Product Information

Dynasylan® SILBOND® Condensed

Tetraethyl orthosilicate

PRODUCT DESCRIPTION

Dynasylan® SILBOND® Condensed is tetraethyl orthosilicate (TEOS; Si[OEt]4), and is used as a raw material for acid- or alkali- catalyzed hydrolysis and subsequent condensation reactions, commonly known as the sol-gel process. Dynasylan® SILBOND® Condensed is a clear, low-viscosity liquid with a minimum silica content of 28.0% (the Si content of Dynasylan® SILBOND® Condensed is calculated as SiO_2).

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Typical Properties

Property	Unit	Value
Appearance		Clear Liquid
Boiling Point, min.	°C	167
Chemical Name		Tetraethyl orthosilicate
Density (20 °C); QC07100P	g/cm³	~0.930-0.940
Flash Point, min.	°C	46
Product Purity, min. (GC-TCD); QC07105P	%	96.5
Viscosity (20 °C)	mPa·s	0.75

The data represents typical values (no product specification)

TYPICAL APPLICATIONS

Dynasylan® SILBOND® Condensed is a ready source of silicic acid for many applications. Silicic acid is usually obtained by hydrolysis, or thermally by condensation at elevated temperatures. 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 withy a very thin SiO_2 layer in order to improve chemical and thermal stability, and mechanical properties.

Other applications are:

- binders for fillers in inorganic zinc-rich paints or precision investment castings
- crosslinkers in silicone rubber systems
- drying agents in sealing compositions

Product Composition

Product Composition	Unit	Value
Silicon Dioxide (SiO_2) Content QC07104P	wt%	28.0-30.0

The data represents typical values (no product specification)

BENEFITS & ADVANTAGES

Dynasylan® SILBOND® Condensed is an important starting material for sol-gel processes, where the additional use of alkylalokoxysilanes (e.g. Dynasylan® MTES) can give the siloxane network a slight organic character as a result of the incorporation of alkyl groups. 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® SILBOND® Condensed is immiscible with water, so hydrolysis requires the use of a co-solvent such as ethanol. Suitable catalysts are mineral acids or ammonia, or even acetic acid and amines. Partial hydrolysis gives hydrolysates of Dynasylan® SILBOND® Condensed 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 for the amount of water can give hydrolysates, which have a shelf-life of up to a year (from the time of manufacture).

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://www.evonik.com/en/company/businesslines/se.html 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® SILBOND® Condensed products could be available in pails, drums, totes and tanker quantities. Please ask for further details.

SHELF LIFE

In unopened container Dynasylan® SILBOND® Condensed has a shelf life of min. 24 months from date of manufacture.

Registration Listings	
Registry	**Status**
Australia (AIIC)	Yes
Canada (DSL)	Yes
China (IECSC)	Yes
EU (REACH)	Yes
Japan (ENCS)	Yes
South Korea (KECL)	Yes
New Zealand (NZIoC)	Yes
Philippines (PICCS)	Yes
Taiwan (TCSI)	Yes
USA (TSCA)	Yes

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