MANTA

Technical Data Sheet

Version: 1.0

Manta P31

Phenyl-Functional Silane (High-Temperature Surface Modifier)

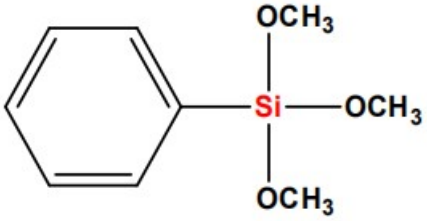
Description

Manta P31 is a phenyl-functional trimethoxysilane that acts as a powerful surface modifier, crosslinker, and chemical intermediate. Unlike standard alkyl silanes, the phenyl group in Manta P31 provides exceptional thermal stability, making it the ideal choice for materials processed or utilized at elevated temperatures.

It effectively renders inorganic surfaces hydrophobic and improves the compatibility of fillers within organic polymer matrices. It is also a key building block for the synthesis of phenyl-silicone resins and high-refractive-index optical materials.

Performance equivalent to Momentive Silquest A-153, Evonik Dynasylan 9165, and Shin-Etsu KBM-103.

Typical Physical Properties

Manta Code:	P31
Chemical Name	Phenyltrimethoxysilane
CAS NO.	2996-92-1
EINECS NO.	221-066-9
Formula	$C_9H_{14}O_3Si$
Appearance	Colorless Transparent Liquid
Density (ρ20°C, g/cm³)	1.0620±0.0050
Refractive Index (n25/D)	1.4650–1.4750
Purity (by GC, %)	98.0 min
Molecular Structure	

Features

- Exceptional Thermal Stability: The phenyl-silicon bond is significantly more stable than alkyl-silicon bonds, providing long-term performance at temperatures exceeding 250°C-300°C.
- Refractive Index Control: High phenyl content allows formulators to tune the refractive index of optical resins and coatings.
- Hydrophobicity & Dispersibility: Efficiently treats inorganic fillers to reduce melt viscosity and improve loading levels in mineral-filled polymers.
- Sol-Gel Versatility: Well suited for co-hydrolysis with other silanes (e.g., Manta E560, Manta 932) to create hybrid hard-coatings.

Applications

1. Surface Modification of Inorganic Fillers

Manta P31 is used to treat inorganic fillers such as wollastonite, aluminum trihydroxide (ATH), silica, and kaolin. It renders these fillers highly hydrophobic, ensuring better dispersibility and lower viscosity in mineral-filled polymer melts, especially for high-temperature processed engineering plastics.

2. High-Temperature Resins & Specialty Siloxanes
Acts as a fundamental intermediate in the production of phenyl-silicone resins. It is used to modify the thermal properties of silicone oils and resins, enhancing their resistance to oxidation and thermal degradation in aerospace and industrial applications.

3. Sol-Gel Coatings & Hard Coats
In sol-gel applications, Manta P31 is often co-hydrolyzed with alkyl silanes or epoxy silanes (like Manta E560) to produce hybrid organic-inorganic coatings. These coatings exhibit superior hardness, thermal stability, and weather resistance, commonly used for decorative and protective finishes.

4. Electronics & Semiconductor Packaging
Used as a critical additive in Epoxy Molding Compounds (EMC) and other electronic encapsulants. It improves the adhesion between the resin and the silica filler while maintaining the strict thermal stability required during lead-free soldering processes.

5. Optical Materials
Due to the high electron density of the phenyl ring, Manta P31 is used to increase the refractive index of transparent polymers and optical coatings (e.g., LED encapsulants, lens coatings, and optical fibers).

6. Hydrophobic Additive & Surface Treatment
Serves as a hydrophobic additive for other silane coupling agent systems, enhancing the water-repellency of glass, masonry, and ceramic surfaces.

Packaging
In 25kg pail, 200kg drum and 1000kg IBC

Safety and Storage
Keep away from heat and open flame. When stored at or below 25 °C in the original unopened containers, this product has a usable life of 24 months from the date of production.

Contact Information
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