Dynasylan®

Product Information

Dynasylan® 1122

Bis(3-triethoxysilylpropyl)amine

PRODUCT DESCRIPTION

Dynasylan® 1122 is a secondary aminofunctional ethoxysilane possessing two symmetric silicone atoms. Dynasylan® 1122 acts as an adhesion promoter between inorganic materials (for example glass, metals and fillers) and organic polymers (thermosets, thermoplastics and elastomers), as a surface modifier and can be used for the chemical modification of substances.

Dynasylan® 1122 is a colourless to yellow liquid with an amine-like odor which is, for example, soluble in alcohols, aliphatic or aromatic hydrocarbons.

Dynasylan® 1122 is a bifunctional organic compound in which the silicon-functional ethoxy-groups hydrolyze in the presence of water to form reactive silanols, which can be bonded to an inorganic substrate; the organophilic amino group can interact with a suitable polymer. Due to 6 hydrolyzable substituents present in one molecule, Dynasylan® 1122 is exceptionally suitable to form highly crosslinked networks on and between substrates and in organic matrices.

The hydrolysis of Dynasylan® 1122 in water takes place by acidic catalysis (e.g. formic or acetic acid at a pH of 2-3). In order to achieve solubility in organic solvents simply add 2-4 wt.-% of water per wt.-% of Dynasylan® 1122. Upon stirring for 5h the solutions are ready for use.

Examples of suitable inorganic substrates are glass, glass fibres, 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 are epoxy resins, polyurethanes, phenolic resins, furan resins, melamine resins, PA, PBT, PC, EVA, modified PP, PVB, PVAC, PVC, acrylates and silicones.

The secondary amino group in Dynasylan® 1122 provides high basicity at somewhat lower reactivity compared to primary amino groups. This is of major advantage in e.g. adhesives and sealants where the silane is added to the polymer matrix: Homogeneous distribution and bonding/networking of Dynasylan® 1122 to the inorganic filler can commence unless bonding to organic materials (e.g. polymers) will proceed.

Moreover, Dynasylan® 1122 has been successfully used as a component in aqueous PA- and PU-sizes for glass fibers.

Typical Properties

Property	Unit	Value
Boiling Point (1013 hPa) ASTM D-1120	°C	≤300
Chemical Name		N,N-bis-3-triethoxysilylpropylamine
Density (20 °C) DIN 51757	g/cm³	~0.964-0.972
Flash Point DIN EN ISO 2719	°C	≤95
pH Value (1.0 g/l) DIN EN ISO 10523 wt.-% SAA 0719		~10.2-10.8
Viscosity (20 °C) DIN 53015	mPa·s	~3-10

The data represents typical values (no product specification)

TYPICAL APPLICATIONS

Dynasylan® 1122 is an important additive in many applications.

Examples are:

- glass fiber/glass fabric composites: as size constituent or finish
- metal primers
- mineral fiber insulating materials, abrasives: as additive to phenolic resin binders
- foundry resins: as additive to phenolic, furane and melamine resins
- adhesives and sealants: as primer or additive
- mineral-filled polymers (composites) or HFFR cables: for pretreatment of fillers and pigments
- paints and coatings: as additive and primer for improving adhesion to the substrate

BENEFITS & ADVANTAGES

The most important effects which can be achieved using Dynasylan® 1122 are:

improvement in product properties, such as

- flexural strength, tensile strength, impact strength and modulus of elasticity
- moisture and corrosion resistance

improvement in processing properties, such as

- adhesion
- filler dispersion
- rheological behaviour: reduction in viscosity, Newtonian behaviour
- higher degree of filling

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® 1122 is supplied in 25 kg PE cans and in 180 kg drums.

STORAGE

It is recommended to store Dynasylan® 1122 above 0 °C, because of the viscosity change at low temperatures.

SHELF LIFE

In the originally sealed containers Dynasylan® 1122 has a shelf life of min. 12 months from delivery.

Registration Listings

Registry	Status
Australia (AIIC)	No
Canada (DSL)	Information on Request
China (IECSC)	Yes
EU (EINECS/ELINCS)	Yes
UK (UK-REACH)	Yes
Japan (ENCS)	Information on Request

Registration Listings

Registry	Status
South Korea (KECL)	Yes
Philippines (PICCS)	Yes
USA (TSCA)	Yes

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