

Silicone water-repellent impregnation for concrete

AREA OF USE

Silifob N is a colourless silan-siloxan based liquid in an organic solvent intended for the final protection of concrete against atmospheric water, moisture and salts. Because of its high absorbency, it penetrates deep into the pores of the concrete and, after the solvent evaporates, forms an invisible impregnation of the surface with no film formation.

Water-repellent impregnations are most effective on surfaces where water can drain, so they are most often used to protect vertical and sloping surfaces, or surfaces with a 3-5% slope. Protected surfaces retain their ability to "breathe" and remain vapour-permeable. The structure and appearance of the surfaces remain unchanged.

Water-repellent impregnations do not provide protection against pressured water, so they are ineffective for protecting swimming pools, reservoirs, and other similar structures. They do not glue poorly bonded parts or bridge cracks wider than capillary cracks.

Surfaces protected by hydrophobic impregnation do not absorb water and remain dry during rainfall, therefore:

- the transport of water-soluble salts is prevented, resulting in no material efflorescence,
- no scaling or deterioration of concrete,
- no damages or cracks due to cold temperatures and de-icing salts,
- there is no occurrence of framework corrosion in concrete,
- improved thermal insulation because it saves heat that would otherwise be used to dry a wet surface,
- there is less microorganism development, algae, mould, and fungi growth, and as a result, the surfaces remain clean for a longer period of time.

Silifob N is suitable for the protection of concrete surfaces and is used:

- in road construction for the protection of bridges, viaducts, concrete parapets, curbs, etc.
- for the protection of structures made of concrete, such as dams, supportive walls, concrete elements in the construction of commercial and residential buildings
- for the protection of artificial stone.

Before using Silifob N, it is recommended to perform surface protection on the sample.

TECHNICAL CHARACTERISTICS

Characteristic	Testing method	Declared value
Appearance	Visually	Colourless liquid
Density, 20 °C	EN ISO 2811-1	[0.80 ± 0.02] kg/L

Characteristic	Testing method	Standard requirements EN 1504-2	Achieved value
Depth of penetration	EN 1504-2, Table 3, pt. 19	Class I: < 10 mm Class II: ≥ 10 mm	Class I: 8 mm
Drying rate coefficient	EN 13579	Class I: > 30 % Class II: > 10 %	Class I: 64 %
Water absorption and resistance to alkali	EN 13580	Absorption coefficient compared with the untreated specimen: < 7.5 %	3.8%
		Absorption coefficient compared with the untreated specimen after immersion in alkali solution: < 10 %	3.7%
Resistance to freeze-thaw-salt stress	EN 13581	The loss of mass of the impregnated surface may occur at least 20 cycles later than that of the unimpregnated test specimen (min $\Delta C \geq 20$)	$\Delta C = 47$

COMPLIANCE

Silifob N – hydrophobic impregnation is in accordance with the requirements of the standard EN 1504-2: Products and systems for the protection and repair of concrete structures – Surface protection systems for concrete – hydrophobic impregnation, for the *hydrophobic impregnation method* according to the principles of:

- 1.1 – protection against ingress [IP]
- 2.1 – moisture control [MC]
- 8.1 – increasing resistivity [IR]

listed in the EN 1504-9 standard: Products and systems for the protection and repair of concrete structures – General principles for the use of products and systems.

DOSAGE AND INSTRUCTIONS FOR USE

Silifob N is prepared in a usable concentration and should not be diluted prior to use. The effectiveness and durability of hydrophobic impregnation are determined by the amount of agent used and, in particular, the depth of penetration of the product into the material to be protected. Because atmospheric moisture reacts slowly with the product and reduces its effectiveness, the packaging must always be tightly closed.

Surface preparation

Silifob N must be applied to surfaces that are free of dust and greasy stains, dirt, salts, mosses, and mildew, as these can reduce product absorption. They must be compact and free of poorly bonded parts, damage, and cracks that cannot be repaired through impregnation.

It is advised to apply hydrophobic impregnation to an air dried or slightly moist surface. The surface must not be saturated with water, as this reduces the absorbency of the material. The surface must also be free from standing water. In the event of prolonged dry periods with high temperatures and/or wind, we recommend wetting the surface before applying Silifob N. In this case, moisten the surface for 12 to 24 hours before applying Silifob N. This ensures that the surface appears dry and that there is enough moisture in the capillaries to allow Silifob N penetration and reaction. If it has rained for 1 day prior to the application of the impregnation, or if there is a high proportion of air moisture in the air, e.g., more than 85%, the surface should not be wetted.

Silifob N is intended for the final protection of concrete and other mineral materials. If we want to paint the surface, we must do so before applying the hydrophobic impregnation, and we must use mineral paints, such as silicate-based paints.

If the surfaces to be protected by Silifob N are already painted, a test on a smaller hidden surface is recommended before application.

Before applying hydrophobic impregnation, we must protect all surfaces that will not be impregnated [wood, glass, aluminium, etc.] to avoid damage and staining.

Application

- Silifob N is applied with a thoroughly wet brush, roller, or gun. Coat a small area, making sure the work surfaces overlap. Silifob N must be absorbed into the surface to be protected for at least some time after impregnation.
- Vertical surfaces are treated from the bottom to the top. Apply enough impregnation to run for about 15 cm over the previously treated surface before being absorbed.

Curing

For at least 24 hours, freshly coated surfaces must be protected from rain, precipitation, and freezing.

Cleaning of work accessories

After completing the work, all tools and work accessories are cleaned with white spirit or thinner.

ADDITIONAL RECOMMENDATIONS AND WARNINGS

- The recommended application temperature is between +5 °C and +30 °C.
- The concretes we want to protect must be at least 28 days old, preferably 6 months old.
- If Silifob N is used indoors, adequate ventilation must be maintained.
- If there is a chance of rain or if the relative humidity is higher than 85%, do not use Silifob N.
- We recommend performing a test on a test surface.
- Protected surfaces can be exposed to the first action of freezing and salt within 14 days of protection implementation.

We adhere to the following requirements and principles when designing and performing concrete structure protection and/or repair:

- EN 1504-9: Products and systems for the protection and repair of concrete structures: General principles for the use of products and systems and
- EN 1504-10: Products and systems for the protection and repair of concrete structures: Site application of products and systems and quality control of works.

CONSUMPTION

Consumption depends on the type, porosity, and roughness of the surface to be protected and is usually:

from 0.2 to 0.5 kg per 1m² of surface.

PACKAGING

cans 4 kg, drums 150 kg

STORAGE

- Silifob N is a flammable liquid and should therefore be stored in warehouses that comply with the regulations for the storage of flammable liquids. Store the product in tightly sealed containers in a cool, dry, and airy location. Protect it from sources of ignition and heat, as well as direct sunlight.
- A properly stored product has a shelf life of at least 2 years after the date of manufacture.
- The product may still be used after the date of expiry, but the characteristics important for the intended use have to be examined.

HEALTH, SAFETY AND ECOLOGY

When working with Silifob N, wear protective gloves, and eye and respiratory protection. Follow the general instructions for working with chemicals: take care of cleanliness, do not eat, drink or smoke while working. After finishing work, wash hands thoroughly with water.

More information on safe handling and disposal of the product is available in the safety data sheet, which is provided on request, and is also available from the dealer or distributor where you purchased the product.

WARNING

Instructions and recommendations are given based on examinations in our laboratories and experience to date. Due to specific conditions and work methods, preliminary tests are advised for each individual case of use.

Since we cannot influence the course of work, we cannot be held responsible for its quality!



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