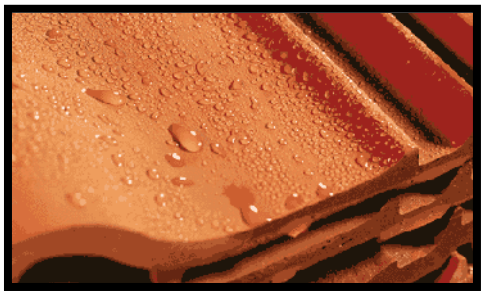
DeepSeal Natural

Impregnating Agents



Requirements and effects

- Drastic reduction in water uptake
- Minimal reduction in water-vapor permeability
- Reduces concrete corrosion
- Adequate resistance to alkalis & Carbon's
- Resistance to UV light
- Surfaces not shiny or tacky, or caused to yellow
- Helps to keep buildings clean

Unlike film-forming coatings such as those based on acrylic, polyurethane or epoxy resins. **DeepSeal** water repellents do not seal the pores at the surface of mineral masonry. They simply form a very thing layer on the pore walls. Water can no longer penetrate in liquid form into capillaries that have been rendered water-repellent, since, as a polar liquid, it is unable to interact with a non-polar, hydrophobic surface. In other words, pores, which have been **DeepSealed** and are therefore hydrophobic and can no longer, be wetted by water.

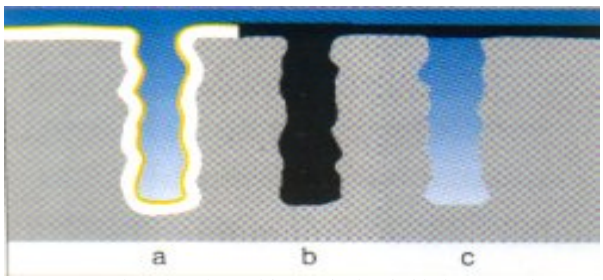


Fig. 3: A mineral surface with (a) a hydrophobic impregnation, (b) Filled pores, and (c) a sealant film

The degree of wetting can be determined quantitatively as the contact angle □ *(fig. 4).*

Untreated surfaces of mineral building materials are wetted immediately by water, i.e., the drops of water spread out and are rapidly absorbed by the building material *(fig. 4a).* If the same building material is treated with an impregnating agent, the drops of water retain their spherical shape and do not penetrate into the substrate. The water is repelled in the form of beads *(fig4b).*

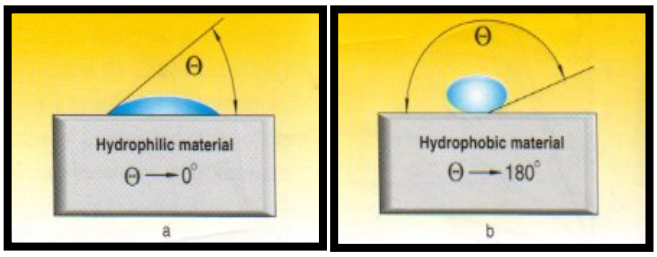


Fig 4a: Wetting of a hydrophilic porous surface
Surface. *Fig. 4b:* Water repellency of a hydrophobic porous

Water vapour can diffuse

Since the pores in hydrophobically treated masonry remain open, the building material retains its vapour permeability or "breathability". Accordingly, the passage of water vapour is impaired only slightly, if at all. This is of great importance, since moisture can diffuse to the outside without causing any damage, e.g., blistering and subsequent spalling, which frequently occur with thick surface coatings.

Water under pressure is a problem

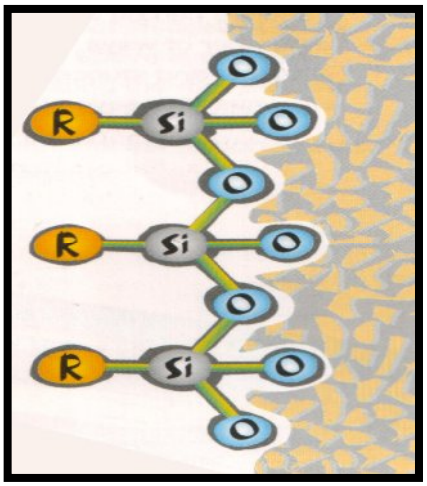
On the other hand, it is of course obvious that water-repellent treatment cannot render a building material resistant to groundwater or to driving rain, since the pores in the masonry are open. This can be a serious problem in cellars, and also with highly exposed facades. The larger the pores in the building material are, the greater is the problem. However, properly applied water repellents are perfectly sufficient to render many standard building materials, such as sand-lime brick, clinker brick and concrete, resistant even to rain driven by the wind at velocities up to 100 km/h. "Properly applied" in this context means, for example, that the resulting hydprophobic zone is not merely superficial but extends to a good depth.

Breathing new life into buildings

How *"DeepSeal"* functions

How can **DeepSeal** repel water so effectively and yet manage to remain permeable to water vapour? To use a simple analogy, they function rather like a leaf does in nature. Water is held at bay and runs off the surface, however the leaf can still exchange gases with the environment.

DeepSeal owes this property to their molecular structure. Chemically speaking, they fall midway between inorganic and organic compounds, with each molecule having an inorganic backbone, resembling quartz (SiO2) in structure, to which are attached organic groups, denoted by (R-). Thus the molecules have a highly specific special structure. They align themselves on the building with their inorganic backbones (-Si-O-) against the surface the organic groups (R-) projecting outwards to present a barrier to moisture. The surface is hence rendered water repellent and cannot be wetted. Nevertheless, the **DeepSeal** molecules do not clog the pores, and so the surface retains its permeability to water vapour and "breathes".



Therefore, treated buildings do not suffer from condensation damage. However the water repellency can be over come by a high head of water. This is why **DeepSeal** masonry water repellents are not used for sealing foundations.

It may be concluded from what has already been said about the various water-uptake mechanisms that unless the building material has pores which do not permit capillary action or that has salt content *(at least in the surface zone)* which is excessively high. Capillary moisture absorption without doubt posses the most serious problem. In this case, water-repellent treatment is certainly one of the best ways to protect the masonry from moisture damage.

DeepSeal is available as a solvent based material as well as an environmentally friendly water-based system, there are also high gloss and semi-gloss **DeepSeal** systems available.

DeepSeal Application

DeepSeal products are designed to be used on virtually any mineral surface as long as the surface contains calcium content.

Service Life

2–10years depending on surface and environment

Application

Is best with a low- pressure spray in 2 coats applied wet on wet in temperatures between 5 – 25 Deg C and is rain fast in approximately 4hours at 21 Deg C

Coverage (m2/ltr/coat) Approximately

Concrete	:	4 – 10
Brickwork	:	3 - 4
Sandstone	:	3 – 5
Cement render	:	3 – 4
Exposed Aggregate	:	4 – 7

Protective clothing, goggles and protective gloves should be worn when handling DeepSeal Products.

Seek medical attention if DeepSeal is swallowed or if overcome by fumes.

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