



# MAXGROUT®



ENVIRONMENTAL PRODUCT DECLARATION

## **NON-SHRINK, HIGH-RESISTANCE FLUID MORTAR FOR FILLINGS, ANCHORAGES AND STRUCTURAL REPAIR**



### DESCRIPTION

**MAXGROUT®** is a one-component non-shrink mortar formulated from special cements and well-graded mineral products which provides high mechanical properties and fluidity. Contains no chlorides or metal particles. It comes in powder form, ready to use mixing only with water.

The product meets the requirements of R4 Class according to EN-1504-3 and the requirements for rebars anchoring according to EN 1504-6.

### APPLICATIONS

- Restoration of concrete structural elements recovering its original shape and function. Standard EN-1504-9 Principle 3 (CR) – Method 3.2 Mortar fillings.
  - Concrete repairs affected by corrosion of reinforcements or defects by pouring concrete into formwork such as columns, beams, retaining walls, piles, etc.
  - Repair of structures damaged by frost, deicing, salts, mechanical impacts, concrete, etc.
  - Repair of structures subject to dynamic loads.

- Reinforcement of concrete to increase or restore the bearing capacity by screed mortar. Standard EN-1504-9 Principle 4 (SS) – Method 4.4 Addition of mortar in reinforcement of columns, beams and slabs.
- Restoration and passivation of steel bars. Standard EN-1504-9 Principle 7 (RP) – Method 7.1 Armor coating mortar increasing and Method 7.2 Replace of contaminated or carbonated concrete
- Anchoring of pillars in concrete prefabricated structures.
- Filling of steel column bases.
- Beam support in bridges.
- Anchoring of bolts, cables, etc.
- Filling of machinery foundation between concrete and steel plates.
- Repairing joints in pavements.
- Void-filling corrective process and consolidation under concrete slabs

#### ADVANTAGES

- High early and ultimate strength.
- Very good adhesion on surfaces, it becomes structural part of the substrate, and it withstands to repeated loads.
- Non-shrink and slightly expansive, thus it does not lose contact with the substrate where is placed.
- High cohesion of the fresh mortar without segregation or bleeding.
- Waterproof, fireproof and non-toxic.

- Unaffected by extreme temperatures once set.
- Contains no chlorides or metal particles, it is non-corrosive for steel surfaces.
- Resistant to water, oil and grease.

#### APPLICATION INSTRUCTIONS

##### Surface preparation

Weak, damaged or deteriorated concrete must be removed down to the structurally sound substrate by mechanical, abrasive or percussion means, sandblasting or high-pressure water jetting, roughening the edges of the repair perpendicular to the surface to a minimum depth of 1 cm.

