

# Dynasytan® 1122

## Bis(3-triethoxysilylpropyl)amine

### Technical data

Properties and test methods	Value	Unit	Method
Boiling Point (1013 hPa)	> 300	°C	ASTM D-1120
Density (20 °C)	0,964 - 0,972	g/cm <sup>3</sup>	DIN 51757
Flash Point	> 95	°C	DIN EN ISO 2719
pH Value	10,2 - 10,8		DIN EN ISO 10523 (1,0 g/l)
Purity	> = 96	wt.-%	SAA 0719
Viscosity (20 °C)	3 - 10	mPa·s	DIN 53015

### Registrations

#### Dynasytan® 1122

EINECS/ELINCS (EU):	Yes
AICS (Australia):	No
DSL/NDSL (Canada):	*
PICCS (Philippines):	Yes
TSCA (USA):	Yes
IECSC (P.R. China):	Yes
ENCS (Japan):	*
ECL (South Korea):	Yes
* = available on request	

Dynasytan® 1122 is a secondary aminofunctional ethoxysilane possessing two symmetric silicone atoms. Dynasytan® 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.

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

### Safety and handling

Before considering the use of Dynasytan® 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.dynasytan.com](http://www.dynasytan.com) or upon request from your local representative, customer service or from Evonik Operations GmbH, Product Safety Department, E-MAIL [sds-hu@evonik.com](mailto:sds-hu@evonik.com).

### Packaging, storage and shelf life

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

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

Dynasytan® 1122 has a shelf life of minimum 12 months from delivery in an originally sealed can or drum.

## Properties and 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

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

## Reactivity

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.

## Processing

Dynasylan® 1122 can advantageously be employed in organic solvents, as constituent of aqueous sizes, as pure substance or added to the polymer as an additive. In higher concentrations (1-5 wt.-%) chemical modification can be achieved by reaction with suitable functional monomers or polymers, for example those containing epoxy groups.

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**Europe/Middle-East/Africa****Evonik Operations GmbH**

Silanes Business Line  
Rodenbacher Chaussee 4  
63457 Hanau-Wolfgang  
Germany  
FAX +49 6181 59 713915  
dynasytan@evonik.com  
www.dynasytan.com

**Asia / Pacific****Evonik (SEA) Pte. Ltd.**

Silanes Business Line  
3 Internatioanl Business Park  
#07-18, Nordic European  
Centre  
Singapore 609927  
PHONE +65 6809 6906  
FAX +65 6809 6699  
dynasytan@evonik.com  
www.dynasytan.com

**Asia / Pacific****Evonik Japan Co. Ltd**

Silanes Business Line  
12th Floor Monolith Building  
2-3-1, Nishi-Shinjuku-ku  
Tokyo 163-0912  
Japan  
PHONE +81 353 23 7446  
FAX +81 353 23 7397  
dynasytan@evonik.com  
www.dynasytan.com

**North America****Evonik Corporation**

Silanes Business Line  
299 Jefferson Road  
Parsippany, NJ 07054  
USA  
PHONE (TOLL FREE) +1 800 237 67  
45  
PHONE +1 973 929 8513  
dynasytan@evonik.com  
www.dynasytan.com

**Asia / Pacific****Evonik Specialty  
Chemicals (Shanghai) Co. Ltd.**

Silanes Business Line  
55, Chungdong Road  
Xinzhuang Industry Park  
Shanghai 201108  
P.R. China  
PHONE +86 21 61191-399  
FAX +86 21 61191-648  
dynasytan@evonik.com  
www.dynasytan.com

**Asia / Pacific****Evonik India Pvt. Ltd.**

Silanes Business Line  
Krislon House  
Saki Vihar Road, Anderi (E)  
Mumbai - 400 072  
India  
PHONE +91 226 7238 809  
FAX +91 226 7238 811  
dynasytan@evonik.com  
www.dynasytan.com

**North America****Silbond Corporation**

9901 Sand Creek Highway  
Weston, MI 49289  
USA  
PHONE +1 732 981 5004  
FAX +1 732 981 5275  
dynasytan@evonik.com  
www.dynasytan.com

**Asia / Pacific****Evonik Korea Ltd.**

Silanes Business Line  
3F (Nongshim Sungmookwan  
B/D)  
112 Yeouidaebang-Ro  
Dongjak-Gu  
Seoul, 07057  
Korea  
PHONE +82 2320 4773  
FAX +82 2783 2520  
dynasytan@evonik.com  
www.dynasytan.com

**Region Central and South America****Evonik Brasil Ltda.**

Silanes Business Line  
Rua Arquiteto Olavo Redig de Campos,  
105  
Torre A - 04711-904 São Paulo- SP  
Brazil  
PHONE +55 11 3146 9627  
dynasytan@evonik.com  
www.dynasytan.com

**Asia / Pacific****Evonik Taiwan Ltd.**

Silanes Business Line  
Artist Construction Bldg.  
9F, No. 133  
Min Sheng East Road, Sec 3  
Taipei, 105 Taiwan, R.O.C.  
Taiwan 10596  
PHONE +886 227 17 1242 #247  
FAX +886 227 17 2106  
dynasytan@evonik.com  
www.dynasytan.com