

Long-lasting
A
Aesthetics

Better
D
Durability

SILRES® BS
FOR DECORATIVE COATINGS
ELEMENT
OF SUCCESS

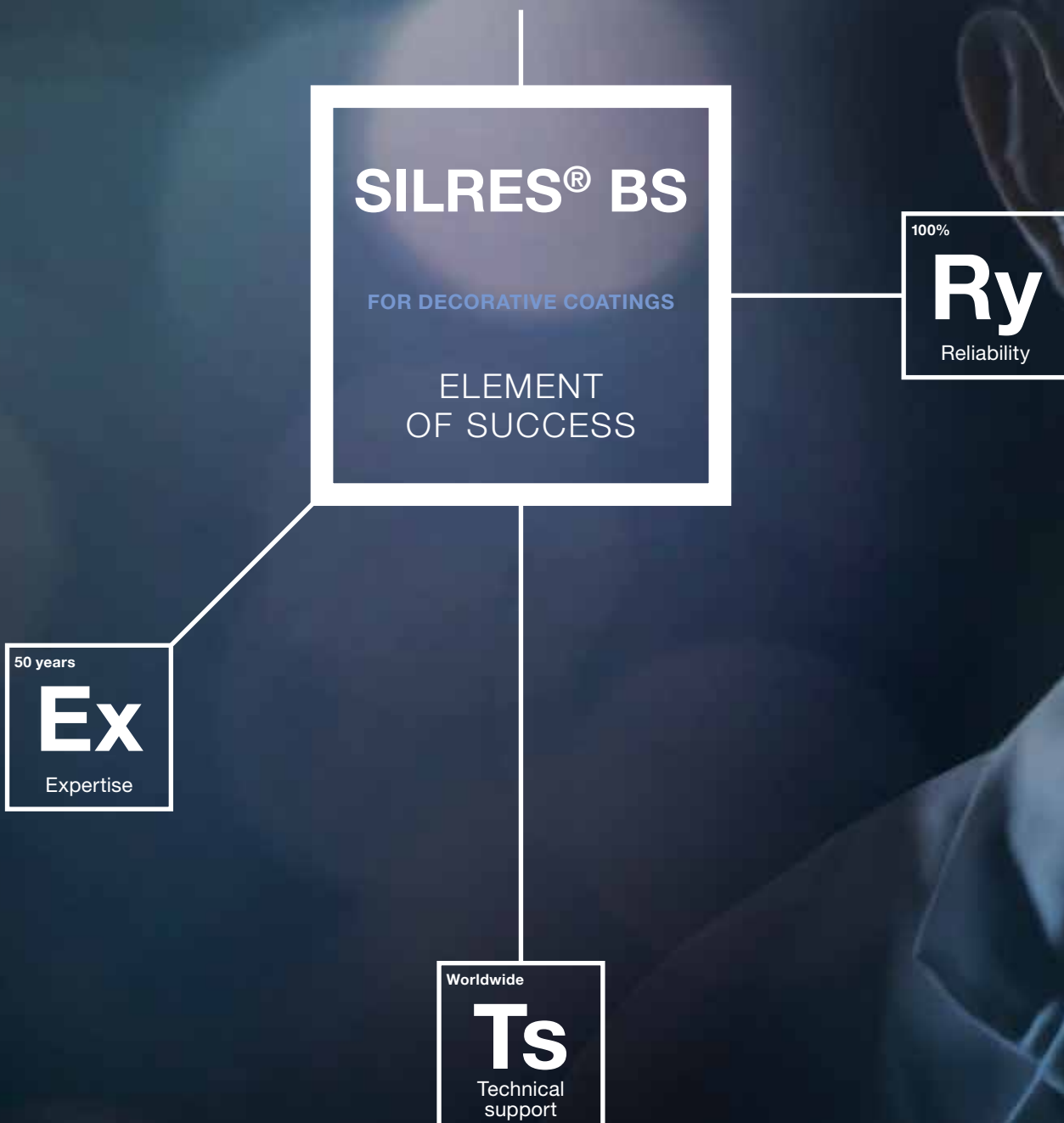
Improved
Ee
Energy
efficiency



CONSTRUCTION & PAINTS | SILICONE RESINS

SILRES® BS
THE ELEMENT OF SUCCESS FOR
DECORATIVE COATINGS

THE ELEMENT OF EXPERIENCE
50 YEARS' RESEARCH TO
GIVE YOUR CUSTOMERS
30 YEARS' PEACE OF MIND





WACKER experts discovered the benefits of silicone resins for masonry protection some 50 years ago. Today, our SILRES® BS silicone resins are the most advanced and effective hydrophobization system in the world. Thanks to our ongoing research, the WACKER brand stands for highest quality and continuous product improvement. Our experience and global technical support will make SILRES® BS the element of success for your products. That means 100% reliability for you. And your customers can relax in the knowledge that their facades will look brand new for up to 30 years.

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SILRES® is a registered trademark of Wacker Chemie AG.



The Worst Enemy Coatings Will Face Is Only 1 mm Wide

Mineral-based construction materials are open-pored and contain countless capillaries with diameters from 0.1 to 100 micrometers. These capillaries, which are much finer than a human hair, convey water into the interior of a facade and enable salts to enter the masonry, thereby reinforcing the negative effects of moisture by additionally promoting water absorption from the air.

THE THREAT

WHAT'S JUST RAIN TO MOST PEOPLE IS THE WORST ENEMY FOR COATINGS