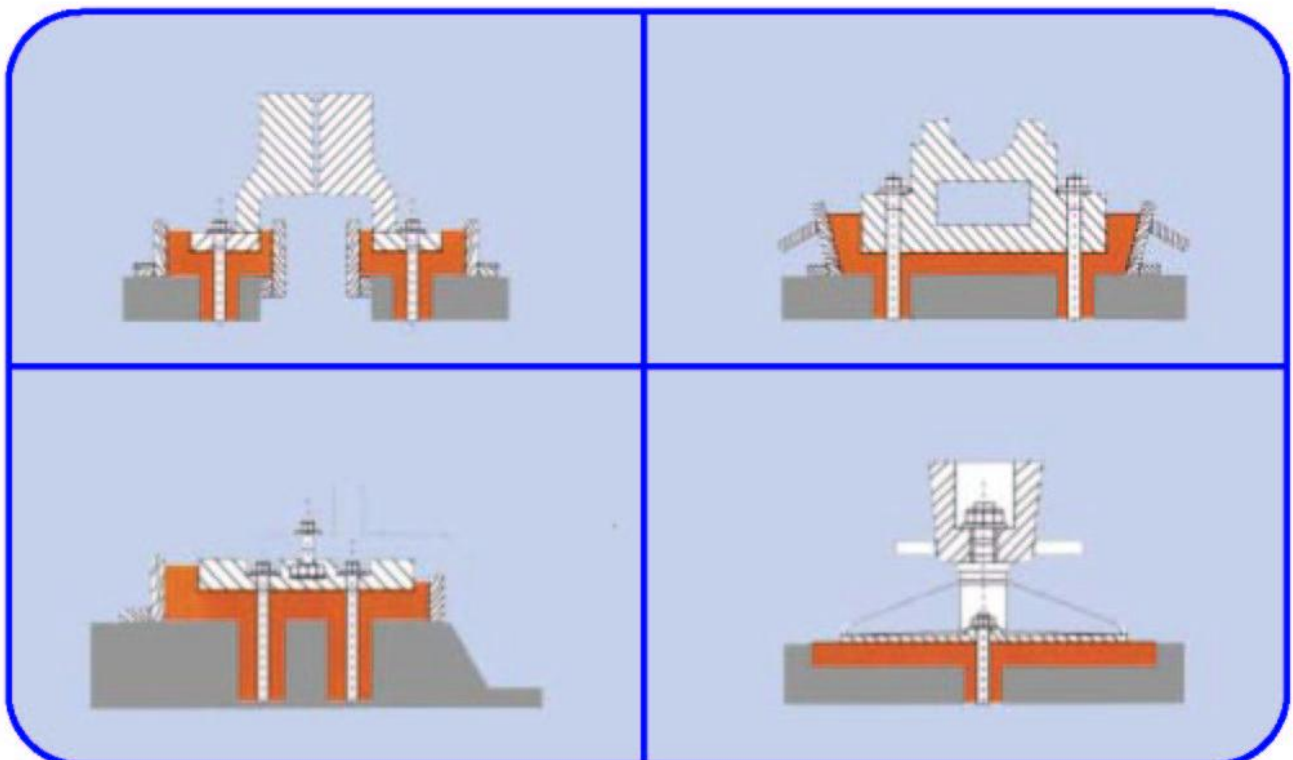
Remove the concrete until the exposed reinforcement is not affected. Clean under the reinforcement to effectively clean the entire perimeter and cover it with a minimum thickness of 1 cm of **MAXGROUT®**.

Remove rust from reinforcement using a steel brush, sandblasting or shot blasting, needle gun, etc. Apply **MAXREST® PASSIVE** rust converter and protector (Technical Bulletin No. 12).

Then wash the surface with pressurised water. The surface must be clean and free of dust, grease, loose particles or any other substance that could affect adhesion. Dampen the surface of the substrate until saturated before pouring but avoid forming puddles.

##### Mixing

Mixing is best done by mechanical means such a slow speed mixing drill (400-600 rpm).



Pour **MAXGROUT®** into a clean drum containing part of the clean water and then start the mixing in order to break up any lumps. Use 3 to 3,5 litres of water per 25 kg bag depending on the required consistency (12 % and 14 % by weight). The mixture should be mixed for 3 to 4 minutes, avoiding to introduce air bubbles into the mix. A concrete mixer can be also used. If product is mixed by hand, increase the mixing time until all lumps disappear. Do not use more water than the recommended ratio. Allow to rest for 1 to 2 minutes so any introduced air bubbles during mixing can disappear. Place **MAXGROUT®** within the following 10-15 minutes.

For volumes greater than about 0,1 m<sup>3</sup> or thickness greater than 4 cm, a mixture adding 8 kg of **DRIZORO® SILICA 3050** with size from 3 to 5 mm per each 25 kg bag of **MAXGROUT®** should be done. Mix all together with 3,0 to 3,5 l of water per bag, depending on the required consistency, but avoid any bleeding or segregation by an excess of water.

## Placing

**MAXGROUT®** is placed simply pouring by gravity directly from the mixing container. In order to avoid cold joints and minimize the chance of air entrapment, **MAXGROUT®** should be placed in a continuously way and also in one direction from one side to the other.

