



# MAXRITE®-R



## ONE-COMPONENT, POLYMER-MODIFIED, CEMENT MORTAR FOR STRUCTURAL CONCRETE REPAIR

### DESCRIPTION

**MAXRITE® -R** is a one-component, cement-based, polymer-modified, structural repair mortar with normal setting time. Its long open time and thixotropy allow the repair of new and old concrete in a simple way, without the need for using any form work, applied manually by trowel or mechanically by spray process. Meets Class R3 according to European Standard EN-1504-3.

### APPLICATION FIELDS

- Restoration of structural concrete elements, recovering original shape and function. EN 1504-9 standard, Principle 3 (CR) – Method 3.1 Applying mortar by hand, and Method 3.3 Spaying mortar in:
  - Repair of concrete affected by corrosion of reinforcements in marine environment, bridges, harbours, dams, concrete structures in industrial areas, etc.
  - Maintenance of industrial areas damaged by aggressive environment, acid rain, atmospheric pollution, etc.
  - Repair of structures damaged by mechanical impacts, de-icing salts, freeze/thaw cycles, etc.
  - Repair of concrete affected by repeated loads.
  - Repair of lines and shapes in pre-cast concrete elements.
- Restoration of passivity for rebars on concrete elements. EN 1504-3 standard, Principle 7 (RP) – Method 7.1 Increasing cover to reinforcement with mortar, and Method 7.2 Replacing contaminated concrete in:
  - Repair of concrete structures subject to carbonation process.
  - Increasing cover for concrete structures.
  - Repair and resurfacing for underground jobs in tunnels, galleries, etc...
  - Floor thickness increase, ramps, etc....

### ADVANTAGES

- Mechanical properties higher than concrete.

- Low water absorption. Withstands freeze/thaw cycles.
- High resistance to carbonation process.
- High adhesion to concrete and reinforcements. No special bonding agent/primer is required. Loads are transmitted onto the repaired structure.
- High impact resistance, repeated loads resistance and mechanical strength. Long-lasting repairs.
- Good thixotropy. Application in successive layers without slump or the need to use form work. Allows high thickness per layer from 5 to 40 mm.
- Easy to mix (only needs water) and to use: good workability.
- Odour-free: Suitable for poor ventilated areas.

### APPLICATION INSTRUCTIONS

#### Substrate preparation

Concrete to be repair must be structurally sound, firm, without cement laitance and as uniform as possible, and preferably with a slight roughness. Remove all damaged and loose concrete until getting sound concrete and, sawcut the edges perpendicularly to the surface to a minimum depth of 5 mm.

Expose all corroded reinforcement bars, removing all concrete until the edges of the bars are not affected by rust. Remove concrete all around the reinforcement for an efficient cleaning and to surround it with a minimum thickness of at least 1 cm of **MAXRITE® -R**.

Eliminate rust from rebars by wire brush, needle gun, sand or shot blasting, etc. Apply the anticorrosion protector and oxide converter **MAXREST® PASSIVE** (Technical Bulletin No. 12) by brush on the rebars.

Concrete surface must be clean and free of paints, coatings, efflorescence, loose particles, grease, oils, curing agents, form release agents, dust, gypsum plasters, organic growth or any other contaminants that may affect to adhesion of the product. For cleaning the substrate, use sand

blasting or high pressure water cleaning methods, not being desirable aggressive mechanical means.

Once substrate has been prepared, dampen thoroughly the entire surface to be repaired with clean water, avoiding the formation of puddles. Allow excess water to drain away, and then start the application once the surface acquires a matte appearance. If it is dry, proceed to saturate it with water again.

### Mixing

A 25 kg bag of **MAXRITE®-R** requires from 3,25 to 3,75 litres (13-15%) of water, depending on existing ambient conditions and desired consistency.

Pour the required amount of water in a clean container, and then slowly add **MAXRITE®-R** to the liquid and mix, using a slow speed electric drill (400-600 rpm) fitted with a disc mixer for about 2-3 minutes until achieving a smooth, lump-free and homogeneous mortar of dry consistency. Do not mix for prolonged period nor use high-speed mixer, which may introduce air bubble. Allow the mixture to rest for 3 to 5 minutes to fully wet out all the powder, and remix briefly before applying.

