

# Dynasytan® BTSE

## Bis(triethoxysilyl)ethane

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### Technical data

Properties and test methods	Value	Unit	Method
Flash point	113	°C	DIN 51755
Density (25 °C)	approx. 0,95	g/cm <sup>3</sup>	DIN 51757
Initial boiling point	315	°C	DIN 51751

### Registrations

Dynasytan® BTSE

EINECS/ELINCS (EU):	Yes
AICS (Australia):	*
DSL/NDSL (Canada):	*
PICCS (Philippines):	Yes
TSCA (USA):	Yes
IECS (P.R. China):	Yes
ENCS (Japan):	Yes
ECL (South Korea):	Yes
* = available upon request	

Dynasytan® BTSE is the only commercially available bipodal alkylsilane. It is used in numerous applications where its nature as an excellent crosslinking agent is crucial. Its use usually requires acid- or alkali-catalysed hydrolysis.

Since all six ethoxy groups are able to participate in this reaction, Dynasytan® BTSE is regarded as hexafunctional. Hydrolysis leads to silanol groups which, in a subsequent condensation reaction, form very stable siloxane bonds (-Si-O-Si-). Condensation starts before hydrolysis is complete. During storage of these hydrolysates, condensation continues until a gel is formed. The rate of gelation depends on the concentration of water.

### 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® BTSE must be stored with exclusion of moisture.

In a sealed container, the product has a shelf-life of min. 12 months from delivery with no loss of quality.

Dynasytan® BTSE is supplied in 25 kg or 180 kg drums.

## Properties and applications

Dynasylan® BTSE is a dipodal alkylsilane, and as such can be used in many diverse applications. It is often used as crosslinking agent for organic and inorganic networks.

Its main applications are:

### Silicones:

- adhesion promoter and crosslinking agent for silicone sealants and putty compounds

### Sol-gel systems:

- Due to its high crosslinking density, it is used as an additive in sol-gel systems. It can increase the chemical as well as mechanical stability of such coatings and primers. Dynasylan® BTSE is commonly used with other sol-gel precursors such as Dynasylan® 9265, Dynasylan® MTES, or Dynasylan® GLYEO. Especially scratch resistant hardcoats and corrosion protection primers are formulated with Dynasylan® BTSE. Resulting hydrophobic and high crosslink density silane layers.

### Precursor for electronic materials:

- used as a precursor for low-κ dielectric materials and other inorganic materials

### Filler treatment:

- coupling agent and surface modifier for mineral fillers in organic thermosets or duroplasts

### PVD:

- Use as PVD-precursor for barrier coatings on plastics (plasma-activated), silane barriers against water and oxygen for plastic foils or films

It is also possible to construct an inorganic/organic network by adding silanes containing organofunctional groups (e.g. aminopropyl groups) and polymerizing with organic precursors. This principle makes it possible to obtain highly scratch- and abrasion-resistant coatings.

Dynasylan® BTSE is immiscible with water, so hydrolysis requires the use of a cosolvent such as ethanol. Suitable catalysts are mineral acids or ammonia, or even acetic acid and amines.

Partial hydrolysis gives hydrolysates of Dynasylan® BTSE whose shelf life depends on the amount of water and solvent used. The amount of water determines the activity of the hydrolysate. Activity and shelf life are inversely proportional. The correct choice of the amount of water can give hydrolysates which have a shelf life of up to a year.

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