Technical Instruction Sheet

Characteristics: AKEMI® Stone Stone Strengthener K is a 1-component product based on ethylesters of silicic acids. The product is converted into the natural binding agent silicia gel and ethanol by the catalytic reaction with air humidity. Approx. 400-500 g of silicic acid gel are produced out of 1 kg Stone Strengthener K. The product is distinguished by the following qualities:

- easy application due to ready-to-use 1 component product
- very high contents of active substances
- good penetration due to its very fluid consistency
- transparent-colourless, therefore suited for light coloured natural stones
- solvent-less
- weather-resistant and non-yellowing
- no closing of the pores, the stone retains its ability to „breathe“

Field of Application: AKEMI® Stone Strengthener K is used to solidify absorbent mineral natural stones (sandstone, tuff stone, limestone etc.) or cast stones (stucco or fresco). The colour of the stone is not intensified and the natural breathing properties of the stone are preserved.

Instructions for Use:

1. Preparing Measures

In order to achieve a successful solidification, it important to first determine the condition of the object which will be solidified:

a) Test for noxious salts (nitrates, sulphates, chlorides)

In case a large amount of these soluble salts is contained, the salt content must be reduced by several careful cleaning procedures with water (with compression). If the stone is very brittle, it may be sensible to strengthen the stone (if the salt content is adequately low) before cleaning it because intensive cleaning can result in a clear loss of substance. Pressure washers are not suitable for such cleaning work under any circumstances.

b) Determination of damaged stone layer

An optimum solidification can only be guaranteed if more than the complete friable stone stratum is strengthened. If not, shells may form and parts may chip off. Damaged stone has a higher porosity and therefore a higher water absorption. Extract a core from the stone to be treated and cut the core into slices. To examine the water absorption put the stone slices on well watered foamed plastics. To compensate for the water extracted from the foamed plastics due to the capillary water absorption, they are put in a container filled with water. In intervals of an hour and during a whole period of 8 to 24 hours the specimen is weighed. Thus the water absorption, porosity and degree of damage can be determined.

c) Cleaning

Besides mechanical cleaning methods there are several chemical products available, s.a. AKEMI® Stone Cleaner, AKEMI® Concrete Film Remover, AKEMI® Rust Remover, AKEMI® Algae and Mildew Remover, AKEMI® Wax Stripper, AKEMI® Oil and Grease Remover, AKEMI® Graffiti Remover. Rinse thoroughly with water after cleaning. The cleaning method used must suit theobject concerned.

d) Preparation of a sample area

In case larger areas (façades) are to be solidified we recommend to prepare a sample area of 1-2 m² in order to examine:
- to determine the material consumption as exactly as possible.
- the efficiency of the product
- and to determine whether the object was strengthened up to the healthy core of the stone efficiency and solidification depth can be examined according to the water absorbent method.

2. Strengthening Procedure

a) The best conditions are a completely dry stone, a temperature of 10 - 25°C, a relative air humidity of more than 50% as well as protection from rain and sunlight for approx. 1 week.
b) Apply Stone Strengthener K several times wet-in-wet in spray-, stroke- or dipping-method, until the stone is strutted; if necessary repeat the treatment after 2 – 3 weeks. Airless spraying equipment with low pressure (max. 1 bar over pressure) is suitable for treating façades using the flooding (multiple-coat) method and a jet distance of 5-10 cm (condition: tubes and seals must be resistant to solvents). Stone Strengthener K is applied several times at intervals of 1-2 hours until it runs down 40-50 cm.
c) It is important to coat the object evenly until complete saturation is reached.
d) To avoid colour enhancement of the stone we recommend to treat the surface with AKEMI® Nitro-Dilution approx. 1 hour after the last application.
e) Reaction time at 20°C and a relative air humidity of 50° is 2-3 weeks approx..
f) A second solidification can be made afterwards or stone substitution material can be applied. If the product is applied after coating with stone substitution material, a reaction time of approx. 4 weeks must be taken into consideration.
g) We recommend to hydrophobe the object with AKEMI® Stone Impregnation afterwards.
h) Tools can be cleaned with benzine or AKEMI® Nitro-Dilution.

Special Hints:

- Use AKEMI® Liquid Glove to protect your hands.
- Surfaces to be treated should be protected from sunlight and rain
- Surplus material can cause blooming and spots
- Protect synthetic materials which are not resistant to solvents, window-screens, parts to be varnished or objects situated in the area of working (cars, gardens).
- Dipping containers should be closed hermetically.
- Being worked properly, the hardened product is generally recognised as not injurious to health.
- For adequate waste disposal container must be completely emptied.

Safety Measures: see EC Safety Data Sheet

Technical Data:

Coverage:	approx. 0.05-2 m²/liter
Colour:	colourless to yellowish
Density:	approx.1.00 g/cm³
Content of active substance:	100%
Shelf life:	1 year approx. if stored in cool place free from frost in its tightly closed original container.

Notice: The above information is based on the latest stage of technical progress. It is to be considered as a non-binding hint and does not release the user from a performance test, since application, processing and environmental influences are beyond our realm of control.

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