

SILRES®

CONSTRUCTION MATERIALS

HYDROPHOBIC IMPREGNATION WITH SILRES® BS

SILRES® MAKES THE
DIFFERENCE

THE THREAT – WATER DAMAGES BUILDINGS

Most structural damage around the world is caused by water and moisture. There are many different kinds of damage. But there is usually one simple remedy: preventive protection against moisture by means of hydrophobic impregnation.

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HYDROPHOBIC IMPREGNATION

Hydrophobic impregnation of a facade reduces maintenance and repair costs. Cleanability is improved and the value of the property is increased, while heating costs can be cut. **SILRES® BS** hydrophobic impregnation combines high technical performance with ease of application.

Significant Reduction in Water Absorption

- Reduction of capillary water uptake by at least 80 %. Low capillary water uptake is the most efficient protection against rain and humidity
- A hydrophobic impregnation reduces water uptake, without lessening water-vapor permeability

Durability

Extremely durable water protection due to:

- High penetration depth
- Sufficient resistance to alkalis
- UV stability



LESS ENERGY CONSUMPTION AND HEALTHIER LIVING

Humidity Causes Energy Loss

Damp facades restrict thermal insulation. Consequently, 2% humidity leads to an energy loss of 20%. 4% humidity means that 50% of energy will be lost.

Effect of Humidity on Insulation Behavior

Hydrophobic Impregnation Saves Energy

A hydrophobic impregnation reduces water uptake by at least 80%, thereby keeping the thermal insulation performance of a wall at a permanently high level.

Heating Energy: Consumption by Building Element

No Sealing of the Wall

At the same time, a hydrophobic impregnation with SILRES® BS retains water-vapor permeability. In this way, there is nothing to stop moisture from escaping through the wall, which helps create a healthy indoor climate.

