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# durarep GT – MCI

## Grade Trowellable - Migrating Corrosion Inhibitor

**POLYMER MODIFIED, STRUCTURAL REPAIR MORTAR CONTAINING MIGRATING CORROSION INHIBITOR (MCI)**

## DESCRIPTION

**durarep GT-MCI** is a pre-mixed ready to use single component polymer modified, cementitious repair mortar containing a migrating corrosion inhibitor (MCI).

**durarep GT-MCI** is a Class R3 Structural Repair Mortar according to EN1504-3.

**durarep GT-MCI** is based on blended cements, graded siliceous aggregate, proprietary chemical additives, fillers and anti-desiccants. **durarep GT-MCI** is intended for use in hot climatic conditions as a structural repair mortar for the repair and reinstatement of concrete structures and masonry elements. The mortar is suitable for use in aggressive environmental conditions, and where superior chloride and carbon dioxide resistance is required.

When **durarep GT-MCI** is mixed with water, migrating corrosion inhibitor (MCI) is activated to inhibit anodic as well as cathodic steel corrosion processes, not only in contact with the steel, but also by migration through the concrete porosity reaching the rebars.

The migrating corrosion inhibitor (MCI) is a superior technical solution to extend the life time expectancy of reinforced concrete subjected to aggressive corrosion promoters such as oxygen, humidity, chlorides from marine environments.

## USES

**durarep GT-MCI** is particularly suitable for use in hot climatic conditions for repairs to concrete and masonry. The mortar

has been formulated for patching in vertical and overhead applications without formwork as well as for large area rendering.

## ADVANTAGES

- Ready to use (pre-blended)
- Low permeability resists carbonation and chloride attack
- Formulated for use in hot climatic conditions
- Can be used in applications without formwork
- High build, does not require multiple applications
- Non-shrink
- Chloride-free
- Repair inhibits anodic as well as cathodic steel corrosion processes, not only in contact with the steel, but also by migration through the concrete porosity reaching the rebars
- Repairs extend the life time expectancy of reinforced concrete subjected to aggressive corrosion conditions

## SURFACE PREPARATION

Square cut all edges to be repaired to a minimum of 10 mm deep. If the rebar is to be exposed, remove concrete to a minimum of 25 mm behind the rebar.

Never feather edge the product.

Remove all dust and unsound debris contaminants and corrosion deposits.

In areas that do not require demolition and where the concrete is in good sound condition but additional cover is required, roughen the surface by scabbling or grit blasting the surface to remove laitance.

Expose corroded rebar and remove all loose scale and corrosion deposits.

Grit blasting is recommended for this purpose and particular care must be taken to ensure that the back of the rebar is cleaned as well. If corrosion has occurred due to chloride attack, the rebar should be high-pressure washed with clean water directly after the grit blasting application.

## BONDING/PRIMING

**Reinforcing steel:** Apply one coat of **durarep ZR primer** at the rate of 7.5 $m^2$/litre and allow to dry (see separate data sheet).

**Substrate priming:** All areas to be treated should be thoroughly saturated with clean water. Remove excess water from the surface prior to applying one coat of **durabond GP** bonding liquid at the rate of 3 to 4 $m^2$/litre. Firmly brush the **durabond GP** into the surface with a hard-bristle brush ensuring that the primer bonds well to the substrate. **durarep GT-MCI** can be applied to the **durabond GP** as soon as it becomes tacky.

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In critical applications when a substrate repair barrier is required or in applications where the substrate is permanently wet. **epidermix® 345** epoxy bonding agent should be used (See separate data sheet).

| TYPICAL PHYSICAL PROPERTIES | |
|---|---|
| **Compressive strengths – MPa ASTM C109 (40x40x160mm prisms: EN 196-1; EN 12190; EN 1015-11)** | |
| 24 hours | 14 |
| 28 days | >25 |
| **Flexural strength – MPa (EN 12390-5; EN 1015-11)** | |
| 28 days | 6 |
| **Tensile adhesion strength – MPa EN 1542; EN 1015-12)** | |
| 28 days | 2 |
| Coefficient of thermal expansion | 9 to 12 x 10–6/ °C |
| Setting time (EN 196-3) | 6 - 8 hours |
| Wet density (EN 12350-6) | 1875 kg/m³ @ 0,20 water: grout ratio |
| Chemical resistance | Resists acid gas, chloride ions, oxygen & water |

## MIXING

Mixing should be carried out using a forced action mixer. Do not use free fall mixers. For single-bag mixing, a heavy-duty drill fitted with a spiral paddle is suitable. Mix product at slow speed (400 - 500 r/min) Add 4 – 5 litres of water to a suitable container and while stirring slowly add the **durarep GT-MCI** to the water and mix for 5 minutes until the mix is homogeneous and lump free.

Do not exceed the stipulated amount of 5 litres of mixing water. Never mix part-bag batches.

## COVERAGE

25 kg of **durarep GT-MCI** powder mixed with 5 litres of water yields approximately 16 litres. One 25 kg bag **durarep GT-MCI** covers 1,60 m² @ 10 mm thick. **durabond GP** applied as a bonding liquid, covers 4 - 6 m²/litre; as a curing compound, 5 m²/litre. **epidermix® 345** covers 10 m²/2 kg kit.

## APPLICATION

**durarep GT-MCI** is applied by hand or trowel to the primed substrate by packing and tamping the product into place using a trowel and gloved hand.

