

UltraPur™ TEOS

Tetraethylorthosilicate

Tetraethylorthosilicate (TEOS) is a liquid source material used in CVD systems for deposition of doped and undoped silicon dioxide films. TEOS is a stable, non-pyrophoric, non-corrosive liquid, and thereby is a preferable alternative to processes employing silane or similar compounds. TEOS is used for undoped SiO₂ films and with liquid dopants to deposit BPTEOS films.

Applications for TEOS include undoped and doped interlayer dielectrics, inter-metal dielectrics, pre-metal dielectrics, sidewall spacers and trench-filling applications, to name a few.

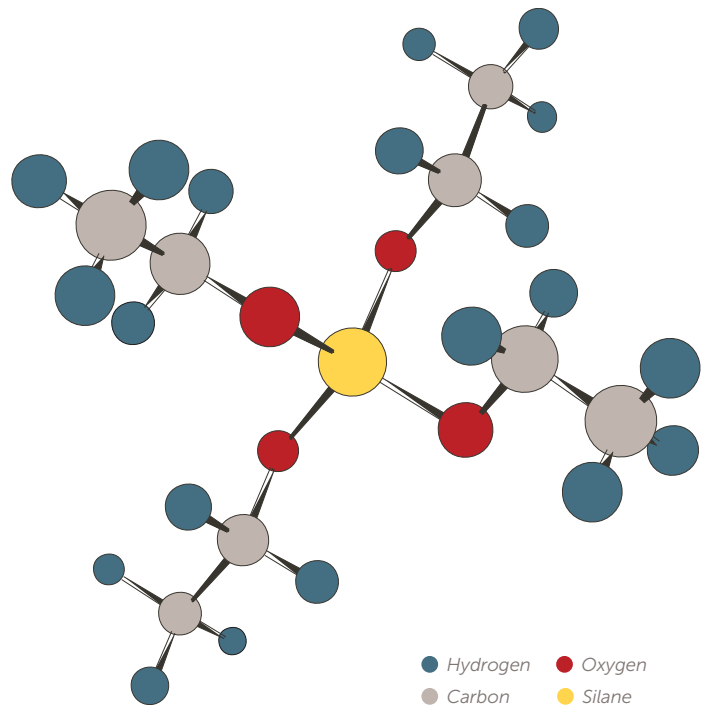
Entegris offers TEOS in an ultrapure grade which is purified using techniques developed by Entegris. By using these techniques, Entegris has developed the industry's most consistent, high-purity chemicals available.

Canisters and delivery systems

Entegris UltraPur™ TEOS is available in a wide variety of stainless steel canisters and ampoules to fit all tools and delivery systems. Standard sizes include 5-gallon, 10-gallon and also 200-liter. Options include manual or air-operated valves and level sensors.

Entegris offers the Unichem™ 3100 and Unichem 3200 dual-canister chemical delivery systems for BPSG applications. Complete fab-wide distribution systems based on the Bulkfill™ 1700 are available from Entegris.

Entegris is a leading industry supplier that provides a complete line of advanced materials, delivery systems and control/monitoring systems which enable comprehensive material lifecycle management solutions for OEMs and end users. The result is higher productivity, greater tool up-time and improved yields.



APPLICATIONS

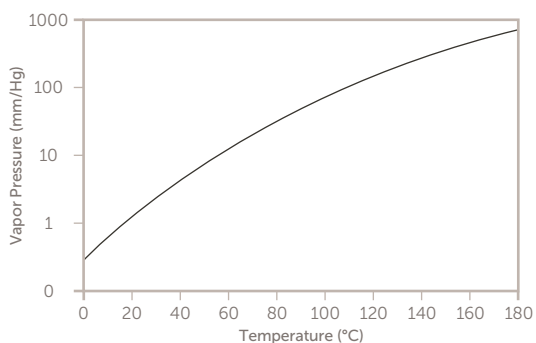
- Deposition of BPTEOS films
- Undoped and doped interlayer dielectrics
- Internal dielectrics
- Pre-metal dielectrics
- Sidewall spacers
- Trench filling

FEATURES & BENEFITS

- Stable, non-pyrophoric
- Noncorrosive liquid
- Preferable alternative to processes employing silane or similar compounds
- Standard shelf life of 24 months

PERFORMANCE DATA

Vapor Pressure Curve



SPECIFICATIONS

Physical properties

Chemical formula	C ₈ H ₂₀ O ₄ Si
Molecular weight	208.33
Density	0.936 gm/mL
Boiling point	169°C (336.2°F) @ 0.1 mm Hg
Melting point	-86°C (-122.8°F)
Flash point (closed cup)	51.7°C (-61.06°F)

