

SILRES® BS: **Perfect moisture protection for** **ceramic construction material**

WACKER

Creating tomorrow's solutions

Preserving building materials while conserving resources

The structure of ceramic construction materials allows water to ingress relatively easily into this construction material. As a result, moss, lichen, algae, and salt crystals start to grow. Fed by damp, these can, with time, destroy the integrity of the structure and damage the material's surface. This, in turn, has a drastic effect on a building's appearance.

These forces act in opposition to our desire for the property we bought or perhaps built ourselves to last a long time and maintain its value. On top of that, we want it to look nice and be cost-effective. SILRES® BS 16 solves the problem perfectly. This organosilicon-based building protection product prevents damage before it occurs.

Lower firing temperatures. Lasting water resistance

Energy efficiency is on the world's agenda. Bricks and other heavy clay ceramics need to be fired at high temperatures to reduce the amount of water they take up and render them frost-resistant. Methods for manufacturing bricks at a lower firing temperature to save energy result in a more open-pored structure. This causes greater water absorption, which can be offset with SILRES® BS 16.

Dry masonry. Better efficiency

Furthermore, thermal insulation, an issue closely associated with energy efficiency, can only be satisfactorily achieved by applying a water-repellent impregnating agent. After all, optimum thermal insulation requires dry masonry. Five percent moisture content is enough to reduce the insulating ability by as much as 60 percent.

5%

A moisture content of only five percent may lower insulating performance by as much as 60 percent.



Christ the Redeemer is made of concrete and soapstone: Materials that deteriorate with harmful environmental influences. In 2010, the statue was coated with SILRES® BS 16 to protect and preserve it for the future.

Protection made easy: After the statue was restored for its 80th anniversary, the SILRES® BS 16 solution was simply and efficiently applied to the stone using rollers.

SILRES® BS is registered trademark of Wacker Chemie AG.

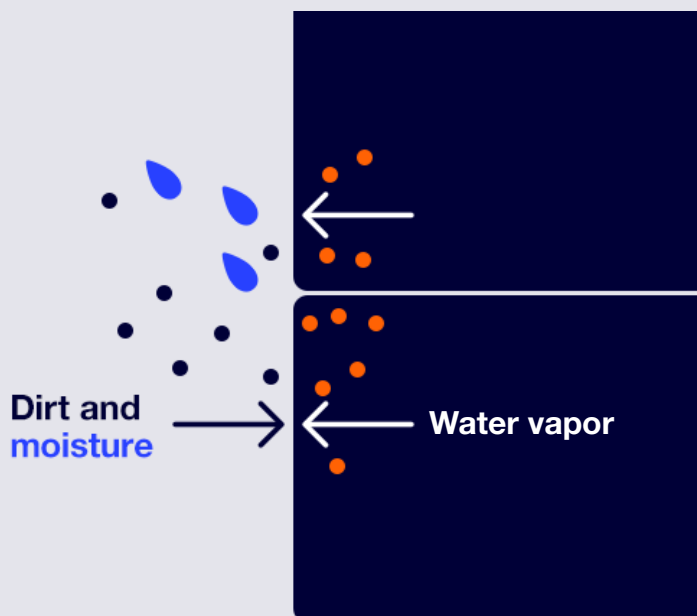
SILRES® BS 16 – a hydrophobization agent with many advantages

The Silicones division of WACKER has more than 60 years of expertise in the development of silicone-based masonry protection agents. The result is a solution remarkable for its efficacy, safety and durability.

Water simply rolls off

Hydrophobic impregnation with SILRES® BS 16 causes construction materials to repel water yet remain open to diffusion, thereby allowing them to breathe. The result is that water simply rolls off the surface, and water vapor escapes unhindered. This allows any existing damp areas to dry out, which also enhances the material's ability to insulate.

