TREMCO
Construction Products Group

Product Specification
Eucocrete HBM
High Build, High Strength, Fibre Reinforced Repair Mortar

MATERIAL SPECIFICATION

Unless otherwise shown on Engineering Drawings, a high strength, fibre reinforced, structural repair mortar meeting the requirements of a Class R4 mortar per EN 1504-3 applied by hand, or wet mix spray shall be used for:

- ❑ Vertical and overhead concrete repairs from 10mm to 90mm.
- ❑ Repairs requiring low permeability, dimensional stability and improved chemical resistance.
- ❑ Repair of reinforced concrete requiring high early strengths and 28-day compressive strengths of up to 57 MPa.
- ❑ Repairs subject to abrasion.

The concrete repair material shall be a blended, pre-packaged cement-based mortar requiring only the addition of potable water.

The concrete repair material shall meet all the following typical performance criteria when tested at 21°C:

TYPICAL PHYSICAL PERFORMANCE			
PERFORMANCE TEST		**TEST METHOD**	**TYPICAL VALUES**
Determination of compressive strength:		UNE-EN 12190:1999	57.6 MPa (Class R4)
	24 Hours		38 MPa
	7 Days		49.8 MPa
	28 Days		57.6 MPa
Bond strength by pull-off (Without primer (28 Days))		UNE-EN 1542:1999	3.4 MPa (Cohesive Failure in Mortar)
Bond strength by pull-off (With primer (28 Days))		UNE-EN 1542:1999	3.5 MPa (Cohesive Failure in Mortar)
Shrinkage		UNE-EN 12617-4:2002. Controlled movements method	3.5 MPa
Expansion		UNE-EN 12617-4:2002. Controlled movements method	3.4 MPa
Carbonation Resistance		UNE-EN 13295:2005	Dk≤ reference concrete MC (0.45)
Elastic Modulus		UNE-EN 13412:2008	23.8 GPa
Chloride Ion Content		UNE-EN 1015-17:2000	<0.01%
Capillary Absorption		UNE-EN 13057:2002	0.2kg/(m² x h0.5)
Coefficient of Thermal Expansion		UNE-EN 1770:1990	14.2 µm/m°C
Working Time at Ambient (21°C)			30 Minutes

A repair material that meets the requirements is:

- ❑ Eucocrete HBM – Available from: TREMCO CPG – www.tremco.com.au

Ancillary products from Tremco Include:

- ❑ Eucocrete Zincrich Primer – Primer for steel reinforcing
- ❑ Eucoweld 2.0 - Primer for substrate
- ❑ Evencure AC or Evencure XDS-NXGEN – Curing Compound

SURFACE PREPARATION

Concrete Surfaces

- ❑ All areas to be repaired are to be clearly marked out by the client's representative in rectangular, or square shapes.
- ❑ Saw-cut concrete around the outlines of the marked-up areas to a minimum depth of 10mm, ensuring all cuts are perpendicular to the surface, to avoiding featheredging.
- ❑ Long narrow repair areas shall be avoided.
- ❑ Side edges of the saw cuts must be mechanically roughened to create adequate mechanical bond.
- ❑ The perimeter of the repair shall be kept to a simple shape and sharp angles avoided.
- ❑ Completely remove all loose, delaminated and weak concrete to the required depth up to the saw cut edge. Avoid abrupt changes in depth.
- ❑ Clean the surface and remove any dust, oil, grease, paint and / or other contaminants.
- ❑ Prepare concrete using acceptable mechanical means and concrete cleaners and degreasers as necessary to obtain clean, sound and rough surfaces. Coarse aggregate shall be exposed.
- ❑ All cracks shall be brought to the attention of the engineer and a determination made of whether the cracks are subject to movement.
- ❑ The cracks shall be repaired as directed by the engineer prior to application of the repair material.

- ❑ Soak concrete thoroughly with potable water for a minimum of 2 hours prior to placement.
- ❑ Concrete shall be saturated and free of standing water at time of repair material placement (surface saturated dry). Any free-standing water should be vacuumed up immediately before application of the repair mortar takes place.

SUBSTRATE PRIMING

- ❑ Clean damp substrate can be primed with a generous coat of Eucoweld 2.0 prior to the application of the repair material.

STEEL REINFORCEMENT

- ❑ All reinforcing steel that has lost bond with the concrete must be fully exposed around the entire perimeter of the bar to a minimum of two times the maximum aggregate size.
- ❑ Continue to remove concrete along all exposed reinforcing bars to at least 50mm beyond the point of corrosion.
- ❑ All steel reinforcing bars must be securely anchored, with an appropriate lap length as directed by the engineer.
- ❑ If more than 10% of the diameter of a reinforcing bar has been deteriorated, the bar will require replacement or will need to be spliced as directed by the engineer.
- ❑ Corroded steel should be mechanically cleaned to remove all signs of oxidation and thoroughly high pressure washed with clean water to ensure removal of debris and residual contamination.
- ❑ All exposed steel reinforcing bars shall be free of all loose scale, rust and other contaminants around the entire perimeter of the bar to achieve a surface preparation at least equivalent to Class SA 2.5 “near white metal” as per AS 1627.4
- ❑ Apply one full coat of Eucocrete Zinc Rich Primer to prepared steel.
- ❑ Particular attention is to be paid to the back of the exposed steel reinforcing bars.
- ❑ The minimum cover over reinforcement shall be in accordance with job specifications.
- ❑ If required, any additional protective treatments, and electrochemical protection for the steel reinforcement shall be undertaken as directed by the engineer, as soon as practically possible after the steel reinforcement has been appropriately prepared.