If it is necessary, a manual vibration element can be used in order to help to fill the volume, but an excessive vibration must be avoided as possible because it may cause bleeding and air entrapment. If it is necessary, machine pumping applications are also possible. Air vents should be provided to facilitate the exit of air from the space to be filled.

Use small mould supplements around placing area in order to help to pouring procedure if they are required.



## Application conditions

The optimum application temperature range is from 10°C to 25°C. For applications during hot temperatures and windy conditions, i.e. summertime, it is recommended to use iced or cold water and store **MAXGROUT®** in a cool place. Cooling the base plate with cold water is also advisable with such conditions. In winter, do not apply **MAXGROUT®** when ambient or application surface temperature is below 5°C or if such temperatures are expected within the 24 hours after placing. Do not apply the grout on frozen or frosted surfaces.

## Curing

Curing procedures should begin immediately after placement. With temperatures above 25°C, dry conditions or wind, provide a moist curing by fogging or protecting the area with wet burlap or rags covered with plastic sheeting, during the first 24 hours. A quality curing compound such as **MAXCURE®** (Technical Bulletin No. 49) can also be used. These curing procedures should be observed mainly with high temperature and wind or low humidity conditions.

## Cleaning

All tools and equipments must be cleaned immediately with water after use. Once the grout sets can only be removed by mechanical methods.

## CONSUMPTION

Pure product application: A 25 kg bag of **MAXGROUT®** fills a volume from about 12,5 to 13,5 litres, depending on the mixing water (0,5-0,54 l/kg). Approximately 1,85-2,00 kg of **MAXGROUT®** per square meter and mm of thickness.

Mixture application: A mixture consisting of 8 kg of sand per 25 kg bag of **MAXGROUT®** fills a volume from about 16,25 to 17 litres, depending on the mixing water (0,65-0,68 l/kg). Approximately 1,4 kg of **MAXGROUT®** per square meter and mm of thickness.

The estimated consumption will vary depending on the condition of the substrate. It is recommended to perform an on-site test to determine the exact value.

## IMPORTANT INDICATIONS

- Do not use remains from previous mixtures to make a new mixture.
- Do not mix **MAXGROUT®** using violent mechanical means and high-speed mixers, nor prolong the mixing process excessively.

- Do not use more water for mixing than the ratio recommended.
- Do not add cement or other not specified compound to **MAXGROUT®**.
- Observe the recommended maximum application thicknesses and volumes.
- Do not apply **MAXGROUT®** to structurally weak, painted or burnished surfaces without adhesion. Do not apply to water-repellent substrates, bituminous materials, metal, wood, plaster or paint.
- Do not use **MAXGROUT®** for levelling and finishing of pavements.
- Allow at least 28 days curing time for new concrete and mortar before application.
- Setting times are measured at 20°C; higher temperatures shorten these times and lower temperatures increase them.
- In cold temperatures, keep the product protected from the elements and use warm water.
- In the presence of water or soil containing sulphates, sea water or wastewater, use the **MAXGROUT® ANTISULFAT** version. Do not use in contact with pure, acidic or carbonated water.
- For further information, consult our Technical Department.

## PACKAGING

**MAXGROUT®** is supplied in 25 kg bags. Available also **MAXGROUT® -FM** version, reinforced with 15 mm length metallic fiber, and **MAXGROUT® -F** reinforced with polypropylene fiber, for very high impact resistance, vibrations, and cyclic loads.

## STORAGE

Twelve months in its original unopened containers. Store in a cool, dry place, protected from moisture, frost and direct exposure to sunlight, at temperatures above 5°C.

## SAFETY AND HEALTH

As all cementitious products, **MAXGROUT®** is non-toxic, but it is an abrasive compound. Both protective rubber gloves and safety goggles must be used to prepare and apply the mixture. In case of skin contact, wash the affected areas with soap and water. In case of eye contact, rinse thoroughly with clean water but do not rub. If irritation continues, seek medical attention.