The facade is a building's visiting card. A dirty or damaged facade will leave a bad impression. Also, the building will depreciate, because the damage impairs the building fabric. Among the many enemies of facades, water is the most serious – be it liquid, gaseous or frozen. Mineral construction materials have a porous surface structure and therefore a strong tendency to absorb water. This may be rain or water damp, both from the inside and outside of a building. Water is mineral facade coatings' natural enemy.

Cracks

Hair cracks and shrinkage cracks are fine, networks of cracks that occur in any facade's exterior coating and sometimes also in the plaster. They are fostered by applying the paint too thickly, by thermal stress and many other factors. Water can penetrate the cracks and lead to moisture and frost damage in the substrate.

Blistering

Blistering is caused by seasonal cycles of warming and cooling and of rain ingress and drying out. A film-forming exterior coating is less permeable to water-vapor and therefore fosters blistering. The coating will adhere less well and will detach from the substrate at weak points.

Microorganisms

Algae are microorganisms which are disseminated by the wind and get deposited on facades. Particularly on severely weathered facades that do not dry out well, the algae proliferate and colonize large areas that turn green, brown or red.

Consequences

These damages make a facade look old and reduce the lifespan of a facade coating. They also have an impact on the functionality of a facade, for example on its insulation capacity. If water penetrates the pores of a construction material, its thermal conductivity is increased and the insulating properties are significantly diminished. A moisture content of only 5% reduces the insulating ability by 60%.



