDEAA

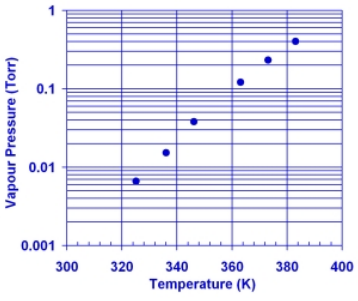
AL Precursors global offer - High k

Tris(diethylamino)aluminium
$Al(N(C_2H_5)_2)_3$
CAS n°352546-72-6

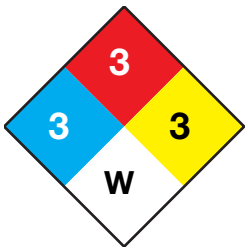
- TDEAA or Tris(diethylamino)aluminium is a volatile, non pyrophoric Al_2O_3 precursor.
- Air Liquide has developed proprietary applications of TDEAA for the deposition of Al_2O_3 or mixed oxides for gate or capacitor dielectrics applications. For the latter, TDEAA has also been found to be compatible with TDEAH (Tetrakis(diethylamino)Hafnium), which allows the usage of cocktail precursor sources.
- Depositions using TDEAA can be performed by Atomic Layer Deposition (ALD) or by Metal Organic Chemical Vapor Deposition (MOCVD) with water, oxygen or ozone as co-reactants, and exhibits equivalent growth kinetics compared with other commonly used pyrophoric AL precursors such as TMA (TriMethylAluminium).
- Main application : Deposition of Al_2O_3 and other mixed oxides such as $HfAlO_4$, $LaAlO_4$, and deposition of AlN

Physical Chemical Properties

Physical Property	
Molecular Weight	486.7 $g.mol^{-1}$
Physical State	Low MP solid
Melting Point	28-31°C
Boiling Point	250°C
Vapor Pressure	0.2 Torr @ 100°C
Density	0.915 $g.cm^{-3}$ @ 25°C



Hazard Rating



HMIS
Health: 3
Flammability: 3
Reactivity: 3

Handling

- TDEAA is a flammable liquid and reacts strongly when exposed to water.
- TDEAA should be stored and dispensed in ultra-high purity EP Stainless steel systems. Appropriate valve seat and other sealing materials include PCTFE, PTFE and PFA . PVDF is to be avoided due to poor chemical compatibility.
- The recommended solvent for connection port cleaning is a high purity saturated hydrocarbon such as n-heptane or n-octane.

Packaging & Dispensing System

- TDEAA is delivered using a liquid dispensing system such as the Air Liquide CANDI Solvent system on most OEM platforms. The relatively low vapor pressure of this compound at room temperature makes the usage of the solvent purge module mandatory to properly clean the connection point of the canister and avoid the reaction of adsorbed traces of the product during canister exchange.
- TDEAA is available in SEMI F66-1101 and F96-0704 compliant canisters of both standard 5 and 2 Gallons (18.9L and 7.6L) sizes as well in smaller custom design canisters. To allow the installation on the CANDI Solvent, a special patent pending valve design allows a perfect and complete removal of TDEAA traces prior to disconnection.

Transport Information

- Proper shipping name: Organometallic compound, NOS
- CAS n°: 352546-72-6
- UN Number: UN 3399
- Class/division: 4.3 (Dangerous When Wet), 3 (Flammable)
- Packing group: II

Air Liquide ALOHA is providing a complete advanced precursor solution. AL ALOHA portfolio covers low k, high k, barrier, metal gate, electrode, including some proprietary solutions for SiN, metals and High k. Certain aspects of Air Liquide technology related to SAM.24 may be covered by Intellectual Property rights

For more information please contact: **aloha@airliquide.com** or your local Air Liquide representative.

ALOHA
ELECTRONICS PERFORMANCE MATERIALS