-2°

-1°

0

1°

2°

3°

4°

5°

6°

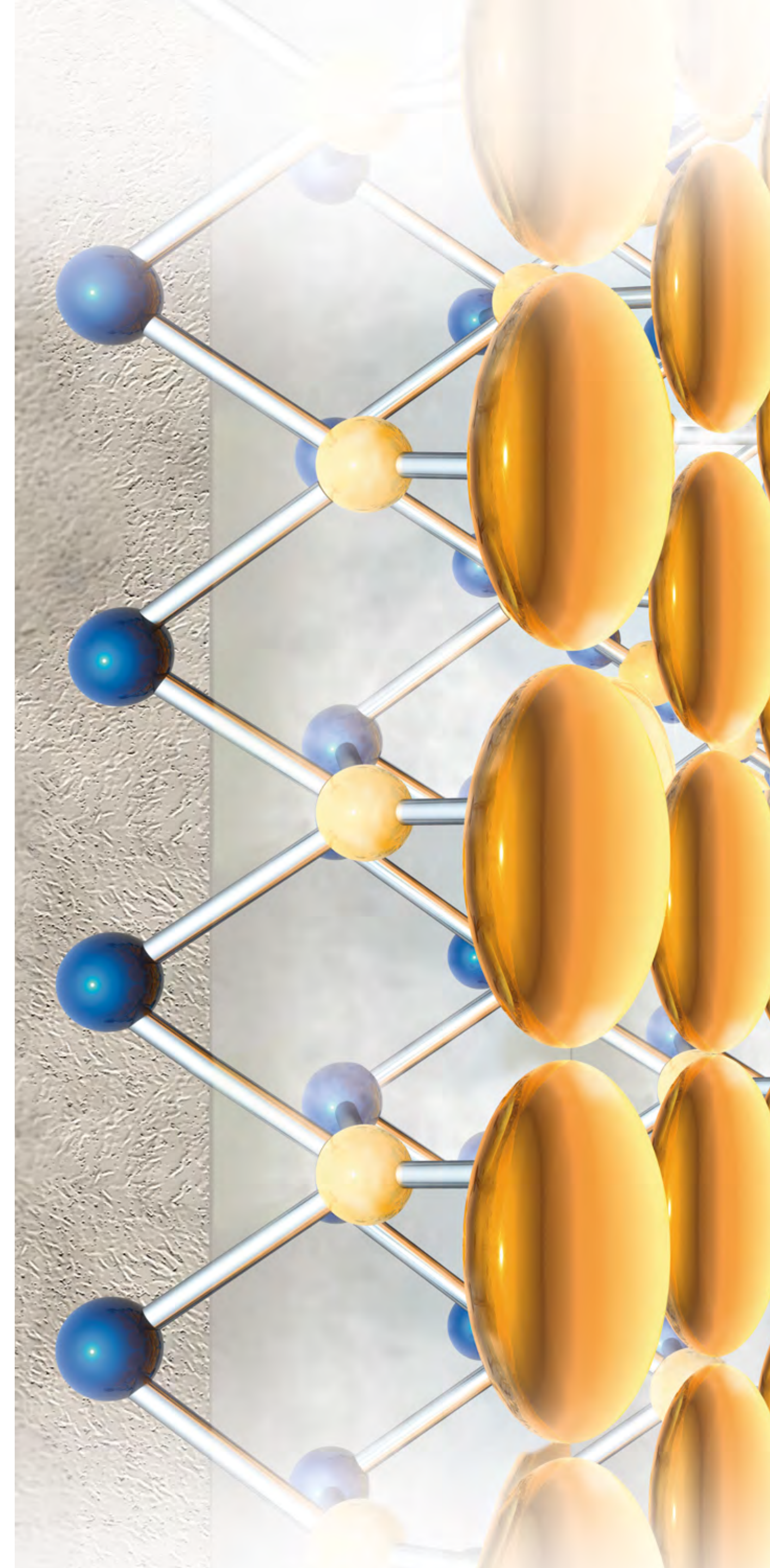
7°

THE SOLUTION BEATING PHYSICS WITH THE RIGHT CHEMISTRY

Mineral construction materials are open-pored. Contact with water produces the capillary effect. Large volumes of water can therefore penetrate into the building material within a short time.

Using capillary-active forces to penetrate into the pores of the mineral building material, SILRES® BS is deposited on the pore walls.

These siliconized pores are no longer wetted by water. Water-vapor permeability is unaffected.



Quartz is the basic material for the production of silicone resin. The molecular structure of the organo-modified silane and siloxane is compatible with the silicate matrix of a mineral substrate. This accounts for the extraordinary efficiency of hydrophobic impregnation.

Chemical Reaction

The organic groups are oriented toward the center of the capillaries and pores. The active ingredient reacts there with the silicate matrix of the building material and reduces the surface tension within the capillaries and pores such as to stop capillary activity. The result is long-lasting hydrophobicity.

Effects

- Low water uptake
- High water-vapor permeability
- Barrier against harmful water-dilutable salts
- Extremely high durability of the hydrophobic impregnation against cold and heat, and UV light

Strong bonding in the substrate for high durability

Excellent hydrophobicity and water-vapor permeability

Deep penetration of the material into the substrate

SILRES® BS: MILESTONES IN HYDROPHOBIC IMPREGNATION

SILRES® BS water-repellent impregnations are among the world's most successful building protection agents and have achieved milestone after milestone in recent years.



SILRES® BS CREME F is easy to apply and penetrates deep into the substrate.

The first silicone resins for building protection originated from WACKER laboratories. Today, we provide you with a time-tested portfolio that includes four product groups, each with specific advantages.

SILRES® BS CREME

SILRES® BS CREME reduces water uptake extremely effectively. It also ensures very good penetration depth and easy application. The product does not drip, and you can readily apply it overhead and see where the impregnation has already been applied.

- SILRES® BS CREME F

Water-Based SILRES® BS Grades

They are free of solvents and a perfect choice for absorbent substrates:

- SILRES® BS 1001
- SILRES® BS 3003
- SILRES® BS 4004

Solvent-Dilutable SILRES® BS Grades

They are very efficient on absorbent substrates and even on non-porous ones:

- SILRES® BS 290
- SILRES® BS 280

SILRES® BS Silicone Microemulsion Concentrate (SMK)

The concentrates save you transportation and storage costs. Diluted in water, the product yields extremely small particle sizes, which penetrate well.

