

# MasterEmaco<sup>®</sup> S 101

Single component, shrinkage compensated polymer modified cementitious repair mortar

## DESCRIPTION

**MasterEmaco S 101** is a single component, polymer modified, cementitious repair mortar. It consists of a pre-packed grey powder in sealed bags containing cement, filler and polymer.

When mixed with the specified amount of water a grey trowellable mortar results that is ideally suited for interior or exterior high build application on vertical or overhead work.

Material can be applied up to 50mm thick in one pass without formwork; greater thicknesses can be achieved depending upon the geometry of the repair or by the use of temporary formwork. **MasterEmaco S 101** is specially formulated to produce a shrinkage compensating mortar giving a smooth finish with excellent adhesion and exceptional water resistance.

## PRIMARY USES

- Repair of damaged, decayed, weak or debonded concrete.
- Replacement of concrete that has spalled, chipped or cracked.
- Replacement of concrete suffering from attack as a result of carbonation or ingress of chloride ions.
- Repair of vertical and overhead surfaces.
- Filling of honeycombs in new or old construction.
- Reprofiling of concrete or masonry.

## ADVANTAGES

- Pre-packed, easy to use material, requiring only the simple addition of water.
- Precision made, consistent results.
- Shrinkage compensating.
- High build, non-slump.
- Durable, low permeability and weatherproof.
- Excellent compressive strength.
- Primer gives high bond strength to prepared surfaces.
- Resistant to aggressive media.

## PACKAGING

**MasterEmaco S 101** is supplied in 25kg bags.

## TYPICAL PROPERTIES

Appearance:	Granular grey powder	
Density:	~1750kg/m <sup>3</sup>	
Compressive strength (BS 1881 Pt. 4):	>11 N/mm <sup>2</sup> at 1 day >35 N/mm <sup>2</sup> at 28 days	
Flexural strength (BS 6319 Pt. 3):	>2 N/mm <sup>2</sup> at 1 day > 6.5 N/mm <sup>2</sup> at 28 days	
Tensile strength (BS 6319 Pt. 7):	>1.4 N/mm <sup>2</sup> at 1 day > 3.5 N/mm <sup>2</sup> at 28 days	
Slant shear bond strength (BS 6319 Pt. 4):	>26 N/mm <sup>2</sup> at 28 days	
Water absorption (BS 1881 Pt. 122):	<1.7%	
Water penetration (DIN 1048-70m head of pressure):	Nil at 10mm thickness	
Initial surface absorption (I.S.A.T.) (BS 1881 Pt. 5):	10 min	< 0.01ml/m <sup>2</sup> /s
	30 min	< 0.01ml/m <sup>2</sup> /s
	60 min	< 0.01ml/m <sup>2</sup> /s
Pot life at 20°C:	> 30 mins	
Minimum application temperature:	5°C	
Recommended appl. thickness, dependent upon substrate:	min.	approx. 10mm per layer
	max.	50mm per layer
	over-head	25 - 40mm per layer

## STANDARDS

**MasterEmaco S 101** has been specially formulated to meet the requirements of the following test methods:  
ASTM C387: 04 Type 1.1.2.2 and 1.1.3

## APPLICATION PROCEDURES

### PREPARATION

It is essential that the surface of the concrete to be repaired is sound, clean and uncontaminated. The decayed or damaged areas should be identified and clearly marked. The perimeter of the area should be saw - cut (or cut neatly keeping the sides of the area as square as possible).

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Feather-edging must be avoided, and a full 10mm minimum thickness at the edges of the repair must be maintained. Breaking out should be undertaken using high pressure water jetting or pointed mechanical chisels. The use of scabbling equipment that can fracture aggregate but leave it in place should not be permitted.

Bush hammering / scabbling crushes the aggregate causing a weak surface to bond too. The force applied must not be such that damage to sound adjoining material may occur.

If unsound concrete or corroded reinforcement is found to extend beyond the pre-marked area, extend the cutting as necessary treating the edges as above. If the reinforcement is corroded ensure that the back of the steel is exposed. The prepared surface should be lightly textured but firm. Test the surface for soundness, remove all loose debris, dust and free water. An air lance (using oil free compressed air) or an industrial vacuum, aids thorough cleaning.

Reinforcement should have all traces of rust removed by the use of power tools, abrasive blasting or water jetting. Reinforcing steel should be exposed and cleaned around its full circumference. Clean the steel to a bright metal condition. (SA 2½ of Swedish Standard SIS 05-900: 1967 or BS 4232 Ref. 24 Second Quality. Alternative methods of cleaning reinforcement will be at the Engineer's discretion).

## PRIMING

## REINFORCING STEEL

Immediately after completion of cleaning, brush apply in a continuous film, a coat of **MasterEmaco 8100 AP** to the dry steel. A second coat may be applied after 5 hours at 20°C. See separate datasheet for further information. The priming system to be used on the concrete substrate will depend on the cause of the damage.

