SILRES® BS 290

Masonry Water Repellents

Characteristics

SILRES® BS 290 is a solventless silicone concentrate that is based on silane / siloxane and is dilutable with organic solvents.

Dilute solutions of SILRES® BS 290 in organic solvents serve as high-quality general-purpose water repellents for impregnating and priming mineral and highly alkaline substrates.

Features
- Good depth of penetration
- High alkaline resistance
- Tack-free drying
- Effective even on damp substrates
- Water repellency develops fast

After application, SILRES® BS 290 reacts with the atmospheric moisture or pore water in the substrate, thereby generating the active ingredient while liberating alcohol. The active ingredient greatly lowers the water absorbency of the substrate. Since neither pores nor capillaries are clogged, the substrate retains a very high degree of water vapour permeability.

Application

SILRES® BS 290 is suitable for imparting water repellency to absorbent, porous, mineral construction materials, e. g.:

- Brickwork
- Mineral-based natural and artificial stone
- Aerated concrete
- Sand-lime brickwork
- Cement fiberboards
- Mineral paints
- All kinds of concrete
- Mineral plasters

SILRES® BS 290 is also suitable as primer for exterior paints.
SILRES® BS 290 is not suitable for rendering gypsum water repellent.

Processing

Flooding, preferably not under pressure, is the best technique for applying SILRES® BS 290, which is ready to use after dilution. Apply several coats, wet on wet, until the substrate is saturated. Generally, at least two applications suffice for all substrates.
Do not leave long breaks between coats. Apply the next when the substrate has absorbed the previous one and is no longershiny (wet-on-wet working). The substrate must not have damp spots, i. e., it should look dry. The requisite quantity of SILRES® BS 290 depends on the adsorbency of the substrate.

The amount of impregnating agent required for a substrate and the effectiveness of the impregnation should be determined on site by testing a small area of the material to be treated.

Before applying SILRES® BS 290, be sure to cover windows and other non-absorbent surfaces properly because the product cures so quickly that it will be extremely difficult, if not impossible, to remove after a few hours. Wipe off any splashes on window panes immediately, using a solvent if necessary.

For this reason, the figures quoted below are intended as a guide only:

Concrete	[l/m²]	0.25 – 0.5
Plaster	[l/m²]	0.5 – 1.0
Sand-lime brick	[l/m²]	0.4 – 0.7
Brickwork	[l/m²]	0.4 – 2.0
Aerated concrete	[l/m²]	0.5 – 2.0
Cement fiberboard	[l/m²]	0.1 – 0.3
Natural stone	[l/m²]	0.05 – 3.0

Product data

Appearance		colorless, hazy
Silane/siloxane content, approx.	[%]	100
Density at 25 °C, approx.	[g/cm³]	1.05
Viscosity at 25 °C, approx.	[mm²/s]	20
Flash point, (DIN EN ISO 2719) approx.	[°C]	38

These figures are intended as a guide and should not be used in preparing specifications.

Dilution

The solvents best suited for diluting SILRES® BS 290 are aliphatic hydrocarbons (e. g. White Spirit 130/175), aromatic hydrocarbons (solvent naphtha, e. g. Shellsol A) or low-odor isoparaffin hydrocarbons (e. g. Isopar H). The solvent used should have a boiling range of 140 – 190 °C and an evaporation number of 30 – 90.

If the above-mentioned hydrocarbon solvents are used, SILRES® BS 290 should be diluted in a weight ratio of 1 : 11 to 1 : 15. Anhydrous alcohols, such as ethanol or 2-propanol, could also be used and are even indispensable whenever contact of the impregnating agent with solvent-sensitive materials (such as expanded polystyrene, bitumen, etc.) cannot be avoided. The alcohol must be completely anhydrous. If alcohol is used as a solvent, a dilution ratio of 1 : 12 pbw is recommended. When impregnating slightly damp substrates, SILRES® BS 290 will give better results if diluted with hydrocarbons than with alcohol.

Stir vigorously when adding the diluent to SILRES® BS 290. Since SILRES® BS 290 reacts with humidity, prolonged contact with air must be avoided. The containers must be hermetically sealed.

Storage

SILRES® BS 290 has a shelf life of at least 12 months when stored between 0 °C and 30 °C in the tightly closed original container. The containers must be protected against direct sunlight. The 'Best use before end' date of each batch appears on the product label.