Cracking



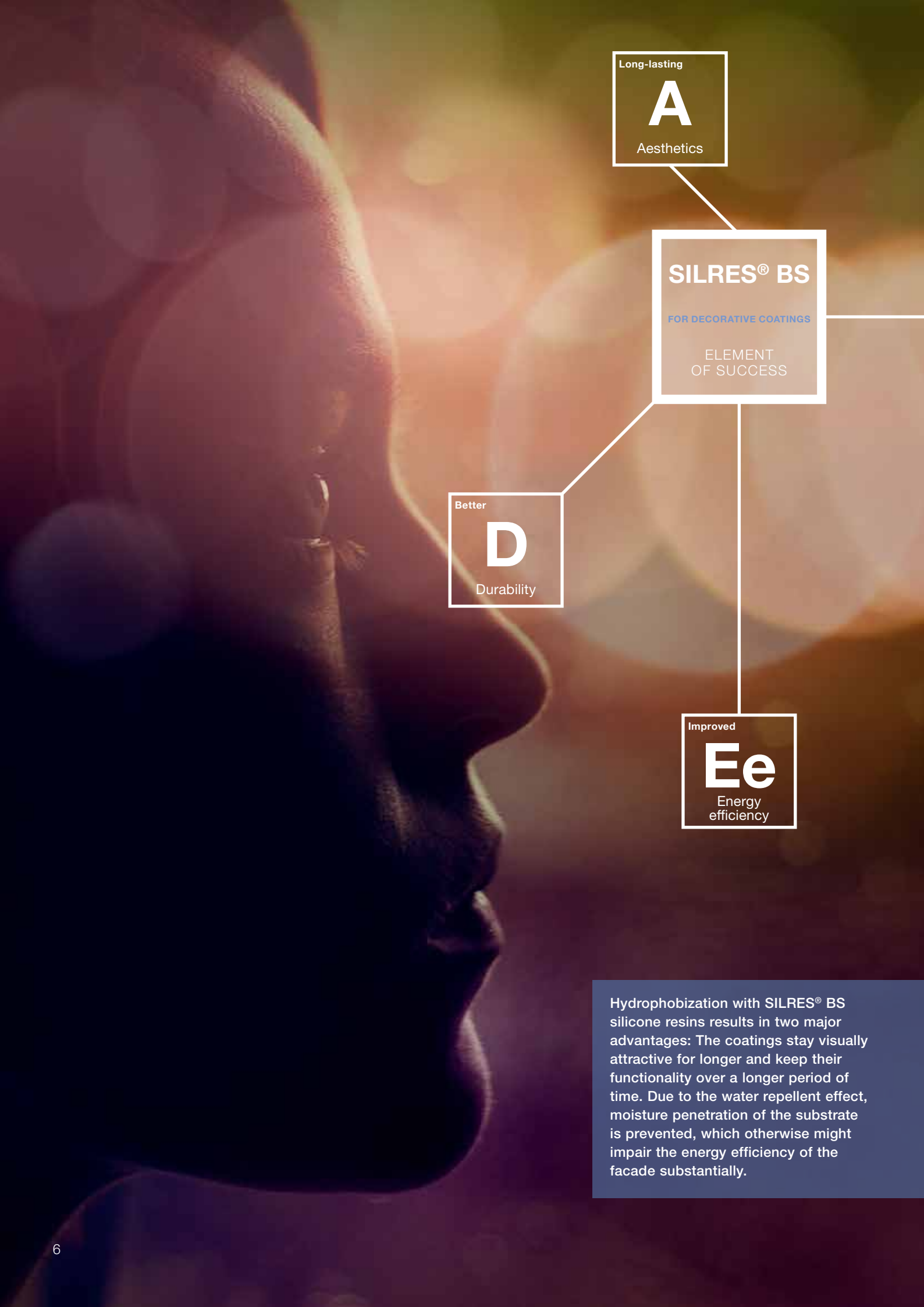
Peeling off



Microorganisms



Salt efflorescence



Hydrophobization with SILRES® BS silicone resins results in two major advantages: The coatings stay visually attractive for longer and keep their functionality over a longer period of time. Due to the water repellent effect, moisture penetration of the substrate is prevented, which otherwise might impair the energy efficiency of the facade substantially.

THE ELEMENT OF PROTECTION SILRES® BS WEATHERPROOFS YOUR PRODUCTS – AND IMPROVES THEIR STANDING ON THE MARKET

The fact that dry facades are less prone to attack by algae, fungi and mold than damp ones was proved by Künzel's facade protection theory, formulated in the 1960s. A few years later, a response to these observations was initiated in WACKER laboratories.

