MANTA

Technical Data Sheet

Version: 1.0

Manta V31

Vinyl-Functional Silane (VTMO) / Crosslinker & Moisture Scavenger

Description

Manta V31 is a bifunctional organosilane possessing a reactive vinyl group and a hydrolyzable trimethoxysilyl group. The dual nature of its reactivity allows it to bind organically to polymers via radical grafting, while simultaneously creating a moisture-curable crosslinked siloxane network.
It is a high-volume additive primarily used for the moisture crosslinking of polyethylene (XLPE) in the wire and cable industry, and acts as a highly efficient moisture scavenger in advanced sealant formulations.
Performance equivalent to Momentive Silquest A-171, Evonik Dynasylan VTMO, WACKER GENIOSIL XL 10, and Shin-Etsu KBM-1003.

Typical Physical Properties

Manta Code:	V31
Chemical Name	Vinyltrimethoxysilane(VTMO)
CAS NO.	2768-02-7
Formula	C5H12O3Si
Appearance	Colorless Transparent Liquid
Density(ρ20°C, g/cm³)	0.960–0.980
Refractive Index(n25/D)	1.3880–1.3980
Purity (by GC,%)	98min

Applications

Manta V31 is a critical raw material with five primary industrial applications:

1. Polymer Modification & Silane Crosslinking (Wire, Cable & PEX Pipes)

Manta V31 is widely used to modify polyethylene (PE) and other polymers. Using a peroxide initiator in an extruder, the vinyl group grafts to the polymer backbone. The resulting grafted polymer is then shaped (e.g., cable jacketing, wire insulation, PEX-b pipes) and exposed to moisture/hot water. This causes the trimethoxysilyl groups to hydrolyze and condense, forming a robust Si-O-Si crosslinked, thermoset network.

2**. Moisture Scavenger in Adhesives & Sealants**

Due to its rapid reaction with water, V31 is extensively utilized as a moisture scavenger in one-part moisture-curing formulations (such as Silane-Modified Polymers/MS, Polyurethanes, and Silicones). It consumes trace amounts of moisture during compounding and packaging, significantly improving the shelf-life and preventing premature gelation or outgassing in the cartridge.

3. Co-monomer for Polymer Emulsions (Water-Borne Coatings)

The reactive vinyl group allows V31 to copolymerize with acrylics or vinyl acetate monomers during emulsion polymerization. This produces silane-modified, water-borne dispersions that exhibit significantly improved wet scrub resistance, weatherability, and crosslinking density upon drying.

4. Surface Treatment for Mineral Fillers (HFFR Cables)

Acts as a highly effective surface modifier for inorganic flame-retardant fillers, such as Aluminum Trihydroxide (ATH) and Magnesium Hydroxide (MDH), utilized in Halogen-Free Flame Retardant (HFFR) cables. It improves filler dispersion, water resistance, and mechanical strength in highly filled polymer composites.

5. Adhesion Promoter for Specialty Resins

Functions as an excellent adhesion promoter and coupling agent specifically tailored for unsaturated polyesters and acrylic resin systems, and is frequently employed as a sizing agent for

fiberglass composites.

Benefits of Silane Crosslinking (vs. Uncrosslinked Polymers)

- Significantly higher maximum continuous use temperature.
- Reduced deformation under load (creep resistance).
- Superior Environmental Stress Crack Resistance (ESCR).
- Improved impact strength, abrasion resistance, and chemical resistance.
- Provides distinct memory characteristics (important for shrink films and heat-shrink tubing).

Advantages of Silane Crosslinking over Radiation or Peroxide Methods

- Low capital investment and lower operating (energy) costs.
- Higher productivity with wider processing latitude (controls premature crosslinking/scorch).
- Processing versatility: accommodates complex shapes and variable thicknesses (thick or thin).
- Highly useful with heavily filled composites and applicable to all PE densities and copolymers.

Packaging

In 20kg pail, 190kg drum and 950kg 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 (200L drum).

Contact Information

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