

BTBAS Bis(tertiary-butylamino)silane Extrema™ Grade

Description

Silicon nitride has many applications in device fabrication because of its superior barrier properties and oxidation resistance. Typically NH_3 and Cl_2SiH_2 mixtures are used to deposit silicon nitride at near 800°C . The volatile NH_4Cl by-product of this reaction can lead to particle formation and hazy films, and also deposit at the exhaust of the reactor tube. These deposits cause wafer and pump damage.

Bis(tertiary-butylamino)silane (BTBAS) is a liquid chemical precursor for the chemical vapor deposition of uniform silicon nitride, silicon oxynitride and silicon dioxide films. The silicon nitride films obtained using BTBAS are free of chlorine contamination at a relatively lower process temperature.

Specifications

Assay	$\geq 98.5\%$
Disiloxane	$\leq 5,000$ ppm
Chloride	≤ 50 ppm
Particles $\geq 0.2 \mu\text{m}$	≤ 100 per ml
Particles $\geq 0.5 \mu\text{m}$	≤ 30 per ml
Particles $\geq 1.0 \mu\text{m}$	≤ 10 per ml
Aluminum (Al)	≤ 5 ppb
Antimony (Sb)	≤ 1 ppb
Arsenic (As)	≤ 1 ppb
Barium (Ba)	≤ 1 ppb
Beryllium (Be)	≤ 1 ppb
Bismuth (Bi)	≤ 1 ppb
Boron (B)	≤ 10 ppm
Cadmium (Cd)	≤ 1 ppb
Calcium (Ca)	≤ 5 ppb
Chromium (Cr)	≤ 1 ppb
Cobalt (Co)	≤ 1 ppb
Copper (Cu)	≤ 1 ppb
Gallium (Ga)	≤ 1 ppb
Germanium (Ge)	≤ 1 ppb
Iron (Fe)	≤ 5 ppb
Lead (Pb)	≤ 1 ppb
Lithium (Li)	≤ 1 ppb
Magnesium (Mg)	≤ 1 ppb
Manganese (Mn)	≤ 1 ppb
Molybdenum (Mo)	≤ 1 ppb
Nickel (Ni)	≤ 1 ppb
Phosphorus (P)	≤ 10 ppm
Potassium (K)	≤ 1 ppb
Silver (Ag)	≤ 1 ppb
Sodium (Na)	≤ 3 ppb
Strontium (Sr)	≤ 1 ppb
Tin (Sn)	≤ 1 ppb
Titanium (Ti)	≤ 1 ppb
Uranium (U)	≤ 1 ppb
Vanadium (V)	≤ 1 ppb
Zinc (Zn)	≤ 1 ppb

Standard Package Information- Asia, North America, and Europe

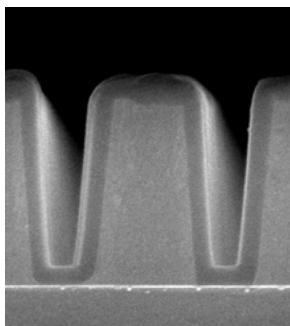
Material Number	10757
Container	19L Stainless Steel
Fill Weight (grams)	14,700
Level Sensor	None
Valve Type	Pneumatic S Diaphragm (Quick Connect)
Inlet Valve Connection	¼" Male VCR
Outlet Valve Connection	¼" Female VCR Driptube
Backfill Gas	Helium
Delivery Method	DLI

Physical Characteristics

Formula	$\text{SiH}_2[\text{NH}(\text{C}_4\text{H}_9)]_2$	Density	0.816 gm/ml
Molecular Weight	174.3	Vapor Pressure	6.5 torr @ 45°C
Boiling Point	167°C @760mm Hg	Flash Point	30°C

Applications

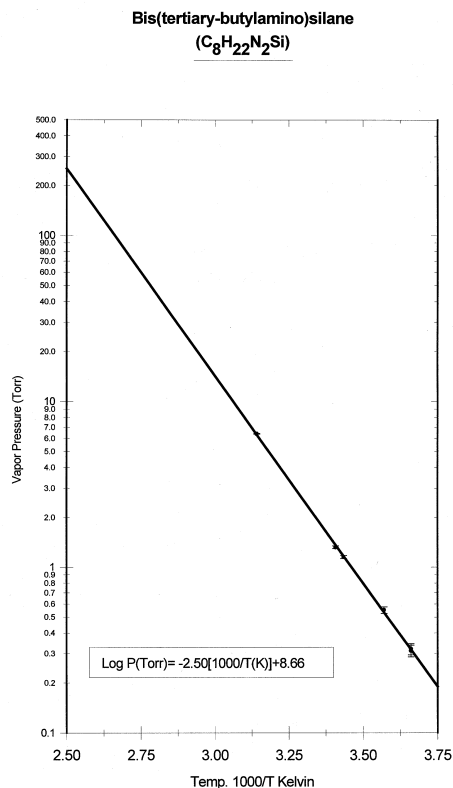
- Si_3N_4 , SiOxNy and SiO_2 under identical process conditions.
- Thin films of silicon nitride are used in IC applications such as gate dielectrics, etch stop/liner layers and ONO stacks for DRAM.
- BTBAS can be used for uniform, conformal silicon nitride films with NH_3 , SiOxNy with N_2O and SiO_2 with O_2 at 550-650°C



.3mm trench at bottom

Distinguishing Features

- Non-pyrophoric, liquid source for CVD silicon nitride, silicon oxynitride and silicon dioxide.
- Ammonium chloride free LPCVD process.
- 550-600°C process temperature using conventional LPCVD.
- Dense silicon nitride films with excellent step coverage.
- BTBAS can be delivered with standard mass flow controllers for vapor draw or direct liquid inject.

***Related Products***

Air Products provides integrated vapor delivery systems and bulk chemical refill systems.

Delivery Equipment

- CHEMGUARD™ Automated Chemical Refill System-dual reservoir cabinet designed to continuously supply chemical to the process tool
- Stainless steel containers feature EXTREMA® Finish, a proprietary micropolish technique designed to prevent rust, discoloration and weld slag.

For More Information

If you would like additional information or technical assistance, write or call Air Products and Chemicals, Inc. at one of the following locations.

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