How hydrophobic treatment of open pore, heavy clay ceramic works



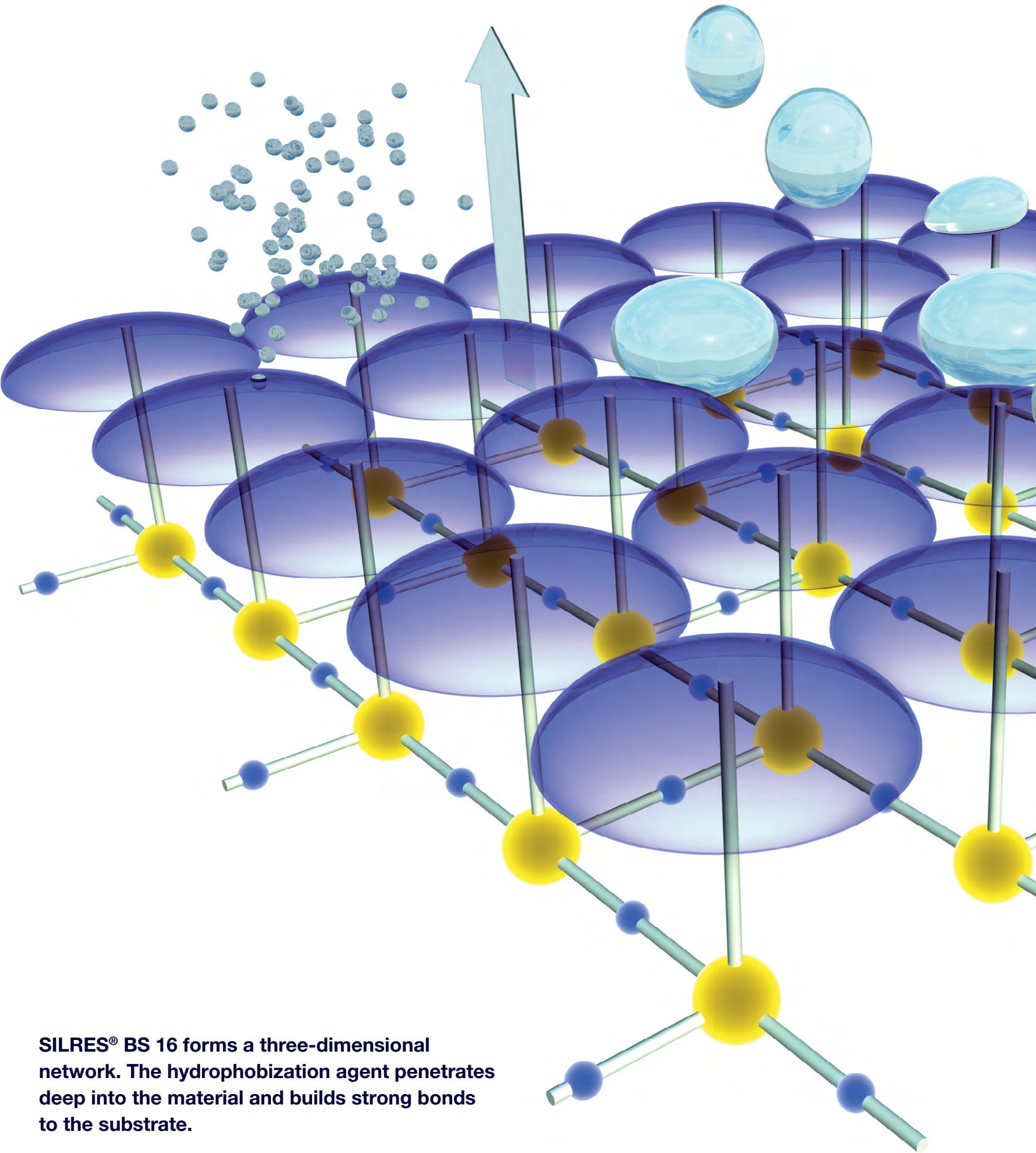
SILRES® BS protects against water, salts and grime. Water vapor can escape despite the water-repellent hydrophobic impregnating agent.

A stable network

SILRES® BS 16 is a concentrated aqueous solution of potassium methyl silicate, which reacts with CO₂ in the air to form a water-repellent silicone network. This three-dimensional silicone resin structure is formed on mineral masonry substrates and in coatings. It repels water and remains permanently bound to the substrate.