For further information, Safety Data Sheet for **MAXGROUT®** is available by request.

Disposal of the product and its empty packaging must be made according to official regulations. This disposal must be made by the final user.



## TECHNICAL DATA

<b>CE Marking, EN 1504-3</b>	
Description. Structural repair mortar for concrete structures in building and civil engineering works. Type CC and Class R4. Principles / Methods. Concrete restoration by applying mortar by hand (Principle 3-CR/3.1). Structural strengthening by adding mortar (Principle 4-SS/4.4). Preserving or restoring passivity by increasing cover to reinforcement with mortar (Principle 7-RP/7.1), and by replacing contaminated concrete (Principle 7-RP/7.2)	
<b>CE Marking, EN 1504-6</b>	
Description. Cementitious mortar for steel rebar anchoring and filling by pouring. Principles / Methods. Installing bonded rebars in preformed or drilled holes in concrete (Principle 4-SS/4.2).	
<b>Product characteristics</b>	
Colour and appearance	Grey powder
Aggregate size (mm)	2,0
Powder apparent density, (g/cm <sup>3</sup> )	1,30 ± 0,10
Mix water, (% weight)	13 ± 1
<b>Application conditions</b>	
Minimum application temperature, (°C)	> 5
Setting time at 20°C and 50 % R.H. (hours)	5 – 6
Segregation	None
Expansion, (%)	0,05
Slump, vibrating table (mm)	209 (12 %)      >300 (14 %)
<b>Cured product characteristics</b>	
Dry density, (g/m <sup>3</sup> )	2,2 ± 0,1
Standard UNE-EN 1504-3 Structural repair	Class R4
Compressive strength, 28 days, EN 12190 (MPa)	89,2 (12 %) - 78,5 (14 %)**
Anchoring resistance by pull-out method, EN 1881	Displacement ≤ 0,6 mm under load of 75 kN
Chloride ion content, UNE-EN 1015-17:2001, (weight %)	≤ 0,05
Adhesion on concrete, EN 1542 (MPa)	≥ 2,0
Elastic modulus, EN 13142 (GPa)	≥ 20
Carbonation resistance, EN 13295 (mm) Control concrete 4 mm	≤ 4,0
Thermal compatibility	
Part 1: Freeze / Thaw, EN 13687-1 (MPa)	≥ 2,0
Part 2: Thunder shower, EN 13687-2 (MPa)	≥ 2,0
Part 4: Dry cycling, EN 13687-4 (MPa)	≥ 2,0
Capillary absorption, EN 13057 (kg/m <sup>2</sup> ·h <sup>0,5</sup> )	≤ 0,5
Reaction to fire EN 13057-1 (Euroclass)	A1
<b>Consumption*/ Thickness</b>	
Minimum / maximum recommended thickness per layer, (mm)	5 / 40
Consumption as pure mortar (kg/m <sup>2</sup> · mm thickness)	2,0 ± 0,1
Consumption with aggregate (kg/m <sup>2</sup> · mm thickness)	1,5 ± 0,1

\* These figures are for guidance only and may vary depending on porosity, texture, substrate conditions and application method. Perform a preliminary test on-site to ascertain the total consumption exactly

## GUARANTEE

The information contained in this leaflet is based on our experience and technical knowledge, obtained through laboratory testing and from bibliographic material. **DRIZORO®**, **S.A.U.** reserves the right to introduce changes without prior notice. Any use of this data beyond the purposes expressly specified in the leaflet will not be the Company's responsibility unless authorised by us. We shall not accept responsibility exceeding the value of the purchased product. The data shown on consumptions, measurement and yields are for guidance only and based on our experience. These data are subject to variation due to the specific atmospheric and jobsite conditions so reasonable variations from the data may be experienced. In order to know the real data, a test on the jobsite must be done, and it will be carried out under the client responsibility. We shall not accept responsibility exceeding the value of the purchased product. For any other doubt, consult our Technical Department. This version of bulletin replaces the previous one.



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