



Antipluviol[®] range

Protection and decoration
of masonry

Water repellent system for brickwork,
natural and artificial stone, render and concrete



Antipluviol® range

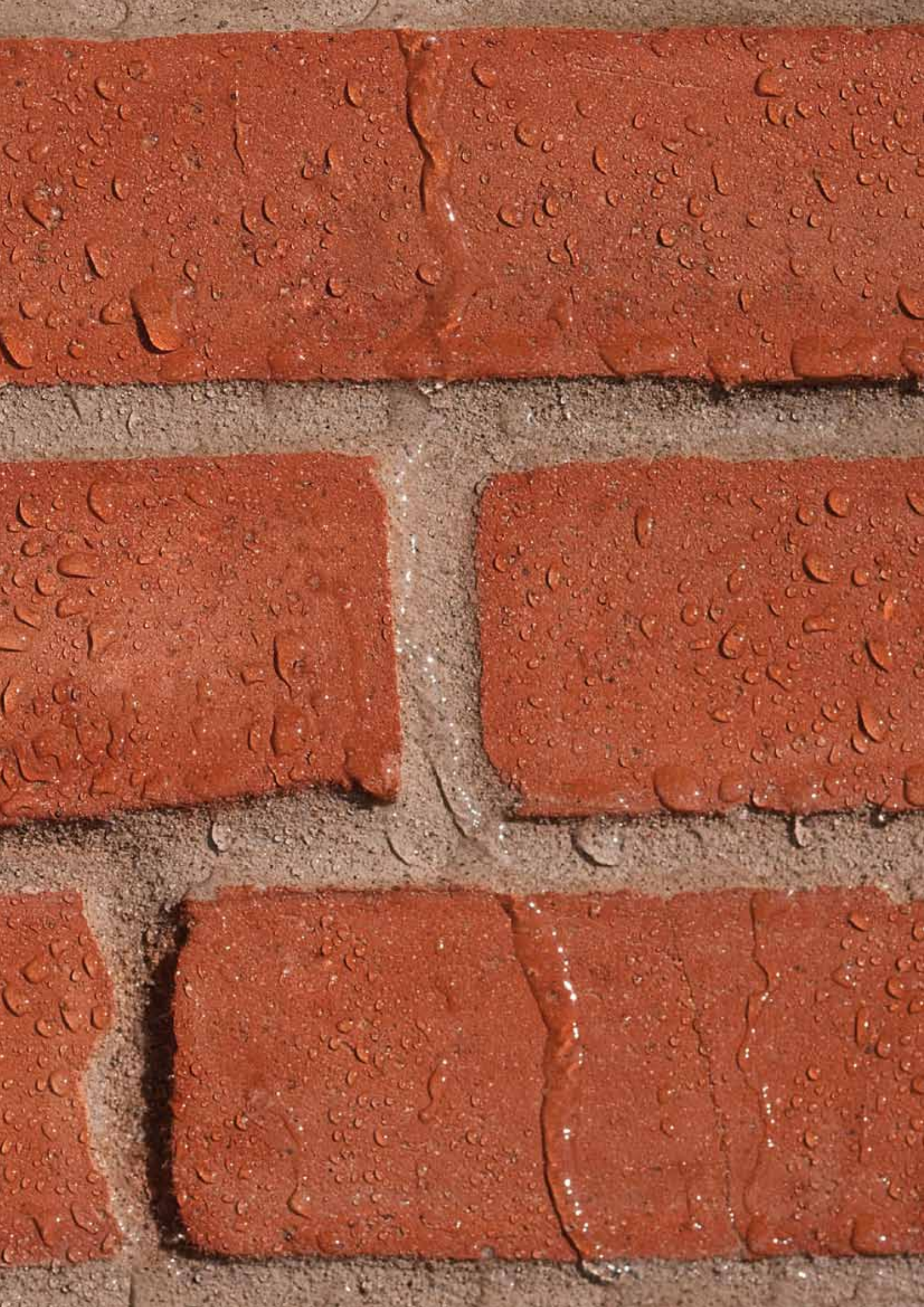
Water repellent system for brickwork, natural and artificial stone, render and concrete



Colourless, water-repellent impregnator made from siloxane composites

To protect brickwork, natural and artificial stone, render, concrete, etc.

