Nanoflex® Infusion

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Deep waterproofing according to EN 1504-2

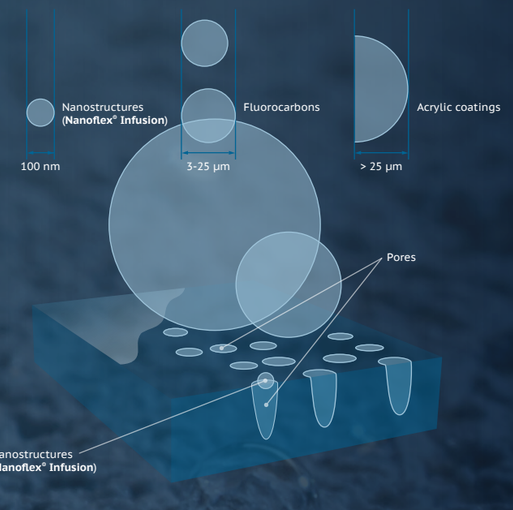
Nearly all damage to mineral building material is caused by humidity. The porous structure of these building materials allows water and its pollutants to penetrate. Capillary effects cause these materials to be transported from the surface into the interior of the building, which may cause significant damages to the building material, such as corrosion of the reinforcing bars, efflorescence, and damage due to frost and antif-reeze salt.

It is imperative to prevent water penetration in order to avoid damage and reduce penetration depth. One way of achieve this is to treat the substrate with **Nanoflex® Infusion**. The product penetrates deeply into the substructure, forming a durable and efficient protection against damp. At the same time, the substrate maintains its breathability and redirects the humidity from the inside to the outside.

Unlike **Nanoflex® Infusion**, polymeric building protection products such as acrylate systems block the pores of the substrate due to the size of the molecules. As such water cannot penetrate, but on the other hand, vapour cannot escape from within the building material, a situation that may cause damage. In addition, exposure to UV radiation may result in the surface of the building material being damaged or dissolved, which again allows the water to penetrate from outside into the interior of the building material structure.

Silane-based molecules of the coating **Nanoflex® Infusion** are tiny and of low viscosity. This characteristic allows the product to penetrate deeply into the structure of the building and to stay there durably while being chemically bound. A durable and efficient hydrophobizing is the result.

The following picture illustrates in a very simple way the mechanism:



The deep penetration of the protective coating has the following main advantage: UV radiation and mechanical abrasion cannot reduce performance.

ADVANTAGES OF NANOFLEX® INFUSION AT A GLANCE

One of the key features of efficient hydrophobizing is a small molecule with a low viscosity. For **Nanoflex® Infusion** we use a liquid organosilicon nanocoating which generates a hydrophobic layer within the substrate which efficiently prevents any water penetration into the building material.

This characteristic has many advantages:

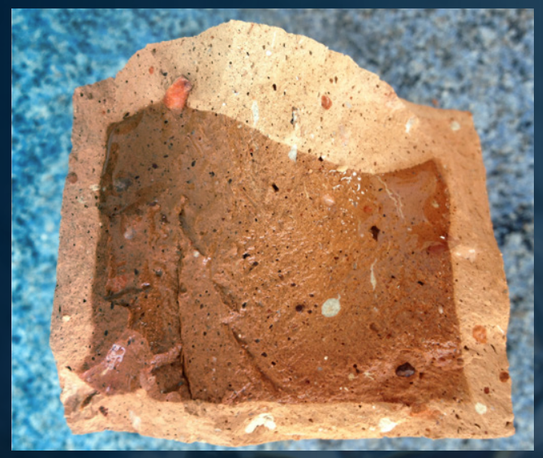
- Nanoflex® Infusion penetrates deeply into the building material, thus providing a protection that is affected neither by UV radiation nor by abrasive contamination such as road traffic.
- Compared with a pure surface coating **Nanoflex® Infusion**shows a significantly longer durability.
- This product range does not cause any visible change to the surface of the building material.
- After the application of **Nanoflex® Infusion** to any surface, it can be further treated, e.g. painted.

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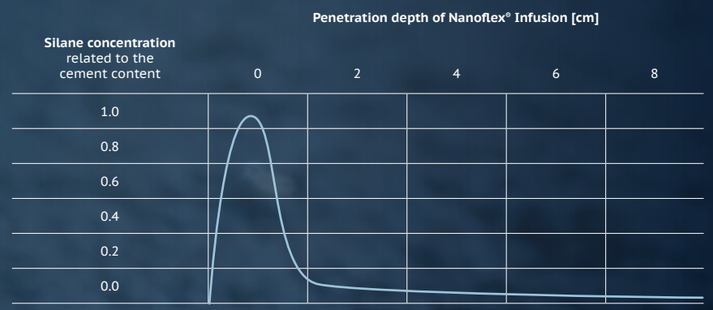
As **Nanoflex® Infusion** mainly functions in the underground and not on the surface, the beading behavior cannot be seen as a reliable indicator of the efficiency of the hydrophobizing. A reliable method to prove the efficiency involves measuring the water absorption. On existing buildings, a corresponding measuring can be carried out without causing any damage using e.g., the Karsten'sches test tubes.