Care must be taken to ensure that the **durarep GT-MCI** is properly compacted against and around the exposed treated rebar. **durarep GT-MCI** can be applied up to 50 mm thick on large vertical sections and 100 mm thick on smaller pockets. On overhead application the **durarep GT-MCI** should not exceed 20 mm thick per application.

However multiple layers can follow in rapid succession. dura. rep GT-MCI should not be applied thicker than 100 mm per application. If the profile dictates that the mortar must be thicker than 100 mm, then multiple layers are to be applied by hand or trowel. The intermediate layer should be scratch keyed and cured with **durabond GP**. The cured layer is then re-primed prior to application of the next layer of **durarep GT-MCI**

For larger rendered surfaces **durarep GT-MCI** should never be applied less than 10 mm thick.

### Spray application:

**durarep GT-MCI Sprayable** can be spray applied using suitable wet or dry spray techniques and machinery. Spray applied application allows for rapid high-build placement due to increased compaction and densities achieved with this method. For further details regarding equipment and application techniques, consult **a.b.e.®**'s technical department.

**durarep GT-MCI Sprayable** is finished by striking off the surface with a straight edge or wood float. Finish with a steel trowel, wood float or sponge, depending on the finish and texture required.

## CLEANING

For **durarep GT-MCI** and **durabond GP**, clean tools with water before setting. Hardened material can only be removed by mechanical means (**durarep GT-MCI**).

For **durarep ZR primer**, **durabond GP**(dried) and **epidermix® 345** (wet only) clean all tools with **abe® super brush cleaner**.

## PROTECTION ON COMPLETION

Like all cement based materials **durarep GT-MCI** requires curing. As soon as the surface will not be marred, apply **durabond GP**, by brush or spray, at the rate of 6 - 9 m²/litre.

## TEMPERATURE AND RELATIVE HUMIDITY

**durarep GT-MCI** is intended for hot climates, it can however be used in more moderate climates. Surface and ambient temperature must be at least + 5 °C and climbing, ideally between 20 °C and 35 °C. In hot climates above 35 °C additional care should be taken to ensure that when **durarep GT-MCI** is being used, the material should be stored in the shade and mixing water should be cool. If required, consider using ice water to cool the mix.

## MODEL SPECIFICATION

Structural and general purpose cementitious mortar for concrete repairs in tropical climates. **durarep GT-MCI** is a Class R3 Structural Repair Mortar according to EN1504-3.

The repair mortar will be **durarep GT-MCI**, a single-component, general purpose, cementitious mortar applied in accordance with the recommendations of **a.b.e.®**, including **durarep ZR primer** for steel and **durabond GP** acrylic bonding agent or **epidermix® 345** where necessary. The mortar will have a minimum 28 day compressive strength of 30 MPa.

**durarep GT-MCI** is a Class R3 Structural Repair Mortar (EN1504-3):

| | | |
|---|---|---|
| 1 - Determination of compressive strength, **EN 12190** | 38,0 N/mm² | |
| 2 - Chloride ion content, **EN 1015-17** | <0,01% | |
| 3 - Measurement of bond strength by pull-off, **EN 1542** | 1,7 MPa | |
| 4 - Determination of retraction and expansion, **EN 12617-4,** Method controlled movements | Shrinkage: 1,6 MPa | |
| | Expansion: 1,6 MPa | |
| 5 - Freeze-thaw cycling with icing salt immersion, **EN 13687-1** | 0,6 MPa | |
| 6 - Thermal compatibility: Thunder Shower, **EN 13687-2** | 1,1 MPa | |
| 7 - Determination of resistance to carbonation, **EN 13295** | Dk ≤ reference concrete MC(0,45) | |
| 8 - Determination of the module of elasticity in compression, **EN 13412** | 17,2 GPa | |
| 9 - Determination of resistance of capillary absorption, **EN 13057** | 0,11 kg/(m² x h$^{0,5}$) | |
| 10 - Determination of the coeffient of thermal expansion, **EN 1770** | 14,3 µm/m °C) | |
| 11 - Skid resistance, **EN 13036-4** | Dry | 48 |
| | Wet | 28 |

## PACKAGING

**durarep GT-MCI** is supplied in 25 kg polyethylene lined paper bags (Product Code: 30803).

**durabond GP** primer is supplied in 5, 20 and 200 litre drums.
**durarep ZR primer** is supplied in 1 litre tins.

## HANDLING & STORAGE

This product has a shelf life of 12 months if kept in a dry cool place in the original packaging. In more extreme conditions this period might be shortened. Surface and ambient temperature must be at least 5 °C and rising, ideally between 20 °C and 30 °C. period might be shortened.

## HEALTH & SAFETY

Product safety information required for safe use is not included. Before handling, read product and safety data sheets and container labels for safe use, physical and health hazard information. The safety data sheet is available from your local **a.b.e.**® sales representative.

## IMPORTANT NOTE

This data sheet is issued as a guide to the use of the product(s) concerned. Whilst **a.b.e.**® endeavours to ensure that any advice, recommendation, specification or information is accurate and correct, the company cannot accept any liability for application – because **a.b.e.**® has no direct or continuous control over where and how **a.b.e.**® products are applied.

## FURTHER INFORMATION

Where other products are to be used in conjunction with this material, the relevant technical data sheets should be consulted to determine total requirements. **a.b.e.**® has a wealth of technical and practical experience built up over the years in the company's pursuit of excellence in building and construction technology.

Please consult our website for our latest data sheets.

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