

ALOHA™ CVD/ALD Materials



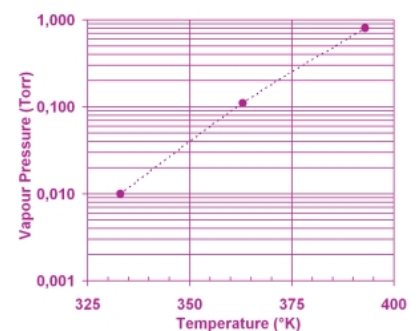
TBTDET

TertiaryButylimido, Tris(Diethylamino)Tantalum
 $\text{Ta}[\text{N}(\text{C}_2\text{H}_5)_2]_3[\text{NC}(\text{CH}_3)_3]$
 CAS n° 169896-41-7

- TBTDET is used for the ALD deposition of TaN films in BEOL applications, and for Ta_2O_5 films for high-k applications.
- TBTDET is a clear to pale yellow liquid that reacts moderately in moist air, and very rapidly with water, with the evolution of volatile amines. Handling in perfectly dried piping and components is mandatory for high-performance, particle-free processing.
- ALOHA's TBTDET exhibits perfect vaporization characteristics with virtually no residue left.
- TBTDET can be supplied pure or as a blend in UHP and perfectly dehydrated solvents such as octane.
- Like for most of the ALOHA advanced products, each canister of TBTDET is supplied with a BALAZS CoA ensuring strict compliance with the specifications. Please consult www.balazs.com for more information on Air Liquide's BALAZS analytical services.

Physical Chemical Properties

Physical Property	
Molecular Weight	468,46 g/mol
Physical State	Liquid
Colour	pale yellow
Melting Point	< 0°C
Vapour Pressure	~ 1 torr @ 120°C
Specific Gravity	1,252 g/cm ³ @ 25°C

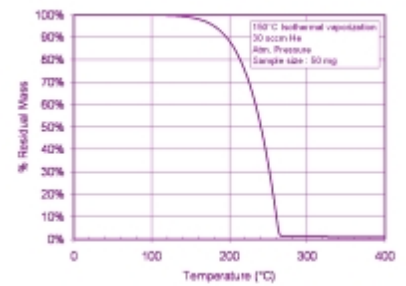


ALOHA Specifications

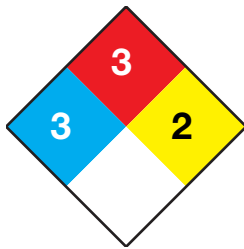
Parameter	Unit	Specification
Assay	%	> 99%
Metal Purity	%	> 99,99%
Water Content	ppm	Reacts
Total Chloride	ppm	< 30

Please consult ALOHA™ for detailed metal specifications. This product come under low volume manufacturing control plan.

The TGA graph besides indicate the perfect vaporization characteristics of ALOHA's TBTDET, with extremely low residue.



Hazard Rating



HMIS

Health: 3
Flammability: 3
Reactivity: 2

- The product should be handled considering that the major by-product in case of air exposure are volatile amines. Please consult the ALOHA MSDS of TBTDET for emergency response and PPE prior to material usage.
- All materials in contact with TBTDET should be compatible with amines. Please consult ALOHA for detailed materials recommendation.

Packaging & Dispensing System

- TBTDET can be packaged in a variety of canisters depending on the application.
- For on-board applications, TBTDET is usually supplied in 1200 or 1800 ml canisters with various valving and dip-tube configurations. Multipoint or continuous level sensing systems can also be customized to meet each specific requirements. ALOHA's on-board canisters have all-metal construction and are cleaned and dried by state of the art techniques. TBTDET can also be filled in properly documented customer-supplied canisters.
- For the cleaning of on-board manifold and direct exhaust to the tool, specific high volatility solvent can be proposed.



Transport Information

- Proper shipping name: Organometallic substance, water reactive, flammable, n.o.s.(Terbutylimido-tris(diethylamino))Tantalum)
- CAS n° 169896-41-7
- UN Number: 3399
- Class/division: 4.3
- Package group: II
- Hazard Labels required : Class 4.3 (Dangerous When Wet), Class 3 (Flammable)



Air Liquide ALOHA is providing a complete advanced precursor solution. ALOHA portfolio covers low k, high k, barrier, metal gate, electrode, including some proprietary solutions for SiN, metals and High k. Manufacturing electronic devices with this material may be claimed in certain patents and seller hereby disclaims any liability as to the use of this material made by buyer.

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

