

Product Information

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Dynasytan[®]

Dynasytan[®] SIVO 121

Wood Surface Impregnation Agent

Description

Dynasytan[®] SIVO 121 is a multifunctional, nearly VOC-free, water-borne silane system. It can act most prominently as a hydrophobizing or olephobizing agent for plain wood surfaces or weathered, originally scumble paint treated wood surfaces.

Technical data

Property	Value	Unit	Method
Flash point	> 90	°C	DIN 51755
Density (20 °C)	1,01	g/cm ³	DIN 51757
Viscosity (20 °C)	approx 1	mPa.s	DIN 53015
Appearance	yellowish, slightly turbid liquid		
pH-value at 20 °C, 1:1 in water	4		ASTM D-1120

Reactivity

Dynasytan[®] SIVO 121 does not contain solvents and, contrary to functional alkoxysilanes, does not release alcohols upon hydrolysis when applied. **Dynasytan[®] SIVO 121** boasts of a high proportion of already active silanol functions. Consequently a chemical coupling to the wood substrate as well as high crosslinking density due to the formation of two- and three-dimensional networks is obtained. Fluoroalkyl-functional groups contained in **Dynasytan[®] SIVO 121** provide strong hydro- and oleophobic surface properties (low energy surfaces).

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Applications

Dynasylan[®] SIVO 121 - containing wood preservation agents can be painted, rolled or sprayed. In a spray application it is mandatory to minimize the generation of Aerosol emissions by suited procedures (e.g. application of HPLV spray processes, air driven low pressure spray processes. Consecutive application steps should be carried out wet-in-wet as a dried coat of **Dynasylan**[®] SIVO 121 will almost immediately exhibit a strong repelling effect. Consequently a second application step would therefore be much less effective. Recommended dosage during application: For a full range effectiveness and durability (up to 1500 h of QUV-stability in transparent systems) 300 g/m² of undiluted **Dynasylan**[®] SIVO 121 are necessary. That amount can be applied by either one-step or multi-step procedures, depending on the absorptiveness of the wood substrate.

In a quantity of 70 - 150 g/m² **Dynasylan**[®] SIVO 121 will exhibit a QUV-stability of 300 - 900 h with regard to hydro- and oleophobic surface activity (corresponding to approx. 1 - 3 years of exterior weathering in an average European climate). AS a minimum concentration we recommend a preparation of 1 part **Dynasylan**[®] SIVO 121 and 1 part of dilution agent (= organic solvent + water + additive). Temperature of treated substrates should stay in the range of 5 - 50°C. **Dynasylan**[®] SIVO 121 is sensitive to freezing temperatures. Frozen material can flocculate upon defrosting and may in part lose its beneficial properties. **Dynasylan**[®] SIVO 121 - containing wood preservation agents should not be applied on wet wood surfaces (humidity < 18% recommended). Crosslinking on wet substrates will be incomplete and thus full efficiency may not be achieved. To a certain degree **Dynasylan**[®] SIVO 121 will impart yellowing on bright wood surfaces. This will by no means influence the hydro-/oleophobic performance of the products. However, the issue must be taken into consideration once a certain optical appearance is of importance during the formulation of transparent, colorless wood preservation agents. As a fully crosslinked impregnating coating, **Dynasylan**[®] SIVO 121 is extremely resistant against all kinds of atmospheric exposure (UV-irradiation, rainfall, temperature changes) but imparts only a relatively weak UV-absorbing strength. Decomposition of lignin by UV light will be delayed but not prevented. Typical greying of wood under the influence of UV light may thus be delayed by **Dynasylan**[®] SIVO 121 but will not be inhibited. If a strong UV-protection is desired in the final formulation, additional UV absorbers need to be introduced. With this regard the addition of pigments (e.g. most prominently iron oxides) can be recommended.

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Processing

Dynasylan® SIVO 121 is suited for hydro- and oleophobic surface modification of wood surfaces. It can also be used in formulations of translucent scumble paints with outstanding properties. Once wood surfaces are treated accordingly, formation of low energy surfaces leads to a prominent repelling effect towards almost all kinds of liquids. This strongly hydro- and oleophobic treatment reduces the pick-up of dirt significantly. As of such affection of wood surfaces by microorganisms (e.g. mildew) is reduced. **Dynasylan**® SIVO 121 exhibits its beneficial properties solely on the surface of the substrate. It may thus be appropriate to add biocides to the final formulation, e.g. agents against bluestain. This will actively prevent fouling caused by microorganisms. This surface modification is extremely resistant against weathering. Main reason is a severe stability of the fluoroalkylsilyl function as well as the chemical reaction of the silanols with the surface and the generation of a highly crosslinked siloxane network. These features make **Dynasylan**® SIVO 121 superior to any other standard fluorocarbon - based additive.

Dynasylan® SIVO 121 enables the formulation of translucent scumble paints, which can withstand many years of exterior weathering once applied to a suited wooden surface. QUV-testing according to DIN EN ISO 11507 (irradiation cycles by UVA-lamps (UVA-340) at 55°C, condensation cycles at 45°C plus intermittent rinsing with water) did show a permanent repelling effect of more than 800 h (corresponding to an approx. 2 years exterior weathering) when applying approx 100 g/m² in non-pigmented, transparent formulations. Elevated consumptions of up to 300 g/m² can further increase the durability of the treatment. Wood which is treated with **Dynasylan**® SIVO 121 stays completely air-permeable despite its strongly hydro- and oleophobic surface. Permeability of water vapour is only marginally influenced by **Dynasylan**® SIVO 121, much less than by most of the standard binder systems in the paint and coating industry.

Dynasylan® SIVO 121 can be physically mixed with water at any desired concentration. Alcohols and ketons can be added as required to improve spreading on the wooden surface. However, compatibility of other usual coating additives for water-borne systems such as wetting agents, defoamers or binder systems has to be checked. It is recommended to draw special attention to the shelf life of such preparations. Sometimes conservation agents may have to be applied in order to prevent the build-up of microorganisms (e.g. mildew). The compatibility of additional biocides towards **Dynasylan**® SIVO 121 needs to be evaluated. Information on dosage: Full effectiveness of **Dynasylan**® SIVO 121 is only reaches at a minimum concentration of 50 wt.-% in the final formulation. Thus lower concentrations are not recommended. Final statements on the realistic persistence of the final formulation can only be derived from respective outdoor weathering tests. Nevertheless, results of QUV testing according to DIN EN ISO 11507 will exhibit a good correlation.

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Dynasylan®

Registration

EINECS/ELINCS (EU):	Yes
AICS (Australia):	Yes
DSL/NDSL (Canada):	
PICCS (Philippines):	
TSCA (USA):	
IECSC (P.R. China):	Yes
ENCS (Japan):	LVE (low volume exemption)
ECL (South Korea):	Yes

Safety and Handling

Before considering the use of Dynasylan® 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.dynasylan.com or upon request from your local representative or customer service.

Packaging and Storage

Dynasylan® SIVO 121 is supplied in 25 kg pails and 200 kg drums.
Being a water-borne system, **Dynasylan**® SIVO 121 must be stored above 0°C.
Moreover, storage temperature should stay below 40°C.

In the unopened container **Dynasylan**® SIVO 121 has a shelf life of at least one year.

Dynasylan® SIVO 121-EN-2007-12

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