

## High Strength Structural Repair Mortar

**Guardian CRM-HS** is a ready to use one part spray or hand applied fibre reinforced, polymer modified high strength repair mortar.

**Guardian CRM-HS** is suitable for structural repairs in buildings, marine structures, bridges and other infrastructure. It is suitable for structural strengthening and preserving/restoring passivity

Complies to EN1504 part 9 and EN1504 Part 3 class R4 and Part 4.

**Principle 3 : Concrete Restoration (CR).**

- Method 3.1 - Applying mortar by hand.
- Method 3.3 – Spraying concrete or mortar.

**Principle 4 : structural strengthening (SS).**

- Method 4.4 – Adding mortar or concrete.

**Principle 5 : Increase in physical resistance (PR).**

- Method 5.3 – Adding mortar or concrete.

**Principle 7 : Preserving or restoring passivity (RP).**

- Method 7.1 – Increasing cover to reinforcement with additional concrete or mortar.
- Method 7.2 – Replacing contaminated or carbonated concrete.

## USES & ADVANTAGES

**Guardian CRM-HS** is a fine, ready to use repair mortar for repairing concrete surfaces including honeycombs, surface defects and minor damage. It can also be used to repair corrosive damage to concrete surfaces.

**Advantages include:-**

- Structural repair mortar.
- Easy to apply. Excellent workability.
- Non shrink. Non toxic. Non corrosive.
- Water & weatherproof.
- Reduces carbonation significantly.
- Excellent adhesion and mechanical strengths.
- Contains no chlorides or salts that may cause corrosion.
- Gives better control and cost saving over two part systems.
- Good colour matching to concrete.
- Non sagging.
- Good resistance to chlorides & sulphates.
- Contains fibres to reduce micro cracking and improve durability.
- High and early mechanical strength.
- Can be applied up to 65 mm thick in single layer.
- Suitable for spray and trowel applied application.
- Also be used as dry pack mortar for various application by adjusting the water content of the mix.

## High Strength Structural Repair Mortar

### PROPERTIES

<b>Component:</b>	Single
<b>Appearance:</b>	Grey powder
<b>Compressive Strength:</b>	47 N/mm <sup>2</sup> at 1 day
(ASTM C109)	75 N/mm <sup>2</sup> at 28 days
<b>Fresh wet Density:</b>	2.25±0.05 kg/ltr.
<b>Slant Shear Bond Strength:</b>	> 10 N/mm <sup>2</sup>
(ASTM C882)	
<b>Water Absorption ISAT:</b>	< 0.004 ml/m <sup>2</sup> /sec at 2 hrs.
(BS 1881-208)	
<b>Pot life:</b>	25-35 min @25 °C
<b>Water Penetration:</b>	< 7 mm
(BS EN 12390-8)	
<b>Drying Shrinkage:</b>	<500 micro strain @ 28 days
(ASTM C157)	
<b>Rapid Chloride Permeability:</b>	very low
(ASTM C1202)	(<800 Coulombs)
<b>Working Time:</b>	20-30 min.

*Note: The above data is typical under laboratory conditions with water to powder ratio of 0.14. These do not constitute a specification and field trials are recommended.*

### SUBSTRATE PREPARATION

The substrate should be clean & sound. Remove dirt, dust, oil, grease, laitance, sealers, release agents, curing compounds & paints.

Exposed rebar should be cleaned & protected with **Guardian Zinc Primer**.

The concrete should be presaturated for preferably 6 hours with water before application.

Substrate temperature : +5oC min +35oC max.

Ambient temperature : +5oC min +35oC max.

### PRIMING

Priming is not normally required. Surfaces to receive **Guardian CRM-HS** should be well saturated with water for at least 24 hrs before application. Where soaking with water is difficult, as an alternative method **Guardian LPA** can be used as a bonding bridge.

### MIXING

**Guardian CRM-HS** is simply mixed with water to yield a stiff easily workable compound with shrinkage compensating properties.

