SILRES® BS 1701

Silanes

SILRES® BS 1701 is a mixture of octyltriethoxysilanes isomers, with iso-octyltriethoxysilane as the main component. SILRES® BS 1701 is used in undiluted form for the hydrophobic priming and impregnation of concrete and reinforced concrete. In addition SILRES® BS 1701 is suitable for the hydrophobic treatment of fillers and pigments.

Properties

SILRES® BS 1701 is characterised by:

- Excellent penetrating power
- no solvents, environmentally compatible
- low volatility

Treated concrete will have the following permanent properties:

- dramatic reduction in chloride and water absorption
- no loss in breathability
- improved durability against freeze-thaw de-icing salt stress
- enhanced durability
- provides good adhesion for paints

In the construction material SILRES® BS 1701 reacts with atmospheric moisture and / or the water in the building material's pores, eliminating alcohol. The active thus substance formed greatly reduces the concrete's absorbency in the active zone (penetration depth after post treatment), but without blocking any pores or capillaries. The impregnated building material retains very high water-vapor permeability.

Technical data

General Characteristics

Property	Condition	Value	Method
Appearance	-	clear, colorless	WSTM-1228
Boiling point	1013 hPa	237 °C	OECD 103
Density	20 °C | 1013 hPa	0.88 g/cm^3	DIN 51757
Flash point	-	42 °C	ISO 3679
Molecular weight (Mw)	-	approx. 276.0 g/mol	-
Silane content	-	approx 99.0 %	-
Viscosity, dynamic	25 °C	1.9 mPa·s	DIN 51562

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

All the information provided is in accordance with the present state of our knowledge. Nonetheless, we disclaim any warranty or liability whatsoever and reserve the right, at any time, to effect technical alterations. The information provided, as well as the product's fitness for an intended application, should be checked by the buyer in preliminary trials. Contractual terms and conditions always take precedence. This disclaimer of warranty and liability also applies particularly in foreign countries with respect to third parties' rights.

Applications

- Infrastructure
- Fiber Cement Boards
- Construction Materials
- Concrete Protection
- Hydrophobic Impregnation

Application details

The work performed (preparing the concrete surface, setting up a reference surface, application and quality control) must follow the applicable regulations (in Germany these are the DAfStb repair work guidelines and the ZTV-ING).

- Concrete should not be impregnated until at least four weeks after it has been produced so that the setting of the cement is not affected.

- New surfaces that are still unsoiled must be cleansed of coarse particles and dust deposits by sweeping or, if necessary, using compressed air. Surfaces already weathered, and those heavily soiled by oil, rubber residue, etc., must first be cleaned using superheated steam or high-pressure water before commencing treatment. It is imperative that the water used be siphoned off immediately to prevent saturation of the concrete.

- Impregnation should always be performed on superficially dry concrete, i.e., when the surface of the concrete appears evenly dry, no more damp patches are visible and the moisture content equilibrium is established. To this end, moisture in the surface zone of the concrete is measured using a suitable technique (CM method or other methods allowed under ZTV-ING). The surface-zone moisture content of the concrete (from the surface to a depth of 20 mm) should not exceed 4 wt%.

- Evenly apply the impregnating agent to the building material in two coats, wet-on-wet. The two coats are absolutely essential to prevent the formation of defects in the impregnated surface. Do not allow puddles to form. The impregnating agent is applied by flow coating at reduced pressure. A lambskin roller may be used afterward for more even coverage.

- In the event of unexpected rain, cover surfaces already impregnated and halt all further impregnation.

- SILRES® BS 1701 should never come in direct contact with bitumen. The resistance of insulating materials to SILRES® BS 1701 must be tested on a case-by-case basis for the required temperatures.

SILRES® BS 1701 is recommended for the hydrophobic impregnation and priming of concrete and reinforced concrete in road, bridge and building construction. In addition it is suitable for the hydrophobic treatment of fillers and pigments.

Expert opinions:
The effectiveness of SILRES® BS 1701 is confirmed
and documented in the following laboratory reports:
• Polymer Institut Dr. Stenner GmbH, Flörsheim,
Germany
Test report P 5024-1, May 14, 2007; EN 1504-2
Test report No. P 1637, Nov. 6, 1998; TL/TP OS (1996 issue) of ZTV-SIB 90
• CBI Betonginstitutet AB, Boras, Sweden
Test report No. 2297156 A, Sept. 6, 1996; BRO 94
Test report No. P701959 B, Oct. 19, 2007; BRO 2004
Test report No. FX00045B, Jan. 27, 2011; VVAMA
Anläggning 09 rev. 2
Test report No. 6P00354 B, NT BUILD 515
• VTT Technical Research Center of Finland, Helsinki, Finland
Test report VTT-R-42523-11, Apr. 6, 2011; SILKO 2010
• TRL Ltd., Berkshire, UK
Report PR/CSS/34/03, Aug. 2003; BD43/03
Report PPR 362, Oct. 2009; BD 43/03
• CTL, Ltd, Skokie, Illinois, USA
Project No. 406945; Jan. 5, 2004; AASHTO T259/T260
Project No. 406945; Aug. 8, 2003; ASTM C 672-98
Project No. 406945; June 23, 2003; ASTM E 514-92
• AMEC Earth & Environmental, Edmonton, Canada Project No. EA 15621;
Dec. 12, 2005; BT-001

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EN 1504-2:2004

Surface protection product – Hydrophobic Impregnation
EN 1504-2: ZA.1a

Depth of penetration	class II: ≥ 10 mm
Water adsorption and resistance to alkali:	absorption ratio < 7,5 % compared with the untreated specimen < 10 % after immersion in alkali solution
Drying rate for hydrophobic impregnation	class I: > 30 %
Loss of mass after freeze-thaw salt stress	fulfilled (weight loss at least 20 cycles later than untreated sample)
Release of dangerous substances	NPD

Packaging and storage

Storage

The containers must be protected against sunlight. The 'Best use before end' date of each batch is shown 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 notes

Comprehensive instructions are given in the corresponding Material Safety Data Sheets. They are available on request from WACKER subsidiaries or may be printed via WACKER web site http://www.wacker.com.

QR Code SILRES® BS 1701

For technical, quality or product safety questions, please contact:

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