



## Thermoplastic Acrylic Resin.

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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: Paraloid (B44, B52, B72).***

## DESCRIPTION

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Used in most cases as a protective of metals e compact materials and for consolidation, by impregnation of the most various types of porous materials such as tuff, wood, plasters, surfaces, adsorbing surfaces etc.

It is well suited for a variety of applications, including treated metal, copper, zinc, brass, treated aluminum, concrete floors, and certain plastics.

It is used in restoration interventions as a final varnish or as a consolidator at low concentrations (2-4%), rarely as an adhesive in higher concentrations. It allows an excellent waterproof performance and is stable even in the long term in light without manifesting chromatic alterations. Over time, the molecules tend to form cross-links, decreasing reversibility. It can be used for the restoration of paintings, frescoes, ceramic and wooden materials and for fossils.

## WHY TO USE

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This product can be used for:

- conservation and consolidation of pictorial layers on supports of wood or canvas;
- consolidation and impregnation of wall paintings (frescoes), silicate paints, crumbly plasters, etc.;
- adhesive for glass and ceramics.

## HOW TO USE AND APPLY

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It can be applied in the transparent, loaded state inert, or again pigmented with pigments compatible with solvents used for its dilution.

The product can be applied by spray, brush or by soak and dry in air or heat. Among the various solvents that can be used the most suitable is trichlorethylene, whose proven quality makes it suitable for the most delicate and demanding uses.

In fact, depending on the conditions of use (for example rather high relative humidity) and type of use, each solvent has its own specificity that goes appropriately evaluated. In particular, it should be noted that the trichloroethylene does not give "fog" effects during the drafting of the product and is non-flammable.

## EXAMPLE OF APPLICATION:

### Consolidation Intervention

- a) Dissolving the product into beads:
  - put in a container 30% by volume of product beads,
  - fill with the solvent, acetone or amyl acetate, will give greater penetrability to the mixture,
  - shake, stirring regularly for a few days, until completely dissolved.

We will obtain a still rather dense solution, which can be further diluted for use.

- b) preparation of the mixture for application:

In an acetone-resistant container, place a variable amount of the prepared solution previously, according to the dilution we want to obtain. usually a ratio of 1:4 for the first imbibition, reaching 1: 2 for the last.

If you want to apply a biocide product as well, add 2% of concentrated solution.

- c) application:
  - With a well soaked brush, apply the product by placing it on the surface; to repeat the operation several times, until the surface absorbs the resin. When the absorption of the product, apply a few passes of pure solvent, this increases the dilution and therefore the penetrability. Leave to settle for some time, and resume applying the resin, until it is absorbed.

Again, apply pure solvent when the absorption ceases.

Repeat the procedure several times, over several days, until you are sure that it is gone absorption of the product.

Remove the excess resin and any surface film, mechanically assisting with swabs soaked in solvent (acetone).

- d) Verify and check, at each stage.
  - visual: the surface must have a homogeneous appearance,
  - mechanical-empirical, subjecting the surfaces of the parts to pressure after a few days' subject to consolidation.

NOTE: With other types of consolidating resins, the preparation is diversified, the method of application with

controls and verifications carried out in the same way. For the percentages of dilution and the solvents to be used, always check the technical data sheets; those safety shows us which precautions and protections to adopt for their application.

## TECHNICAL CHARACTERISTICS

**APPEARANCE:** Solid in grains, granulated, emulsified

**COLOR:** Colorless, transparent

**ODOR:** Acrylate

**SOLUBILITY:** Soluble in toluene, acetone, trichloroethylene

**STORAGE:** The product dissolved in the solvent yes retains indefinitely if kept tightly closed

**RESISTANCE:** It is widely resistant to harsher climatic conditions. Good resistance to main acids, alkalis, lubricants, detergents.

## RECOMMENDATIONS AND OTHER INFORMATION

It must be handled with extreme care, as it is dangerous for inhalation, ingestion and contact with the skin. Furthermore, prolonged exposure to the solvents contained in the product can be harmful to the liver, kidneys and heart (carefully read the safety data sheet provided by the manufacturer).

The product is one of the most frequently used acrylic polymers, employed mainly for its adhesive and consolidating properties in the conservation of a wide range of materials.

Appreciated for its reversibility, mechanical characteristics and ease of use, application of the polymer requires it to be simply dissolved in a solvent.

Nevertheless, the chemical nature of the relevant solvent must be regarded as an essential parameter, due to its influence on the physico-chemical characteristics of the resulting adhesive film.

## EXAMPLES

### WALL PAINTS

For the consolidation and impregnation of wall paintings (frescoes), silicate paints, crumbly plasters, etc., a solution is used maximum of 5% in toluene/isopropanol. It is applied in numerous layers until the required saturation is reached.

### OIL PAINTS

For the conservation and consolidation of pictorial layers on supports of wood or canvas, a 5-10% solution in toluene is used or in toluene isopropanol. After drying, any imperfections can be flattened with a hot spatula.

When the product is used as a paint, one is an appropriate 10% solution in toluene/xylene. While the first layer can be applied with a brush, each subsequent layer should be given by spray. In some cases, depending on the ambient temperature vapours could be formed.

### WOOD

For wood consolidation it is advisable to use 5% -10% solutions in toluene or trichloroethylene. Impregnations must be done with the "wet" technique until complete saturation. For slower and deeper penetrations, toluene/xylene solutions are preferable.

### GLASS AND CERAMIC

The product has proven very useful as an adhesive for glass and ceramic. The solution in acetone, acetone/alcohol and trichloroethylene dries very quickly. Depending on the porosity of the fragments, the edges should be insulated with a 10% solution to ensure good adhesion.

Then apply a 20%-40% solution along the edges and fragments united.

Another method is to reactivate the dry adhesive with solvent before joining the fragments.

### CONSOLIDATION OF MARBLE

The solution is generally prepared at a concentration ranging from 5% to 10% in solvent (5/10 of product+95/90 of solvent) by means of a mechanical stirrer. First put the solvent in the dilution vessel and then, while it is being kept under stirring, gradually add the resin until a perfect solution is obtained. The solvents generally used are nitro diluent, acetone, cellosolve acetate, trichloroethylene.

The application of this solution of product on deteriorated marble objects can be done with the normal systems used in the paint sector, that is with acrograph or brush, even if the best results are obtained by slow immersion of the support in the solution. In this way the paint is absorbed by capillarity from the porous support penetrating even in the innermost parts, consolidating the object in a more complete and uniform way.

## **REFERENCES / SOURCES AND LITERATURE**

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<https://link.springer.com/content/pdf/10.1186/s40494-019-0283-9.pdf>.

## **WEBSITE OF THE COMPANY**

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Rohm and Haas [www.carlroth.de](http://www.carlroth.de)

## IMAGES AND CAPTIONS



Fig.1: The product, marketable by chips.



Fig.2: Restoration of the Trento Cathedral (Italy) - Consolidation of stone using compress method with very long application times. © <https://www.impresedilnews.it/metodologia-bagnato-su-bagnato-per-il-restauro-delle-superfici-del-duomo-di-trento/>





Fig.3: Restoration of the Trento Cathedral (Italy) - Consolidation Intervention of a stony cornice - the product was used to fix small and medium sized flakes and powdery parts. First, the stone was treated with acetone given by brush, in order to facilitate the penetration of the adhesive to be applied later.

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