- Deep-down hydrophobisation
- Drop effect
- High transpiration
- Protection against aggressive substances carried in water
- Self-cleaning properties of façades by leaching dirt
- Reduces the adhesion of mould and mildew



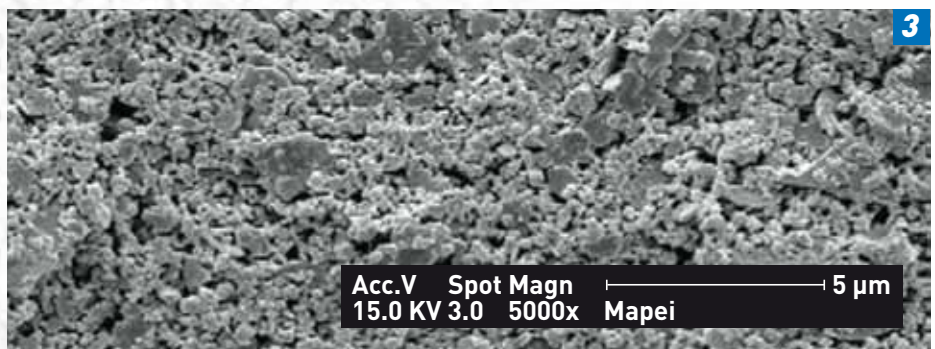
Problem



Deterioration of exterior building materials

Many building materials and coatings are naturally porous. When they come into contact with water, for example rainwater, they absorb large quantities of water by capillary absorption. The penetration of water into the material is one of the main causes of deterioration, and gives rise to a number of deterioration phenomena, such as:

- cracking due to expansion and contraction through freeze-thaw cycles of the water absorbed (see fig. 1)
- saline efflorescence and damage caused by hydration and crystallisation of soluble salts
- infiltration of damp as far as the internal walls
- appearance of mould and mildew
- penetration of pollutants carried by water, such as acid gases (SO_2 e NO_x), which have a detrimental effect on materials
- damage to the appearance of the coating by dirt, rust stains and leaching (see fig. 2)
- corrosion of the steel reinforcement in the concrete



Water absorption is mainly through capillary penetration, that is, the natural tendency of water to penetrate into small diameter pores (from 10^{-7} to 10^{-4} m, or 10^{-1} µm e 10^2 µm), Capillary penetration is more widespread especially when there are more pores around this size. Extremely compact materials are the only ones which are not sensitive to this effect, because the smaller porosity (on average smaller than 10^{-7} m) only allows water vapour to enter (see fig. 3).

Protection

To reduce water absorption and, therefore, deterioration of building materials, a hydrophobic material must be impregnated to make the substrate water-repellent.

The hydrophobisation treatment, however, must not block the natural porosity of the materials, in order to guarantee the natural transpiration of the substrate. In so doing, capillary penetration is reduced considerably and any damp in the substrate is released in the form of water vapour.