### Application

For an optimum adhesion prepare bonding slurry by mixing 5 parts of **MAXRITE® -R** with 1 part of water, until achieving a homogeneous consistency without any lumps. Apply the bonding slurry using a **MAXBRUSH** type brush on the surface to be repaired and on the reinforcement bars. Bonding coat must be thoroughly worked into the prepared substrate to fill and cover all micro-pores and other small voids.

When bonding slurry begins to lose brightness but is still fresh, start application of repair mortar. If slurry dries up, or the previous layer is completely set, apply a new slurry coat to continue the job. Apply layers between 5 mm and 40 mm thick. Put special attention in pressing the mortar with the trowel to prevent any air from being trapped.

For applications of several lifts, scratch the surface of each previous layer with a trowel to improve the adhesion of the following one. If a quick drying is observed, damp the surface with cold water. Successive layers should be applied when the previous one is completely set.

For application by spraying methods, it is only necessary to dampen the surface with clean water until saturation, but without puddling. Wait until the surface begins to lose brightness and start placing by projecting **MAXRITE® -R** in layers of thickness between 5 mm and 40 mm. Adjust the spraying pressure to minimize the rebound and ensure proper adhesion of structural repair mortar on the substrate.

Surface can be finished with a sponge, wood, plastic float or trowel, depending on the desired texture. Do not overwork the mortar; minimize trowelling. Shape the last layer as desired before the final setting time.

Once the repair is finished it can be coated with cement-based coating such as **MAXSEAL® -/ FLEX** (Technical Bulletins Nos. 1 and 29), or acrylic-based coatings such as **MAXSHEEN® -/ ELASTIC** (Technical Bulletins Nos. 17 and 142) available in a wide range of colours.

### Application conditions

Do not apply when rain is expected within the first 8-10 h after the application.

The optimum temperature range for application is from 10 °C to 30 °C. Do not apply with substrate and/or ambient temperature is at or below 5°C, or when temperatures are expected to fall below 5 °C within 24 h after application. Do not apply to frozen or frost-covered surfaces.

For applications at hot temperatures (>30°C), low relative humidity and/or windy conditions, i.e. summer time, surface must be wet thoroughly with plenty of water prior to application.

### Curing

Prevent a quick drying of **MAXRITE® -R** application and protect it from direct sunlight with extreme heat (> 30°C), keeping its moisture for at least 24 hours after application, by spraying a fine mist of water without causing the wash-out or by covering with polyethylene sheets or damp burlaps. A quality curing compound such as **MAXCURE®** (Technical Bulletin No. 49) can also be used. Curing procedures should be observed mainly with high temperature (>30 °C) and direct exposure to sunlight, windy conditions or low relative humidity (<50%).

### Cleaning

All mixing and application tools must be cleaned immediately with water after use. Once product hardens, this can only be removed by mechanical means.

### CONSUMPTION

Estimated consumption for **MAXRITE® -R** is 1,80 kg/m<sup>2</sup>.mm with a thickness from 5 mm to 40 mm per layer. A 25 kg bag fills approximately 13,8 litres (0,55 litres per 1,0 kg of product).

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

## IMPORTANT INDICATIONS

- Do not apply on vitrified or enamelled substrates, or treated with transparent water repellent agents. Do not apply on bituminous materials, metal, wood or paints. Do not apply over weak substrates or low strength render/plaster.
- Do not add cements, additives, aggregates or other compounds.
- Use the recommended mixing ratios.
- Do not use leftovers from previous mixes.
- Observe the recommended consumptions and thickness per layer (max. 40 mm thick).
- Setting-time data is measured at 20 °C. Lower temperatures and/or higher R.H. values increase this value.
- With low temperatures keep the product in a warm place and use clean warm water to accelerate the setting time.
- With hot temperatures keep the product in a cool place and preferably use fresh clean water for the mix. Wet the different layers.
- Do not use in contact with very soft water, acid water and/or carbonic water. When sulphates are present, i.e., groundwater, seawater or wastewater, use the **MAXRITE® -R ANTISULFAT** sulphate-resisting version.
- For other uses not specified on this Technical Bulletin or further information, consult the Technical Department.

