



TECHNICAL DATA SHEET

SIOX-5 RE40 - Color enhancer for natural stone, plaster and terracotta

SIOX-5 RE40 is a water repellent protective coating and color enhancer based on sol-gel technology developed by the group of chemistry for cultural heritage at the university of padua, italy (patent n. 0001370467 synthesis of silica protective films by tin-catalized sol-gel process).

HOW IT WORKS

The product contains nanostructured silica gel. Once applied it saturates the pores with a layer of amorphous silica thin, colorless, transparent, compatible with the substrate, water resistant and breathable. The functionalized component - hydrophobic- is arranged outwards and it prevents the absorption of water and substances by natural stone or artificial material (plasters, stucco, terracotta). The high concentration is responsible of the wet effect and of the enhancement of the colors but the natural aspect of the material is preserved.

APPLICATION

Surface preparation

When applied on natural stone and terracotta the substrate must be consolidated.

Remove dust and deposits from the surface to be treated. Before the application the surface must be dry.

When applied on plasters for restoration (lime or cement based) the product can be applied after 24 hours after laying. The alkaline environment due to the carbonation and the presence of an hydrated layer promote the densification of the sol-gel product and the formation of bonds between the coating and the binding agent.

Dilution

The product is ready to use without dilution.

Directions for use

Use a brush or a paint roller for solvent-based varnishes. Apply evenly avoiding deposits and drops and allow to absorb gradually. A single application is sufficient; if adjustment is needed it must be realized when the product is wet without waiting the complete absorption. In the case of materials with low level of absorption remove any excess with a cloth in order to avoid changes in the surface opacity.

Surface coverage

The product yield is about 5-8 m²/L, values could be different on the basis of material porosity.

Penetration

Value between 0,2 and 1,0 mm, depending on the porosity and the method of application.

Drying

The coated surface is dry in 30 minutes.

Stability

The treatment is completely stable after 72 hours.

Temperature conditions

Min. 5°C – max. 35°C.

CHEMICAL/PHYSICAL PROPERTIES

Composition

The product is liquid and contains nanostructured silica (40%) in alcoholic solution functionalized with silica alkoxides organically modified.

Aspect

Liquid, colorless, transparent.



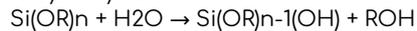
Relative density
0,839 g/cm³

Drying
At room temperature.

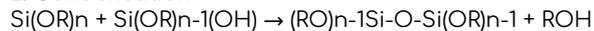
Flash point
<19 °C

Reactions
The liquid products forms a thin layer of glass through two reactions:

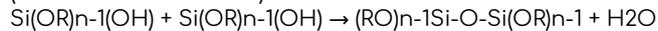
1. Hydrolysis



2. Condensation



(alcohol condensation)



(water condensation)

Contact angle
106 ±10 (°θ) according to UNI EN 15802, 2004.

Water absorption coefficient
w = 0,049 kg/(m²h0,5) W3 class (low permeability to liquid water) according to UNI EN 1062-3, 2008.

Permeability to water vapour
V1 class (high permeability to vapour) according to UNI EN ISO 7783, 2012.

Compatibility
Chemical covalent bonds are formed between the silica layer and the substrate: Si-O-Si (in case of silicate material) or Si-O-Ca (in case of carbonates), with water release.

Reversibility
Reversible with alkaline poultice.

ADDITIONAL NOTES

Cleaning of the application tools
After use the tools should be washed with alcohol (2-Propanol or ethanol).

Storage
Store in a closed container, away from heat in a cool, dry place. If properly stored, the storage life is 6 months.

Safety
The product is flammable.

Advices
The product is in alcoholic solution and has a quick setting; please avoid the application with temperatures higher than 35 °C. Carry out a preliminary test on a small surface area.

Note
The data contained herein are furnished for information only and are believed to be reliable. We cannot assume responsibility for the results obtained by others over whose methods we have no control. We reserve the right to modify and improve the product and to adapt it to safety regulations as well as to modify the packages. We suggest to adapt the application of our products on the basis of the nature and of the conditions of the material to be treated by testing the product in a sample area. Our technical office is at disposal for any other explanation.