

## Guncrete E

**High strength, low shrinkage, high build spray applied repair mortar**

### SECTION A: GENERAL COMMENTS

#### HIGH AND LOW TEMPERATURE WORKING

It is suggested that, for temperatures above 35°C or below 5°C, the following guidelines are adopted as good working practise:

- I. Store unmixed materials in dry conditions, in original unopened bags.
- II. In high temperature environments, keep equipment cool, arranging shade protection if necessary. It is especially important to keep cool those surfaces of the equipment that come into direct contact with the material itself.
- III. Try to avoid application during the hottest times of the day, arrange temporary shading as necessary.
- IV. At lower temperatures, *Guncrete E* should be applied only when the substrate temperature and the ambient temperature is above 5°C or 5°C and rising.
- V. Make sufficient material, plant and labour available to ensure that application is a continuous process.
- VI. For mixing water required in the application of the product, it is advised to maintain the water at a maximum of 20°C.

#### EQUIPMENT

It is suggested that the following list of equipment is adopted as a minimum requirement for the correct application of this material:

- Protective clothing :
- Protective overalls, safety helmet and safety shoes
  - Good quality gloves, goggles and face-mask
- Preparation equipment :
- Wire brush
  - Proprietary grit blasting equipment or high pressure washer
- Mixing equipment :
- Measuring jug
  - Festo slow speed drill, 400-500 rpm
    - + Parchem mortar mixing paddle
    - + Parchem 20 litre mixing pail, or
  - Proprietary forced-action mixer for multiple bag mixing
  - Proprietary pump / spray and / or mixer / pump / spray machine
- Application equipment :
- Hand application trowel
  - Wooden float
  - Steel or plastic finishing float
  - Finishing sponge

## **APPLICATION – POINTS OF NOTE**

Parchem operates a policy to encourage the use, where possible, of experienced applicators, since the long-term performance of the materials is dependant upon proper application. For contractors who wish to apply the materials themselves, Parchem is also able to offer technical assistance.

## **SECTION B: APPLICATION METHOD**

### **1.0 REPAIR AREAS**

- 1.1 The areas to be repaired are to be as shown on the drawings or as indicated by the Contract Administrator. The areas are to be clearly marked out on site and agreed with the Contract Administrator before proceeding.
- 1.2 The areas may be adjusted by the Contract Administrator as work proceeds according to the conditions found.
- 1.3 Propping shall be provided as noted on the drawings or as agreed by the Contract Administrator.
- 1.4 The surfaces adjacent to and of areas for repair shall be cleaned to remove any dust, unsound material, plaster, oil, paint, grease, corrosion deposits, organic growth, etc.
- 1.5 Within the repair area, the concrete cover to reinforcement links or main bars shall be determined by cover meter. A small area shall be chiselled out and the concrete cover and the depth of deteriorated concrete confirmed by measurement.

### **2.0 CONCRETE PREPARATION**

- 2.1 Break out unsound concrete as defined within the repair zone. Using a saw, disc cutter, or other suitable tool, the perimeter of the area to be repaired shall be incised to a depth of at least 10mm causing good arises to be formed at the outer edges all to preclude feather edging of the repair mortar.
- 2.2 Where the depth of breaking out corresponds to the depth of concrete cover and thereby exposes reinforcement, breaking out shall continue to expose the full circumference of the steel and to a further depth of 25 mm or as directed by the Contract Administrator. Breaking out shall continue along the reinforcement until non-corroded steel is reached and shall continue 50 mm beyond this point or as directed by the Contract Administrator. Special care shall be exercised to ensure that any reinforcement exposed is not cut or damaged.
- 2.3 After breaking out as specified the exposed surface of concrete shall be tested for carbonation by the use of a semi-aqueous solution of phenolphthalein. The test shall be carried out on the freshly exposed concrete or at least within 30 minutes of being exposed. The test shall be carried out on sound, dry and clean air-blown dust free surfaces. If the concrete substrate still exhibits carbonation in the vicinity of the steel reinforcement, breaking out to remove a further 20 mm shall be carried out and the test repeated. If carbonation is still present the Contract Administrator shall be notified before proceeding further.
- 2.4 It is essential that no carbonated concrete substrate shall be in contact with, or within 5 mm of, the reinforcing bars. In cases where carbonation has reached within 5 mm of the reinforcing bars, the concrete shall be broken out to expose the full circumference of the steel and a further depth of 20-30 mm or as directed by the Contract Administrator.
- 2.5 All concrete surfaces to receive repair mortar shall be of a rough scabbled nature. Saw/disc cut edges shall be grit blasted to lightly roughen.
- 2.6 This preparation shall be such as to leave a sound exposed concrete substrate free from dust, loose particles and any deleterious matter.

