

Dynasylan® MEMO

3-Methacryloxypropyltrimethoxysilane

Technical data

Properties and test methods	Value	Unit	Method
Density (20 °C/ 68 °F)	approx. 1.04	g/cm ³	DIN 51757
Refractive index n (20,D)	approx. 1.432	-	DIN 51423
Viscosity (20 °C/ 68° F)	approx. 2.8/ 2.7	mPa·s / cSt	DIN 53015
Boiling point (1013 hPa)	approx. 255	°C	DIN 51356
Flash point	approx. 110	°C	DIN 51758

Registrations

Dynasylan® MEMO

EINECS/ELINCS (EU):	Yes
AICS (Australia):	Yes
DSL/NDL (Canada):	Yes
PICCS (Philippines):	Yes
TSCA (USA):	Yes
IECSC (P.R. China):	Yes
ENCS (Japan):	Yes
ECL (South Korea):	Yes
REACH (Europe)	Registered

Dynasylan® MEMO is a methacrylfunctional silane that can be used as adhesion promoter, surface modifier, co-monomer for polymer synthesis and crosslinker.

Dynasylan® MEMO is a clear, colorless liquid. It is soluble in alcohols, and aliphatic or aromatic hydrocarbons.

Safety and handling

Before considering the use of Dynasylan® products please read its Safety Data Sheet (SDS) thoroughly for safety and toxicological data as well as for information on proper transportation, storage and use. The Safety Data Sheet is available after registration on our website www.dynasylan.com or upon request from your local representative, customer service or from Evonik Resource Efficiency GmbH, Product Safety Department, E-MAIL sds-hu@evonik.com.

Packaging, storage and shelf life

Dynasylan® MEMO is supplied in 25 kg, 215 kg drums and 1.000 kg bulk containers.

In the unopened container Dynasylan® MEMO has a shelf life of min. 12 months from delivery.

Properties and applications

Dynasylan® MEMO is used as adhesion promoter in application such as:

- a constituent of glass fiber sizes (glass fiber fillers for unsaturated polyester resins and polyolefins)
- a finish for glass fabrics used in unsaturated polyester resins
- as a surface modifier for pigments and fillers for thermosets (unsaturated polyester, MMA), thermoplastics (polyesters and polyolefins) and elastomers
- as an additive for filled, peroxide-crosslinked elastomers
- as an additive for casting resins (unsaturated polyester, MMA)

Dynasylan® MEMO is either applied to the inorganic substrate as a pretreatment by dipping, spraying, or coating or it may be added directly to the resin matrix (additive process). For pretreatment, the silane may be used

- neat
- dissolved in an organic solvent
- dissolved in a mixture of organic solvent and water for partial hydrolysis
- completely hydrolyzed in aqueous solution.

To prepare an aqueous pretreatment solution, approx. 1-5 wt.% Dynasylan® MEMO is dissolved in water that has been adjusted to pH 3-4 with acetic acid. The solution will turn clear when the silane has fully hydrolyzed. The clear solution of Dynasylan® MEMO hydrolysate must be used within 1-2 days, if it turns cloudy again it may no longer be used. In the additive process, Dynasylan® MEMO is mixed with the resin or polymer before or together with the filler. A prerequisite for this method is compatibility of the silane with the resin since the silane must not react prematurely with the resin.

When used correctly Dynasylan® MEMO can achieve the following properties, for example in a highly-filled unsaturated resin system:

- optimum dispersion of the fillers/pigments
- reduction in settling of the fillers/pigments
- a reduction in viscosity and improved flow properties of the resin
- improved mechanical properties of the molded products
- improved resistance of the molded products to boiling water, acids and alkalis

Dynasylan® MEMO can be used as monomer during resin synthesis (e.g. latex dispersions). It may partially replace the methacryl-functional monomers (usually 0.5-3%, but sometimes up to 20%). The thus incorporated silane functionality can lead to improved properties in the final application (e.g. coating or sealant) of such resins:

- wet adhesion strength
- chemical resistance
- mar resistance

Reactivity

The alkoxy group of Dynasylan® MEMO hydrolyzes in the presence of water (and a suitable catalyst such as acetic acid) to produce methanol and reactive silanol (Si-OH) groups which can bond to a variety of inorganic substrates. The methacryl groups interact with the polymer. Examples of suitable inorganic substrates are glass, glass fibers, glass wool, mineral wool, silicic acid, quartz, sand, cristobalite, wollastonite and mica; also suitable are aluminium hydroxide, kaolin, talc, other silicate fillers, metal oxides and metals.

Examples of suitable polymers include unsaturated polyester, acrylates and vinyl esters.

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