

Strontium Precursors

Description

Air Products offers a series of Sr precursors for deposition of Ultra High K STO (Strontium Titanate) films. These precursors comprise both pure compounds for direct evaporation and formulated mixtures for direct liquid injection through a suitable vaporizer.

Properties:

- White solids at room temperature
- Soluble in organic solvents, hydrolyzed in water
- Suitable for DLI, vapor draw or bubbling
- Vapor pressure approximately 0.1 torr @ 160°C
- Deposition rates approximately 0.4 Å/cycle in self-limiting ALD mode
- Deposition temperatures up to 350°C in self-limiting ALD mode

Applications

Strontium Titanate is a leading candidate for DRAM capacitor dielectrics at or below 32 nm. STO is a stoichiometric substance (SrTiO_3) having extremely High K value of over 90 when crystalline. Air Products has developed a series of Sr precursors to enable atomic layer deposition of STO in thermal processes employing O_3 or H_2O as the oxidant. These precursors may be introduced to the process either by direct evaporation or by direct liquid injection through a suitable vaporizer. Extended testing of the precursors has demonstrated their suitability for clogging-free DLI performance. Deposition trials have demonstrated their ability to deposit crystalline, stoichiometric films with high-dielectric constants. Air Products technologists are available to assist in process setup.

Specifications

A typical lot analysis can be provided upon request. Commercial specifications are currently being developed.

Delivery Containers

Stainless steel containers of various sizes from 200 cc up to 200 liters. Containers are electropolished and finished to a high specification for supply and delivery of ultra-high purity chemicals. A variety of valve configurations, connection types and level sensing are available to suit most equipment needs.

Delivery Equipment

ChemGuard[®] 500 Automated Chemical Refill System – dual reservoir cabinet designed to continuously supply low-vapor pressure chemicals to the process tool.

Titanium Precursors

Strontium Oxide deposition occurs at higher temperatures than Titanium Oxide deposition using conventional precursors. Air Products has developed advanced Titanium precursors which may be combined with Strontium precursors to tailor the optimum STO film.

Metal Electrode Precursors

Air Products offers precursors for deposition of conductive electrode materials such as Ru, TiN and TaN for use in MIM capacitors and HKMG transistors.

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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