Purity analysis

Element	Detection limit	Specification	Analytical method
Aluminum	0.012 ppb	0.200 ppb	ICP-MS
Antimony	0.018 ppb	0.050 ppb	ICP-MS
Arsenic	0.018 ppb	0.100 ppb	ICP-MS
Barium	0.003 ppb	0.100 ppb	ICP-MS
Beryllium	0.005 ppb	0.050 ppb	ICP-MS
Bismuth	0.004 ppb	0.050 ppb	ICP-MS
Boron	0.334 ppb	10.000 ppb	ICP-MS
Cadmium	0.005 ppb	0.050 ppb	ICP-MS
Calcium	0.043 ppb	0.300 ppb	ICP-MS
Cerium	0.003 ppb	0.050 ppb	ICP-MS
Chromium	0.007 ppb	0.100 ppb	ICP-MS
Cobalt	0.005 ppb	0.100 ppb	ICP-MS

Purity analysis (continued)

Element	Detection limit	Specification	Analytical method
Copper	0.008 ppb	0.100 ppb	ICP-MS
Gallium	0.004 ppb	0.050 ppb	ICP-MS
Germanium	0.010 ppb	0.050 ppb	ICP-MS
Gold	0.006 ppb	0.100 ppb	ICP-MS
Hafnium	0.005 ppb	0.100 ppb	ICP-MS
Indium	0.004 ppb	0.050 ppb	ICP-MS
Iridium	0.004 ppb	0.050 ppb	ICP-MS
Iron	0.014 ppb	0.200 ppb	ICP-MS
Lead	0.004 ppb	0.100 ppb	ICP-MS
Lithium	0.006 ppb	0.050 ppb	ICP-MS
Magnesium	0.005 ppb	0.200 ppb	ICP-MS
Manganese	0.038 ppb	0.100 ppb	ICP-MS
Mercury	0.032 ppb	0.070 ppb	ICP-MS
Molybdenum	0.008 ppb	0.050 ppb	ICP-MS
Nickel	0.007 ppb	0.200 ppb	ICP-MS
Niobium	0.003 ppb	0.050 ppb	ICP-MS
Palladium	0.010 ppb	0.050 ppb	ICP-MS
Platinum	0.012 ppb	0.050 ppb	ICP-MS
Potassium	0.072 ppb	0.500 ppb	ICP-MS
Rhenium	0.003 ppb	0.050 ppb	ICP-MS
Rhodium	0.002 ppb	0.050 ppb	ICP-MS
Rubidium	0.003 ppb	0.050 ppb	ICP-MS
Silver	0.013 ppb	0.200 ppb	ICP-MS
Sodium	0.032 ppb	0.200 ppb	ICP-MS
Strontium	0.004 ppb	0.050 ppb	ICP-MS
Tantalum	0.003 ppb	0.050 ppb	ICP-MS
Thallium	0.003 ppb	0.050 ppb	ICP-MS
Thorium	0.004 ppb	0.050 ppb	ICP-MS
Tin	0.033 ppb	0.050 ppb	ICP-MS
Titanium	0.015 ppb	0.050 ppb	ICP-MS
Tungsten	0.006 ppb	0.050 ppb	ICP-MS
Uranium	0.004 ppb	0.050 ppb	ICP-MS

Element	Detection limit	Specification	Analytical method
Vanadium	0.010 ppb	0.050 ppb	ICP-MS
Zinc	0.028 ppb	0.100 ppb	ICP-MS
Zirconium	0.004 ppb	0.70 ppb	ICP-MS

Particle size	Specification	Analytical method
>0.2 µm	10 mL	PMS
>0.3 µm	7 mL	PMS
>0.5 µm	5 mL	PMS
>1.0 µm	1 mL	PMS

Parameter	Detection limit	Specification	Analytical method
Assay	—	99.99%	GC
Chloride	—	50 ppb	Typical
Color	—	5	Typical
Purity	—	99.999999%	ICP-MS
Water	1.3 ppm	5 ppm	KF Titrator

Maximum TEOS fill weights for Entegris canisters

5-gallon	17,700 grams
10-gallon	35,200 grams
200-liter	200,000 grams

FOR MORE INFORMATION

Please call your Regional Customer Service Center today to learn what Entegris can do for you. Visit entegris.com and select the Contact Us link to find the customer service center nearest you.

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