ENVIRONMENTAL CONDITIONS

- ❑ Repair material & surfaces to be repaired should be pre-conditioned to between 4°C and 35°C.
- ❑ Optimum temperatures will be between 12°C & 25°C
- ❑ Shade the material from direct sunlight as necessary.
- ❑ Store material in an area that is clean, dry & protected from the elements.

MIXING

Drill and Paddle Mixer (Hand / Trowel Applications)

- ❑ Place the minimum amount of pre-measured potable water into a clean mixing bucket.
- ❑ While mixing at a slow speed, slowly add repair material and mix to a uniform consistency.
- ❑ Add remaining water to achieve desired workability.
- ❑ Do not exceed maximum water content as printed on product packaging or an amount that will cause segregation.
- ❑ Total mixing time should be between 4 to 5 minutes.
- ❑ Do not mix more material than can be placed within the working time of the repair material.
- ❑ Do not re-activate the mix by adding additional water. It is however, permissible to re-mix the material after approximately 10 minutes to return the material to a workable state if required.
- ❑ Avoid splitting kits of repair materials i.e., only mix full units for all applications.
- ❑ Place material immediately after mixing.

Pan Mixer (Stationary Barrel with Moving Paddles for wet mix spray applications)

- ❑ Do not exceed one-half the maximum capacity of the mixer.
- ❑ Pre-wet mixer ahead of mixing and then empty excess water.
- ❑ Start by adding the minimum amount of pre-measured clean water to mixer.
- ❑ While mixing, gradually add the repair material and mix to a uniform consistency.
- ❑ Add remaining water as necessary to achieve desired workability.
- ❑ Total mixing time should be between 4 to 5 minutes.
- ❑ Do not exceed maximum water content as printed on product packaging or an amount that will cause segregation.
- ❑ Do not mix more material than can be placed within the working time of the repair material.
- ❑ Do not re-activate the mix by adding additional water.

PLACEMENT

Trowel / Hand (For vertical & overhead repairs)

- ❑ Substrate shall be properly prepared, saturated, free of standing water and primed prior to application of the repair mortar.
- ❑ Apply a first thin layer / scrub coat or repair material and press / compact into the prepared substrate to ensure that all voids are properly filled.
- ❑ The scrub coat must only be applied over the area that can be immediately covered with repair material.
- ❑ Immediately and firmly apply next layer of repair material up to 90mm thick over scrub coat. Multiple green on green layers of mortar may be required to achieve a total build of 90mm.

- ❑ Overhead repair layers may require thinner applications and multiple lifts to prevent sagging.
- ❑ For multiple lift applications, scratch the surface of initial lift using a trowel in a checkerboard pattern to create a mechanical key for the next lift of repair material.
- ❑ Lifts that have set should be dampened with water just prior to applying the subsequent lift.
- ❑ Each lift should be compacted firmly into the previous lift and placement shall proceed continuously until the area to be repaired is completely filled.
- ❑ Finish the repair material to the desired texture when it offers stiff resistance. A float, brush, or trowel may be used for finishing.

Wet Spray (For large vertical & overhead applications)

- ❑ Substrate shall be properly prepared, saturated, free of standing water and primed prior to application of the repair mortar.
- ❑ Contractor must trial mixer / spray equipment and combinations to ensure suitability for use.
- ❑ The repair material must be applied at full thickness where possible.
- ❑ Overhead placement may require placement in layers to prevent sagging.
- ❑ Placement shall follow the procedures contained in ACI 506R-90 Guide to Shotcrete and/or CIA Z5-2010 Shotcreting in Australia: Recommended Practice.
- ❑ Finish the repair material to the desired texture when it offers stiff resistance. A float, brush, or trowel may be used for finishing.

CURING

- ❑ Correct curing is essential to ensure optimum performance.
- ❑ Once the repair material has reached its initial set, the repaired areas should be coated with an approved liquid curing membrane.
- ❑ In extreme weather conditions, supplementary curing with polyethylene sheeting should be considered.

DISCLAIMER

Tremco CPG Australia Pty Ltd products are manufactured to rigid standards of quality. Any product which has been applied (a) in accordance with Tremco CPG Australia written instructions and (b) in any application recommended by Tremco CPG Australia, but which is proved to be defective, will be replaced free of charge.

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