Easy to use

SILRES® BS 16 contains no solvents or surfactants and, when diluted in water, forms a homogeneous, clear solution. After it has been applied, SILRES® BS 16 reacts with the silicate matrix of the construction material. The higher the temperature and CO₂ concentration in the air, the faster the protective network is generated.



SILRES® BS 16 forms a three-dimensional network. The hydrophobization agent penetrates deep into the material and builds strong bonds to the substrate.

Extending service life.

Preserving appearance

SILRES® BS 16 renders almost any ceramic construction material weather-resistant. The silicone-based hydrophobic treatment can be applied by dipping, spraying or brushing.

Long-lasting roof tiles

SILRES® BS 16 makes roof tiles hydrophobic, which effectively prevents salt efflorescence and prolongs the lifetime of the tiles. This is done by dipping them in a solution of SILRES® BS 16, diluted with water. In order to achieve the necessary penetration depth of 3 to 5 mm, the material remains immersed in this solution for as little as 15 seconds to as much as 5 minutes, depending on its porosity.

Attractive facades

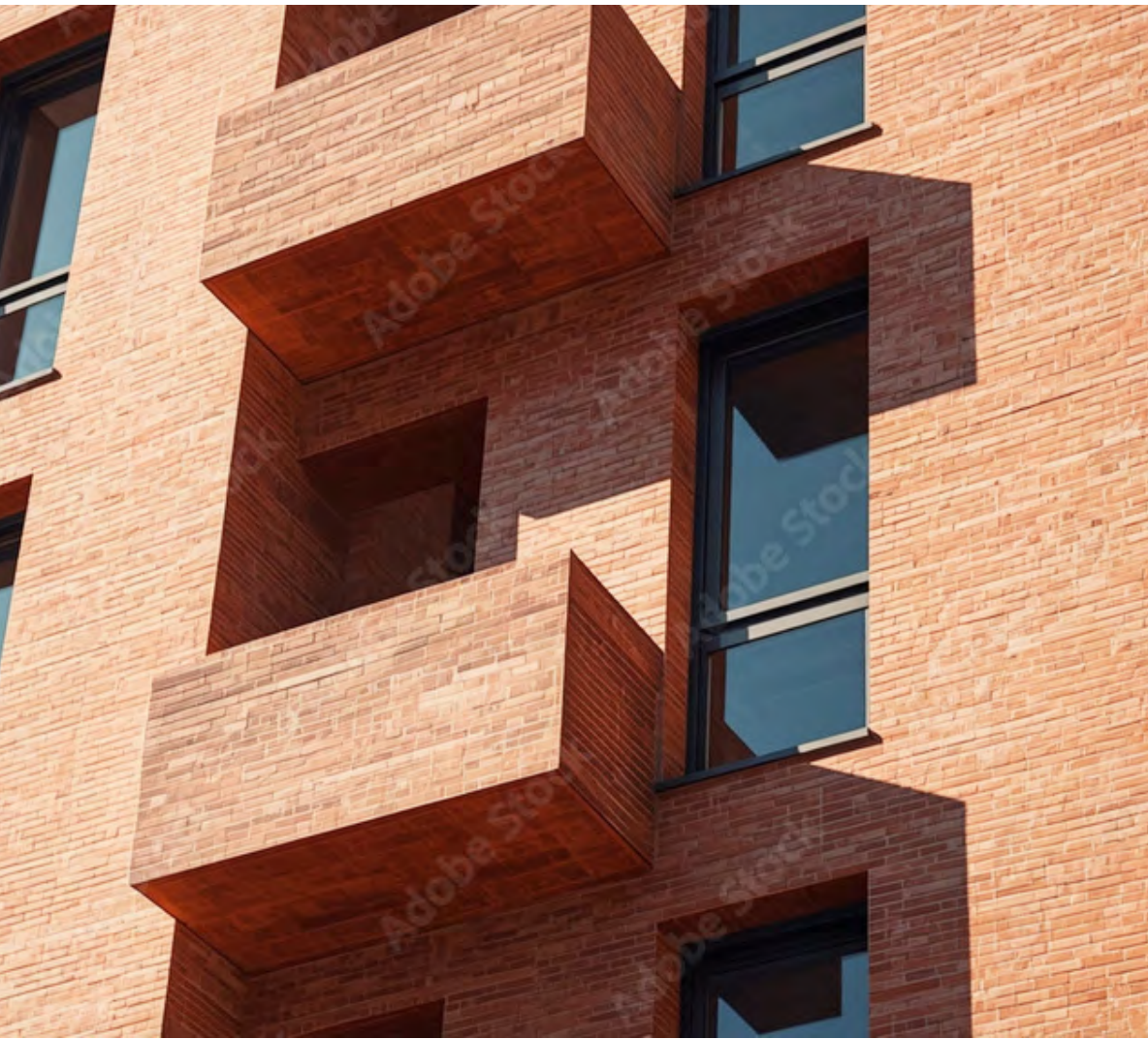
Facing bricks treated with SILRES® BS 16 stay clean for a long time. For best results, the header and stretcher surfaces of the brick should be sprayed directly after firing. SILRES® BS 16 allows mortar residue to be easily removed and prevents salt efflorescence. Furthermore, it slows algal growth as well as dirt pickup.