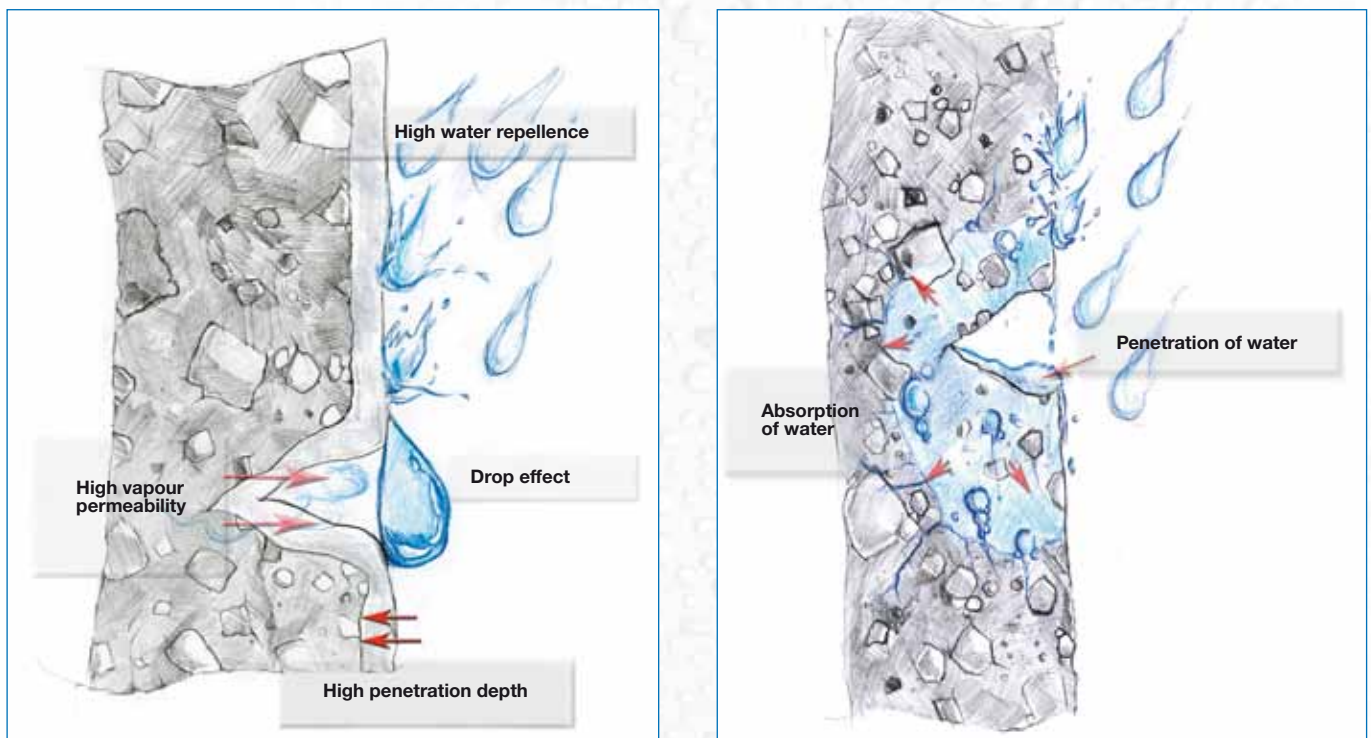
Solution

How the product works

Siloxane composites are the base components of the products from the **Antipluvioi®** range. They interact with the substrate through a chemical reaction (Si – O – Si bonding) to form an intimate bond with the substrate, but without forming a surface film, with the hydrophobic elements facing the outside.

The internal surface of the capillaries are thus coated with a water-repellent layer. The pores are not closed, and the coating stops water from entering but allows water vapour to pass through.

The drawing illustrates a sectional view of a hydrophobised capillary pore (on the left) and a non-hydrophobised capillary pore (on the right).



The image shows the section of a hydrophobised capillary pore (left) and a non-hydrophobised pore (right)

Antipluviol®

Water-based impregnator with good penetration properties, easy to apply, with DropEffect



Antipluviol® W

Water-based impregnator with good penetration properties, long-lasting protection, easy to apply, with DropEffect



Antipluviol® S

Solvent-based impregnator with very high penetration properties, highly durable, excellent DropEffect, particularly suitable for substrates with low porosity

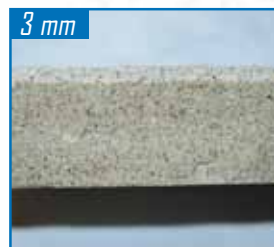


Hydrophobisation treatment

Hydrofobic products form the Antipluviol® range

One of the main properties of hydrofobation products in order to form sure, long-lasting protection is that they must penetrate deep into the pores so the water-repellent layer is as large as possible. The reduced size of the molecules in the siloxane composites in the **Antipluviol®** range guarantees excellent penetration and ensures that the water-repellent treatment is efficient and long-lasting.