Important Factors for Facade Protection

Künzel examined the influence of dampness on facades, and noted the importance of a protective coating that is both moisture-resistant and vapor-permeable. Two parameters are crucial:

1. Low water absorption
2. High water-vapor permeability

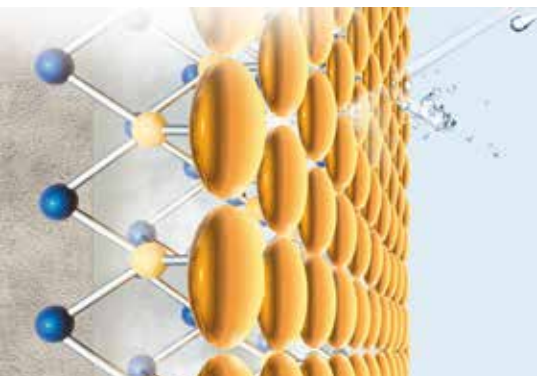
Straight From the Technology Leader

The value of silicone resins for masonry protection was first discovered by WACKER experts some 50 years ago. They noticed that under the influence of moisture, silicone resins react with

mineral construction materials by way of a catalyzed condensation reaction to form a silicone resin network. This network renders the facades water repellent while maintaining their water-vapor permeability. Today silicone resins have developed into the most modern and performance-oriented hydrophobization methods in the world.

Less Is More!

Another important factor is the efficiency of a facade coating. Longer renovation cycles and cost-effective application are sound arguments for choosing a facade protection based on silicone resins.



Perfect Protection Is Much Smaller Than 1 mm

Silicone resin owes its inorganic and organic hybrid character to its unique molecular structure. Due to their similarity to natural silica, silicone resins have a chemical affinity to mineral construction materials, thereby guaranteeing extra-ordinary durability. When applied to a mineral base, they form a three-dimensional network that combines two unique advantages:

1. It is strongly hydrophobic and thus minimizes capillary water uptake.
2. It ensures water vapor permeability by transporting dampness from within to the outside.

DIN EN
Tr
Tested results

SILRES® BS
FOR DECORATIVE COATINGS
ELEMENT
OF SUCCESS

18
Tc
Technical
centers

100%
Sv
Service

Capillary water uptake is measured with the w-24 test according to DIN EN 1062-3. Coated sand lime bricks are immersed in a water bath. After 24 hours the bricks on the left (blue) show up to five times more water uptake compared to the bricks covered with silicone resin emulsion paint on the right (yellow). To visualize the water-vapor permeability of silicone resin emulsion paints, a porous concrete slab covered with silicone resin emulsion paint is aerated from below. The breathability is demonstrated by the air bubbles above the slab. Water-vapor permeability is measured according to DIN EN ISO 7783 (wet cup method). Thanks to the water-repellent effect of SILRES® BS, water and dirt simply bead off facades.

THE ELEMENT OF RELIABILITY TO US, IT'S UP TO 10% SILICONE RESIN – FOR YOU, IT'S MORE THAN 100% CERTAINTY

**Coatings are about visible effects.
We back them up with tested results
and personal support.**

As chemists we have a compelling need to understand things. This goes far beyond our own products. We established technical service staff in all key regions from the beginning to provide you with a local expert at your side. 19 technical centers worldwide assist you with fully equipped labs and state-of-the-art testing methods. Ten WACKER ACADEMIES offer opportunities for learning, discussion and market-relevant knowledge exchange about building materials and trends. You are invited to make use of these facilities to enhance your success.

Services Offered by Our Technical Center

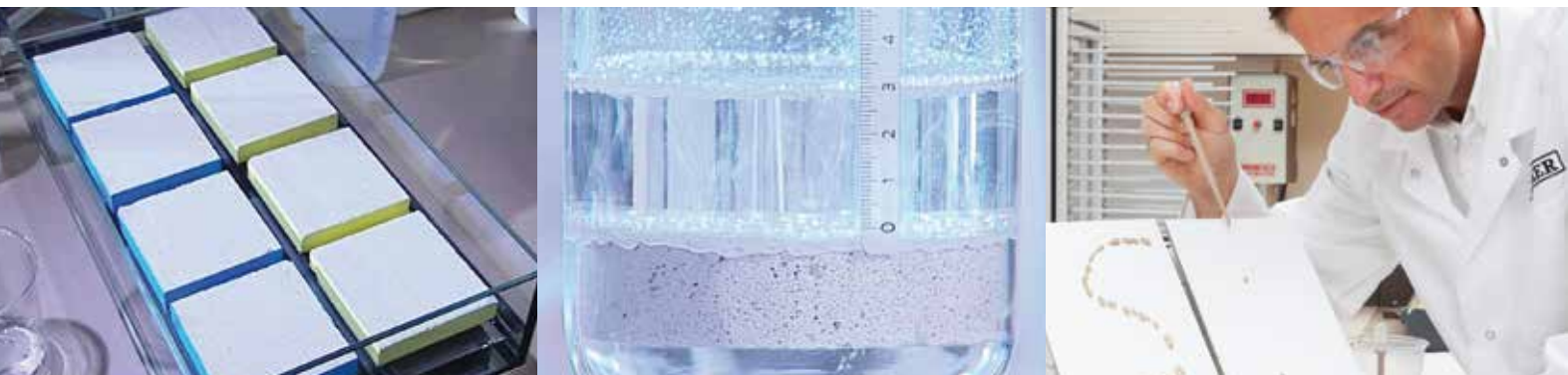
- Developing formulations for new products
- Optimizing formulations of existing products
- Testing coatings according to national and international standards