Clean floor tiles and flowerpots

Both internal and external salts can easily effloresce from unsintered, unglazed floor tiles and flowerpots. Water-repellent hydrophobic impregnation with a 3 to 5 mm deep layer of SILRES® BS 16 stops this process for good and makes cleaning easier. In addition, WACKER has specialized products for other types of maintenance as well.

Dilution and dip time

For maximum efficacy, the dilution and dip time must be fine-tuned to the properties of the material to be treated.



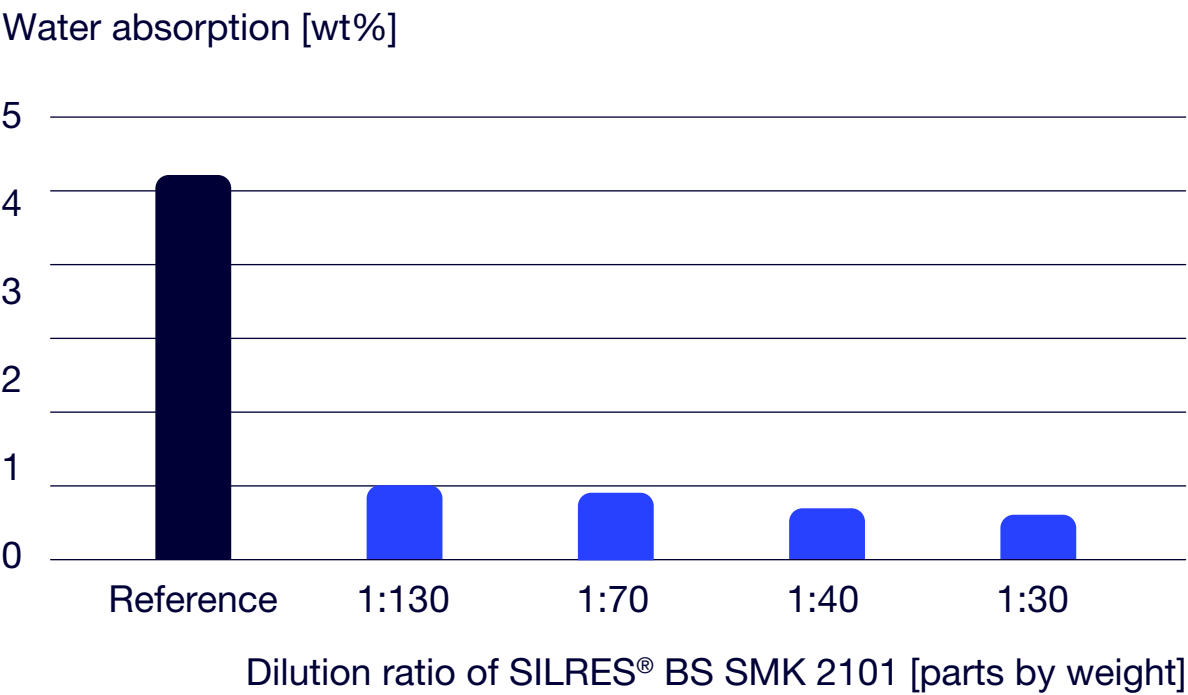
SILRES® BS SMK 2101 – the expert’s choice for engobed ceramics

