

MasterEmaco[®] S 442

A single component, advanced repair mortar based upon applied Nanotechnology especially designed for repairs to corrosion damaged concrete.

DESCRIPTION

MasterEmaco S 442 is a combination of Portland cement, well graded sands, specially selected fibres and additives formulated to reduce the possibility of shrinkage cracks, and to improve physical and application properties. When mixed with water **MasterEmaco S 442** produces a thixotropic repair mortar, suited to hand and *spray application.

TYPICAL APPLICATIONS

Refurbishment of all structural concrete elements such as:

- Oil gas and petrochemical foundations, supports and retaining walls.
- Jetties piles, harbour walls and other marine structures.
- Columns, Piers and cross beams on highway structures.
- Water production, treatment, intake and outfall structures and sewerage facilities.
- Tunnels, pipes and other below ground construction.
- Cooling towers and chimneys and other industrial environments.
- Beams, columns, walls and slabs in high rise buildings.

BENEFITS

- Improved cement hydration reducing micro-defects, drying shrinkage, and enhancing bond using applied Nanotechnology.
- Dimensional stable repairs, low permeability and enhanced durability through synergistic shrinkage control systems and best binder models.
- Better physical properties, reduced early age and long term cracking tendency, by the use of EE Fibre technology
- Excellent workability for easier mixing placing and finishing

PACKAGING

MasterEmaco S 442 is available in 25 kg bags.

TYPICAL PROPERTIES*

@ 3.6 litres of water / bag

Comp. strength @ 28 days BS 1881 Pt 116 1983	> 70 N/mm ²
Flexural Strength @ 28 days BS EN 1015 Pt 11	> 10 N/mm ²
Tensile Strength @ 28 days BS 6319 Pt 7 1985	> 4 N/mm ²
Wet density	Approx. 2234kg/m ³
EE Fibres	Diameter 16 micron E Modulus > 15 GPa Density 1.18
Synergistic shrinkage control (ASTM C157 :93)	< 250 micro strain @ 28 days
Coutinho ring (cracking)test	> 90 days to cracking
E-Modulus BS 1881 Pt 121 1983	37,500 N/mm ²
Water penetration BS EN 12390 Pt 8 2000	> 5mm
Rapid chloride permeability AASHTO T 277 93	Low
Indirect tensile strength BS 1881 Pt 117 : 1983	> 4.5 N/mm ²
Consistency BS EN 413 Pt2 2005	> 5 mm @ 20 mins
Flow BS EN 1015 Pt 3	> 140mm at 30 mins

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APPLICATION GUIDELINES

Substrate preparation

All repair areas must be clean, sound and free from all dirt dust, loose material and any oil or grease which would impair adhesion.

Defective concrete, honeycombing and cold joints must be removed to obtain a keyed surface. The chosen method of preparation should avoid the formation of micro-cracks and fractured aggregate.

The edges of all repairs should be cut vertically to a minimum depth of 10mm.

Reinforcing steel preparation

Where Protectosil CIT is specified for corrosion protection and to mitigate the 'incipient anode effect' only removal of loose corrosion products from the reinforcing steel by mechanical means is necessary prior to repair

Where Protectosil CIT is not to be applied to the concrete structure and for enhanced durability where chlorides are present in the parent concrete the reinforcing steel should be primed with **MasterEmaco 8100 AP**.

Priming of the substrate

Generally priming of the substrate is not necessary however the concrete should be thoroughly soaked constantly, to a saturated but surface dry condition for a minimum of 4 hours prior to installation of the repair.

For overhead repairs where soaking with water is not practical an alternative method of priming is by the use of **MasterBrace ADH 1414** or **MasterEmaco P 210**.

Priming of reinforcement

Generally priming of the substrate is not necessary

MIXING

It is recommended that only full bags of 25 kg are mixed.

MasterEmaco S 442 should be mixed by mechanical means. Single bags may be mixed using a slow speed drill and spiral paddle or forced action mechanical mixer.

Place the mixing water into the mixing bucket and add the **MasterEmaco S 442** powder and

mix for approximately 3-5 minutes until a smooth lump free consistency is achieved.

The water additions shall be 3.1 to 3.6 litres per 25kg bag. This may be reduced depending upon the consistency required.

Application

Following mixing the **MasterEmaco S 442** can be installed by hand ensuring the initial application is scraped into the substrate to ensure good contact. The **MasterEmaco S 442** shall be compacted well into the repair area to a minimum thickness of 10mm and a maximum layer thickness of 40mm. Depending upon the geometry of the repair area **MasterEmaco S 442** may be installed in a single layer thickness greater than 40mm.

For large scale repairs **MasterEmaco S 442** can be applied by dry or wet spray techniques. Please refer to BASF technical department for guidance.

As soon as the **MasterEmaco S 442** starts to stiffen, finishing can be done by wooden, plastic or steel float depending upon the type of finish required.

CURING

Good curing practice must always be followed. Curing of the installed repair should be carried out by either.

- **MasterKure[®]** curing agents
- Damp Hessian and polythene

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YIELD/COVERAGE

A 25kg bag of **MasterEmaco S 442** will yield approximately 12.75 litres of mortar.

One bag of **MasterEmaco S 442** will cover 1.27 m² at thickness of 10mm. This coverage is theoretical and depends upon the surface profile of the substrate and the wastage.

STORAGE

MasterEmaco S 442 should be stored in dry conditions out of direct sunlight. Shelf life when stored correctly is 12 months.

WATCHPOINTS

- During the summer months or where elevated ambient temperatures are encountered the **MasterEmaco S 442** should be mixed using chilled water to ensure that the mixed temperature does not exceed 32°C.
- *Spray application may change the physical properties of the cured material
- Do not add cement sand, or which may affect it's properties.
- Do not add water or fresh mortar to material which has begun to set.

SAFETY PRECAUTIONS

Avoid contact with eyes and prolonged contact with skin. In case of contact with eyes immediately flush for at least 15 minutes with fresh clean water. Call a physician.

In case of contact with skin wash skin thoroughly.

NOTE

Field service, where provided, does not constitute supervisory responsibility. For additional information contact your local BASF representative.

BASF reserves the right to have the true cause of any difficulty determined by accepted test methods.

QUALITY AND CARE

All BASF Products are manufactured under a management system independently certified to conform to the requirements of the quality, environmental and occupational health and safety standards of ISO 9001 and BASF ESHQ recommendations.

* Properties listed are based on laboratory controlled tests.

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NOTE

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Saudi BASF for Building Materials Co. Ltd.

P.O. Box 1884, Al Khobar, KSA

Tel: +966 13 8538600, Fax: +966 13 8328671

www.master-builders-solutions.sa