WACKER ACADEMY Training Courses

At the WACKER ACADEMY, we offer seminars that are relevant to your market. The program ranges from basic polymer or silicone chemistry courses through practical training in key applications, such as energy efficient facades or masonry protection, to general seminars on, for example, intercultural

communication. All seminars are held by experienced trainers from the region. The seminar rooms are located right next to the technical centers, where the theory learned in the seminar is put into practice in the lab.

www.wacker.com/wacker-academy



THE ELEMENT OF APPEARANCE
WE CALL IT SILRES® BS,
THE WORLD CALLS IT CULTURAL
HERITAGE AND STUNNING SIGHTS



Aesthetically Appealing

Worldwide, millions of square meters of facades throughout Europe, the US and Asia have been coated with silicone resin emulsion paints. Among them are famous national heritage sites such as Neuschwanstein, Saint Basil's Cathedral, Belvedere and Château Saint Jean, as well as modern buildings.

SILRES® BS BINDERS

DEFINING A NEW CLASS OF COATINGS

Silicone resin binders react with mineral construction materials and form a three-dimensional silicone resin network. Tightly chemically bound to the mineral substrate, this network is the basis of the wide range of SILRES® BS applications.

A New Class of Coatings




Via their resin binder, silicone resin emulsion paints combine the best of organic and inorganic coatings in a perfect class of coatings: easy to process, economical to apply and outstanding in performance.

Perfectly Combined Benefits

Film-forming emulsion systems are highly water-resistant, but only have low water vapor diffusion. A hydrophilic silicate paint shows very high water vapor permeability, but low water resistance.

Silicone resin emulsion paints and plasters do not form a film on the masonry; rather, they have a porous surface, which makes them permeable to water vapor and carbon dioxide.

Silicone resin emulsion paints and plasters combine the advantages of both systems perfectly and eliminate their disadvantages. This means they are both breathable and especially long lasting, and have an extremely low water absorption coefficient.

Silicone Resin Emulsion Paints Outperform Emulsion Coatings & Silicate Paints			
		Low Water Absorption	High Water Vapor Diffusion
	Emulsion paint	●	○
	Silicone Resin Emulsion Paint (SREP)	●	●
	Silicate paint	○	●

● Yes ○ No

Silicone resin emulsion paints realize best performance classes in accordance with DIN EN testing norms.



SILRES® BS ADDITIVES

ADD QUALITY TO YOUR COATINGS

SILRES® BS silicone water-repellent additives add quality to any coatings' formulation as they considerably improve a paint's surface properties. They greatly enhance the "early rain resistance" of a coating and form a protective barrier which is especially important during the critical drying period directly after application of the paint.

Water Resistance and Water-Vapor Permeability

SILRES® BS additives enhance the water repellency without reducing the water-vapor permeability. This effect can be realized in practically all modern coatings systems, even in systems with a very high pH-value.