Ceramic construction materials with engobed surfaces can be challenging for conventional hydrophobizing agents. Drawing on its expertise, WACKER offers a long-lasting solution to this problem.

Protective layer for ceramics

Engobes and slipwares are topcoats on ceramic construction materials that provide protection and decorative effects. These clay-based slurries are fired onto the surface, forming a dense ceramic layer. Most hydrophobizing agents cannot penetrate engobes, which can lead to issues like staining or discoloration.

Water absorption of engobed roof tiles treated with SILRES® BS SMK 2101



The samples were immersed for 60 seconds in a microemulsion with SILRES® BS SMK 2101 at the given dilution ratios with water. The specimens were then dried for 3 weeks. Afterwards, the water absorption test was performed after 72 hours of full immersion.

Technological edge

SILRES® BS SMK 2101 is a solventless silicone microemulsion concentrate based on silanes and siloxanes. When diluted, it offers excellent penetration, even on dense topcoats, and outstanding water repellency. WACKER’s SMK technology enables effective treatment of engobed ceramics while preserving breathability, efficiency, and durability.

No interference with engobes

SILRES® BS SMK 2101 self-emulsifies in water, forming a stable emulsion with micro droplets that penetrate dense topcoats without interfering or reacting prematurely. It is also an optimal impregnating agent for alkaline ceramics such as cementitious roof tiles.

Engobes and slipware expand the application range of construction ceramics. However, robust and colorful topcoats can present challenges for conventional impregnations.



In-plant surface treatment with SILRES® BS

Product portfolio

Product	SILRES® BS 16	SILRES® BS SMK 2101
Product group	Siliconate	Silane/siloxane microemulsion concentrate
Main advantage	Best cost performance for clay roof tiles	Protection for engobed and alkaline roof tiles
Applications: water-repellent treatment by dipping or spraying		
Clay-based construction materials	●●●	●
Concrete roof tiles		●●
Engobed, fired clay		●●●
Properties		
Active ingredient [%]	34	100

● Suitable ●● Recommended ●●● Highly recommended

- Advantages of hydrophobic treatment**
- Durability
 - Attractive appearance
 - Thermal insulation
 - Energy efficiency

3 to 5 mm deep

A 3 to 5 mm deep layer of SILRES® BS 16 prevents salt efflorescence and makes the cleaning of floor tiles and flowerpots easier.



Expertise coupled with a service network on five continents

Global technology leader in chemistry

WACKER is a world-leading and research-intensive chemical company, with sales of €5.5bn. Its products can be found in countless everyday items. The company’s portfolio comprises more than 3,000 products and ranges from tile adhesives to computer chips. Its main customers are in the automotive, construction, chemical, semiconductor, consumer goods, medical technology, pharmaceutical and photovoltaic sectors.

Innovation driven by sustainability

As a technology leader, WACKER promotes products and ideas that offer 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.

Worldwide presence and customer partnership

With around 16,000 employees and four business divisions, WACKER operates 27 production sites, 22 technical competence centers, 14 WACKER ACADEMY training centers and 47 sales offices worldwide. Local experts support customers in developing region-specific products and optimizing complex production processes. The company positions itself as a reliable innovation partner that helps customers strengthen their competitive success.

Digital services for greater efficiency

Through WACKER e-solutions, customers gain access to online services and integrated processes for faster, more efficient project and order handling.

Visit: www.wacker.com



27 Production sites

22 Technical competence centers

47 Sales offices

All figures are based on fiscal 2025.

Wacker Chemie AG, Gisela-Stein-Str. 1, 81671 Munich, Germany
www.wacker.com



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