

# MasterEmaco® OneMix™ Concrete Repair System

Versatile concrete repair mortar incorporating Power Paks™ that create multiple product solutions

## PACKAGING

### Base Bag

50 lb (22.69 kg) polyethylene bags

### Power Paks

Self-Consolidator Power Pak

Polymer Modifier Power Pak

Corrosion Protection Power Pak

Fiber Reinforcing Power Pak

Accelerator Power Pak

Retarder Power Pak

Each power pak come

6 Power Paks in a polyethylene bag inside the pouch; 20 Pouches in a box; 120 total power paks in a box

## YIELD

0.39 ft<sup>3</sup> per 50 lb bag (0.011 m<sup>3</sup> /22.69 kg)

## SHELF LIFE

Base bag: 12 months when properly stored

Power Paks: 12 months when properly stored

## STORAGE

Store in unopened containers in a cool, clean, dry area

## VOC CONTENT

0 g/L less water and exempt solvents

## DESCRIPTION

MasterEmaco OneMix Concrete Repair System is a multi-purpose repair mortar. When mixed alone with water produces a quality vertical, overhead and horizontal repair material. Using our proprietary Power Pak System enhances the performance characteristics of the OneMix system.

## PRODUCT HIGHLIGHTS

- Finishability
- Placeability
- Non-sag consistency able to be placed in 2" (51 mm) thick lifts \* (Vertical Applications)
- Readily sculpted, shaved, and finished to match existing substrate
- Freeze/thaw stability
- High Strength
- Pumpable
- Screedable

## APPLICATIONS

- Interior and exterior
- Large volume structural repairs
- Repair or replacement of concrete elements
- Formed horizontal, vertical and overhead repairs
- Above and below grade
- Spalls or holes in concrete
- Deteriorated edges

## SUBSTRATES

- Concrete
- Masonry
- Structural Concrete

\*With addition of polymer and fiber Power Paks

## AVAILABLE MasterEmaco OneMix Power Paks

Vertical and horizontal repairs only require the addition of potable water for many applications. The addition of MasterEmaco OneMix Power Paks adds versatility and provides enhanced performance as follows:

- Self Consolidation Power Pak creates form and pour material
- Accelerator Power Pak speeds up setting time
- Retarder Power Pak slows down setting time
- Polymer Power Pak increases adhesion and improves finishability
- Corrosion Power Pak provides protection for re-enforcing steel
- Fiber Power Pak reduces plastic shrinkage cracking and improves non-sag properties



## Mixing Instructions



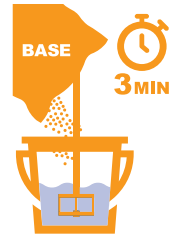
1) Add water to mixing container



2) Add Power Pak to mixing container



3) Start mixer



4) Slowly add Base Material while mixing. Mix for 3 minutes.

## Water Requirements (field conditions may require minor adjustments)

### Vertical

2.5 Quarts (2.37L)

Power Pak Optional

### Horizontal

2.75 Quarts (2.60L)

Power Pak Optional

### Self-Consolidating (SCC)

3.0 Quarts (2.84L)

Power Pak SCC Required

## Power Pak Options (can be used in combination)

### Accelerator

Speeds up cure rate of mix

### Retarder

Slows down cure rate of mix

### Polymer

Improves finishing and reduces cracking

### SCC

Required for self-consolidating, form and pour/pump applications

### Corrosion Inhibitor

Protects steel reinforcement from corrosion

### Fibers

Improves non-sag and tensile properties



In all cases, Power Paks should be added to the mix water before the base material (bag) is slowly added and mixed.

Consult the OneMix Technical Data Guide for complete information regarding mixing and placement of OneMix repair materials and the properties with Power Paks.

## SIX UNIQUE POWER PAKS THAT ENHANCE THE PHYSICAL PROPERTIES OF BASE MATERIAL



Table 1

**Working Time**

<b>BASE MATERIAL</b>	<b>AT 50 °F (10 °C)</b>	<b>AT 73 °F (23 °C)</b>	<b>AT 90 °F (32 °C)</b>
Working Time (minutes)	60	55	30
Initial Set (minutes)	283	163	142
Final Set (minutes)	480	266	183
1 Day Compressive Strength	1000 psi (6.9 MPa)	3000 psi (20.7 MPa)	3000 psi (20.7 MPa)
7 Day Compressive Strength	6000 psi (41.4 MPa)	6000 psi (41.4 MPa)	6000 psi (41.4 MPa)
28 Day Compressive Strength	7500 psi (51.7 MPa)	7500 psi (51.7 MPa)	7500 psi (51.7 MPa)