Water Repellency

The excellent water-repellent effect of SILRES® BS additives causes water to simply bead off facades, taking loose dirt particles with it. Even after heavy rain and extreme temperatures, there is no darkening, swelling or flaking of the finish as a result of water pressure, and the facade stays clean longer. WACKER offers a broad portfolio of products which gives you full control over the degree of beading effect: from high beading to low beading formulations.

Easy to Process

Ease of processing is crucial to the success of coatings, especially for interior paints. Our additives can help you fine tune the quality of your interior paints as they can more than triple the open time. Furthermore, the hydrophobic effect makes it easier to apply the second coat. These coatings are also easier to clean and therefore last longer.

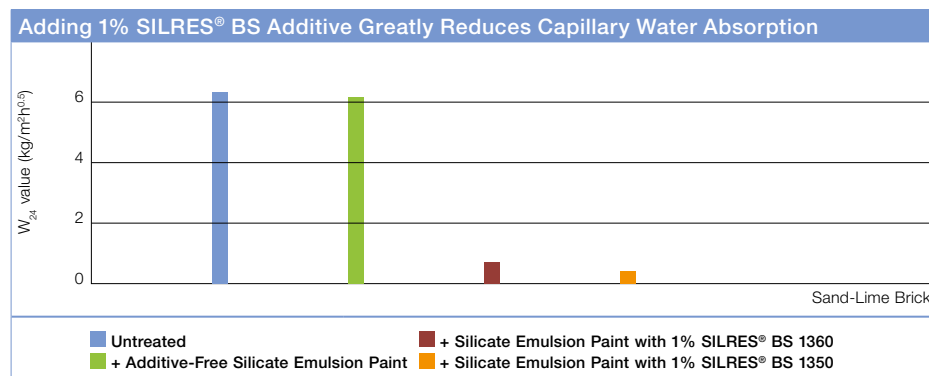
High Efficiency

Silicone additives are amazingly efficient; even small doses optimize water repellency in water-based coatings.

The Benefits of SILRES® BS Water-Repellent Additives:

- Low water uptake (good early rain resistance)
- Excellent breathability
- Realize good beading effect to minimize dirt pick-up
- Control over the degree of water repellency
- Economical use due to high efficiency of additive products
- Broad scope of usage: from silicone resin paints to dispersion and silicate paints, from indoor to outdoor

Water repellency can be improved significantly by SILRES® BS silicone additives.



SILRES® BS SILICONE PRIMERS

THE BASIS FOR MASONRY PROTECTION

The primer is a crucial element of a facade-coating system. It not only has to protect the masonry against moisture penetrating from the outside, it also has to prevent moisture transfer from the construction material into the coating, while allowing vapor diffusion at the same time. SILRES® BS silicone primers provide top performance here in every respect.

Reliable Moisture Protection

Facade coatings must resist long-term weathering and preserve the breathability of the masonry. The primer plays a crucial role in determining the extent to which these requirements are met. SILRES® BS silicone primers form a dry, hydrophobic zone beneath the coating, and have proved extremely efficient in long-term applications. They act both externally and internally, preserving the water-vapor permeability of the masonry and the coating.

Wide Range of Applications

SILRES® BS silicone primers can be used for:

- All mineral substrates
- Silicone resin emulsion paints and plasters
- Emulsion paints and plasters
- Concrete coatings
- All coatings that contain wetting agents

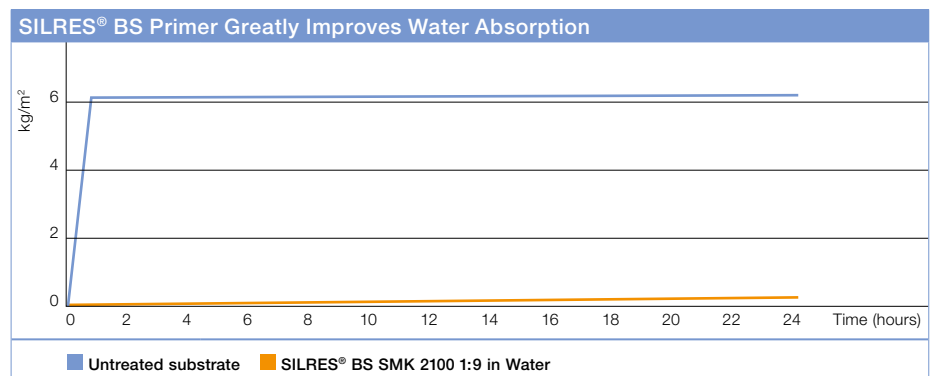
Superior Results:

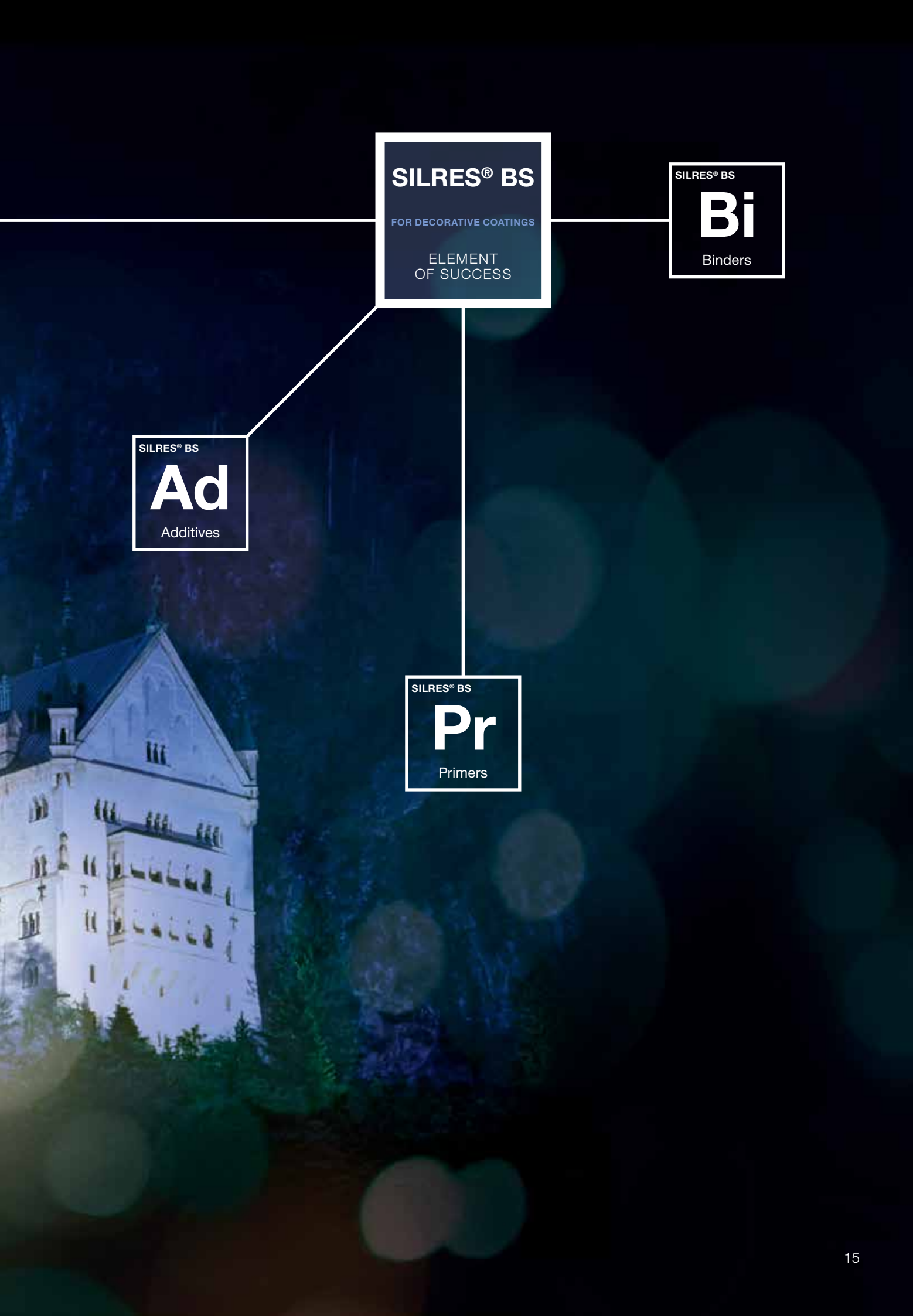
- A dry, stable substrate
- Better adhesion of the coating
- No transport of harmful salts
- No efflorescence in the coating
- No moisture beneath the coating
- Durable quality and an attractive appearance
- Less frequent renovation required

