MasterCast® 141

Multi-purpose admixture for cementitious systems. Waterproofs and improves mortars. Bonding agent.

DESCRIPTION

MasterCast 141 is a (SBR) styrene-butadiene co-polymer latex specifically designed for use with cement compositions. It is used in mortar and concretes as an admixture to increase resistance to water penetration, improve abrasion resistance and durability. It is used with cement as a reliable water-resistant bonding agent.

PRIMARY USES

- Concrete repair.
- Floor screeds and toppings.
- External rendering.
- Waterproofing and tanking.
- Fixing slip bricks and tiles.
- Corrosion protection of steel.
- Polymer modified concrete.
- Light weight concrete with EPS Beads.

TYPICAL APPLICATIONS

CONCRETE REPAIR

Spalled concrete, repairing floors, beams and precast slabs.

FLOOR SCREEDS AND TOPPINGS

Abrasion resistant and non-dusting floors, underlay for special finishes, mild chemical and effluent-resistant floors.

EXTERNAL RENDERING

Waterproof, weatherproof and frost resistant render.

WATERPROOFING AND TANKING:

Basements, lift pits, inspection pits, water towers, liquid tanks, effluent tanks and swimming pools.

OTHER TYPICAL APPLICATIONS

Bedding tiles, fixing or re-fixing slip bricks, bonding new concrete to old.

Polymer Modified Concrete ACI 548.3

ADVANTAGES

- Earlier hardening.
- Improved flexibility.
- Greatly reduced shrinkage.
- Prevents bleeding.
- Lower water-cement ratio.
- Increased durability and toughness.
- High resistance to water penetration.
- Good abrasion resistance.
- Good frost resistance and resistance to salt permeation.
- Good resistance to many chemicals and to mineral oil.
- Excellent adhesion to steel and concrete. Adheres well to brick, glass, asphalt, wood, expanded polystyrene and most building materials.
- Prolonged corrosion protection.
- Proven performance.
- Similar thermal expansion and modulus properties to concrete (unlike resin mortars and primers).
- Non-toxic. Can be used with potable water.
- More economical than epoxy or polyester resin mortar.

ACTION

The use of **MasterCast 141** synthetic latex in cement-based slurries and mortars compensates for many deficiencies in the mixes without detracting from their inherent strength and properties.

MasterCast 141 has been developed specifically for use with Portland cements. As ordinary mortar dries out, voids are left which make it permeable and weaker. When **MasterCast 141** is added, the **MasterCast 141** particles bind together to form continuous films and strands - these stitch the opposite sides of the voids together and block up the spaces, thus increasing strength and resistance to water penetration. **MasterCast 141** combined with cement produces an excellent adhesive; each component compliments the properties of the other in this respect.

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COMPOSITION

MasterCast 141 is a milky, white liquid, produced from styrene and butadiene by high pressure emulsion polymerisation. The latex consists of microscopic particles of synthetic rubber dispersed in an aqueous solution. **MasterCast 141** modified mixes may be slightly darker than corresponding unmodified mixes.

PACKAGING

MasterCast 141 is supplied in 20 and 200 litre containers.

PROPERTIES*

Unless otherwise stated typical properties are based on a 3:1 sand/cement mix in which 10 litres of **MasterCast 141** per 50kg of Type I OPC cement has been incorporated.

+Compressive strength:	40N/mm² dependent on cement used and workability.
Slant Shear Bond Strength ASTM C1059 / C1042	>9N/mm²
Freeze thaw resistance:	Excellent.
Water vapour permeability:	Less than 4gm/m²/24hr, through an 11mm thick test piece.*
Adhesion:	Excellent to concrete, steel, brick, glass, etc.
Co-efficient of thermal expansion:	-20°C to +20°C: 12.8 x 10^{-6} -20°C to +60°C: 12.9 x 10^{-6}
Chemical resistance:	Resists mild acids, alkalis, sulphates, chlorides, urine, dung, lactic acid, sugar, etc.
Resistance to water under pressure - 30m head:	Excellent - no water through a 15mm thick test piece.*

+ Indicated strengths are typical. Variation in cement used and workability can give increased strengths.

