

HIGH PURITY CHEMICALS FOR SEMICONDUCTOR

LIQUID SOURCES

Trimethylborate (TMB)

Application:

Trimethylborate is an organic borate ester compound which has been widely used as a boron source in the deposition of doped silicate glasses in low pressure and plasma enhanced CVD. Boron and Phosphorus act as glass flow temperature modifiers. The softening temperature of silicate glasses is modified with varying concentrations of doping constituents. The boron source for doped silicate glasses has traditionally been diborane.

Trimethylborate has gained significant acceptance in these applications. Benefits of TMB include the ease of handling a liquid source, less health hazards, improved purity levels, and improved performance characteristics. TMB is a liquid at room temperature and has a relatively high vapor pressure that allows for bubbling with a carrier gas, vacuum processing, or direct liquid injection.

Specification:

Purity (Trace Metals) 99.99995+%

Rev. Date 7/90

Assay	99.99% minimum
Al	1 ppb maximum
Ag	1 ppb maximum
As	1 ppb maximum
Au	1 ppb maximum
Ba	1 ppb maximum
Bi	1 ppb maximum
Ca	1 ppb maximum
Co	1 ppb maximum
Cr	1 ppb maximum
Cu	1 ppb maximum
Fe	1 ppb maximum
Water	10 ppm maximum

Ga	1 ppb maximum
Hg	1 ppb maximum
K	1 ppb maximum
Li	1 ppb maximum
Mg	1 ppb maximum
Mn	1 ppb maximum
Na	1 ppb maximum
Ni	1 ppb maximum
Pb	1 ppb maximum
Sn	1 ppb maximum
Sr	1 ppb maximum
Ti	1 ppb maximum
Zn	1 ppb maximum
Color	10 APHA

Delivery Hardware:

Hong Kong Specialty Gases offers our ULSI Grade TMB in industry standard quartz bubblers and stainless steel ampules as well as application specific delivery systems. High purity quartz bubbler is available in 500, 1000, and 1500cc sizes. The 316L stainless steel ampules are available in 0.5, 1.3, and 2.3 liter capacities with various valve and delivery configurations. For large volume consumption, refill bulk canisters are available in 1 and 2 gallon capacities.

Physical Properties:

Formula	$(CH_3O)_3B$
Chemical Family	Organic Borate Ester
Molecular Weight	103.92
Boiling Point	68.7°C
Melting Point	-29.3°C
Density at 20°C	0.915gm/ml
Vapor Pressure	See chart below
Vapor Density (Air=1)	3.59
Flash Point	-1.7°C (Closed cup)

Vapor Pressure:

