Dynasylan®

Product Information

Dynasylan® VTEO

Vinyltriethoxysilane

CAS NUMBER

78-08-0

PRODUCT DESCRIPTION

Dynasylan® VTEO is a bifunctional organosilane possessing a reactive vinyl group and a hydrolyzable inorganic triethoxysilyl group.

The dual nature of its reactvity allows Dynasylan® VTEO 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® VTEO is a colorless, low-viscosity liquid with a typical aromatic odor.

Typical Properties

Property	Unit	Value
Appearance		colorless liquid
Boiling Point, min. (1013 hPa) DIN 51751	°C	161
Chemical Name		Vinyltriethoxysilane
Density (20 °C) DIN 51757	g/cm³	0.91
Flash Point, min. DIN EN ISO 2719	°C	46
Viscosity (20 °C) DIN 53015	mPa·s	~0.7

The data represents typical values (no product specification)

TYPICAL APPLICATIONS

1. Moisture curing of polymers

Dynasylan® VTEO is suitable for the preparation of moisture curing polymers, e.g. polethylene. 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 an 80-100 °C waterbath, steambath, or even at ambient conditions), are the polymer chains linked together via the formation of siloxane bonds, 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® VTEO may also be used as a comonomer 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 crosslinked 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® VTEO acts as an adhesion promoter for various mineral-filled polymers, improving mechanical and electrical properties especially after exposure to moisture. Once bonded to an inorganic filler, Dynasylan® VTEO hydrophobizes the filler surface, improving the compatibility of fillers with polymers, leading to a better dispersibility, reduced melt viscosity and easier processing of filled plastics. Surface coating of glass, metal or ceramics with Dynasylan® VTEO will improve not just adhesion, espe-

cially of acrylic systems, but also corrosion or scratch resistance.

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

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

4. Dynasylan® VTEO as moisture scavenger

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

5. Other applications of Dynasylan® VTEO

Dynasylan® VTEO can easily bond to OH-groups. Hydroxyl containing polymers e.g. functionalized silicones, may be modified with Dynasylan® VTEO, thereby introducing reactive vinyl groups into the polymer chains. The vinyl group of Dynasylan® VTEO is activated by its proximity to silicon, which makes it an attractive molecule for different organic syntheses.

BENEFITS & ADVANTAGES

Reactivity

In the presence of moisture the ethoxy groups of Dynasylan® VTEO hydrolyze to produce ethanol 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® VTEO 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® VTEO is supplied in 25, 180 kg drums and 800 kg IBC-containers.

SHELF LIFE

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

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

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