

Manta TMOS

High-Purity Tetramethoxysilane (Orthosilicic Acid Tetramethyl Ester)

Description

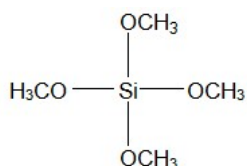
Manta TMOS is a colorless liquid utilized primarily as a source of high-purity silicon dioxide (SiO₂). Due to its small molecular size and high reactivity, it hydrolyzes significantly faster than Tetraethoxysilane (TEOS), making it the preferred precursor for precision sol-gel processes, thin-film coatings, and advanced chemical synthesis.

When fully hydrolyzed, Manta TMOS yields approximately 39.5% silica by weight, providing a dense silica-gel binder that enhances the structural integrity and chemical resistance of various substrates. It is equivalent to industry standards such as Momentive Silquest TMOS and Evonik Dynasylan M.

Typical Physical Properties

Manta Code:	TMOS
Chemical Name	Tetramethoxysilane; Tetramethyl orthosilicate
CAS NO.	681-84-5
EINECS No.:	211-656-4
Formula	C ₄ H ₁₂ O ₄ Si
Appearance	Colorless transparent liquid
Molecular weight:	152.22
Boiling point at 760mmHg	121~122°C
Flash point, Closed cup	26°C
Density (ρ _{25°C} , g/cm ³)	1.023
Refractive Index (n _{25/D})	1.3670-1.3800
Purity (%)	98min

Chemical structure



Features

1. Rapid Hydrolysis: Offers significantly faster reaction kinetics compared to TEOS, enabling shorter processing times in sol-gel applications.
2. High Silica Yield: Provides a high concentration of inorganic silicate binder for reinforcement.
3. Optical Clarity: Forms extremely transparent, hard silica films ideal for optical and electronic coatings.
4. Inorganic Binder: Creates a robust SiO₂ matrix that is resistant to high temperatures and chemical degradation.

Applications

1. Advanced Sol-Gel Process

Manta TMOS is the premier starting material for the sol-gel production of high-purity silica gels, aerogels, and specialty glasses. It allows for the synthesis of complex organic-inorganic hybrid materials at room temperature.

2. Optical & Scratch-Resistant Coatings

Used in the treatment of glass and plastic lenses to provide a hard, scratch-resistant surface finish. Its ability to form a dense silica-gel binder makes it ideal for anti-reflective (AR) and protective coatings in precision optics.

3. Electronic & Semiconductor Materials

In the electronics industry, it serves as a precursor for chemical vapor deposition (CVD) to form dielectric layers and high-purity insulating films on semiconductor wafers.

4. Silicone Rubber & Sealants

Acts as an efficient crosslinker in room-temperature vulcanized (RTV) silicone rubber systems. It also functions as an effective drying agent (moisture scavenger) in advanced sealing compositions to extend shelf life.

5. Refractory Fillers & Pigment Treatment

Used as an inorganic binder for refractory materials, pigments, and ceramic fibers. It provides high-temperature stability and improves the mechanical strength of the composite by coating the surfaces with a protective silica layer.

6. Chemical Intermediate

Serves as a fundamental building block for the synthesis of organofunctional silanes and specialty polysilicic acid esters.

Packaging

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

Safety and Storage

Extremely sensitive to moisture; ensure containers are hermetically sealed and purged with dry nitrogen after every use.

Safety Note: TMOS vapor is toxic and can cause severe eye damage. Handle with strict adherence to safety protocols (PPE and ventilation). When stored at or below 25 °C in the original unopened containers, this product has a usable life of 12 months from the date of production.

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