Dynasylan®

Product Information

Dynasylan® M

Tetramethyl orthosilicate (TMOS)

PRODUCT DESCRIPTION

Dynasylan® M is the methyl ester of orthosilicic acid. In the literature it is frequently also referred to as TMOS (tetramethoxysilane). Dynasylan® M is a colorless or slightly yellow, low-viscosity liquid with an SiO_2 content of 39.5%. Use does not require acid- or alkali-catalyzed hydrolysis. Dynasylan® M easily hydrolyses upon addition of water.

Since all four methoxy groups are able to participate in this reaction, Dynasylan® M is regarded as tetrafunctional. 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, where the rate depends on the degree of hydrolysis.

Typical Properties

Property	Unit	Value
Apparent Porosity		N/A
Appearance		Colorless to yellowish
Boiling Point (1013 hPa) DIN 51751	°C	≤122
Density (20 °C) DIN 51757 DIN EN ISO 13736	g/cm³	1.03
Freezing Point OECD 102	°C	3
Viscosity (20 °C) dynamic DIN 53015	mPa·s	0.7

The data represents typical values (no product specification)

TYPICAL APPLICATIONS

Dynasylan® M is a ready source of silic acid for many applications. Silic acid is usually obtained by hydrolysis or thermally by condensation at elevated temperature. The resulting silicic acid bonds well to many inorganic substrates and can be deposited in situ in a controlled manner. The surfaces of glass, metals, pigments, fillers and synthetic fibers can be coated with a very thin SiO_2 layer in order to improve chemical and thermal stability and mechanical properties.

Dynasylan® M is an important starting material for sol-gel processes, where the additional use of alkylalkoxysilanes (e. g. Dynasylan® MTMS) can give the siloxane network a somewhat organic character as a result of the incorporation of alkyl groups.

Product Composition

Product Composition	Unit	Value
Silicon Dioxide (SiO_2) Content	wt%	39-40

The data represents typical values (no product specification)

BENEFITS & ADVANTAGES

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.

Partial hydrolysis gives hydrolysates of Dynasylan® M 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 a few months.

HANDLING & PROCESSING

Before considering the use of Dynasylan® 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 on our website https://silanes.evonik.com/en or upon request from your local representative, customer service or from Evonik Operations GmbH, Product Safety Department, E-MAIL sds-hu@evonik.com.

PACKAGING

Dynasylan® M is supplied ready to use in 200 kg drums.

STORAGE

Dynasylan® M must be stored with exclusion of moisture.

SHELF LIFE

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

Registration Listings	
Registry	**Status**
Australia (AIIC)	Yes

Registration Listings	
Registry	**Status**
Canada (DSL)	Yes
China (IECSC)	Yes
EU (REACH)	Yes
EU (EINECS/ELINCS)	Yes
Japan (ENCS)	Yes
South Korea (KECL)	Yes
Philippines (PICCS)	Yes
USA (TSCA)	Yes

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