

## Product Information

# Dynasylan® SIVO 210

proprietary composition of primary and secondary aminofunctional silanes with high crosslinking performance

## CAS NUMBER

919-30-2 & 13497-18-2

## PRODUCT DESCRIPTION

Dynasylan® SIVO 210 is a blend of primary and secondary aminofunctional silanes.

The blend contains up to 50 wt% of 3-aminopropyl-triethoxysilane and up to 50% of secondary amines like Bis-(triethoxysilylpropyl)amine. The blend possesses silanes having reactive primary and secondary amino groups as well as hydrolyzable ethoxysilyl group. The dual nature of this reactivity allows Dynasylan® SIVO 210 to bind chemically to both inorganic materials (e.g. glass, metals and fillers) and organic polymers (e.g. thermosets, thermoplastics, elastomers) thus functioning as an adhesion promoter, a surface modifier and a reactive reagent.

Dynasylan® SIVO 210 is a yellowish liquid with an amine-like odor. It is soluble in alcohols as well as aliphatic or aromatic hydrocarbons.

### Typical Properties

Property	Unit	Value
<b>Boiling Point, min.</b> (1013 hPa) ASTM D-1120	°C	240
<b>Density</b> (20 °C) DIN 51757	g/cm <sup>3</sup>	-0.97
<b>Flash Point, min.</b> DIN EN ISO 2719	°C	95
<b>pH Value</b> (20 °C) DIN 19268		11,0-11,3
<b>Viscosity</b> (20 °C) DIN 53015	mPa·s	4-40

The data represents typical values (no product specification)

## TYPICAL APPLICATIONS

Dynasylan® SIVO 210 may be used as a constituent of aqueous sizes, neat, or added to a resin or polymer as a modifier.

Examples are:

- glass fiber/glass fabric composites: as a finish or size constituent
- mineral fiber insulating materials and abrasives: as an additive to phenolic resin binders
- foundry resins: as an additive to phenolic, furanic and melaminic resins
- sealants and adhesives: as a primer or additive and for chemical modification
- mineral-filled polymers or HFFR cables: for pretreatment of fillers and pigments
- paints and coatings: as an additive and primer for improving adhesion to the substrate.
- as a primer for glass and metal surfaces.

Dynasylan® SIVO 210 may react with a variety of inorganic substrates and modify their surfaces. Examples of suitable inorganic substrates are glass, glass fibers, glass wool, mineral wool, silicic acid, quartz, cristobalite, wollastonite, mica as well as aluminum trihydrate, magnesium dihydrate, kaolin, talc, other silicate fillers, metal oxides and metals.

Dynasylan® SIVO 210 may react with a variety of organic resins and polymers and form silane-functionalized materials. Examples of suitable organic resins and polymers are epoxy, phenolic, furanic and melaminic resins, polyurethanes, PA, PBT, PC, EVA, modified PP, PVB, PVAC, PVC, PS, polyester, acrylates and silicones.

Dynasylan® SIVO 210 can undergo reactions with ketone or ester solvents. Silane or silanized substrates can react with carbon dioxide to form the corresponding carbonates and/or carbamates.

Addition reactions with suitable monomeric or polymeric compounds (e.g. isocyanates, epoxides, etc.) are established and state of the art.

## BENEFITS & ADVANTAGES

Dynasylan® SIVO 210 is exceptionally suitable to form highly crosslinked networks on and between organic substrates and inorganic matrices. Therefore Dynasylan® SIVO 210 is a preferred component in the modification of inorganic filler surfaces and in corrosion-resistant primer systems for metal pretreatment.

Dynasylan® SIVO 210 contains primary and secondary aminoalkyl(triethoxysilanes). The components are bifunctional organic compounds in which the silicon-functional ethoxygroups hydrolyze in the presence of water to form reactive silanols, which can be bonded to an inorganic substrate. The organophilic amino group can interact with a suitable polymer.

Examples of suitable inorganic substrates are glass, silicic acid, quartz, sand, cristobalite, wollastonite and mica; also suitable are aluminium hydroxide, kaolin, talc, other silicate fillers, metal oxides and metals.

Examples of suitable polymers are phenolic resins, furane resins, melamine resins, PA, PBT, PC, EVA, modified PP, PVB, PVAC or PVC.

The secondary amino group in Dynasylan® SIVO 210 provides high basicity at somewhat lower reactivity compared to the primary amino groups. This is of major advantage in e.g. HFFR cables where the silane is added to the polymer matrix. Homogeneous distribution and bonding/networking of Dynasylan® SIVO 210 to the inorganic filler can commence unless bonding to organic materials (e.g. polymers) will proceed.

## DOSAGE

The hydrolysis of Dynasylan® SIVO 210 in water takes place by acidic catalysis (e.g. formic or acetic acid at a pH 3). To achieve solubility in organic solvents simply add 2-4 wt.-% of water per wt.-% of Dynasylan® SIVO 210. Upon stirring for 5 h the solutions are ready for use.

Dynasylan® SIVO 210 can advantageously be employed in organic solvents as constituent of aqueous sizes or solutions or added to the polymer as an additive. In higher concentrations (1-5 wt.-%) chemical modification can be achieved by reaction with suitable functional monomers or polymers, for example those containing epoxy groups.

## 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](mailto:sds-hu@evonik.com).

## PACKAGING

Dynasylan® SIVO 210 is supplied in 25 kg cans, 180 kg drums and 900 kg IBC's.

## STORAGE

Local regulations have to be followed and applied.

From technical point of view a storage between 4°C and 40°C is beneficial.

The material is stable as long as not exposed to air or moisture.

## SHELF LIFE

In the original unopened container Dynasylan® SIVO 210 has a shelf life of at least 12 months from delivery.

### Registration Listings

Registry	Status
China (IECSC)	Yes
European Union (EINECS/ELINCS)	Yes
United Kingdom (UK-REACH)	Pending
Japan (ENCS)	Information on Request
South Korea (KECL)	Yes
Philippines (PICCS)	Yes
Türkiye (KKDIK)	Pending
United States of America (TSCA)	Yes

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