Conventional render



Antipluviol



Antipluviol W



Antipluviol S

Brick



Antipluviol



Antipluviol W



Antipluviol S

Aerated concrete



Antipluviol



Antipluviol W



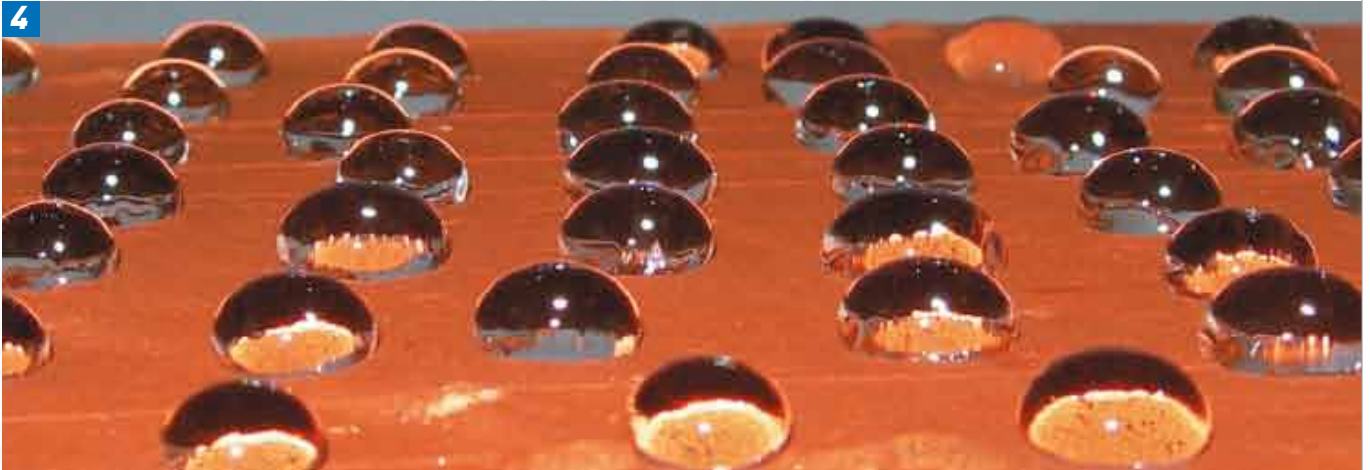
Antipluviol S



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Surfaces of coatings are made water-resistant and will form the classic drop effect. This indicates that water runs along the surface without wetting it, dirt is leached out and the adhesion of mould and fungus is reduced. (fig. 4)

At the same time, the porosity and transpirant capacity of the substrate remain unchanged.

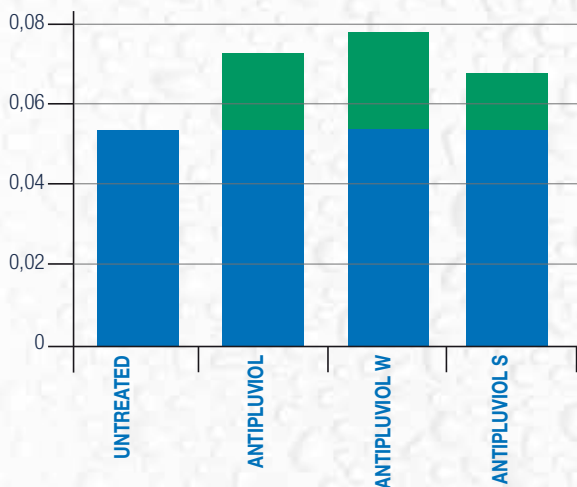


Permeability to vapour

Permeability to vapour is expressed as the equivalent thickness (s_D) expressed in metres. The graph illustrates values lower than 0.14 m, classified as class I or highly transpirant according to UNI EN ISO 7783-2 standards.

