SILRES® POWDER ADDITIVES FOR HIGH-PERFORMANCE DRY MORTARS

Every year, the construction sector keeps demanding more sustainable products that comply with high quality standards. More than ever before, formulators now have a responsibility to find economical solutions that will not compromise the long-term performance of their products or their impact on the environment.

High-Performance Dry Mortars

Fact is, water is a big enemy of construction materials. Not only does it spoil the appearance, but it also impairs a building's performance and durability. To protect buildings against water, modern high-performance dry mortars are formulated with water-repellent additives. SILRES® POWDER additives are an excellent alternative here because they offer both surface and bulk protection.

Two Technologies

The WACKER SILRES® POWDER additives portfolio comprises silane/silicone-based products manufactured by two different technologies. In one, the active substance is located on the surface of an inorganic carrier while, in the other, it is encapsulated, as shown in Fig. 1.

SILRES® POWDER additives can be easily added to dry formulations to confer hardness, adhesion and strength on the end-product. They are compatible with a broad range of dry additives and remain stable in alkaline formulations.

SILRES® POWDER A

SILRES® POWDER A is a highly efficient water-repellent silicone additive in powder form. The active substance on the inorganic carrier in SILRES® POWDER A boosts the water repellency and water resistance of dry mixes, e.g. joint mortars, premixed plasters, powder paints and coatings. Figure 2 shows the outstanding water absorption produced when SILRES® POWDER A is used as an additive in different applications and Fig. 3, the excellent water-beading effect achieved in a plaster.

SILRES® POWDER A can be used in powder and liquid systems. It is therefore also suitable for manufacturing earth-moist or slurry-based products, such as non-load-bearing concrete products and aerated concrete parts.

Figure 2: Products Modified with SILRES® POWDER A Show a Significant Reduction in Capillary Water Absorption

Figure 1: Schematic Representation of SILRES® POWDER Technologies

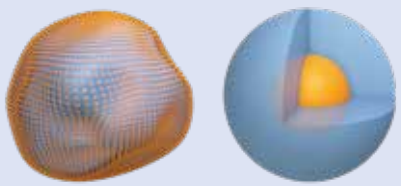


Figure 3: Water-Beading Effect Achieved with SILRES® POWDER A

Unmodified plaster

Plaster modified with SILRES® POWDER A

WACKER

CREATING TOMORROW'S SOLUTIONS

SILRES® POWDER D

SILRES® POWDER D is a highly efficient water-dispersible powder based on an encapsulated functional silane that provides excellent water repellency at low concentrations without affecting the vapor permeability. SILRES® POWDER D can be used in powder and liquid systems. The active component in SILRES® POWDER D enhances the water repellency and dirt resistance of mineral-based construction materials, such as premixed stuccos, tile grouts, and mortars. Figure 4 shows the water uptake of tile grouts with SILRES® POWDER D in comparison to a similar market product. SILRES® POWDER D is produced without the use of organic solvents.

SILRES® POWDER E

SILRES® POWDER E is a highly concentrated water-dispersible powder based on an encapsulated highly efficient silane that provides excellent water repellency at very low concentrations without affecting the vapor permeability. SILRES® POWDER E can be used in powder and liquid systems. The active component in SILRES® POWDER E enhances the water repellency and dirt resistance of mineral-based construction materials, such as premixed stuccos, tile grouts, and mortars. Figure 5 shows the water uptake of a thick-layer plaster (monocouche). SILRES® POWDER E is produced without the use of organic solvents.

Benefits

- Water repellency
- Bulk hydrophobization
- Stain resistance
- Significantly reduced water absorption
- Does not alter appearance of materials
- Extends product life cycle
- Environmentally friendly

Figure 4: Tile Grout Modified with SILRES® POWDER D Outperforms the Same Formulation in a Similar Market Product

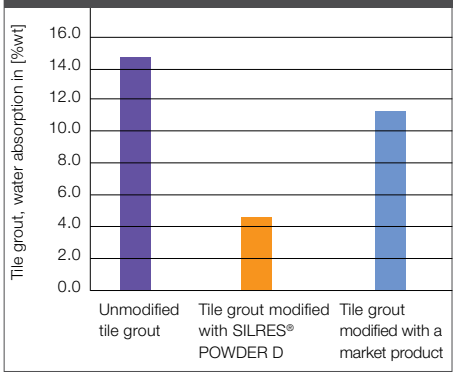
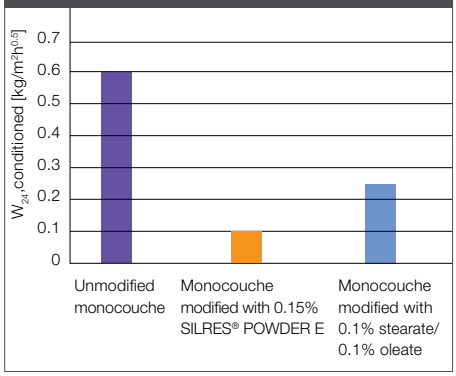


Figure 5: SILRES® POWDER E Clearly Outperforms Stearate/Oleate



General Characteristics

Product	Active substance [%]	Appearance	Stabilization system
POWDER A	Approx. 50	White powder	-
POWDER D	Approx. 35	White to light beige powder	Polyvinyl alcohol
POWDER E	Approx. 65	White to light beige powder	Polyvinyl alcohol

Hydrophobicity and Typical Applications

SILRES®	Hydrophobic Effect		Typical Application
	On Surface	In Bulk	
POWDER A	●●	●●●	Stuccos and plasters. Grouts for tiles and stones. Sealing slurries and repair mortars. Mineral-based powder paints.
POWDER D	●●	●●●	ETICS basecoats and topcoats. Sealing slurries and repair mortars. Precast concrete (pavers, manufactured stones). Decorative concrete overlays. Mineral-based powder paints.
POWDER E	●●●	●●●	Stuccos and plasters. ETICS basecoats and topcoats. Precast concrete (pavers, manufactured stones). Decorative concrete overlays. Mineral-based powder paints.

• Suitable •• Recommended ••• Highly recommended

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