

Product Information

Dynasylan® VTMO

Vinyltrimethoxysilane

CAS NUMBER

2768-02-7

PRODUCT DESCRIPTION

Dynasylan® VTMO is a bifunctional organosilane possessing a reactive vinyl group and a hydrolyzable inorganic trimethoxysilyl group.

The dual nature of its reactivity allows Dynasylan® VTMO to bind chemically to both inorganic materials (e.g. glass, metals, fillers) and organic polymers (e.g. thermosets, thermoplastics, elastomers), thus functioning as a crosslinking agent, adhesion promoter and/or surface modifier.

Dynasylan® VTMO is a colorless, low-viscosity liquid with a typical aromatic odor.

Typical Properties

Property	Unit	Value
Boiling Point (1013 hPa) DIN 51751	°C	≤123
Chemical Name		Vinyltrimethoxysilane
Density (20 °C) DIN 51757	g/cm ³	~0.97
Flash Point DIN EN ISO 13736	°C	≤25
Viscosity (20 °C) DIN 53015	mPa·s	~1

The data represents typical values (no product specification)

TYPICAL APPLICATIONS

1. Moisture curing of polymers

Dynasylan® VTMO is suitable for the preparation of moisture-curing polymers, e.g. polyethylene. The characteristic feature of this process is peroxide-initiated grafting of the vinylsilane to the polymer during extrusion. After grafting, the polymer can still be processed as a thermoplast. Only upon treatment with moisture (in a 80-100 °C waterbath,

steambath, or even at ambient conditions), the polymer chains are linked together; thereby forming a crosslinked polymer. This reaction can be accelerated by using a catalyst. Silane crosslinked polyethylene is widely used as cable isolation, and sheathing mainly in low voltage applications as well as for hot water/sanitary pipes and underfloor heating. Heat resistance is the main reason for the crosslinking of polymers for cable applications, but crosslinking can also improve the following properties: tear- and crack resistance, chemical resistance, abrasion resistance, memory effect. Dynasylan® VTMO may also be used as a co-monomer for the preparation of different polymers such as polyethylene or acrylics. Those polymers show an improved adhesion to inorganic surfaces and they can also be cross-linked with moisture as described above.

2. Adhesion promotion and surface modification

Because of its ability to react with inorganic fillers as well as with organic polymers (activated by e.g. peroxides or radiation), Dynasylan® VTMO acts as an efficient adhesion promoter for various mineral-filled polymers, improving mechanical and electrical properties especially after exposure to moisture. Once bonded to an inorganic filler, Dynasylan® VTMO hydrophobates the filler surface, improving the compatibility of fillers with polymers, leading to a better dispersibility, reduced melt viscosity and easier processing of filled plastics. The pretreatment of glass, metals, or ceramic surfaces with Dynasylan® VTMO improves the adhesion of coatings on these surfaces and can thus improve the corrosion resistance.

3. Dynasylan® VTMO as co-monomer for polymer dispersions

Polymer dispersions (e.g. styrene acrylics), modified with Dynasylan® VTMO show improved adhesion strength in wet conditions and wet scrub resistance.

4. Dynasylan® VTMO as moisture scavenger

Dynasylan® VTMO reacts rapidly with water. Even traces of water can be removed with Dynasylan® VTMO. This effect is used widely in sealants.

5. Other applications of Dynasylan® VTMO

Dynasylan® VTMO can easily bond to OH-groups. Hydroxyl containing polymers e.g. functionalized silicones,

may be modified with Dynasylan® VTMO, thereby introducing reactive vinyl groups into the polymer chains. The vinyl group of Dynasylan® VTMO is activated by its proximity to silicon, which makes it an attractive molecule for different organic syntheses.

BENEFITS & ADVANTAGES

In the presence of moisture the methoxy groups of Dynasylan® VTMO hydrolyze to produce methanol and reactive silanol (Si-OH) groups which can bond to a variety of inorganic substrates or react with each other to form siloxane bonds (Si-O-Si). The organophilic vinyl end of Dynasylan® VTMO can also react with a suitable polymer initiated by a peroxide.

HANDLING & PROCESSING

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 on our website <https://silanes.evonik.com/en> or upon request from your local representative, customer service or from Evonik Operations GmbH, Product Safety Department, E-MAIL sds-hu@evonik.com.

PACKAGING

Dynasylan® VTMO is supplied in 25 kg or 195 kg drums or 900 kg containers.

STORAGE

The containers must remain tightly sealed during storage and kept in a cool, well aired place. The product should be protected against humidity.

SHELF LIFE

In the unopened container the shelf life of Dynasylan® VTMO is min. 12 months from delivery.

Registration Listings

Registry	Status
Australia (AIIC)	Yes
Canada (DSL)	Yes
China (IECSC)	Yes
EU (EINECS/ELINCS)	Yes
EU (REACH)	Yes
Japan (ENCS)	Yes
South Korea (KECL)	Yes
Philippines (PICCS)	Yes
USA (TSCA)	Yes

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