- SILRES® BS SMK 1311

MADE TO MEASURE SILRES® BS PRODUCT OVERVIEW

Product Overview							
	Cream	Water-Based			Solvent-Based		SMK
Product	SILRES® BS CREME F	SILRES® BS 1001	SILRES® BS 3003	SILRES® BS 4004	SILRES® BS 290	SILRES® BS 280	SILRES® BS SMK 1311
Appearance	White to yellowish cream	Milky, white	Milky, white	Milky, white	Colorless, hazy	Colorless, hazy	Clear, yellowish
Silicone base	Silane/siloxane	Silane/siloxane	Silane/siloxane	Silane/siloxane	Silane/siloxane	Silane/siloxane	Silane/siloxane
Diluting agent	Undiluted	Water	Water	Water	Solvents	Solvents	Water
Solids content	25%	50%	60%	50%	100%	100%	100%
Shelf life (months)	12	9	9	9	12	12	12
Density (g/cm³)	0.84	0.95	0.95	0.95	1.05	1.05	0.90
Viscosity [mm²/s]		12	12	12	15–19	15–19	4
Flash point [°C]	75	>100	>100	>100	42	42	25
Application Area							
Clay brick	•••	•••	•••	•••	•••	•••	•••
Sand-lime brick	•••	•••	•••	•••	•••	•••	•••
Sandstone	•••	••	••	••	•••	•••	•••
Mineral plaster	•••	•••	•••	•••	•••	•••	•••
Concrete*	••	••	••	••	•••	••	•••
Porous limestone	•	•	•	•	••	•••	•
Key characteristics	Easy to apply	Can be used as a primer (acrylate)	High efficiency	Strong beading	High efficiency	Specifically for limestone	SMK technology

• Well suited •• Very well suited ••• Ideal
* Outside EN 1504-2

Effectiveness on different Materials

Active ingredient in SILRES® BS products



OUR SERVICE FOR YOUR SUCCESS

The building-protection criteria to be met by a brick building in Amsterdam are not the same as those of a sandstone house in Bangkok. This is why we decided early on to set up regional technical centers that help you find the best solution for your individual needs. These technical centers carry out, on your behalf, standardized tests on regional building materials and provide you with comprehensive advice.



REFERENCES

SILRES® BS products have been applied around the world to protect buildings and to preserve them for future generations.



Alte Pinakothek
Art Museum, Munich



Town Hall, Bruges



Kaiser Wilhelm
Memorial Church, Berlin

Monument to the Discoveries, Lisbon

The Monument to the Discoveries is located close to the sea with extreme exposure to salt water. It has been treated with SILRES® BS to prevent water damage.



THE WACKER ACADEMY *CONNECTING THE BEST*

The global forum for learners, networkers, creators and discoverers
WACKER ACADEMY offers cutting-edge expertise for regional markets. Participants can meet and swap experiences with colleagues from similar areas – at 14 locations around the world.

CREATING TOMORROW'S SOLUTIONS

A Diverse Array of Products for Growing Markets

Our product portfolio ranges from silicones, binders and polymeric additives all the way up to bioengineered pharmaceutical actives. Rounding these out is hyperpure silicon for semi-conductors and solar applications.

Innovations that Improve Quality of Life

As a technology leader focusing on sustainability, WACKER promotes products and ideas that offer a high value-added potential to ensure that current and future generations enjoy a better quality of life, based on energy efficiency and protection of the climate and environment.

Global Knowledge for Local Markets

When you work with WACKER, you have 100 years of chemistry expertise at your disposal, with access to the research findings and best practices of our experts throughout the world. Our knowledge base consists of a network of 23 technical centers, 14 training centers and our basic research center.

And most importantly: we are there wherever you need us – worldwide. Our local specialists know your markets and speak your language. Working with them, you will find innovative solutions that win over your customers and make you more competitive.

Follow us:

Find us on LinkedIn, YouTube and Twitter, and we'll keep you up to date on the latest and discuss current issues with you.



All figures are based on fiscal 2019.



Silicones and Polymers
3,200 specialty products from organic and inorganic chemistry



Global Market Leader
In dispersions and dispersible polymer powders based on vinyl acetate-ethylene (VAE), in building-protection silicones and in the production of cyclodextrin and cystein.



Globally Active

- Sites worldwide
- Headquartered in Munich
- 24 production sites in Europe, Asia and the Americas
- 23 technical centers
- 14 WACKER ACADEMY training centers
- 51 sales offices



Employees: 14,700



Total Sales
€4,93 billion



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