



DENVERTEC 700

Cement Based Mortar, Modified with Polymers for Semi-Deep and shallow Repairs



DENVERTEC 700 – a bi-component, tixotropic and repair mortar, based on cement, modified with acrylic polymers, easy handling and high adherence to the substrate.

USES

- ❑ Filling of shallow and semi-deep repairs with thickness up to 70 mm.
- ❑ Filling of deep repairs localized by the dry-pack system.
- ❑ Recomposition of structural component sections.
- ❑ Coatings of permanent protection in masonry, block or concrete structures.

ADVANTAGES

- ❑ It allows projecting application
- ❑ It does not need formwork use, making possible manual application in lower vertical and horizontal surfaces (floor).
- ❑ High mechanical strength and excellent adherence to the concrete
- ❑ Low water permeability and to several aggressive agents, for example, chloride ions
- ❑ It grants high enduringness to structures repairs.

TYPICAL PROPERTIES

Technical Data

Description	Specification
Component A (fluid)	Emulsion of acrylic resin, additives and preserving material..
Component B (powder)	Cement, sand, active mineral additives, plasticizers additives and retraction reducers.
Application Time	20 to 30 min. (at 25°C)
Chlorides	Free

Performance Parameters

Testo	Specification	Standard
Compressive Strength [MPa]*:	3d ≥ 20MPa 7d ≥ 30MPa 28d ≥ 40MPa	NBR 5739
Tensile (bending) Strength [MPa]* after 28d	14 ± 3.5 MPa	NBR 12142
Chloride ion penetration	300**	ASTM C 1202:94
Water adsorption	0.5 a 0.7 g/cm ³	NBR 9779
Inner capillary rising height	maximum 7 cm	NBR 9779
Water penetration under positive pressure (0.5MPa)	Tightness	NBR 10787
Water penetration under negative (0.3MPa)	Tightness	NBR 10787

The performance parameters above are related to the laboratory test mean values. New lots tests may show small variations.

* Production control tests mean value and average deviation for 30 lot samples.

** Low risk of chloride penetration

REPAIR METHOD

The following operation sequence should be followed for repair execution. As guidance, the next steps may be followed:

- ❑ Boundaries of the area to be repaired.
- ❑ Boundaries of the repaired area with cuts of 5 mm thickness, minimum; use diamond blades taking care with frameworks of small thickness covering.
- ❑ Scratch and remove the deteriorated and loose concrete.
- ❑ Clear frameworks in its entire perimeter¹.
- ❑ Assess the framework and substrate condition and enlarge the repair area if there are more problems than those showed.
- ❑ Clean frameworks; sandblasting is preferably.
- ❑ Replace or change corroded framework, as necessary.
- ❑ Attach the exposed steel bars firmly².
- ❑ Treat the repair edges to guarantee a 5 mm CUT perpendicular to the structural piece surface and, so, a minimum thickness of the filling material at the section edges.
- ❑ If there is any problem related to framework corrosion apply **Denverprimer Zinc** to the frameworks as an additional rust protection³.
- ❑ Saturate the substrate.
- ❑ Apply adherence bridge to the edges and/or repair area bottom, using **Denverfix Acrylic**⁴.
- ❑ Fill the repair with **Denvertec 700**.
- ❑ If it is necessary plating or superficial normalization, provide a local or general finishing with **Denvertec 600**.
- ❑ As to guarantee tightness and to inhibit aggressive element penetration in the structure, apply a superficial protection with a paint or varnish system or with **Denvertec Color**.

Substrate Preparation

The **Denvertec 700** application area should be clean, free of loose material and debris as well as saturated and without puddles.

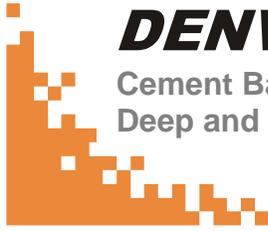
After sandblasting or scratching it is recommended to wash the surface with water under pressure.

¹ Guarantee a minimum free space of 20 mm behind the framework.

² Avoid bars moving during the filling material application process.

³ Remove or slow down incipient anodes appearance.

⁴ Apply adherence bridge with a paint brush only in areas where it is possible to apply **Denvertec 700** soon after.



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For substrate saturation, the substrate should be kept wet during 2 hours, sprinkling water over the surface. Before application, the puddle water should be removed with a sponge or compressed air⁵.

Mixture

It is recommended to use a forced action mixer or a low speed driller (450/500 rpm) with a mixing blade. Mix during 3 to 5 minutes.

In any case, it should be avoided to mix the product manually, because the product may not achieve the necessary consistency⁶.

Mix one or more packages each time, without fractioning the packages. Use always the entire volume of both components.

Put 2/3 of component A (fluid) in the mixer and add the entire volume of component B (powder), slowly, always with the mixer running until achieving a homogenized mortar. Afterwards, add the remainder of component A (fluid).

