

Dynasylan® PTMO

Propyltrimethoxysilane

Technical data

Properties and test methods	Value	Unit	Method
Density (20 °C)	approx. 0.94	g/cm ³	DIN 51757
Viscosity (20 °C)	approx. 0.7	mPa·s	DIN 53015
Flash point	approx. 35	°C	DIN 51755
Initial boiling point	approx. 137	°C	DIN 51751

Registrations

Dynasylan® PTMO

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

Dynasylan® PTMO, an alkyltrialkoxysilane is important component in **sol-gel systems**.

Dynasylan® PTMO is a colourless, low-viscosity liquid. **Dynasylan® PTMO** is regarded as trifunctional since all three alkoxy groups can hydrolyze. **Dynasylan® PTMO** also contains a propyl group that adds hydrophobic character to sol-gel coatings. Hydrolysis leads to silanol groups which, in a subsequent condensation reaction, form very stable siloxane bonds (-Si-O-Si-). Condensation occurs parallel to hydrolysis once a certain amount of silanol groups have been formed. The absolute and relative rates of hydrolysis and condensation depend on a number of factors. The most important factors include pH, concentration, solvent, temperature and the catalyst.

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 or upon request from your local representative, customer service or from Evonik Industries AG, Product Safety Department, E-MAIL sds-im@evonik.com.

Packaging and storage

Dynasylan® PTMO is sold in 25 kg and 180 kg drums. **Dynasylan® PTMO** must be stored with exclusion of moisture. In a sealed container, the product has a shelf-life of 12 months with no loss of quality.

Properties and application

In some sol-gel applications **Dynasylan**[®] PTMO is partially hydrolyzed to form a preproduct that can be further crosslinked using temperature. This pre-hydrolysis often is done in conjunction with other organofunctional silanes (e.g. **Dynasylan**[®] GLYMO), silicic acid esters or even an aqueous silica sol. This pre-product can be further modified by addition of organic resins or inorganic nanoparticles such as AEROSIL[®]. It is also possible to construct an inorganic/organic network by adding silanes containing organofunctional groups (e.g. aminopropyl groups) and organic resins. The mixture is then cured using standard organic methods. In this way it is possible to obtain more resistant coatings having a higher UV-stability than traditional organic coatings. This can also lead to more flame resistant materials than using traditional resins.

Dynasylan[®] PTMO reacts faster with water than **Dynasylan**[®] PTEO. To regulate the rate of hydrolysis and condensation a catalyst (mineral acids or ammonia, or even acetic acid and amines) can be added. Hydrolysis can also be furthered by adding a co-solvent such as an alcohol.

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