Technical Data Sheet

MARINE MORTAR S

Class R4: Structural Repair Mortar for Marine and Tidal Areas

USES

For the structural repair and profiling of vertical, horizontal and overhead surfaces in marine and tidal areas which are subject to early immersion.

ADVANTAGES

- Pre-packaged material only requiring simple mixing.
- Physical properties of cured materials are similar to base concrete.
- Thixotropic mortar which allows easy trowel application whilst enabling high application thicknesses in both vertical and horizontal situations.
- Low shrinkage and high bond strength ensure monolithic performance of the repair.
- Fibre reinforced to improve tensile and impact strength. Superior to tensile strength of concrete. Excellent low sag properties.
- Dense matrix provides excellent protection against the ingress of acid gases, moisture and chlorides.
- Excellent resistance to wash-out soon after application.
- Economic, polymer modified, fibre reinforced cementitious mortar.
- Non toxic when cured.

COMPLIANCE

Fully complies with the Highways Agency Standard BD 27/86 for the repair of Highway Structures. Approved by the BBA, Certificate No. 05/4276.

PRODUCT DESCRIPTION

MARINE MORTAR S is a thixotropic, fibre reinforced, polymer modified, cementitious mortar with excellent cohesion for use in areas subject to early immersion. It cures rapidly to produce a high strength mortar with enhanced polymeric properties for the repair of voids in aggressive marine environments. **MARINE MORTAR S** is supplied as a two component system in pre-weighed quantities ready for on-site mixing and use, requiring no extra additions of water or aggregate and is suitable for application thicknesses up to 50mm.

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EN1504-3: Concrete repair product for structural repair

PCC mortar (based on hydraulic cement polymer modified)

Compressive Strength:	Class R4 ≥ 45 MPa
Adhesive Bond:	Class R4 ≥ 2.0 MPa
Chloride Ion Content:	≤ 0.05%
Carbonation Resistance:	Passes
Elastic Modulus:	26GPa
Thermal Capability Part 1:	Class R4 ≥ 2.0 MPa
Capillary Absorption:	0.056kg.m^{-2}.h$^{-0.5}$
Dangerous Substances:	Complies with 5.4
Reaction to Fire:	Class F

TECHNICAL DATA

Mixed Colour:	Concrete Grey
Mixed Density:	2150 kg/m³
Min Application Thickness:	5mm
Max Application Thickness:	50mm per layer
Min Application Temperature:	5°C
Max Application Temperature:	35°C

MECHANICAL CHARACTERISTICS (TYPICAL)

Compressive Strength: BS 1881 - Part 116 (1983)

	At 5°C	At 20ºC
1 day	5-10 MPa	15-20 MPa
28 days	40-50 MPa	50-60 MPa

Bond Strength: BS 6319 - Part 4 Slant Shear Method
33-36 MPa

Young's Modulus of Elasticitiy (E): BS 1881-Part 12(1983)
24-27 MPa

Free Plastic Shrinkage: TI-B26 Danish Tech. Institute
0.02% at 28 days

Coefficient of Thermal Expansion: over range 5-55ºC
17.5-18.5 x 10^{-6}/ºC

Flexural Strength: TI-B26 Danish Tech. Institute
28 days 2-15 MPa

Water Permeability: Taywood Test 6.21 x 10^{-16} m/sec
i.e. 10mm **MARINE MORTAR S** = 3000mm of typical concrete

Carbon Dioxide Diffusion Coefficient: Taywood Test
D_{CO2} = 3.29 x 10^{-7} cm^2/sec

Diffusion Resistance Coefficient: μ_{CO2} = 453,000

Equivalent Air Thickness: at 10mm thickness (S)
R = μ_{CO2} x S = 4530m

Based on Engelfried technique, an effective barrier to carbon dioxide is R ≥ 50m

APPLICATION DATA

Application Guide available on request.

PREPARATION

Mechanically remove all damaged concrete back to a sound core. Wherever possible, the full circumference of the steel reinforcement should be exposed to at least 25mm behind the bars and 50mm beyond the point at which corrosion is visible. On cutting back, feather edges must be avoided. The perimeter of the repair area should be stepped to a depth of 10mm. This is achieved by means of saw or disc cutting or preferably using a power chisel. The areas to be repaired must be free from all unsound material, i.e. dust, oil, grease, corrosion by-products and organic growth. Smooth cut surfaces should be roughened, all loose material and surface laitance removed, and reinforcement cleaned to bright steel using wet grit blasting techniques or equivalent approved methods. The strength of the concrete sub-base should be a minimum of 20 MPa.

The prepared substrate should be thoroughly soaked with clean water until uniformly saturated without any standing water.

PRIMING

MARINE MORTAR S is highly polymer modified and as a result concrete surfaces do not generally require a primer. Highly porous substrates should be primed with **BONDING BRIDGE 842**. Two coats of **STEEL REINFORCEMENT PROTECTOR 841** should be applied to the prepared steel by brush. For further information, please refer to relevant data sheets.

MIXING

MARINE MORTAR S must be mechanically mixed using a forced action pan mixer or in a clean drum using a drill and paddle. A normal concrete mixer is NOT suitable. Shake Part A (liquid) and pour into the mixing container and while mixing, slowly add Part B (powder). Normal mixing time depends on the type of mixer used, 2-3 minutes is average. **DO NOT ADD WATER OROTHER MATERIALS TO THIS PRODUCT** . Mix so as to entrain as little air as possible. Bottles of liquid and bags of powder are **not** to be split.

PLACING

MARINE MORTAR S should be compacted in layers not exceeding the maximum recommended thickness using a placement technique to remove entrapped air. If necessary, support with shuttering to allow for compaction if working to reveals, etc. For repairs which require multi layer applications, it is important to ensure that previous layers are well keyed and stable but not fully set (usually 2-6 hours dependent on temperature) prior to the application of subsequent layers. Final profiling of a high quality is achieved with a steel float. Allow to cure for a minimum of 1 hour before being immersed. The area should be protected from wave action or aggressive tidal flow if necessary.

CURING AND OVERCOATING

Normal concreting procedures should be strictly adhered to. It is important that the surface of the mortar is protected from strong sunlight and drying winds with **FLEXCRETE CURING MEMBRANE WB**, polythene sheeting, damp hessian or similar.

CLEANING

All tools should be cleaned with water immediately after use.

SHELF LIFE

12 months in dry, frost free conditions with unopened bags at moderate temperatures no greater than 25°C.

PACKAGING AND COVERAGE

Pack Size:	30kg composite weight
Yield:	14.0 litres of mortar per 30kg pack
Coverage:	A 30kg pack covers 0.7m² at 20mm thickness

SAFETY DATA

Safety Data Sheet available on request.

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