PERMEABILITY TO VAPOUR

equivalent thickness s_D (m)



■ MACRO-POROUS RENDER ■ WATER-REPELLENT TREATMENT

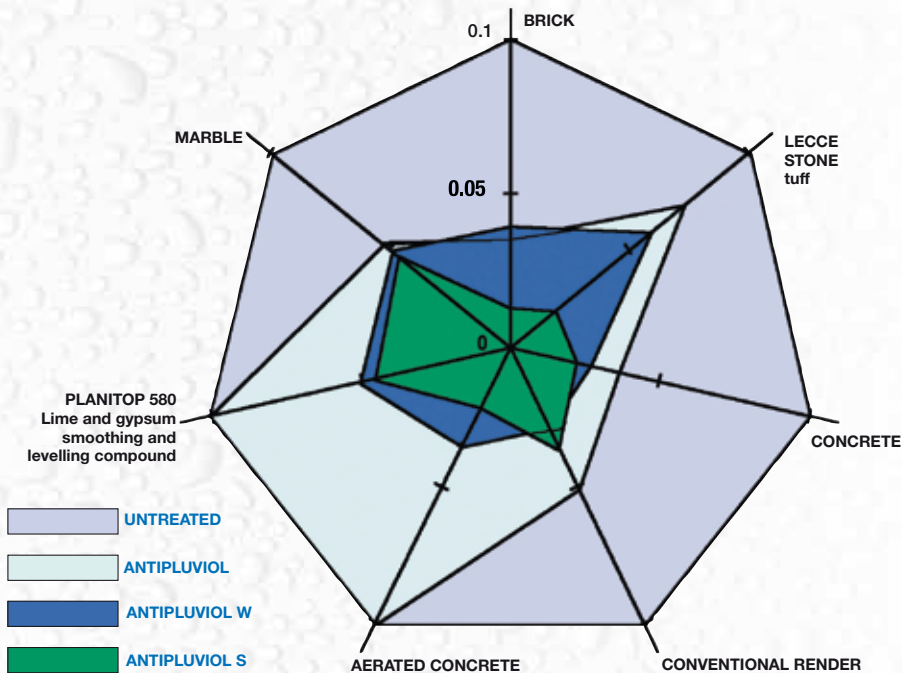
PERMEABILITY TO VAPOUR ON MACRO-POROUS RENDER

Equivalent thickness s_D (m)

Untreated	0.052
Antipluviol	0.072
Antipluviol w	0.078
Antipluviol s	0.066

Water absorption through capillary lift on various materials

Water absorption is expressed by the coefficient W_{24} .
The graph illustrates values lower than $0.1 \text{ kg}/(\text{m}^2 \text{ h}^{0.5})$, classified as class III or low absorption according to UNI EN 1062-3 standards.



COEFFICIENT W_{24} ($\text{kg}/(\text{m}^2 \text{ h}^{0.5})$)

	UNTREATED	ANTIPLUVIOL	ANTIPLUVIOL W	ANTIPLUVIOL S
Brick	15.6	0.035	0.039	0.013
Lecce stone (tuff)	6.8	0.073	0.059	0.019
Concrete	0.580	0.036	0.027	0.022
Conventional render	10.4	0.051	0.029	0.036
Aerated concrete	5.5	0.432	0.035	0.022
Planitop 580 (lime and gypsum smoothing and levelling compound)	4.9	0.379	0.051	0.045
Marble	0.6	0.054	0.050	0.047

