

# MasterEmaco® S 433

High strength, shrinkage compensated, free flowing repair micro concrete

## DESCRIPTION

**MasterEmaco® S 433** is a high strength precision micro concrete, requiring only the on-site addition of water to provide a free-flowing concrete ideally suited for placing in nominal thicknesses of 15 mm to 250 mm.

When mixed, applied and cured in accordance with the manufacturer's instructions, **MasterEmaco® S 433** produces a free-flowing precision micro concrete free from segregation and bleeding.

## PRIMARY USES

Whenever a repair material is required to reconstruct heavily congested areas and areas with difficult access.

**MasterEmaco® S 433** is the ideal material for vertical or horizontal structural repairs wherever the use of formwork is preferable to hand or machine applied repair systems.

Its high early and ultimate strength enables formwork to be stripped at an early age thus minimizing delays.

Due to its rhinoplasty nature, **MasterEmaco® S 433** can be utilized as a grout and poured under a head of pressure. **MasterEmaco® S 433** should not be used where the depth of voids to be filled is less than 15 mm.

**MasterEmaco® S 433** shall be poured up to 250 mm in a single pour. However higher thickness shall be achieved by adding 10kg of 6-10 mm washed aggregate per 25 kg bag (12 kg per 30 kg bag).

**Note:** Water content shall remain unchanged in all cases.

**MasterEmaco® S 433** shall be used as the capping medium in conjunction with MasterSeal 910 in the Master Builders Solutions pile head waterproofing system. For further details of this system, please contact your Master Builders Solutions representative.

## TYPICAL APPLICATIONS

General repair and renovation of decayed, defective or damaged concrete such as:

- Columns
- Walls
- Beams
- Honeycombed concrete
- Floors
- Precast elements
- Anchor bolts

## COMPOSITION

**MasterEmaco® S 433** is a pre-packaged blend of Portland cement, carefully graded natural aggregate, specially selected sands, fillers, shrinkage control

agents, micro silica and fluidifiers. When mixed with the stated amount of water it produces a free flowing, cohesive, precision concrete that hardens to produce a dense, durable surface.

## ADVANTAGES

- Guaranteed performance - material is precision blended in the factory to ensure consistent results.
- Micro silica content enhances strength and durability and ensures minimum permeability.
- Early strength development and low heat gain
- High bond strength to steel and concrete
- Free flowing - eliminates honeycombing in areas of congested reinforcement.
- Self compacting - ensures complete filling of spalled/damaged areas.
- Shrinkage compensated - unique formulation provides dual expansion system in plastic and hardened states.
- Easy to use - simple on-site addition of water.
- Low VOC & Emission
- Suitable for pumping & pouring applications

## PACKAGING

**MasterEmaco® S 433** is supplied in 25kg & 30kg bags. Note: Bulk packaging is available upon request.

## TYPICAL PROPERTIES

The strength of **MasterEmaco® S 433** is dependent on many factors which include mixing, water addition, curing, temperature and humidity. The table below gives typical average strengths of **MasterEmaco® S 433** at 25°C, when mixed with 2.8 liters. (flowable) & 3.5 liters (fluid) per 25kg bag.

Compressive strength BS 1881-116	Flowable	Fluid
	N/mm <sup>2</sup>	N/mm <sup>2</sup>
1 day	40	20
3 days	55	35
7 days	65	45
28 days	80	55
Flexural Strength ASTM C 348 (Fluid)	8 N/mm <sup>2</sup>	
Tensile Strength ASTM C 307 (Fluid)	4 N/mm <sup>2</sup>	
VOC (SCAQMD Rule 1113)	< 1g/l	
CDPH (emission rate)	< 10µg/m <sup>2</sup> h	

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Note : Above results are based on the testing of the subject material carried out under standard laboratory conditions and as stated in the respective ASTM/BS/DIN standards.“

Water addition	25kg	2.8-3.5 L / bag
	30kg	3.36-4.2 L / bag
Mixed Density	2200 kg / m <sup>3</sup> @3.5 L/25 Kg bag	

## METHOD OF USE

**MasterEmaco® S 433** is a versatile repair and renovation mortar. Surface preparation, method of use etc. are dependent on the job in hand. Detailed below are general guidelines for the use of **MasterEmaco® S 433**. For full specification details and advice on specific repairs contact your local representative.