Storage beyond the date specified on the label does not necessarily mean that the product is no longer usable. In this case however, the properties required for the intended use must be checked for quality assurance reasons.

Safety information

Detailed safety information is contained in each material data safety sheet, which can be obtained from our sales offices.

Approvals

The efficacy of SILRES® BS 290 is borne out in the following laboratory reports and test certificates:

- Centre Scientifique et Technique de la Construction, Brussels, Belgium:
  „Test results of masonry water repellent SILRES® BS 290 L“
  (80 % dilution of SILRES® BS 290 in organic solvents).

- Eidgenössische Materialprüfungs- und Versuchsanstalt, Dübendorf, Switzerland
  Test Report no. 245/376, January 10, 1985:
  „Resistance to frost and road salt of concrete surfaces impregnated with SILRES® BS 290 and BS 44“

- Labor für Präparation und Methodik, Beinwil am See, Switzerland
  Test Report No. A-4729, February 13, 1985:
  „LPM expertise of tests concerning the penetrative effectiveness of impregnations with SILRES® BS 290 and BS 44“.

- Bureau Veritas, Gennevilliers, France
  Test Report No. CN 53B950305E01, July 17, 1995:
  „Test of masonry water repellent SILRES® BS 290 in 1 : 15 dilution“

In the USA, the following tests have been performed on SILRES® BS 290:

- DL Laboratories, New York, April 30, 1992
  Product: SILRES® BS 290 (10 % in MS, 125 ft²/gal.)
  Federal Specification SS-W-110C „Water-Repellent, Colorless, Silicone Resin Base“
  Result: Water absorption: 0.2 %

- Wiss, Janney, Elstner Associates, Inc., Northbrook, Illinois
  Product: Code A25-172 (SILRES® BS 290, 15 % in MS, 125 ft²/gal.)
  NCHRP 244 Report “Concrete Sealers for the Protection of Bridge Structures”
  Series II: (January 26, 1990):
  Reduction of water absorption: 87 %
  Reduciton of chloride ion content: 89 %
  Water vapor transmission: > 100 % (within 7 days)
  Average penetration depth: 0.20 in.

- Law Engineering, Atlanta, Georgia
  Product: Code 710-194 (SILRES® BS 290, 15 % in MS, 125 ft²/gal.)
  NCHRP 244 Report “Concrete Sealers for the Protection of Bridge Structures”
  Results Series I: (April 12, 1988):
  Reduction of water absorption: 85.1 %
  Reduction of chloride ion content: 92.1 %
  Water vapor transmission: 120.1 %
  Results Series IV: (January 13, 1989):
  Northern climate: very slight scaling,
  97.5 % chloride reduction, no corrosion
  Southern climate: very slight scaling,
  97.6 % chloride reduction, no corrosion
  ASTM C 666 “Resistance o Concrete to Rapid Freezing and Thawing” (April 2, 1988)
  Result: Slight degree of scaling; durability factor 139 %
  ASTM C 672 “Scaling Resistance of Concrete Surfaces “ (May 6, 1988)
  Result: Slight degree of scaling
  Ontario Provincial Standard 1351.08.01 “Salt Scaling Acceptance Test” (December 14, 1988) 12.2 g/m² (allowed max. 800 g/m²)
  visually no scaling detected

- EBA Engineering Consultants Ltd., Edmonton, Alberta, Canada, September 20, 1988
  Product: Code 756-197 (SILRES® BS 290, 16.4 % in MS, 1.6 m²/l)
  Alberta DOT Specification B388-90 “Evaluation of Sealers Used on Concrete Bridge Elements”
  Result: Initial reduction of water absorption: 89.9 %
  Reduction of water absorption after sandblasting: 82.6 %

The data presented in this leaflet are in accordance with the present state of our knowledge, but do not absolve the user from carefully checking all supplies immediately on receipt. We reserve the right to alter product constants within the scope of technical progress or new developments. The recommendations made in this leaflet should be checked by preliminary trials because of conditions during processing over which we have no control, especially where other companies' raw materials are also being used. The recommendations do not absolve the user from the obligation of investigating the possibility of infringement of third parties' rights and, if necessary, clarifying the position. Recommendations for use do not constitute a warranty, either express or implied, of the fitness or suitability of the products for a particular purpose.

The management system has been certified according to DIN EN ISO 9001 and DIN EN ISO 14001

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