## CHLORIDE INDUCED CORROSION

If there are residual chlorides left in the host concrete it is recommended that **MasterBrace ADH 1414**, an epoxy resin is brush applied as a bonding agent. **MasterBrace ADH 1414** has a tack free time of 7 hours at 30°C and the

**MasterEmaco S 101** should be applied within this time.

If the **MasterBrace ADH 1414** dries, then it should be overcoated before application proceeds. Allow 45 minutes standing time between the application of the **MasterBrace ADH 1414** and the subsequent application of **MasterEmaco S 101**.

## NON-CHLORIDE INDUCED CORROSION

The concrete should be thoroughly dampened with clean, fresh water, however, the surface should be free of standing water. Brush apply **MasterEmaco P 210** in a thin, continuous film. Avoid ponding.

For the **MasterEmaco S 101** to achieve optimum bond, in the fresh and cured states, it should be applied to **MasterEmaco P 210** that is tacky.

## MORTAR PREPARATION

## MIXING

Slowly add the **MasterEmaco S 101** powder to clean gauging water, working well to produce a smooth mortar. The consistency of the mix can be adjusted by the addition of more powder or water as necessary.

When mechanical mixing, best results are obtained using a forced action mixer. Again, add the powder to the water and mix for 3 minutes.

Mixing water should be added to **MasterEmaco S 101** at the rate of 4.10 to 4.75 litres of water per 25kg of **MasterEmaco S 101** powder. The addition rate of water is dependent on the workability required. Higher temperatures would generally require more water.

## PLACING AND FINISHING

Whilst the primer (**MasterBrace ADH 1414** or **MasterEmaco P 210**) - is still tacky apply the **MasterEmaco S 101** carefully and fully compact it. Application can be by trowel or by a rubber gloved hand to force the plastic mortar into place. The method chosen will be dictated by the size and situation of the repair.

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**MasterEmaco S 101** can be applied at thicknesses in excess of 50mm at one pass on vertical surfaces and up to 40mm when used in overhead work. Application thickness is dependent on repair size and geometry. Higher build applications can be achieved using temporary formwork.

Where necessary to achieve a desired thickness, the previous layer of **MasterEmaco S 101** mortar should be lightly cross hatched and allowed to take up its initial set prior to the application of the final finishing layer. Trowel the surface to give a smooth finish matching the surrounding concrete. Always give the applied **MasterEmaco S 101** a final firm finish with a steel, wood or plastic float prior to the start of the curing regime.

## CURING

**MasterEmaco S 101** should be cured in accordance with good concrete practice by application of a suitable curing membrane or by covering the work with properly secured plastic sheeting. Protection against rapid drying from wind, sun or excessive heat is necessary.

Curing should begin as soon as the final finish is achieved.

## CHLORIDE CONTAMINATED ENVIRONMENTS

In cases of severe contamination, direct contact with water borne salts and saline solutions, highway structures where de-icing salts are in use and spray can reach the repair, cure with one of the **MasterKure** range of products.

If it is desired to change the appearance of the structure and to hide the "patchwork" appearance of multiple repairs, a pigmented protective coating such as **MasterProtect 300** applied on to a primer coat of **MasterKure 181** should be used. **MasterKure 181** a curing membrane that does not break down, acts as a primer for subsequent applications of certain protective coatings.

**Note:** In addition to shrinkage compensation, this product has been designed to develop tensile strength sufficient to withstand the internal stress generated by volume change to reduce the incidence of drying shrinkage cracking.

## COVERAGE

Priming steel:	MasterEmaco 8100 AP	165m of 16mm diameter bar / ltr.
Priming concrete:	MasterBrace ADH 1414	2-2.7m <sup>2</sup> /kg
Priming concrete:	MasterEmaco P 210	5 to 8 m <sup>2</sup> / litre

## YIELD

Approx. 17.5 litres/25kg bag at average water addition.

## WATHPOINTS

- All existing expansion joints should be carried through the repair from the substrate.
- It is recommended that exposed concrete is protected with a protective coating from the BASF range as an integral part of the overall concrete repair and protection operation.

## EQUIPMENT CARE

Tools should be washed with water immediately after use.

## STORAGE

Store out of direct sunlight, clear of the ground on pallets protected from rainfall. Avoid excessive compaction.

Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging. For specific storage advice consult BASF's Technical Services Department.

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## SAFETY PRECAUTIONS

As with all chemical products, care should be taken during use and storage to avoid contact with eyes, mouth, skin and foodstuffs. Treat splashes to eyes and skin immediately. If accidentally ingested, seek medical attention. Reseal containers after use. Use in well ventilated areas and avoid inhalation. For further information refer to the material safety data sheet.

## 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 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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