

Dynasytan® SIVO 210

Proprietary aminofunctional silane composition

Technical data

Properties and test methods	Value	Unit	Method
Density (20 °C)	approx. 0.97	g/cm ³	DIN 51757
pH value (20 °C / 1:1 in H ₂ O)	approx. 11	-	-
Viscosity (20 °C)	approx. 4-40	mPa·s	DIN 53015
Boiling point (1013 hPa)	approx. 240	°C	ASTM D 1120
Flash point	> 100	°C	DIN 51755

Registrations

Dynasytan® SIVO 210

EINECS/ELINCS (EU):	Yes
AICS (Australia):	No
DSL/NDSL (Canada):	No
PICCS (Philippines):	Yes
TSCA (USA):	Yes
IECSC (P.R. China):	Yes
ENCS (Japan):	No
ECL (South Korea):	Yes

Dynasytan® SIVO 210 is an aminofunctional silane composition which acts as an adhesion promoter between inorganic materials (for example glass, metals and fillers) and organic polymers (thermosets, thermoplastics and elastomers), as a surface modifier or as chemical modification of substances.

Dynasytan® SIVO 210 is a colorless to yellowish liquid with an amine-like odor which is soluble in alcohols, aliphatic or aromatic hydrocarbons.

Safety and handling

Before considering the use of Dynasytan® 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.dynasytan.com or upon request from your local representative, customer service or from Evonik Industries AG, Product Safety Department, E-MAIL sds-im@evonik.com.

Packaging and storage

Dynasytan® SIVO 210 is supplied in 25 kg pails and 180 kg drums. In the originally closed drum **Dynasytan® SIVO 210** has a shelf life of at least 1 year.

Properties and application

Dynasylan[®] SIVO 210 is an important additive in many applications.

Examples are:

- metal primers
- foundry resins: as additive to phenolic, furan and melamine resins
- sealants and adhesives: as primer or additive
- mineral-filled polymers (composites) or HFFR cables: for pretreatment of fillers and pigments
- paints and coatings: as additive and primer for improving adhesion to the substrate.

The most important effects which can be achieved using

Dynasylan[®] SIVO 210 are:

improvement in product properties, such as:

- mechanical properties, for example flexural strength, tensile strength, impact strength and modulus of elasticity
- moisture and corrosion resistance

improvement in processing properties, such as:

- adhesion
- filler dispersion
- rheological behaviour: reduction in viscosity, Newtonian behaviour
- higher filler loading

Reactivity

Dynasylan[®] SIVO 210 contains primary and secondary aminoalkylethoxysilanes. The components are bifunctional organic compounds in which the silicon-functional ethoxy-groups 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. The composition contains partly six hydrolyzable substituents in one molecule. Thus **Dynasylan**[®] SIVO 210 is exceptionally suitable to form highly crosslinked networks on and between substrates and in organic matrices.

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 5h the solutions are ready for use.

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, 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.

Excellent crosslinking properties make **Dynasylan**[®] SIVO 210 a preferred component in the silylation of inorganic filler surfaces and in corrosion-resistant primer systems for metal pretreatment.

Processing

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.

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