* **MasterCast 141** added at 10 litre / 50kg cement.

DIRECTIONS FOR USE

SURFACE PREPARATION

Surfaces to which **MasterCast 141** is to be applied should be clean, sound and free of deleterious substances.

Remove all laitance, oil, grease, mould oil or curing compound from concrete surfaces using wire brush, scabbler or other equipment as appropriate. Ensure that reinforcing steel is clean and free from grease or oil; remove scale and rust. When repairing spalled or damaged concrete, ensure that the concrete has been cut back to sound material.

BONDING SLURRY

Wet down absorbent surfaces, such as concrete, brick, stone, etc., ensuring that they are saturated but free of surface water. Prepare a bonding slurry of 1½ to 2 parts cement to 1 part **MasterCast 141**, mixed to a lump-free creamy, consistency. Using a stiff brush, work the bonding slurry well into the damp surface, ensuring that no pinholes are visible. Do not apply bonding slurry at a thickness in excess of 2mm. If a second coat is necessary, it must be applied after the first coat is touch dry. The second coat must be applied at right angles to the first to ensure complete coverage.
(Approximately 20 litre of **MasterCast 141** mixed with 50kg of OPC Type I cement will give a creamy slurry which will cover 20 square metres of substrate dependent on surface texture and thickness applied.)

MATERIALS FOR MasterCast 141 MODIFIED MIXES

Sand

Sand should be sharp washed, well graded and free from excessive fines. For general use select a BS 882 C&M (previously Zone 2) sand. For rendering, select a sand complying with BS 1199 Table 1.

Cement

MasterCast 141 is compatible with all types of OPC, sulphate resisting Types II and V. For use with other cements, contact BASF Technical Services Dept. for advice.

Water

The strong plasticising action of **MasterCast 141** greatly reduces the water cement ratio for any given workability.

MasterCast 141

Standard dose is 5 litres per 50kg of cement. For more demanding situations, such as exposure to chemicals or wear, 10ltr per 50kg of cement is recommended.

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MIXING

Mixing should be preferably be carried out in an efficient concrete mixer - where available a pan type mixer, such as a Creteangle, is recommended. Hand mixing is only permissible when the total weight of the mix is less than 25kg. Charge the mixer with the required quantity of sand and cement and premix for approx. 1 minute. Add the **MasterCast 141** and mix for 2 minutes only, to avoid excessive air entrapment. Finally, without delay, add the water slowly until the required consistency is achieved. Owing to the strong plasticising properties of **MasterCast 141**, rapid thinning can occur - avoid adding excessive water!

GUIDE TO APPLICATION

RENDERING TO VERTICAL SURFACES

Apply the bonding slurry to the prepared surface and then apply the **MasterCast 141** render into the wet bonding slurry.
Apply **MasterCast 141** modified mortars in coats at a maximum thickness of 6mm per coat. Greater thickness can lead to slumping. Several coats can be applied in fairly rapid succession, usually within 15 to 30 minutes of the previous coat. Close the surface using a wooden float or steel trowel. Another method is to let the first coat of render dry overnight and apply another slurry coat before applying the second coat of render. For further details refer to the "Guidelines and Recommendations using **MasterCast 141** ".

SCREEDS AND TOPPINGS, APPLIED TO HORIZONTAL SURFACES

Screeds, patches, etc., based on **MasterCast 141** modified cements, can be laid to any thickness from 60mm down to 6mm minimum. After mixing, the **MasterCast 141** modified mix should be placed over the still wet bonding slurry, well compacted and struck off to level. It may then be trowelled to the required finish using a wooden float or steel trowel.

