

# Dynasytan® 1189

## N-(n-Butyl)-3-aminopropyltrimethoxysilane

### Technical data

Properties and test methods	Value	Unit	Method
Density (20 °C)	0.947	g/cm <sup>3</sup>	DIN 51757
Boiling point (1013 hPa)	238	°C	DIN 51751
Viscosity (20 °C)	2.5	mPa.s	DIN 53015

### Registrations

#### Dynasytan® 1189

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

Dynasytan® 1189 is a bifunctional silane possessing a reactive secondary amine and hydrolyzable methoxysilyl groups.

The dual nature of its reactivity allows Dynasytan® 1189 to bind chemically to both inorganic materials (e.g. glass, metals, fillers) and organic polymers (e.g. thermosets, thermoplastics and elastomers) thus functioning as an adhesion promoter or as a surface modifier and can be used for the chemical modification of substances.

Dynasytan® 1189 is a colorless to slight yellowish liquid with a light amine-like odor which is, for example, soluble in alcohols, and 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® 1189 is supplied in 25 kg pails, 190 kg drums and 800 kg containers.

In the unopened container Dynasytan® 1189 has a shelf life of min. 12 months from delivery.

## Properties and applications

Dynasylan® 1189 has many important applications.

Examples include:

- as a size constituent or finish for glass fiber/glass fabric composites
- as an additive to phenolic, furan and melamine resins used in foundry resins
- as a primer or additive and for the chemical modification of adhesives and sealants
- for pretreatment of fillers and pigments used in mineral-filled polymers
- as a primer and additive for improving the adhesion of paints and coatings to the substrate
- as a high flexible adhesion promoter in SMP-systems.

The most important product effects that can be achieved using Dynasylan® 1189 include:

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

Dynasylan® 1189 can also provide improvements in processing properties, such as

- adhesion
- filler dispersion
- rheological behavior: reduction in viscosity
- higher filler loading

## Reactivity

In the presence of water, the methoxy groups of Dynasylan® 1189 hydrolyze to form reactive silanol groups which can bond to a variety of inorganic substrates. The organophilic n-butylamino group of Dynasylan® 1189 can react with a suitable polymer.

The hydrolysis of Dynasylan® 1189 in water takes place by acid catalysis (e.g. acetic acid at a pH of 3). To achieve solubility in organic solvents 2-4 wt.-% of water per wt.-% of Dynasylan® 1189 should be added. After stirring for 5 hours the solutions are ready for use.

Examples of suitable inorganic substrates are glass, glass fibres, glass wool, wollastonite and kaolin.

Dynasylan® 1189 may be used with such polymers as epoxy, polyurethanes, PA, PBT, EVA, modified PP and silicones.

In particular, Dynasylan® 1189 is a very effective coupling agent for thermoplastics. Superior mechanical properties can be achieved in reinforced MAA-modified PE or polypropylene matrices as well as polyamide. Dynasylan® 1189 especially leads to improvement of the impact strength of polyamide. Dynasylan® 1189 treated fibers and fillers deliver superior performance over standard aminosilanes in challenging environments. Dynasylan® 1189 can be used as an endcapper for polyurethanes (isocyanatoprepolymer).

## Processing

For substrate pretreatments (inorganic fibers and fillers) Dynasylan® 1189 can be applied as a primer as a constituent of an aqueous size or solution, neat or added to the polymer as an additive. For substrate pretreatment a concentration of approx. 0.5-2 percent is recommended. Higher concentrations (1-5 wt.-%) achieve chemical modification by reaction with suitable functional monomers or polymers, for example those containing isocyanate 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