

SILRES[®] BS OH 100



Ethyl Silicates

SILRES[®] BS OH 100 is a solventless, ready-to-use product for the consolidation of construction materials.

Properties

- one-pack system - therefore easy processing
- low-molecular - therefore optimum penetration
- tack-free drying - therefore no dirt attraction
- no by-products that are damaging to the building material
- the binder formed is mineral - therefore resembling the building material
- the binder formed is acid-resistant-therefore resistant to rainwater
- pores are not sealed - therefore the treated building material maintains its water vapour permeability

Mode of action

SILRES[®] BS OH 100 is based on ethyl silicate. When applied, it penetrates through the capillaries deep into the construction material. The neutral catalyst promotes the reaction between ethyl silicate and water from atmospheric humidity or the moisture in the capillary pores. A glass-like silica gel binder (SiO₂.aq.) is formed. The ethanol by product evaporates. Under standard conditions (20°C / 50% r. h.), final hardness is reached after two weeks, i. e. when most of the ethyl silicate has been converted to silica gel.

The product does not contain any hydrophobic additives such as silanes or siloxanes. Before the reaction is complete, the treated surface may show slight beading, though this does not mean that it is water repellent.

Technical data

General Characteristics

Property	Condition	Value	Method
Catalyst	-	neutral	-
Color	-	colourless to yellowish	-
Density	25 °C	approx. 0.997 g/cm ³	DIN 51757
Ethyl silicate content	-	approx. 100 wt. %	-
Flash point	-	40 °C	ISO 2719
Ignition temperature (liquids)	-	230 °C	DIN 51794

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

- Construction Materials

Application details

The main application of the product is to restore weather-damaged natural stone, stucco or frescos. It may also be used to treat other construction materials such as brick or terracotta.

Any absorbent mineral construction material can be treated with SILRES® BS OH 100. By saturation with the product, their original strength and porosity can be practically restored.

Processing

Preliminary test, test area

Due to the fact that the degree of deterioration will differ from one building material to the next, the instructions given in the following can only serve as general guidelines for successful restoration:

- Determine the exact state of the substrate which is to be consolidated (binder, salt content, porosity, etc.)
- Establish the necessary steps to be taken and likely material consumption
- Mark out a sufficiently large test area (also used to determine the material consumption) and check the results by looking for discoloration and making relevant physical measurements
- Check that the necessary steps are taken and monitor material consumption
- Carry out thorough final tests.

Substrate condition

Buildings which are to be restored often have a thick, dirty surface layer (crust). The areas must be cleaned thoroughly but mildly, e. g., by spraying with cold or hot water, or by steam cleaning. In many cases, the stone is already friable, and so cleaning is not possible without a further loss of substance. It is, however, possible to consolidate the material with SILRES® BS OH 100 beforehand to prevent substance loss. Then the material can be cleaned and the main consolidation can take place.

In order to enable the SILRES® BS OH 100 to penetrate all the friable building material, it is necessary for the area to be air-dry and absorbent. The treated area should be protected against rain during the following two to three days. It is also important that the area be protected against direct sunlight prior to treatment. If the building material is allowed to absorb too much heat, the product will evaporate too quickly and therefore will not penetrate sufficiently. The optimum temperatures for application are between 10 and 20°C. The relative humidity should be > 40%. In order to prevent the building material from heating up too much, awnings can be set up.

Application method

SILRES® BS OH 100 may be applied by spraying, brushing or dipping, according to the object to be consolidated. Larger areas should be treated with spraying equipment, but smaller ones can be treated with a wash bottle. Portable objects such as sculptures can be treated by dipping or by means of compresses.

Amount to be applied

One of the chief prerequisites for successful restoration is that the product penetrates to the sound core of the masonry as otherwise the possibility of flaking due to crust formation cannot be excluded.

In order to achieve the desired penetration depth, small areas of the building material (perhaps one stone or block or brick at a time) should be treated wet-on-wet with SILRES® BS OH 100 until the building material is fully saturated, i. e., it is unable to absorb any more of the product. If necessary, a second course of treatment can follow after two to three weeks at the earliest material must be achieved.

If a second course of treatment is carried out before the formation of active substance is complete, the masonry will not be able to absorb the stone strengthener. As a consequence, the surface will turn gray.

The amount of SILRES® BS OH 100 needed for the consolidation depends on the type of building material. The consumption may range from 0.5 to 15 l/m². Example: a stone which was weathered to depth of 6cm needed in the first course of treatment 5 l/m² of SILRES® BS OH 100 and 3.5 l/m² in the second course carried out after three weeks. In another case, 2.7 l/m² was applied and a penetration depth of 10cm demonstrated. The necessary amount of stone strengthener must be determined on a test area.

Post-treatment

Discoloration of the surface by ethyl silicate can be prevented by washing it with a solvent such as white spirit as soon as it is fully saturated.

Application of stone substitute or paint

When the SILRES® BS OH 100 course has reacted completely, stone substitute or mineral silicate paint can be applied to the treated area. The consolidated surface can also be treated with silicone paint. SILRES® BS OH 100 can also be applied to surfaces after they have been treated with stone substitute or mineral silicate paint, but only after an interval of four weeks.

Water-repellent treatment

After restoration work, a water-repellent coat should be applied to protect against rainwater. Wacker Chemie AG will be glad to advise you about suitable products.

Additional information

- Before applying SILRES® BS OH 100, cover up any window panes or solvent-sensitive plastics, etc. When applying the product outdoors by spraying, take care not to splash parked cars.
- If, in application by the dipping process, a lengthy dipping time is required, ensure that the dip tank is hermetically sealed to avoid gelling of the product.
- If the treated surface has a beading effect, which may affect the application of stone substitute or mineral silicate paint, this can be remedied by wiping the surface with an ammonia solution.
- If areas treated with SILRES® BS OH 100 are to be molded, the surface should be pretreated with a wetting agent, e. g. a soap solution or PVA solution, to prevent the silicone rubber compound from sticking to the surface.

Packaging and storage

Storage

The containers must be protected against sunlight. If the product is allowed to react with atmospheric humidity, it will gel and be rendered unfit for use.

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 OH 100



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

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