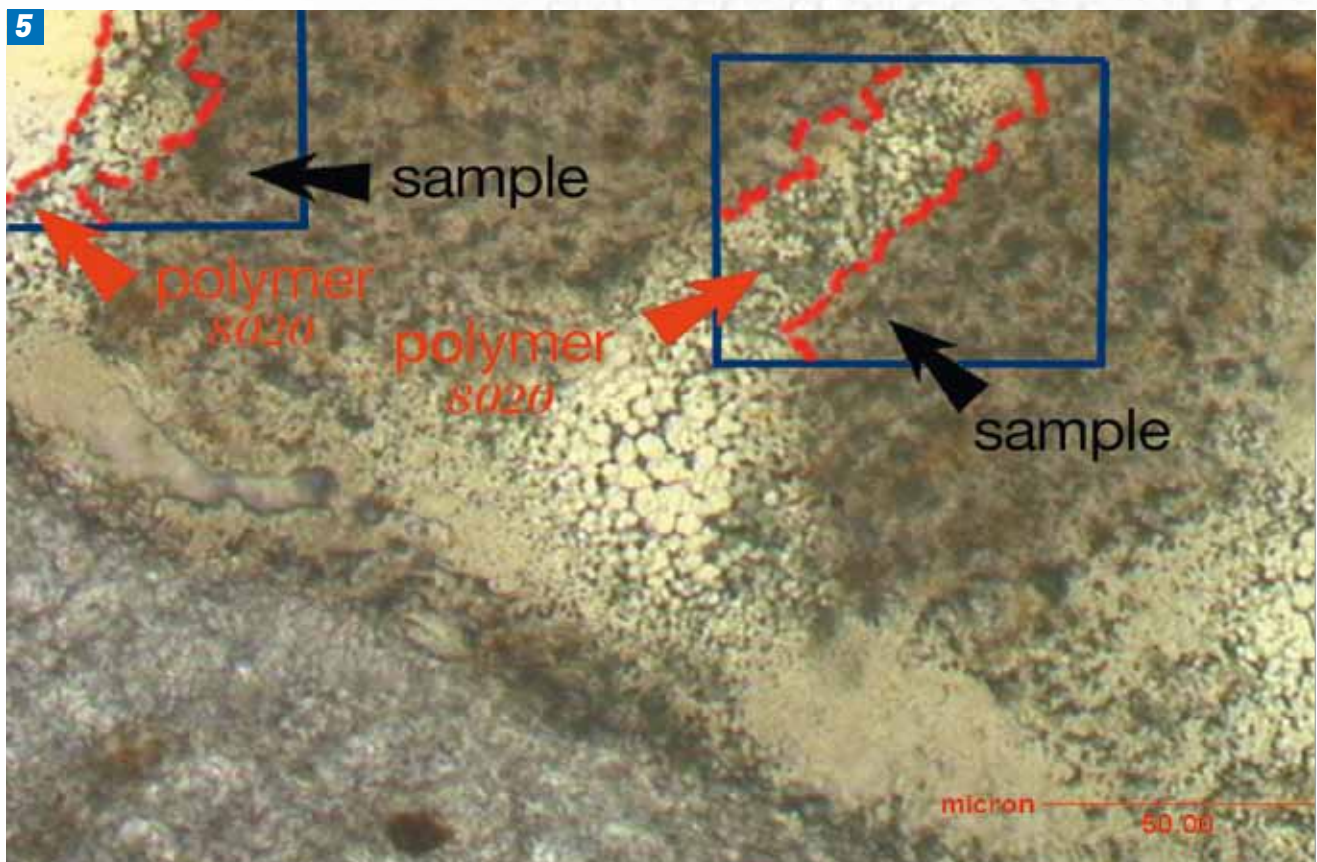
Consolidating and hydrofobation treatment

On natural stone which are particularly deteriorated, partially crumbly and increase porosity, a purely hydrofobation treatment is not sufficient to guarantee durability and protection for the substrate.

Firstly, the original substrate must be made more compact and stronger.

In such cases we recommend using **Consolidante 8020**, a reversible solvent consolidator which contains a special type of active polymer with smaller molecules and extremely high penetration capacity (fig. 5).