## PACKAGING

**MAXRITE® -R** is supplied in 25 kg bags. It is available in standard grey colour.

## STORAGE

Twelve months in its unopened and undamaged original sealed packaging. Store in a cool, dry and covered place, protected from moisture, freezing and direct sunlight, at temperatures above 5 °C.

## SAFETY AND HEALTH

**MAXRITE® -R** is not a toxic product but is an abrasive composition. Avoid direct contact with skin and eyes, and breathing dust. Use rubber gloves and safety goggles when handling, mixing and applying the product. In case of contact with skin, wash affected area with soap and water. In case of contact with eyes, rinse immediately thoroughly with clean water but do not rub. If the irritation persists, seek medical assistance.

Consult the Material Safety Data Sheet for **MAXRITE® -R**.

Disposal of the product and its packaging should be carried out according to the current official regulations and it is the responsibility of the final user of the product.

## TECHNICAL DATA

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| <b>Product characteristics</b>                                                                                                                                                                                                                                                                                                                                                                                                                                           |                        |
| <i>CE Marking, EN 1504-3.</i> Description. Structural repair mortar for concrete structures in building and civil engineering works. Type PCC and Class R3. Principles / Methods. Concrete restoration by applying mortar by hand (Principle 3-CR/3.1) and by spraying mortar (Principle 3-CR/3.3). 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) |                        |
| General appearance and colour                                                                                                                                                                                                                                                                                                                                                                                                                                            | Grey powder            |
| Maximum aggregate size, (mm)                                                                                                                                                                                                                                                                                                                                                                                                                                             | <0,8                   |
| Density for powder, (g/cm <sup>3</sup> )                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1,4 ± 0,1              |
| Mixing water, (% by weight)                                                                                                                                                                                                                                                                                                                                                                                                                                              | 14 ± 1                 |
| <b>Application and curing conditions</b>                                                                                                                                                                                                                                                                                                                                                                                                                                 |                        |
| Minimum application temperature for substrate and ambient, (°C)                                                                                                                                                                                                                                                                                                                                                                                                          | > 5                    |
| Initial / Final setting time at 20 °C & 50 % R.H., (h)                                                                                                                                                                                                                                                                                                                                                                                                                   | 3-4 / 6-8              |
| <b>Cured product characteristics</b>                                                                                                                                                                                                                                                                                                                                                                                                                                     |                        |
| Density for cured and dry mortar, EN 1015-10 (g/cm <sup>3</sup> )                                                                                                                                                                                                                                                                                                                                                                                                        | 2,1 ± 0,1              |
| Requirement for repair products, EN 1504-5 (Class)                                                                                                                                                                                                                                                                                                                                                                                                                       | R3 / Structural repair |
| Compressive strength at 28 days, EN 12190 (MPa)                                                                                                                                                                                                                                                                                                                                                                                                                          | ≥25                    |
| Chloride ion content, EN 1015-17 (% by weight)                                                                                                                                                                                                                                                                                                                                                                                                                           | ≤ 0,05                 |
| Adhesive bond on concrete at 28 days, EN 1542 (MPa)                                                                                                                                                                                                                                                                                                                                                                                                                      | ≥ 1,5                  |
| Carbonation resistance, EN 13295, d <sub>k</sub> (mm). Control concrete 4 mm                                                                                                                                                                                                                                                                                                                                                                                             | ≤ 4,0                  |
| Elasticity modulus, EN13412 (GPa)                                                                                                                                                                                                                                                                                                                                                                                                                                        | ≥ 15                   |
| Capillary absorption, EN 13057. w (kg/m <sup>2</sup> ·h <sup>0,5</sup> )                                                                                                                                                                                                                                                                                                                                                                                                 | ≤ 0,5                  |
| Reaction to fire, EN 13501-1 (Euroclass)                                                                                                                                                                                                                                                                                                                                                                                                                                 | A1                     |
| <b>Thickness / Consumption*</b>                                                                                                                                                                                                                                                                                                                                                                                                                                          |                        |
| Thickness per layer (mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 5 – 40                 |
| Consumption (kg/m <sup>2</sup> per mm thickness)                                                                                                                                                                                                                                                                                                                                                                                                                         | 1,80 ± 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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ISO 9001  
ISO 14001

BUREAU VERITAS  
Certification

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