

# Dynasylan® MTES

## Methyltriethoxysilane

### Technical data

| Properties and test methods | Value        | Unit              | Method    |
|-----------------------------|--------------|-------------------|-----------|
| Density (20 °C)             | approx. 0.89 | g/cm <sup>3</sup> | DIN 51757 |
| Viscosity (20 °C)           | approx. 0.6  | mPa·s             | DIN 53015 |
| Flash point                 | approx. 30   | °C                | DIN 51755 |
| Initial boiling point       | approx. 142  | °C                | DIN 51751 |

### Registrations

#### Dynasylan® MTES

|                      |     |
|----------------------|-----|
| 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®** MTES, an alkyltrialkoxysilane is an important component in sol-gel systems.

**Dynasylan®** MTES is a colorless, low-viscosity liquid. Use requires acid- or alkali-catalysed hydrolysis. **Dynasylan®** MTES is regarded as trifunctional since all three alkoxy groups are able to participate in this reaction. Additionally **Dynasylan®** MTES contains a methyl group that adds organic character to the products. 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 depends 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](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®** MTES are available in 25 kg, 180 kg and 900 kg drums/ containers. **Dynasylan®** MTES 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**<sup>®</sup> MTES is partially hydrolyzed to form a preproduct that can be further crosslinked using temperature. This prehydrolysis is often done in conjunction with other organofunctional silanes, silicic acid esters (e.g. **Dynasylan**<sup>®</sup> A) or even a aqueous silica sol. This preproduct can be further modified by addition of organic resins or inorganic nanoparticles such as AEROSIL<sup>®</sup>. It is also possible to construct an inorganic/organic network by adding silanes containing organofunctional groups (e.g. aminopropyl groups) and organic resins and polymerizing using standard organic methods. This principle makes it possible to obtain mar resistant coatings having a higher UV-stability than traditional organic coatings. This can also lead to more flame resistant materials than using traditional resins.

## Reactivity

**Dynasylan**<sup>®</sup> MTES reacts slower with water than **Dynasylan**<sup>®</sup> MTMS. For rapid hydrolyzation a hydrolysis catalyst (mineral acids or ammonia, or even acetic acid and amines) or a cosolvent such as ethanol can be added.

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