A Strong Portfolio

SILRES® BS offers a wide range of water-based and solvent-based silicone primers for effective masonry protection. It is even possible to formulate self-priming coatings by adding SILRES® BS directly to the paint or plaster.

Primer (below), Plaster (above)





SILRES® BS

FOR DECORATIVE COATINGS

ELEMENT
OF SUCCESS

SILRES® BS

Bi

Binders

SILRES® BS

Ad

Additives

SILRES® BS

Pr

Primers

100%
Sf
Solvent-free

SILRES® BS
FOR DECORATIVE COATINGS
ELEMENT
OF SUCCESS

Effective
Hi
Heat insulation

Perfect for
Et
ETICS

Silicone resin emulsion paints are strongly recommended for all kinds of coatings – but can be considered a “must” for External Thermal Insulation Composite Systems (ETICS).

THE ELEMENT OF THE FUTURE TO US, IT IS SUSTAINABILITY – FOR FUTURE GENERATIONS, IT IS QUALITY OF LIFE

Those who construct, shape the future.

Sustainable architecture can only truly be achieved through the right building insulation. But insulated facades must be protected properly from water, so that they continue to serve their function over the long term. This is where high-performance SILRES® BS really works its magic.

Water management can be extremely challenging with respect to External Thermal Insulation Composite Systems (ETICS). A facade coated with ETICS always generates more condensation water on its surface and typically dries out less effectively. This is because ETICS change the physical properties of a surface in two ways: Firstly, an ETICS facade typically heats up strongly during the day. When the temperature falls at night, the resulting temperature difference leads to a higher amount of condensation water. Secondly, ETICS reduce the heat flow from inside to outside, causing the facade to dry out more slowly and fostering algae growth. For this reason, the high water-vapor permeability and the low water absorption of silicone resin emulsion paints are especially valuable to protect ETICS facades.

- SILRES® BS protects facades from moisture without limiting water-vapor permeability. This prevents unwanted heat loss and the associated negative impact on a building's energy consumption.
- SILRES® BS protects from pounding rain, making it much less necessary to carry out restorations on buildings.
- Last but not least, SILRES® BS also makes a contribution to healthy living. WACKER's SILRES® BS silicon additives are water-soluble and solvent-free, reducing the emissions of construction materials and paints.



EXPERTISE AND SERVICE NETWORK ON FIVE CONTINENTS



• Sales offices and production sites, plus 18 technical centers, ensure you a local presence worldwide.

WACKER is one of the world's leading and most research-intensive chemical companies, with total sales of €4.6 billion. Products range from silicones, binders and polymer additives for diverse industrial sectors to bioengineered pharmaceutical actives and hyperpure silicon for semiconductor and solar applications. 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. Spanning the globe with 4 business divisions, we offer our customers highly-specialized products and comprehensive service via 23 production sites, 18 technical competence centers, 13 WACKER ACADEMY training centers and 48 sales offices in Europe, North and South America, and Asia – including a presence in China. With a workforce of some 13,450, we see ourselves as a reliable innovation partner that develops trailblazing solutions for,



and in collaboration with, our customers. We also help them boost their own success. Our technical centers employ local specialists who assist customers worldwide in the development of products tailored to regional demands, supporting them during every stage of their complex production processes, if required. WACKER e-solutions are online services provided via our customer portal and as integrated process solutions. Our customers and business partners thus benefit from comprehensive information and

reliable service to enable projects and orders to be handled fast, reliably and highly efficiently.

Visit us anywhere, anytime around the world at: www.wacker.com



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