## APPLICATION PROCEDURE PREPARATION

It is essential that the surface of the concrete to be repaired is sound clean and uncontaminated corrosion must be removed from steel reinforcement before application of **MasterEmaco® S 433**. In certain instances where there is a significant loss of section, the steel may have to be replaced. Defective areas should have a 20mm deep saw cut made around the perimeter. Cut back all defective concrete to a sound base. Feather edging must be avoided. Care should be taken to ensure formwork is water tight and constructed in line with normal concreting practice. The use of formwork tape is recommended in order to eliminate grout loss. The unrestrained surface of the repair should be kept to a minimum and care should be taken to ensure at least 20mm cover to reinforcement. Soaking prior to placement is essential and provision should be made for drainage outlets. Where **MasterEmaco® S 433** is to be poured ensure access is available and a head of pressure can be maintained.

## PRIMING

Prime reinforcing steel with 2 coats of **MasterEmaco® 8100 AP**. Areas to be repaired should be soaked with water for several hours prior to application of

**MasterEmaco® S 433** to minimize local absorption and to assist in the free flow of the concrete. Before placing ensure concrete surfaces are damp but free of standing water and seal drainage outlets. Ensure formwork is secure to prevent movement during placing and curing. Providing the substrate has been thoroughly soaked priming is not normally necessary. The use of **MasterBrace® ADH 1414**, epoxy bonding agent is recommended where high soluble salts are present in the parent concrete. **MasterBrace ADH 1414** epoxy bonding agent is recommended as it prevents migration to the repair of deleterious salts such as chlorides or sulphates as well as bonding, new concrete to old.

When **MasterBrace® ADH 1414** is used, pre-soaking is not necessary, but care should be taken to ensure formwork is erected and **MasterEmaco® S 433** placed within open time of **MasterBrace® ADH 1414** (generally within 8 hours) at 25°C.

## MIXING

Since **MasterEmaco® S 433** is a precision micro concrete it is important that care is exercised in mixing and placing. It is essential that a mechanically powered mixer is used or suitable drill and paddle. The specified amount of water to obtain the desired consistency can be varied according to site conditions but should not exceed 3.5 Liters per 25kg bag (or 4.2litres per 30kg bag) Under no circumstances should **MasterEmaco® S 433** be re-tempered by the later addition of water. Damp down the inside of the mixer with water prior to mixing the initial batch of **MasterEmaco® S 433**. Ensure the mixer is damp but free of standing water. Add the pre-measured quantity of water. Slowly add the **MasterEmaco® S 433** powder mixing continuously. Mix for 3 to 5 minutes until a smooth, uniform, homogenous mix is achieved.

## PLACING

**MasterEmaco® S 433** should be placed in a single continuous operation. Poured material should be introduced slowly to prevent entrapment of air. It is essential to place the mixed material within 30 minutes of batching.

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## CURING

As with all cementitious material curing is of vital importance to ensure that optimum properties are Obtained

## SUBSEQUENT SURFACE FINISHES

It is recommended that products from the MasterProtect range of protective finishes be applied. Where it is necessary for aesthetic reasons to blend the repair into the background the use of MasterSeal 550 is recommended.

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

Yield approximately 12.6 – 13.0 liters per 25kg  
15.1 - 15.6 liters per 30kg.

## STORAGE

Store out of direct sunlight, clear of the ground on pallets protected from rainfall. Avoid excessive compaction. Shelf life is 1 year when stored as above

## SAFETY PRECAUTIONS

As with other products containing Portland cement, the cementitious material in **MasterEmaco® S 433** grout may cause irritation. In case of contact with eyes, immediately flush with plenty of water for at least 15 minutes. 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 Master Builders Solutions representative.

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

## QUALITY AND CARE

All Master Builders Solutions 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 Master Builders Solutions ESHQ recommendations.

\* Properties listed are based on laboratory controlled tests.

® = Registered trademark of the MBCC-Group in many countries

## CONTACT

Should you require any further information, please do not hesitate to contact us:

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## Disclaimer:

In view of widely varying site conditions and fields of application of our products, this technical data sheet is meant to provide general application guidelines only. This information is based on our present knowledge and experience. The customer is not released from the obligation to conduct careful testing of suitability and possible application for the intended use. The customer is obliged to contact the technical help-line for fields of application not expressly stated in the technical data sheet under "Fields of Application". Use of the product beyond the fields of application as stated in the technical data sheet without previous consultation with Master Builders Solutions and possible resulting damages are in the sole responsibility of the customer.

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