

Product Information

Dynasylan® A SQ

Tetraethyl orthosilicate, high purity

CAS NUMBER

78-10-4

PRODUCT DESCRIPTION

Dynasylan® A SQ represents a special quality of Dynasylan® A, the ethyl ester of orthosilicic acid.

With a specified purity of 99.9% (GC-FID) and a low level of impurities like chloride and trace metals Dynasylan® A SQ stands for reliable product quality. Tetraethyl orthosilicate is the most industrially important of the tetraalkyl silicates. It is frequently also referred to as TEOS or tetraethoxysilane in the literature. Dynasylan® A SQ is a colourless, low-viscosity liquid with an SiO₂ content of 28.5%.

Typical Properties

Property	Unit	Value
Boiling Point, min. (at 1,013 hPa) DIN 51751	°C	167
Chemical Name		Tetraethyl orthosilicate, high purity
Color		colourless liquid
Density (20 °C) DIN 51757	g/cm ³	0.94
Flash Point, min. DIN 51755	°C	45
Freezing Point (at 1,013 hPa)	°C	-77
Odor		faint inherent odor
Product Purity, min. (GC-FID) AN SAA 1506	%	99.9
Viscosity (20 °C) DIN 53015	mPa·s	0.75

The data represents typical values (no product specification)

TYPICAL APPLICATIONS

Dynasylan® A SQ can replace Dynasylan® A in every application where higher purity is required. In the application of silicic acid esters, use is often made of the option of preparing silicic acid by hydrolysis or thermally treatment. 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 fibres can be coated with a very thin SiO₂ layer in order to improve chemical and thermal stability and mechanical properties. Other applications are:

- Dynasylan® A SQ is a suitable base material for the production of ultra high purity tetraethoxysilane (UHP TEOS) used in the electronic industry
- crosslinkers in silicone rubbers for electronic potting systems
- drying agents in sealing compositions for electronic applications.

Dynasylan® A SQ is an important starting material for sol-gel processes, 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 and, during storage of these hydrolysates, continues until a network is formed, where the rate depends on the degree of hydrolysis. Additional use of alkylalkoxysilanes (e. g. Dynasylan® MTES) can give the siloxane network a somewhat 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® A SQ is immiscible with water, so hydrolysis requires the use of a cosolvent as solubilizer. Suitable catalysts are acids or bases like mineral acids or ammonia, or even acetic acid and amines.

Partial hydrolysis gives hydrolysates of Dynasylan® A SQ 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 propor-

tional. The correct choice of the amount of water can give hydrolysates which have a shelf life of up to a year.

Product Composition

Product Composition	Unit	Value
Silicon Dioxide (SiO₂) Content	wt%	28.3-29.1

The data represents typical values (no product specification)

BENEFITS & ADVANTAGES

- Dynasylan® A SQ is a suitable base material for the production of ultra high purity tetraethoxysilane (UHP TEOS) used in the electronic industry
- crosslinkers in silicone rubbers for electronic potting systems
- drying agents in sealing compositions for electronic applications.

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® A SQ is supplied ready to use in 180 kg and 190 kg drums.

STORAGE

Dynasylan® A SQ must be stored under exclusion of moisture.

SHELF LIFE

In a sealed container, Dynasylan® A SQ has a shelf-life of min. 6 months from delivery.

Registration Listings

Registry	Status
Australia (AIIC)	Yes
Canada (DSL)	Yes
China (IECSC)	Yes
EU (REACH)	Yes
European Union (EINECS/ELINCS)	Yes
Japan (ENCS)	Yes
South Korea (KECL)	Yes
New Zealand (NZIoC)	Yes
Philippines (PICCS)	Yes
Taiwan (TCSI)	Yes
United States of America (TSCA)	Yes

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