Another standard quality check involves extracting a drilling core and on having this examined in the laboratory.

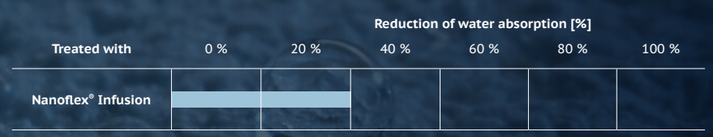
The adjacent figure clearly shows a waterproofing that prevents the water from penetrating the test body coated with **Nanoflex® Infusion** even after 12 hours. In further tests, a concrete reference block coated with **Nanoflex® Infusion** and an uncoated concrete reference block were exposed to a 10-centimeter water column for seven days. Compared with the uncoated concrete, the coated reference block showed a 90% reduction in water absorption.



CONCENTRATION PROFILE OF SILANE IN CONCRETE



REDUCTION OF WATER ABSORPTION

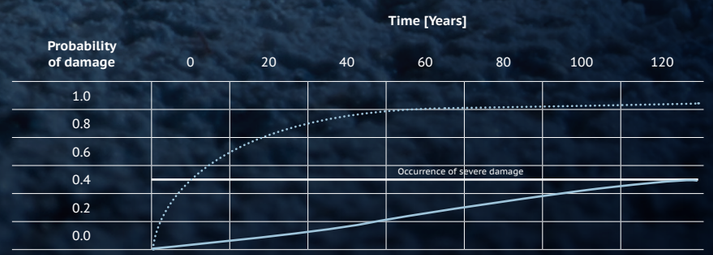


The standard method for applying **Nanoflex® Infusion** is the Airless-Spray-technique, according to which total efficiency could be proved even after 12 years.

WATER ABSORPTION OF CONCRETE



PREDICTED SERVICE LIFE



Forecasted durability of a quay wall based on the measurement of material characteristics and chloride profiles (untreated / treated).

Nanoflex® Infusion

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Technical data sheet

PRODUCT INFORMATION

Nanoflex® Infusion is perfectly suitable for providing mineral building materials in the outdoor area with a water-repelling impregnation. The coating is characterized by a high reactivity and resistance to alkalis as well as by outstanding penetration depths. Furthermore, by forming a steam-permeable and colorless impregnation, the coating considerably reduces water absorption and prevents water-soluble harmful substances such as chlorides from penetrating.

Even cracks up to 0.3mm may be protected against further breakthrough.

The ready-to-use product is also suitable to hydrophobize under top coats or surface protection systems and has been tested and certified according to TL/TP OS-A of ZTV SIB 90 and EN 1504-2.

Moreover, **Nanoflex® Infusion** may be used as OS 1 system and according to principle 1, 2, 5, and 6 of EN 1504-9.

CONDITIONS OF APPLICATION

- Substrates should be clean and dry – high pressure or steam cleaning recommended
- Outside and underground temperatures between 0° and + 40°C during application.
- Any contact between the product and water has to be avoided (ahead of and during the application)
- Application under strong wind or rain ought to be avoided
- Application as liquid film by solid flooding of the surface – in case of needing to use of appropriate conveyor unit (e.g., airless devices)
- No nebulizing
- The conveyor unit has to be cleaned with organic solvents after application
- The amount of liquid should be enough as required to allow several seconds' contact between the film and the surface
- Non-absorbent substrates such as glass, wood, plastics, and metal should not be treated
- Plants next to the area to be impregnated must be protected
- Not to be applied on asphalt
- **Nanoflex® Infusion** provides porous and mineral substrates with an invisible and water-repelling impregnation. It is recommended to apply the coating on a trial area with pre-treatment and post-treatment to determine the order volume and compatibility.

CHARACTERISTICS

- Suitable to hydrophobize mineral substrates – especially surfaces with a low porosity
- Is applied in diluted form – the amount depends on the absorbency of the mineral substrate
- Has a minimum curing time of 28 days at environmental temperature (recommended in connection with application on concrete)
- Is also appropriate for carbonated or aged concrete – in this context, a period of 5 days ought to be respected before applying the top coat such as e.g., a product of the **Nanoflex® Konzentrat SP** product range.

SPECIFICATIONS

Chemical basis	Modified silicon dioxide
Layer thickness	< 200 nm
Water repellency	Contact angle between 140° and 90°
Oil repellency	Not applicable
Temperature stability	250° C on a permanent basis
Chemical stability	between pH 1 and pH 14
Weather resistance	3500 h according to ISO 11507 A
Abrasion resistance (mechanical)	Very high
Saltwater resistant	Yes
Transparency	Slight color enhancement possible
Storage stability	2 years
Temperature sensitivity (liquid)	- 3 °C up to + 30 °C
Consumption	130 - 300 ml/m^2

Nanoflex® Infusion is ready-to-use. The product is non-hazardous goods.
For the application of **Nanoflex® Infusion** please refer to the corresponding safety data sheet.

nano Care

Your partner in

Building Protection

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v1.1-2025.09