

GENIOSIL[®] MPTM

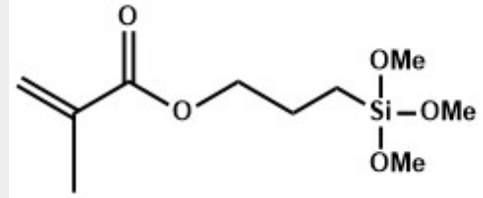
GENIOSIL[®]

Organofunctional Silanes

3-Methacryloxypropyltrimethoxysilane

GENIOSIL[®] MPTM is a clear, colorless, light and heat-sensitive liquid with a characteristically sweet odor.

CAS No. 2530-85-0 | Empirical formula C₁₀H₂₀O₅Si | Molecular weight 248,35



Properties

GENIOSIL[®] MPTM is an alkoxy silane with a methacrylic organofunctional group. It's a clear, colorless, light and heat sensitive liquid with a characteristically sweet odor. The silane hydrolyzes in the presence of moisture (methanol is released) to form silanols, which can then react with themselves to produce siloxanes. As a bifunctional, organically unsaturated molecule, GENIOSIL[®] MPTM can be incorporated into organic polymers, e.g. via radical grafting.

The use of GENIOSIL[®] MPTM as a coupling agent in glass fiber-reinforced or filler-modified plastics improves filler dispersibility while reducing the filler's sedimentation tendency. It also results in a major reduction in the melt viscosity of casting resins, as well as a marked improvement in the mechanical properties of glass-fiber-reinforced or mineral-filled plastics. In addition, use of GENIOSIL[®] MPTM in these materials leads to a sizable increase in moisture (vapor) resistance as well as greater resistance to acids and bases. Used as a co-monomer in polymers, GENIOSIL[®] MPTM produces binders that exhibit much improved wet scrub, abrasion and scratch resistance thanks to crosslinking and strong adhesion to the base. As a component of free-radical curable adhesives and sealants, GENIOSIL[®] MPTM leads to improved mechanical properties and enhanced substrate adhesion.

Technical data

General Characteristics

Property	Condition	Value	Method
Boiling point	15 hPa	125 °C	-
Density	25 °C	1.05 g/cm ³	DIN 51757
Flash point	-	> 92 °C	-
Hydrolyzable chloride	-	< 30 mg/kg	-
KOH	-	≤ 20 ppm	-
Propeneoxide	-	≤ 0.099 %	-
Purity	-	98 - 100 %	GC
Viscosity, dynamic	25 °C	2.5 mPa·s	-
Viscosity, kinematic	25 °C	2.3 - 2.5 mm ² /s	DIN 51562-1

These figures are only intended as a guide and should not be used in preparing specifications.

All the information provided is in accordance with the present state of our knowledge. Nonetheless, we disclaim any warranty or liability whatsoever and reserve the right, at any time, to effect technical alterations. The information provided, as well as the product's fitness for an intended application, should be checked by the buyer in preliminary trials. Contractual terms and conditions always take precedence. This disclaimer of warranty and liability also applies particularly in foreign countries with respect to third parties' rights.

Applications

- Adhesives
- Building & Construction Adhesives
- Chemical Industry
- Composites
- Industrial Adhesives
- Industrial Coatings
- Primers for Paints & Coatings
- Sealants
- Thermoplastics & Elastomers

Application details

1. General processing information:

GENIOSIL[®] MPTM is highly miscible with standard organic solvents such as alcohols, toluene, and acetone. GENIOSIL[®] MPTM is practically insoluble in neutral water. However, by adjusting the pH to between 3 and 4 with a hydrolysis catalyst (e.g. acetic acid), an aqueous solution of up to 5 percent by weight can be obtained. The resulting clear solution should be used as soon as possible (within 1-2 days), before siloxane formation has proceeded too far. Deactivation of GENIOSIL[®] MPTM by siloxane formation is signaled by clouding of the aqueous solution.

2. GENIOSIL[®] MPTM in glass-fiber reinforced or mineral-filled polymers:

Fillers are treated either with pure GENIOSIL[®] MPTM or a solution thereof. It may be necessary to pretreat the substrate with water and/or a catalyst. Subsequent binding of the treated filler to unsaturated polyester resins, for example, is preferably effected via peroxide or radiation initiated copolymerization or grafting.

In an alternative procedure referred to as "blending", GENIOSIL[®] MPTM is added directly to the polymer - either before the organic materials is compounded with the filler or at the same time. A prerequisite for the blending process is that GENIOSIL[®] MPTM and the polymer are compatible and that the resin and GENIOSIL[®] MPTM do not react prematurely.

3. GENIOSIL[®] MPTM as a surface modifier:

Used as a primer, GENIOSIL[®] MPTM is applied as an aqueous or organic solution to an inorganic substrate (e.g. metal or glass surfaces). Once GENIOSIL[®] MPTM has dried and bonded to the surface, an organic coating may be applied using a standard technique (e.g. spraying or knife coating).

4. GENIOSIL[®] MPTM as a polymer building block:

To incorporate GENIOSIL[®] MPTM in organic polymers, it is added as a co-monomer - along with typically used monomers and free-radical initiators such as diazo compounds or peroxides - during production of the solution or emulsion polymer. Promoters (e.g. cobalt compounds) can give additional impetus to the radical grafting of GENIOSIL[®] MPTM to organic polymers. The polymers obtained in this way can be formulated as coatings, adhesives or sealants.

GENIOSIL[®] MPTM is mainly used in glass fiber or glass fabric-reinforced polyester and polyolefin molded components. In addition, GENIOSIL[®] MPTM is used as a surface modifier for fillers and pigments used in thermosetting plastics (e.g. polyacrylates, polyesters), thermoplastics (polyesters, polyolefins) and elastomers, as well as a polymer component in surface coatings. Further important areas of application are heat and/or radiation-curable adhesives and sealants.

Packaging and storage

Packaging

Information on available container sizes is obtainable from WACKER subsidiaries.

Storage

The 'Best use before end' date of each batch is shown on the product label. Storage beyond the date specified on the label does not necessarily mean that the product is no longer usable. In this case however, the properties required for the intended use must be checked for quality assurance reasons.

Safety notes

Comprehensive instructions are given in the corresponding Material Safety Data Sheets. They are available on request from WACKER subsidiaries or may be printed via WACKER web site <http://www.wacker.com>.

QR Code GENIOSIL® MPTM



For technical, quality or product safety questions, please contact:

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