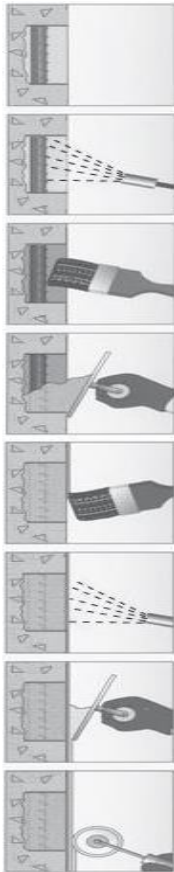
The quantity of water depends on the desired consistency but as a guide we recommend 13-15% by weight of **Guardian CRM-HS**

Mix with a paddle mixer or trowel for at least 3 minutes to ensure a homogenous lump free material is achieved.

Do not try to remix the product after losing workability by the addition of more water.

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### Typical System for Concrete Repair Using Guardian Repair Mortars



Remove damaged concrete and prepare exposed steel reinforcement.

Thoroughly clean area of repair using high pressure water jet to remove all loose debris and contamination. Fingers should be able to be fitted behind rebar.

Mix and apply **Guardian Zinc Primer** to rebar allow to dry. Apply **Guardian LPA** bonding bridge if required. Apply repair material WET ON WET to bonding bridge.

Replace damaged concrete using **Guardian CRM-HS** one component polymer modified mortar, build up in layers if necessary.

Once set firm, the repair and surrounding area coat with **Guardian CURE-SW** or **Guardian CURE-S** curing compound.

Remove any remaining **Guardian CURE-SW** from treated area if to overcoat.

Any further leveling may be achieved with fairing material.

A final coat of **Guardian ELASTOSHIELD** decorative elastomeric, anti-carbonation coating will prevent the ingress of water chlorides and other aggressive influences, effectively halting the carbonation process. **Guardian ELASTOSHIELD** is water vapour permeable, allowing the substrate to breathe, and has excellent elasticity, bridging dynamically moving cracks even at low temperatures.

## METHOD OF USE

Apply **Guardian CRM-HS** with a trowel, spatula, float or by spray. By hand press hard. Work up to recommended thickness in a single layer. Thicker repairs may be achieved by working in layers.

## CURING

To prevent rapid surface drying and crazing, use a suitable curing compound from Guardian range e.g. **Guardian CURE-SW**

## APPLICATION THICKNESS

	<u>Horizontal</u>	<u>Vertical</u>	<u>Overhead</u>
Min	5 mm	5 mm	5 mm
Max	65 mm	50 mm	30 mm

## YIELD

12.4 ltr/25 kg.

## COVERAGE

2.2-2.3 kg/m<sup>2</sup>/mm.

## LIMITATIONS

- During hot weather use chilled water for better workability.
- It is recommended to take adequate measures during placing at high temperatures.
- Properties may change for spray application for the cured material.
- Do not add water or rework with the mixed material which has begun to set.

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### PACKAGING

25 kg. 4 ply plastic lined bags.

### STORAGE & SHELF LIFE

**Guardian CRM-HS** has a shelf-life of up to 12 months in unopened packs kept in a dry store. If high humidity is apparent the life may be reduced to 6-9 months.

### HEALTH & SAFETY

**Guardian CRM-HS** is non-toxic but is alkaline in its nature. When applying gloves & goggles should be worn. Wash off splashes to skin with water. If in eyes wash out with plenty of clean water and seek medical attention. **Guardian CRM-HS** is non-flammable.

### TECHNICAL SERVICE

Guardian offers a comprehensive range of high performance, high quality products suitable for use within all aspects of the concrete repair and protection industry. In addition, the company offers a technical support package to specifiers, end users and contractors, as well as on-site assistance. The Guardian Coating Service Department is available to assist you in the correct use of our products and its resources are at your disposal entirely without obligation.

### QUALITY ASSURANCE (OEM)

ISO 9001: 2015 verified by TUV Nord.

ISO 1400 : 2015 verified by Lloyd's Register International

All statements and data presented herein are given in good faith and believed to be appropriate and reliable. It is given without express or implied warrant or guarantee. Potential users of Guardian's materials are urged to conduct confirmatory trials to satisfy themselves as to the suitability of the selected product for their particular end use prior to purchase.