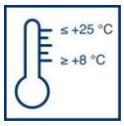
Technical Data Sheet
Art. No. 0719

KSE 100

Solvent based stone strengthener on a silicic acid ethyl ester (KSE) base. Low gel deposit rate approx. 10 % (“soft strengthener”).


For use indoors and outdoors


Job safety



Working temperature


Apply by brush / dipping/ low pressure spraying

Application rate depending on application

Shelf-life


Store frost-free and cool protected from/ moisture in closedcontainers

Range of use

Remmers KSE 100 is a soft strengthener that is suitable for strengthening fine-pored and low strength, mineral building materials such as Baumberg sandstone. It can also be used to strengthen historical renders and joints. In the case of stone that has pronounced swelling and shrinking properties because of swelling capable clay minerals, we recommend pre-treatment with Remmers Antihygro (Art. No. 0616) to reduce swelling. The stone should be examined in Remmers' laboratory.

Property profile

KSE 100 reacts with water stored in the pore system or humidity. During this reaction, amorphous, hydrous silicon dioxide ($SiO_{2,aq}$, "silica gel") is deposited as a binder. The mineral silica gel binder thus replaces the original binder lost through weathering. The speed of the gel deposit reaction is very dependent on temperature and humidity. Under normal conditions (20°C, 50% relative humidity), the deposit of binder is concluded after approx. 3 weeks. In the following, the most important property parameters of KSE 100 are given:

- Low gel deposit rate approx. 10 %
- Single component system – no errors, easy to use
- Neutral catalyst
- High penetration depth, possible all the way down to the sound core of the stone material
- No by-products that damage the building
- Highly resistant to weathering and UV stable
- Partially strengthened natural stone can be worked over with Remmers Restoration Mortar

Characteristic data of the product

Characteristic data of the product in the packaged state

Active ingredient content:	approx. 20 % by mass
Catalyst system:	neutral
Density at 20°C:	0.79 g/cm³
Colour:	clear to light cloudy, may have a slight yellow tinge
Odour:	typical

Characteristic data of the product after application

Quantity of gel deposited:	approx. 100 g/l
By-product	

Directions

Preliminary examination, setting up trial areas:

The following characteristic data of the material should be determined (analysis of the state of the building):

1. Moisture content, content of damaging salts, hygroscopic water absorption
2. Absorbency, capillary water absorption

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3. Strength profile, depth of weathering, degree of hygroscopic swelling
4. Application rate for each area, penetration depth of the stone strengthener, resulting strength profile
5. Establishment of working operations
6. Setting up a representative trial surface This is necessary to see if there will be any changes in colour and to correlate laboratory results with the quantities and values achieved on the object.
7. Execution of treatment and application rates are to be controlled and documented.

Substrate preparation:
The (natural) stone surfaces to be preserved often have a reduced absorption capacity caused by different types of soiling or a patina. To reinstate the original absorption capacity, cleaning measures are required that should be as gentle as possible, e.g. by spraying with cold or warm water or by steam cleaning; stubborn soiling is preferably removed with the rotec Soft Whirl Jet or with one of the Remmers facade cleaning products (see Technical Data Sheets for the respective products). In many cases the stone is already so friable that cleaning is not possible without a sensitive loss of substance. To avoid a loss of substance, pre-strengthening with KSE 100 or another suitable stone strengthener from the Remmers KSE family can be carried out prior to cleaning. After the cleaned substrate has dried, the main strengthening measure is carried out. In order to be able to saturate the entire weathered zone of the stone with KSE 100, the surfaces to be treated should have reached their compensation moisture balance, be absorbent and not be heated. When strengthening is carried out, the temperature of the stone strengthener as well as the temperature of the substrate and surrounding air should range between + 8 °C and + 25 °C.
To prevent strong heating by the sun, use shading devices. Protect the surfaces before, during and after strengthening from sun, rain and wind.

Application method:
An important prerequisite for the best possible strengthening results is that the weathered zone of the stone is completely saturated with the stone strengthener all the way down to the sound core. To achieve this, KSE 100 is applied to the building material in a flow coating, dipping and/or compress procedure. When using a flow coating procedure, smaller areas (sometimes stone by stone) are treated with KSE 100, wet-on-wet, at one time until the applied stone strengthener is no longer absorbed.
The application procedure selected depends on the object and task at hand. So-called "fast hydrolysis" is not recommended since this has an uncontrolled influence on the gel formation reaction and therefore on the success of the strengthening measures.

Notes

If necessary, treatment can be repeated 2-3 weeks after initial treatment. Here as well, the weathered zones of the stone must be completely saturated. The application rate of KSE 100 should be determined in a laboratory during preliminary examination and on a trial surface. The rate depends on the absorbency of the substrate and on the selected application procedure.

Follow up treatment:
To avoid a change in the colour of the surface caused by oversaturation with KSE 100, the stone surface should be washed off with a dry solvent (e.g. V 101 Thinner) immediately after saturation has been achieved.

Applying stone substitution compounds, hydrophobizing impregnation agents and coats of paint:
After the deposit of gel has been concluded, Remmers Restoration Mortar, Funcosil impregnation agents and/or products from the Remmers Silicone Resin Paint System can be applied to surfaces that have been strengthened with KSE 100. After application, the active ingredient "silicic acid ester" leads to a temporary water repelling effect that disappears during the course of gel formation. If strengthened surfaces still show an annoying water repelling effect after more than 4 weeks reaction time, e.g. when carrying out subsequent work with restoration mortar, this can be suppressed by wetting the surface with alcohol or de-tensioned water.

Adjacent surfaces:
Building elements that should not come in contact with the stone strengthener (e.g. windows, lacquered surfaces as well as glass and plants should be covered by suitable materials (e.g. polyethylene sheets).

Tools, cleaning

Depending on the task at hand e.g. low pressure spraying equipment, airless equipment and hand-held sprayers Tools must be clean and dry. After use and before longer interruptions clean tools and equipment thoroughly with V 101 Thinner. Once the stone strengthener has reacted, it can only be removed by mechanical means.

Packaging, application rate, shelf-life

Packaging:
5 l and 30 l tin cans

Application rate:
The quantity of KSE 100 required considerably depends on the type and condition of the substrate to be treated as well as the application procedure.

The application rate may range accordingly between 0.1 l/m² and several litres per m². The application rate should be determined in a laboratory during preliminary examinations as well as on a trial surface.

Shelf-life:
At least 12 months in closed, original containers, stored dry, cool and frost-free. KSE 100 reacts with moisture (humidity), so close con-

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tainers air tight each time material is removed.

Safety, ecology, disposal

Further information on safety when transporting, storing and handling as well as disposal and ecology is found in the latest Safety Data Sheet.

Personal protective equipment is required for spraying procedures. Use respiratory equipment with a combination filter at least A/P2 (made by e.g. Draeger) For suitable protective gloves, see Safety Data Sheet. Wear closed work clothes.

Remmers (UK) Limited Crawley
United Kingdom
Tel: +44 (0) 1293 594 010
Fax: +44 (0) 1293 594 037
www.remmers.co.uk