

Technical Information Sheet Article No.

Funcosil CI

Alkyl alkoxy silane with additives

Test certificates:

Tested according to ZTV-SIB 90, TL/TP OS-A and OS-B

Bast listed

Range of use

Funcosil CI is used for the hydrophobic impregnation of concrete in road traffic areas - roads, bridges, retaining walls, noise barriers, guard rails, parking garages, parking lots, etc. - as preventive concrete protection against the penetration of de-icing salt and sea water, as well as against frost and de-icing salt damage. It can be used on concrete in its various modifications (e.g. white concrete, light-weight concrete and cast stone) and fibrated cement.

Property profile

Funcosil CI is a reactive, oligomer silane solution with additives for the water repelling impregnation of mineral building materials. This product was especially developed for the water repelling treatment of concrete. Funcosil CI is distinguished by high alkali stability, i.e. the substrate to be impregnated may show pH values of up to max. 14 without adversely affecting the effect of the impregnation. Because of its low molecular structure in the packaged state, Funcosil CI has very good penetration capacity in the packaged state and reacts chemically in the building material in the presence of humidity to become a water repelling, UV

Characteristic data of the product

Characteristic data of the product in the package state

Effective ingredient base:	silane
Effective ingredient content:	≈ 20% by mass
Carrier agent:	low odour hydrocarbons
Flash point:	+40° C.
Density:	approx. 0.78 g/cm ³
Viscosity:	44 sec. in DIN 2 cup
Solidification point:	> -15° C.
Appearance:	clear liquid

Characteristic data of the product after formation of the active ingredients

Polysiloxane content:	approx. 12% by weight
Water absorption:	very low
UV resistance:	excellent
Weathering resistance:	highly pronounced
Long term effect:	> 10 years
Alkali resistance:	up to pH 14
Non-stick drying:	given
Tendency to soil:	very little
Toxicity:	physiologically safe
Chloride ion resistance:	very good

and weathering resistant active ingredient - polysiloxane. After application, the active ingredient is deposited on capillary and pore walls as a macromolecular layer without essentially influencing water vapour diffusion capacity. Funcosil CI reduces the absorption of water and pollutants in the form of water soluble, acidic atmospheric substances. As a result, infestation with microorganisms on concrete surfaces is

reduced. Frost and de-icing salt resistance is improved. Energy loss is minimised by protecting against the penetration of moisture.

Building material surfaces impregnated with Funcosil CI show considerably less tendency to soil. Funcosil CI reduces the penetration of chloride ions into the concrete which protects reinforcement steel from corrosion.

Substrate

The substrate must be in sound condition. Structural defects such as cracks, cracked joints, defective connections, rising damp and hygroscopic moisture must be remedied first. It must be ensured that water and damaging salts dissolved in the water cannot penetrate behind the hydrophobized zone since this could lead to frost damage, spalling and salt burst. Before hydrophobizing impregnation can be carried out, adhering crusts of soil and pollutants, as well as efflorescence, algae and moss must be removed by a suitable cleaning procedure. Cleaning opens the capillaries and pores and allows the impregnation agent to be absorbed.

Depending on substrate, type and degree of soiling, we recommend our facade cleaner products. The mode of action and applications are found in the respective Technical Information Sheets. When cleaning, make sure that building substance is damaged as little as possible. Cleaning agent residue (e.g. surface active agents) from prior cleaning measures may interfere with the hydrophobizing effect and must be completely washed off for this reason. Chase out defective mortar joints and cracks and repair with factory-mixed, dry mortar, such as Joint Mortar. Close expansion and connection joints with elastic Albon joint sealing compounds.

Substrate properties:

A prerequisite for an optimal impregnation effect is the absorption of the impregnation agent. This depends on the pore volume of the building material and moisture

content. For this reason, the substrate must be as dry as possible. If salts that damage the building are present, a quantitative salt analysis is absolutely essential. High concentrations of salts (especially chlorides, nitrates and sulphates) lead to severe damage that cannot be prevented by a hydrophobizing impregnation.

Adjoining surfaces:

Facade elements that should not come in contact with the impregnation agent, such as windows, varnished surfaces or surfaces to be varnished as well as glass and plants should be covered with polyethylene sheet.

Directions

The impregnation agent is to be applied in a flow coating procedure under gravity in such amounts that a 30-50 cm long film of liquid runs down the building material surface. The spray nozzle is led horizontally, without interruption, along the facade. After the impregnation agent has been absorbed, the process is repeated several times. Spraying pressure and nozzle diameter should be adjusted so that misting does not occur. In order to avoid missing places, limited sections should be completely impregnated without interruption at one time. For smaller, complicated surfaces that do not allow a spray application, a brush or roller can also be used. With this method, insufficient application rates can only be avoided if impregnation work is always carried out with well saturated tools. The freshly impregnated surface should be protected from driving

rain for at least 5 hours. Strong wind and sunlight can speed evaporation of the carrier agents which negatively influences penetration depth.

During application and drying of impregnation agents, solvent vapours may enter the building, especially at low temperatures and if there is no wind. All windows and doors should be covered during impregnation work with polyethylene sheet. After the impregnation, ventilate living space.

Working temperature

Hydrophobizing impregnation measures can be carried out at all temperatures found in practice, however, temperatures in the range of +10° to +25° C. are preferable. Strong surface heating caused by the sun can be prevented by using awnings. At temperatures below +10° C., the evaporation of the carrier agent and the formation of the active ingredient may be delayed.

Testing the effectiveness

Water absorption on mineral building materials before and after hydrophobizing impregnation measures can be determined with the Funcosil Test Plate (Art. No. 0732) or with a test tube developed by Prof. Karsten. With the Funcosil Test Plate, a non-destructive method of measuring water absorption, the w-value (water absorption coefficient in $\text{kg/m}^2\text{h}^{0.5}$) can be easily determined directly on the object. Testing should be carried out at the earliest 4 weeks after impregnation and the measured data recorded.

Tools, cleaning

All solvent resistant, low pressure conveyer and spray equipment, liquid pumps are suitable. Tools must be dry and clean. After use and before longer pauses, clean thoroughly with V 101 thinner.

Packaging, application rate, shelf-life

Packaging:

5 l, 30 l and 200 litre tin containers

Application rate:

Concrete	0.3 - 0.5 litre/m ²
Light-weight concrete	1.0 litre/m ²
Fibrated concrete	0.3 litre/m ²

The required amount of impregnation agent for calculation and tender should be determined on a sufficiently large (1-2 m²) trial area. The effectiveness of the impregnation should also be determined on this area.

Shelf-life:

At least 2 years in closed containers.

Safety, ecology, disposal

Further information on safety when transporting, storing and handling as well as on disposal and ecology is found in the latest Safety Data Sheet.

The statements above are compiled from our field of production and according to the latest technological developments and application techniques.

Since application and working are beyond our control, no liability of the producer can be derived from the contents of this information sheet. Any statements made beyond the contents of this information must be confirmed in writing by the producer.

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