Penetration of Consolidante 8020 observed through a microscope highlighting the difference between a mineral and polymer sample

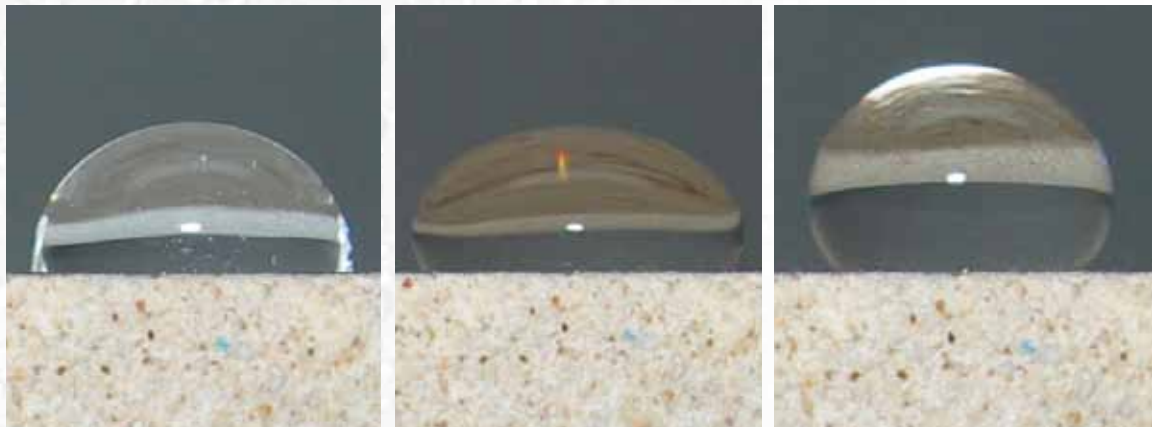


Treatment with **Consolidante 8020** drastically reduces the crumbly finish and increases the cohesion and strength of the substrate without modifying its original appearance and vapour permeability capacity by leaving the pores in the material open. After repairing a substrate with **Consolidante 8020**, we recommend treating with hydrofobation products from the **Antipluviol®** range, in order to preserve stone coatings and guarantee long-lasting protection.

The chemical-physical characteristics of **Consolidante 8020** makes it perfectly compatible with siloxane composites contained in hydrofobation products from the **Antipluviol®** range.

Antipluviol® range

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	ANTIPLUVIOL	ANTIPLUVIOL W	ANTIPLUVIOL S
Composition	Water-based solution of potassium methyl siliconate	Water-based solution of silanes and siloxanes	Solution of silanes and siloxanes in solvent
Content of main substance	2.5 %	8 %	9 %
Application	Suitable for all types of substrates; not suitable for very basic substrates (lime or cement-based) due to its limited resistance to alkalis brickwork, natural and artificial stone and render	Suitable for all types of substrates; particularly recommended for porous and absorbent materials brickwork, natural and artificial stone and render	Suitable for all types of substrates, both porous and less porous brickwork, natural and artificial stone, render and concrete
	Not suitable if there is presence of saline lift		
Consumption	0.1 - 0.5 kg/m²	0.2 - 1 kg/m²	0.3 - 2 kg/m²
	Depends largely on the porosity of the substrate. We recommend carrying out preliminary tests to determine consumption for saturation		
Surface drop effect (self-cleaning effect of water and lower adhesion of mould and mildew)	Low, depends on the type of substrate	Very good	Excellent
Effect on finish	Very little change, may become slightly darker, no wet-look effect		
Durability (depends on consumption and penetration)	Good. Partial leaching of main substance, increased by basicity of the substrate	Excellent: remains water-repellent even when drop-effect reduces	Excellent: remains water-repellent even when drop-effect reduces
Application procedure	Product ready for use. Applied in several continuous coats with wet on wet technique until saturated using a manual spray with back-pack storage tank for large surfaces, or by roller or brush for smaller surfaces. The efficiency and duration of the water-repellent effect depends on how deeply the impregnator penetrates into the substrate, therefore on the absorption of the material treated and the quantity of impregnator applied.		
Preparation of the substrate	Eliminate all dirt, dust, grease, oil, paint, saline efflorescence, mildew and weeds from the surface and any other materials which impede the product from penetrating deeply. Only apply the product on dry, compact surfaces, the presence of water impedes the product from penetrating.		
Certification			EN 1504-2 (surface protection systems for concrete – hydrophobic impregnation).



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