

# Dynasylan® AMEO

## 3-Aminopropyltriethoxysilane

### Technical data

Properties and test methods	Value	Unit	Method
Refractive index n (20,D)	approx. 1.422	-	DIN 51423
Boiling point (4 hPa)	approx. > 68	°C	DIN 51356
Flash point	approx. 93/199	°C/ °F	DIN 51758
Viscosity (20 °C/ 68 °F)	approx. 1.85/1.95	mPa·s / cSt	DIN 53015
Density (20 °C/ 68 °F)	approx. 0.95	g/cm <sup>3</sup>	DIN 51757

### Registrations

#### Dynasylan® AMEO

EINECS/ELINCS (EU):	Yes
AICS (Australia):	Yes
DSL/NDSL (Canada):	Yes
PICCS (Philippines):	Yes
TSCA (USA):	Yes
IECSC (P.R. China):	Yes
ENCS (Japan):	Yes
ECL (South Korea):	Yes

**Dynasylan® AMEO** is a bifunctional silane possessing a reactive primary amino group and hydrolyzable ethoxysilyl groups.

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

**Dynasylan® AMEO** is a colorless to slightly yellowish low-viscosity liquid with an amine-like odor. It is soluble in alcohols, and aliphatic or aromatic hydrocarbons.

In addition **Dynasylan® AMEO** is completely and immediately soluble in water (with reaction).

### Safety and handling

Before considering the use of Dynasylan® and Protectosil® products please read its Material Safety Data sheet (MSDS) thoroughly for safety and toxicological data as well as for information on proper transportation, storage and use. The Material Safety Data Sheet is available after registration on our website [www.dynasylan.com](http://www.dynasylan.com) or upon request from your local representative, customer service or from Evonik Industries AG, Product Safety Department, E-MAIL [sds-im@evonik.com](mailto:sds-im@evonik.com).

### Packaging and storage

**Dynasylan® AMEO** is supplied in 25 kg, 180 kg drums and 900 kg containers. In the unopened container **Dynasylan® AMEO** has a shelf life of one year.

## Properties and application

**Dynasylan**<sup>®</sup> AMEO is an important additive for many applications.

Examples are:

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

The most important effects which can be achieved through the use of **Dynasylan**<sup>®</sup> AMEO are:

improved product properties, such as

- improved mechanical properties, for example flexural strength, tensile strength, impact strength and modulus of elasticity
- improved moisture and corrosion resistance
- improved electrical properties, for example dielectric constant, volume resistivity

improved processing properties, such as

- adhesion
- better filler dispersion
- rheological behavior: reduction in viscosity, Newtonian behaviour
- higher fillerloading

## Reactivity

In the presence of water, the ethoxy groups of **Dynasylan**<sup>®</sup> AMEO hydrolyze and form reactive silanol (Si-OH) groups which can bond to a variety of inorganic substrates. Upon hydrolysis ethanol is released. The organophilic amino group of **Dynasylan**<sup>®</sup> AMEO can react with a suitable polymer.

The hydrolysis of **Dynasylan**<sup>®</sup> AMEO takes place autocatalytically. Hydrolyzates could be stable for concentrations higher than 10% for > 1 year. The pH of the aqueous solution is about 11.

Examples of suitable inorganic substrates are glass, glass fibers, glass wool, mineral wool, silicic acid, quartz, cristobalite, wollastonite, mica as well as aluminum trihydrate, magnesium dihydrate, kaolin, talc, other silicate fillers, metal oxides and metals.

**Dynasylan**<sup>®</sup> AMEO may be used with such polymers as epoxy, phenolic, furan and melamine resins, polyurethanes, PA, PBT, PC, EVA, modified PP, PVB, PVAC, PVC, PS, nitril Kautschuk, polyester, acrylates and silicones.

**Dynasylan**<sup>®</sup> AMEO can undergo reactions with ketone or ester solvents. Silane or silanized substrates can react with carbon dioxide to form the corresponding carbonates and/or carbamates. Product modifications are possible through addition reactions with suitable monomeric or polymeric compounds (e.g. isocyanates, epoxides, etc.).

## Processing

**Dynasylan**<sup>®</sup> AMEO may be used as a constituent of aqueous sizes neat, or added to the polymer as an additive. In higher concentrations 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/RoW**

##### **Evonik Industries AG**

Inorganic Materials  
Rodenbacher Chaussee 4  
63457 Hanau-Wolfgang  
Germany  
PHONE +49 6181 59 13636  
FAX +49 6181 59 13737  
dynasytan@evonik.com  
www.dynasytan.com

#### **Asia / Pacific**

##### **Evonik Degussa (SEA) Pte. Ltd.**

Inorganic Materials  
3 Internatioanl Business Park  
#07-18, Nordic European Centre  
Singapore 609927  
PHONE +65 6809 6830  
FAX +65 6809 6630  
dynasytan@evonik.com  
www.dynasytan.com

#### **Asia / Pacific**

##### **Evonik Taiwan Ltd.**

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

#### **North America**

##### **Evonik Degussa Corporation**

Inorganic Materials  
P.O. Box 677  
299 Jefferson Road  
Parsippany, NJ 07054-0677  
USA  
PHONE (TOLL FREE) +1 800 237 67 45  
PHONE +1 973 929 8513  
FAX +1 973 929 8503  
dynasytan@evonik.com  
www.dynasytan.com

#### **Asia / Pacific**

##### **Evonik Degussa (Shanghai) Co. Ltd.**

Inorganic Materials  
55, Chungdong Road  
Shanghai 201108  
P.R. China  
PHONE +86 21 6119 1053  
FAX +86 21 6119 1075  
dynasytan@evonik.com  
www.dynasytan.com

#### **Asia / Pacific**

##### **Evonik Japan Co. Ltd**

Inorganic Materials  
12th Floor Monolith Building  
2-3-1, Nishi-Shinjuku-ku  
Tokyo 163-0912  
Japan  
PHONE +81 353 23 7300  
FAX +81 353 23 7399  
dynasytan@evonik.com  
www.dynasytan.com

#### **Latin America**

##### **Evonik Brasil Ltda.**

Inorganic Materials  
Alameda Campinas, 579  
01404-000 São Paulo-SP  
Brazil  
PHONE +55 11 3146 4123  
FAX +55 11 3146 4109  
dynasytan@evonik.com  
www.dynasytan.com

#### **Asia / Pacific**

##### **Evonik Korea Ltd.**

Inorganic Materials  
94, Galsan 1-dong  
Bupyeong-gu  
Incheon, 403-081  
Korea  
PHONE +82 32 510 2433  
FAX +82 32 505 2510  
dynasytan@evonik.com  
www.dynasytan.com

#### **Asia / Pacific**

##### **Evonik India Pvt. Ltd.**

Inorganic Materials  
Krislon House  
Saki Vihar Road, Anderi (E)  
Mumbai - 400 072  
India  
PHONE +91 226 7238 800  
FAX +91 226 7238 811  
dynasytan@evonik.com  
www.dynasytan.com