



## Consolidating of natural or artificial stone materials.

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### IS IT:

*Product*

*Technology*

*Equipment*

### APPLICABLE FOR:

*Restoration*

*Rehabilitation*

*New Construction*

### APPLICABLE ON:

*1. Foundations and underground structures*

*2. Vertical structures*

*3. Horizontal structures and vertical connections*

*4. Roof and terraces*

*5. Façade and building envelope*

*6. Finishes and completion elements*

*7. Integrated services*

*8. General strategies for building recovery*

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***Related companies:*** *Kerakover Eco Silicato di Etile; Sika®Silidur; Consolidante pietra\_Vimark; Consolidante ETS, MAPEI.*

## DESCRIPTION

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Solution with excellent permeability to the diffusion of water vapor and high capillary penetration, suitable for absorbent building materials, natural stone, brickwork, terracotta, non-cohesive, eroded, and degraded plasters, stuccos, frescoes, etc.

Material suitable for treating silica stone or brick surfaces, to reduce their porosity and improve their resistance to the aggression of atmospheric agents and pollutants.

The product penetrates into the support and forms a silica gel which binds the particles that are crumbling to the underlying healthy material, forming a protective gel of a vitreous nature.

This gel, which hardens over time, is highly resistant to adverse weather conditions and chemical attack by industrial pollutants.

It is chemically similar to the mineral components of stone and concrete and does not change the appearance of the surfaces (the stone remains natural).

An important detail is that, although the individual particles are protected, the spaces between them are only partially filled and, while water infiltration is inhibited, the stone can still "breathe".

Being an inorganic material, there can be no harmful side effects, even after a long time, as can happen with the use of organic substances.

## WHY TO USE

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Ethyl silicate is used for restoration and for consolidation.

It is made to penetrate into the degraded stone material with which it creates a network of mineral-type bonds, bringing it back to mass conditions and mechanical characteristics similar to the original ones, without preventing its transpiration and without changing its external appearance.

The product penetrates into the support by capillary absorption by consolidating or pre-consolidating it from crumbling, often due to the penetration of rainwater and the degrading action of freezing and thawing cycles.

THE ADVANTAGES OF USING THIS PRODUCT CAN BE SUMMARIZED AS FOLLOWS:

- Ease of application
- Good chemical and mechanical resistance
- Fast drying
- Good wear resistance
- Transparent
- Highly UV stable.

## HOW TO USE AND APPLY

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It must be applied in a single coat, by roller or brush, on the clean, dust-free, and dry substrate.

Poorly absorbent substrates or the application of large quantities of material, in one or more coats, can cause a hardened glossy finish and, in some cases, the formation of whitish spots.

Best results are often obtained with porous siliceous stones, such as sandstone or volcanic tuff.

The surface can be restored by cleaning up to the healthy substrate and then treating with the product, or by using a mixture of product and dust and aggregate of the original stone reconstructing the original profile.

The treatment in the case of new or cleaned stones with ethyl silicate makes them less exposed to atmospheric attack. The treated surfaces are resistant against acids, diluted alkalis, salts, vegetable oils and can be washed without deteriorating.

The product is ready to use and can be applied, as needed, by means of a low-pressure steamer or a soft brush in natural fibers. It is advisable to apply the product until the stone support is completely saturated in a single coat or you can apply two coats wet on wet.

The surfaces to be treated must be dry and free from damp phenomena due to capillary rising.

Homogenize the product well by shaking the container; the product, ready according to the case, can also be applied by immersion.

It is always better to brush and clean the surfaces to be treated well, if this is possible, to eliminate all traces of dust and superficial deposits, grease, and saline fluff.

If possible, clean the surfaces before treatment with water cleaning methods, or preconsolidate the surfaces with the same ethyl silicate, then carry out the cleaning operations



compatible with the substrate and then conclude with the consolidating treatment.

## **TECHNICAL CHARACTERISTICS**

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Liquid, colorless appearance.

The ethyl silicate does not modify the breathability of the support and does not decrease the permeability to water vapor, it does not modify the chromatic aspect of the treated materials and has a high resistance to UV rays. important phenomena of disintegration and de-cohesion of the stone material.

## **RECOMMENDATIONS AND OTHER INFORMATION**

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It is always recommended to perform a preliminary test on the support to be treated, which is absolutely necessary in cases where the final aesthetics of the support is a requirement to be maintained after treatment.

Protect the stone substrate to be treated from sunlight before applying the consolidating product: in fact, application on very hot surfaces could facilitate the evaporation process of the alcoholic vehicle, limiting the correct penetration of the consolidator into the substrate structure.

In the case of particularly dry substrates, it is advisable to moisten them before treatment for better crosslinking. The product should preferably and often be protected from rain for the first 24 hours.

Stone surfaces can be restored using suitable repair mortars, filling any cracks.

For an excellent consolidation it is necessary to treat the stone until refusal.

If necessary, it is also possible to carry out a second treatment cycle at least 2-3 weeks after the first application.

Flammable product, use suitable protective clothing, mask, overalls, goggles and gloves. Avoid contact with eyes and skin.

Protect the parts for which the product is not intended with polyethylene sheets.

During the application phase, a slight darkening of the stone may occur, but it is a temporary phenomenon, which disappears in a short time.

A fundamental component of the consolidation product is the catalyst which regulates the polymerization and the reaction rate.

## **EXAMPLES**

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Consolidation of vertical surfaces, such as:

- historical plasters and stuccos
- modern plasters
- absorbent stone materials, exposed bricks

## **REFERENCES / SOURCES AND LITERATURE**

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## **WEBSITE OF THE COMPANY**

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<http://www.sirgum.com>

<https://ita.sika.com/it/edilizia/rinnovo-e-protezionediedificiestructure/risanamento-murature/consolidamento/sika-silidur.html>

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## IMAGES AND CAPTIONS

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Fig.1: Consolidation of a frieze with ethyl silicate. © <https://bottegatte.com/qualcosa-sul-restauro-della-pietra/>



Fig.6: Consolidation of the plate with ethyl silicate impregnation, until the degraded parts are welded with the parts that are still sound and firm, managing to maintain a good percentage of porosity of the material.

The ethyl silicate consolidates the hydrogen bridge bonds that are established between the silica and the hydroxyls of the silicate stone, forming a dry residue that allows the re-adhesion of the incoherent stone portions.

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