MANTA

Technical Data Sheet

Version: 1.0

Manta MS312

MS Polymer / Silyl-Terminated-Polyether

Description

Manta MS312 is a silane-terminated polyether (STPE) polymer featuring trimethoxysilylpropylcarbamate terminal groups on a high-purity Polypropylene Oxide (PPO) backbone.

It is specifically designed as a reactive binder for high-modulus, elastic moisture-curing systems. Upon exposure to ambient humidity, MS312 undergoes controlled hydrolysis—releasing a small amount of methanol—to form a resilient and durable siloxane network. This polymer combines the easy processability of polyethers with the superior weatherability and adhesive strength characteristic of high-end silicone systems.

The Equivalent List

Manta	Wacker	Kenaka
MS312	GENIOSIL ® STP-E15	

Typical Physical Properties

Manta code:	MS312
Chemical Name：	Trimethoxysilane Terminated Polyether
CAS No.:	216597-12-5
Appearance	Colorless Transparent Liquid
Flash Point (℃):	237
Viscosity (25℃) / mpa·s:	9000 – 15000
Density (25℃) / g/cm^3:	1.02 – 1.05
Catalyst Dosage (Tin, %)	1 - 2
Chemical Structure:	
Activity:	Medium activity
Modulus:	Medium-high modulus

Properties

- High Reactivity & Controlled Curing: Optimized for fast curing profiles when used with amine or organometallic catalysts.
- Superior Mechanical Integrity: Offers high tensile strength and a high modulus, ideal for structural bonding applications.

- Exceptional Optical Clarity: Formulated as a clear, colorless viscous oil, it is perfect for high-transparency sealants.
- Enhanced Stability: Provides excellent resistance to yellowing and thermal aging, ensuring long-term aesthetic performance.
- Excellent Processability: Low base viscosity allows for easy compounding with high filler loadings (PCC, GCC, etc.) without compromising flow.
- Primerless Adhesion: Demonstrates a broad adhesion profile on various substrates, including metals, glass, ceramics, and many plastics.
- Broad Service Temperature: Maintains stable mechanical properties across a wide temperature range due to its low glass transition temperature (Tg).

Applications

1. Structural Adhesives: High-modulus binder for automotive engineering, rail transport, and container construction.
2. Industrial Assembly: Ideal for "liquid nail" applications and high-strength assembly adhesives where rapid strength build-up is required.
3. Construction Sealants: Used in premium, overpaintable sealants for building facades and window installations (Low VOC).
4. Potting & Encapsulation: A reliable choice for electronic potting compounds and mold-making due to its low shrinkage and excellent dielectric properties.
5. Surface Coatings: Acts as a reactive additive or binder to improve the scratch resistance and adhesion of industrial coatings.

Processing

1. Moisture Sensitivity: Manta MS312 reacts with water or atmospheric moisture. To maintain product integrity and prevent premature gelation, it is essential to ensure hermetically sealed storage and a strictly moisture-controlled production process.
2. Formulation Flexibility: The dosage of Manta MS312 can be adjusted to meet specific performance requirements. It exhibits excellent compatibility with common functional fillers, including PCC, GCC, fumed silica, quartz flour, diatomaceous earth, and aluminum hydroxide.
3. Dehydration: Fillers must be thoroughly dehydrated before compounding to avoid unintended curing. Vinyltrimethoxysilane (VTMO) is recommended as a highly efficient water scavenger to neutralize residual moisture.
4. Plasticizer Compatibility: Suitable plasticizers include various phthalates (e.g., DINP, DIDP, DOTP) and low-molecular-weight polyethers (PPG).
5. Performance Additives: To optimize end-product properties, MS312 can be formulated with adhesion promoters, antioxidants, fungicides, and UV stabilizers.

Typical Performance of a Reference Sample

MS312 Inspection Items	Standard	Analysis Results
Appearance	Colorless or light yellow	Colorless transparent liquid

	transparent liquid	
Viscosity(25℃) mPa.s	7000 – 13000	8667
pH Value	6-9	7
Tensile Strength Mpa	⩾ 0.5MPa	0.53
Elongation at tensile break%	⩾ 50	60
Hardness(Shore A)	⩾ 50	40

Reference Formulation:

Component	Parts by Weight	Example / Function
Manta MS330C	30 - 40	MS Polymer
Plasticizer	10 - 20	PPG, DINP, or DOTP
Water Scavenger	1 - 2	Vinyltrimethoxysilane (VTMO)
Thixotropic Agent	2 - 5	Fumed Silica (Hydrophilic or Hydrophobic)
Fillers	40 - 50	Ground Calcium Carbonate (GCC) / TiO_2
Antioxidants and UV-stabilizers	0.1 - 2	Hindered Phenols (AO) / HALS (UV)
Adhesion Promoter	1 - 2	Amino-silanes (e.g., AMEO, AMMO)
Catalyst	0.3 - 0.6	Organotin (DBTDL) or Tin-free alternatives

Packing

50kg plastic drum lined with aluminum foil bag; 200kg drum lined with aluminum foil bag;
1000kg IBC/Tote;
Can be customized.

Safety and Storage

Keep in a cool and dry place and avoid storage in direct sunlight. Shelf life is 24 months. It is non-hazardous substance.

Contact Information

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