MANTA

Technical Data Sheet

Version: 1.0

Manta TEOS

High-Purity Tetraethoxysilane (Tetraethyl Orthosilicate)

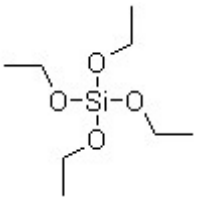
Description

Manta TEOS is a clear, colorless liquid that serves as a versatile source of silicon dioxide (SiO2). It is the most widely used silane precursor in the world, utilized for its ability to undergo controlled hydrolysis and condensation to form a durable inorganic silica network.

Manta TEOS is favored for its balanced reactivity and environmental safety (releasing ethanol upon hydrolysis). It is an essential binder and intermediate in precision casting, advanced coatings, and high-performance construction materials.

Performance equivalent to industry standards: Momentive Silbond Pure, Evonik Dynasylan A, Wacker TES 28.

Typical Physical Properties

Manta Code:	TEOS
Chemical Name	Tetraethoxysilane / Tetraethyl Orthosilicate
CAS NO.	78-10-4
EINECS NO.:	201-083-8
Formula	$C_8H_{20}O_4Si$
Molecular weight	208.33
Appearance	Colorless transparent liquid
Density (25°C, g/cm^3):	0.920-0.960
Refractive Index(n25/0)	1.3750-1.3990
Flash Point, Closed Cup, ℃	48
Assay (%)	99min
Total Chlorine Content (ppm):	<0.5
Total Cation Content (ppm):	<1
Boiling Point (760mmHg):	168°C
Chemical structure	

Features

- Controlled Silica Deposition: Yields approximately 28.8% silica (SiO2) upon complete hydrolysis, forming a hard, heat-resistant, and chemical-resistant binder.
- Superior Binder for Investment Casting: Provides exceptional thermal stability and surface finish for precision molds.
- Hydrophobicity & Strengthening: Deeply penetrates porous substrates like natural stone to

increase structural integrity and weather resistance.

- High-Purity Precursor: Ideal for the synthesis of ultra-fine powders and high-performance sol-gel coatings.

Applications

1. Precision Investment Casting

Manta TEOS is a primary binder for refractory fillers (such as zircon or silica) used in the manufacture of precision casting molds. It provides high thermal stability, excellent dimensional accuracy, and a superior surface finish for high-end metal parts.

2. Sol-Gel Process & High-Performance Coatings

Acts as the central starting material for the sol-gel production of glass-like coatings. It is used to manufacture chemical-resistant and heat-resistant finishes for metals, glass, and polymers, and is a key component in anti-scratch and anti-reflective optical treatments.

3. Construction & Stone Consolidation

Applied to natural stones, masonry, and historic monuments, Manta TEOS reacts with moisture to form a silica-gel binder (SiO_2) within the pores. This significantly increases the substrate strength and provides a breathable, hydrophobic barrier against environmental degradation.

4. Manufacture of Fluorescent & Fine Powders

Upon complete hydrolysis, Manta TEOS generates high-purity, nano-sized silicon oxide powders, which are essential precursors for making fluorescent powders (phosphors) used in LED and display technologies.

5. Resin Modification & Crosslinking

Used in the polymerization of silicone resins for paints and surface modifiers. It improves the thermal stability and mechanical performance of other organic resins (like epoxies or polyurethanes) by introducing inorganic siloxane structures.

6. Chemical Intermediate

Serves as the raw material for the production of specialized silicon macromolecular compounds and organofunctional silanes.

Packaging

In 20kg pail, 180kg drum and 900kg IBC

Safety and Storage

Storage: Store in a cool, well-ventilated place away from fire and water. Ensure containers are tightly sealed to prevent moisture contact.

Shelf Life: 12 months in original, unopened containers.

Contact Information

Nanjing Manta New Material Co., Ltd

Add: Room 102-247, Building 17, No. 1 Qiliqiao North Road, Nanjing Area of the China (Jiangsu) Pilot Free Trade Zone, Nanjing, China

Factory: Miaoguan Town Industrial Park, Sishui County, Jining City, Shandong Province, China
Mob: 0086 18962800162
Mail: inquiry@mantasil.com Web: www.mantasil.com