## 3.0 REINFORCEMENT PREPARATION

- 3.1 All exposed reinforcement shall be cleaned of corrosion products by wet grit blasting or other approved means to achieve a surface finish to comply with a standard of steel cleanliness such as SA21/2 (BS7079: Part A1 / ISO8501) or as directed by the Contract Administrator. Special care shall be taken to clean out properly any pitting that may have occurred in the steel bar.
- 3.2 When the corrosion products have been removed and if directed by the Contract Administrator, the diameter of the reinforcing bar(s) shall be measured. If considered necessary by the Contract Administrator the existing reinforcement shall be cut out and replaced and/or additional bars added in accordance with instructions. Any deep pitting of the reinforcing bars shall be brought to the attention of the Contract Administrator.
- 3.3 Reinforcement damaged during the removal of concrete or the preparation process shall be brought to the attention of the Contract Administrator and if required, shall be repaired or replaced.
- 3.4 Where the presence of chloride is determined, it is essential that the cleaning process is completed by pressure washing with clean water the total exposed areas of reinforcing steel to ensure the removal of all residual contamination from the pitted surface of steel.

## 4.0 REINFORCEMENT PRIMING

- 4.1 Immediately following preparation and cleaning, the reinforcing steel shall be primed with *Nitoprime Zincrich* single component epoxy primer complying with the relevant parts of BS4652, 1971 (1979) Specification For Metallic Zinc Rich Priming Paint Type 2.
- 4.2 The *Nitoprime Zincrich* shall be brush applied to the cleaned reinforcement ensuring that all exposed steel is fully coated. Special attention shall be paid to the backs of the steel bars and where steel bars are tied together. It is essential that this coat is continuous with that of any adjacent repaired area where zinc-rich primer has been used. Avoid excessive overpainting onto the concrete and allow to dry.

## 5.0 CONCRETE REINSTATEMENT

- 5.1 *Guncrete E* spray mortar shall be used for decks, slabs, horizontal and vertical concrete surfaces to be repaired in one or more layers, each layer 10-150 mm thick where compressive strength >45 MPa and a low level of drying shrinkage is required. The minimum depth for repair shall be 10 mm.

## 6.0 PRIMING CONCRETE

- 6.1 The prepared substrate shall be thoroughly wetted with clean water to totally satisfy absorption and any standing or excess water shall be removed.
- 6.2 No concrete primer shall be used.

## 7.0 APPLICATION OF REPAIR MORTAR

- 7.1 Before dry spraying the repair mortar the contractor shall ensure that sufficient and correct areas for reinstatement are prepared and ready to receive repair mortar.
- 7.2 Only complete bags of *Guncrete E* shall be allowed and part bag mixes not permitted.
- 7.3 The dry spraying shall be carried out strictly in accordance with current product instructions for use and only with appropriate equipment.
- 7.4 The mixing water shall be potable quality and be added at the nozzle. As a guide approximately 2.0 litres per 20 kg bag should be added for dry spray application.
- 7.5 Sagging of the repair mortar is not acceptable and if occurring, all the material of the affected repair shall be completely removed prior to reinstating.
- 7.6 After applying sufficient mortar to achieve a level flush with or slightly proud of the surrounding surface the *Guncrete E* shall be finished by striking off with a straight edge and trowelled / floated depending upon circumstances.

7.7 Repair mortar shall not be applied when the ambient or substrate temperature is below 5°C or above 35°C nor at an ambient temperature of 5°C on a falling thermometer. The applied repair mortar shall always be protected from freezing whilst drying.

## 8.0 CURING

8.1 Details of the methods of curing shall be submitted to the Contract Administrator for approval.

8.2 Curing techniques shall be instigated immediately following application of repair mortar to any given area. Large areas (0.5m<sup>2</sup> at a time) shall be cured as trowelling progresses without waiting for completion of the whole area.

8.3 *Concure WB30* may be low-pressure spray applied as a curing membrane. In fast drying conditions it will be necessary to supplement this with polyethylene sheet taped around its edges. Where a *Dekguard* or *Emer-Clad* protective coating is to be applied over the repair area, then *Nitobond AR* shall be used to as the curing membrane.

8.4 During application and curing, all work shall be protected against direct strong sunlight.

## SECTION C: IMPORTANT NOTE

This method statement is offered by Parchem as a 'standard proposal' for the application of *Guncrete E*. It remains the responsibility of the Customer to determine the correct method for any given application.

Parchem does not accept any liability either directly or indirectly for any losses suffered in connection with the use or application of the product whether or not in accordance with any advice, specification, recommendation or information given by it.