Note: Whenever screeds are being laid over existing concrete surfaces, it is important that expansion joints in the sub-floor are carried through the **MasterCast 141** modified mix. This can be done by fitting a temporary timber batten wrapped in polythene sheet into the joint.

CURING

Correct curing of **MasterCast 141** modified mixes is important.
Moisture cure for 24 hours and then allow to dry out slowly. (Note that initial curing is necessary to provide good curing conditions for the hydration of the Portland cement, then the latex mortar must be allowed to dry out to permit the latex particles to join together to form the continuous films and strands.)

WATCHPOINTS

1. Never apply **MasterCast 141** modified mixes or concrete to a bonding slurry that has been allowed to dry out.
2. Always use fresh, cool cement and sharp, clean, well graded aggregate, free of excessive fines.
3. Keep mixing time to a minimum - see recommendations.
4. Until the user becomes familiar with its workability the appearance of a **MasterCast 141** modified mix is deceptive; when of correct consistency it may appear to be too dry. However, it will be found that it can be compacted and trowelled satisfactorily. Avoid using excessive water.
5. Trowelling should proceed with the work. Do not overtrowel and avoid retrowelling. Protect from too rapid drying out prior to trowelling.

EQUIPMENT CARE

All tools should be cleaned with water immediately after use. If delayed, use of soap and coarse wire wool may help. Solvents such as white spirit can be used to remove partially hardened mortar.

DOSAGE RATE

For all normal use the standard dose of 5ltr of **MasterCast 141** per 50kg cement is adequate. For extreme conditions and/or when adhesion, waterproofing, water vapour resistance or chemical resistance are critical, the dosage should be increased to 10ltr of **MasterCast 141** per 50kg cement. For this higher dosage, the extra water addition required is low and, therefore, use of wet aggregate may result in excessive workability.

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COMPATIBILITY

MasterCast 141 is specifically designed for use with Portland cements. It is also compatible with sulphate-resisting cement, Types II and V.
Lime (more than 10% cement weight), air entraining agents and masonry cement must not be used in conjunction with **MasterCast 141**.

EFFECTS OF OVER DOSAGE

The recommended levels should not be exceeded. Gross overdosage at an acceptable workability is not likely, but will result in an increase of the polymer properties to the detriment of the compressive strength.

SPECIFICATION CLAUSE

All cementitious mixes stated shall be modified with **MasterCast 141**, styrene butadiene copolymer latex, manufactured by BASF or similar approved, to the following specification:-

Composition	A milky, white styrene butadiene copolymer latex, specifically made for use with Portland cement.
pH	10.5.
Specific gravity	1.01.
Mean particle size	0.17 micron.
Butadiene content	40 +/- 1% by weight of **MasterCast 141** polymer.

The material shall be used in bonding slurries at the rate of approximately 1 volume of **MasterCast 141** to 1½ to 2 volumes of OPC cement and in cementitious mixes at the rate of 5 or 10 litres per 50kg cement, as recommended in the manufacturer's literature.

STORAGE

Store under cover, out of direct sunlight and protect from extremes of temperature.
Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging. For specific storage advice consult MBCC's Technical Services Department.

SAFETY PRECAUTIONS

Avoid contact with eyes and prolonged contact with skin. During application always wear gloves and appropriate clothing to minimise contact. In case of contact with eyes, immediately flush with plenty of water for at least 15 minutes. Should skin contact occur, wash immediately with soap and water. Seek the advice of a physician should symptoms persist.

NOTE

Field service, where provided, does not constitute supervisory responsibility. For additional information contact your local MBCC representative.
MBCC reserves the right to have the true cause of any difficulty determined by accepted test methods.

QUALITY AND CARE

All products originating from MBCC's Dubai, UAE facility are manufactured under a management system independently certified to conform to the requirements of the quality, environmental and occupational health & safety standards ISO 9001, ISO 14001 and OHSAS 18001.

* Properties listed are based on laboratory controlled tests.

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

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