Depending on the temperature and on the wished initial consistency, it may be added to mixture, or during application, up to 0,15 liters of clean water (5% of the original fluid portion). In cold locations, it may be necessary to remove 0,15 liters from the fluid portion to achieve the wished consistency. With the addition of this amount of water there will not occur the expressive losses of the initial product properties, mainly in locations of high ambient temperature, in which the addition is consequence of the evaporated water replacement during the application time.

For projecting application "by wet means" it is necessary to add clean water, being admissible to add up to 0,5 liters of water by set. Adjusting and tests should be made before application.

Manual Application

The most recommended way to apply **Denvertec 700** é directly with hands (protected by rubber gloves), pressing the first layer on the wet adherence bridge applied on the substrate. The application may also be made with a trowel or steel mortar board, taking care to fill the spaces behind the framework. It is not recommended to use tools to fill in the first layer.

⁵ Using always an air filter.

⁶ It is not recommended to achieve the initial consistency adding water or product fluid portion beyond that admissible. The badly mixed product, without achieving the right consistency, shall be rejected or, if there is a forced action mixer, it should be applied soon after a new package mixture.

It is recommended to apply **Denvertec 700** in 15 mm to 25 mm layers until area completion. Depending on the area, position and existence of frameworks in the cavity to be filled, the maximum thickness to be achieved by the layers may be between 50 mm and 70 mm, being recommended an interval of 2 hours between layers.

For covering works in huge areas or in repairs slabs and beams (roofs) lower side, The recommended maximum thickness of fresh material is 25 mm. After an interval higher than 12 hours the work should be retaken, adding 25 m sections until achieving the necessary thickness.

The time period between successive layer applications should be minimum and just sufficient to the recently applied layer has the ability to receive the subsequent layer, guttering the lower layer and saturating the layer when applying the next layer in order to achieve a good adherence.

When filling cavities and locations of minor responsibility, the system "dry pack" can be adopted, making a wedge in each layer with washed and pre-selected grits. The subsequent layer should cover all the inserted stones making a compact and uniform mass. The process of wedging and stirring should be made with a wooden socket or a hammer handle.

Application by projecting

Denvertec 700 may be applied by projecting through "wet ways". For repairing huge areas, the high speeds of application and the bigger thicknesses make this method economically advantageous in comparison to the manual application. Besides, the repair mortar shows more compactness, less permeability and better adherence characteristics.

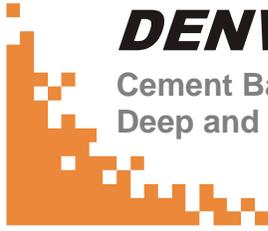
Finishing

The finishing should be made with a mortar board and an aluminum straight edge. The surface will always show some corrugation appropriated to a stucco mortar application as **Denvertec 600**.

Curing

Denvertec 700 should be cured for 3 days, sprinkling water over the surface during hotter times and covering the surface with a wet cloth.

Application in huge areas/planes needs especial care and the mortar curing should be during application process. Do not wait for completing each step; proceed with curing as soon as repair completion.



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OBSERVATIONS

- ❑ To avoid stops the application should be planned according to operational conditions: equipment, labor, terms, kind of work, environmental conditions etc.
- ❑ The mortar should be well compacted against the substrate. If there is "big belly growth", remove the mortar and reapply in small thicknesses.
- ❑ It is NT recommended in finishing works or in thicknesses lower than 5 mm.
- ❑ Protect the recently applied product against direct sunlight and strong winds. Use appropriate protectors and bulkheads.

CONSUMPTION

Denvertec 700	2050 kg/m ³
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PACKAGING

Box with sets of 18 kg

STORAGE

Store in a covered, dry, ventilated location and in the intact packages.
Shelf Life: 6 months.

CLEANING

Equipment and tools should be cleaned with water while product is not hardened. After that, the product will only be removed through mechanical means.

HANDLING AND SAFETY

- ❑ **Denvertec 700** should not be neither ingested or be in contact with the skin and eyes.
- ❑ When the product comes into contact with the skin, rinse with clean running water. If there is contact with the eyes, rinse them with clean running water for 5 minutes and seek medical.
- ❑ It is recommended to observe the safety regulations established by the relevant bodies and to use suitable PPEs.
- ❑ S-2: Keep out of reach of children and animals.
- ❑ **For more information about handling and safety, request the product SISCP⁷.**

PERFORMANCE

DENVER IMPERMEABILIZANTES guarantees the quality of the product against manufacturing defects; however, it does not assume responsibility for the performance of the work, since it does not have direct control over the application conditions. Any indemnification will be limited to the cost of the product.

DENVER IMPERMEABILIZANTES informs that it may alter the product whenever necessary, without prior notice.

DENVER IMPERMEABILIZANTES products should be applied by trained professionals and in compliance with the instructions listed in the application manuals provided by the company.

If you have questions, call:

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- ❑ Denver Impermeabilizantes manufactures a complete line of chemical products for construction. Contact us for more information, training, literature, or technical support.

⁷ Safety information sheet for chemical products.