**MasterEmaco OneMix Concrete Repair Base Material – Test Data**

<b>TEST</b>	<b>BASE</b>	<b>TEST METHOD</b>
Compressive Modulus (28 days)	4.30x10 <sup>6</sup> psi (2.96X10 <sup>4</sup> MPa)	ASTM C469
Flexural Strength (1 day)	800 psi (5.5 MPa)	ASTM C293
Flexural Strength (7 days)	950 psi (6.5 MPa)	ASTM C293
Flexural Strength (28 days)	1100 psi (7.5 MPa)	ASTM C293
Direct Tensile Bond Strength (28 days)	275 psi (1.8 MPa)	ASTM C1583
Direct Tensile Strength to Concrete (7 days)	200 psi (1.37 MPa)	ASTM C1583
Split Tensile Strength (7 days)	300 psi (2.0 MPa)	ASTM C496
Split Tensile Strength (28 days)	500 psi (3.4 MPa)	ASTM C496
Slant Shear Bond Strength (1 day)	1300 psi (8.9 MPa)	ASTM C882
Slant Shear Bond Strength (7days)	2000 psi (13.7 MPa)	ASTM C882
Slant Shear Bond Strength (28 days)	2200 psi (15.1 MPa)	ASTM C882
Expansion (28 days)	<0.1%	ASTM C157
Drying Shrinkage (28 days)	<0.1%	ASTM C157
Freeze-Thaw Resistance (28 days)	99%	ASTM C666
Crack Reduction Ratio (CRR)	N/A	ASTM C1579

Note: All results determine at 11.5 % water content and at 73 °F (23 °C)

Table 2

MasterEmaco OneMix – Test Data with Power Paks

POLYMER

TEST	RESULTS	TEST METHOD
Direct Tensile Strength to Concrete (7 days)	255 psi (1.8 MPa)	ASTM C1583
Crack Reduction Ratio (CRR)	100% / No cracks	ASTM C1579

FIBERS

TEST	RESULTS	TEST METHOD
Direct Tensile Strength to Concrete (7 days)	310 psi (2.1 MPa)	ASTM C1583
Crack Reduction Ratio (CRR)	100% / No cracks	ASTM C1579

ACCELERATOR

WORKING TIME	AT 50 °F (10 °C)	AT 73 °F (23 °C)	AT 90 °F (32 °C)	TEST METHOD
Working Time (minutes)	60	40	N/A	ASTM C191
Initial Set (minutes)	190	122	N/A	ASTM C191
Final Set (minutes)	360	202	N/A	ASTM C191
1 Day Compressive Strength	1500 psi (10.3 MPa)	3000 psi (20.7 MPa)	N/A	ASTM C109
7 Day Compressive Strength	6000 psi (41.4 MPa)	6000 psi (41.4 MPa)	N/A	ASTM C109
28 Day Compressive Strength	7500 psi (51.7 MPa)	7500 psi (51.7 MPa)	N/A	ASTM C109

RETARDER

WORKING TIME	AT 50 °F (10 °C)	AT 73 °F (23 °C)	AT 90 °F (32 °C)	TEST METHOD
Working Time (minutes)	N/A	75	30	ASTM C191
Initial Set (minutes)	N/A	335	174	ASTM C191
Final Set (minutes)	N/A	484	247	ASTM C191
1 Day Compressive Strength	N/A	3000 psi (20.7 MPa)	3000 psi (20.7 MPa)	ASTM 109
7 Day Compressive Strength	N/A	6000 psi (41.4 MPa)	6000 psi (41.4 MPa)	ASTM 109
28 Day Compressive Strength	N/A	7500 psi (51.7 MPa)	7500 psi (51.7 MPa)	ASTM 109

SELF CONSOLIDATOR

TEST	RESULTS	TEST METHOD
Consistency, flow test, in (mm)	11.25 (285) 45% increase vs. base	2" X 4" cylinder

CORROSION INHIBITOR

TEST	RESULTS	TEST METHOD
Time to Corrosion	90 days (130% improvement)*	Accelerated Corrosion Test (lollipop test)

\*vs. 4000 psi (30MPa) concrete

Note: The results in table 2 document additions to those listed in table 1

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### HOW TO APPLY SURFACE PREPARATION CONCRETE

1. Concrete must be structurally sound and fully cured (28 days).
2. Saw cut the perimeter of the area being repaired into a square with a minimum depth of ½" (13 mm) for horizontal repairs and ¼" (6mm) for vertical and overhead repairs.
3. Refer to current ICRI Guideline no. 310.2R for surface prep requirements to permit proper bond.

### REINFORCING STEEL

1. Remove all oxidation and scale from the exposed reinforcing steel in accordance with ICRI Technical Guideline No. 310.1R.
2. For additional protection from future corrosion, coat the prepared reinforcing steel with MasterProtect P 8100 AP or MasterEmaco P 124.

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### VERTICAL APPLICATION

1. Dampen the surface with potable water; it must be saturated surface-dry (SSD) with no standing water.
2. With a gloved hand, scrub a small quantity of mixed material into the SSD substrate. Thoroughly key in and work the material throughout the cavity to promote bond. Do not apply more of the bond coat than can be covered with mortar before the bond coat dries.
3. Apply material in lifts of ¼–2" (6–51 mm). Avoid featheredging. For optimum mechanical bond between successive lifts, thoroughly score each lift and allow to reach initial set before the next layer is applied. Placement time is 20–30 minutes at 70 °F (21 °C) and 50% relative humidity.
4. Trowel, shave or shape material to the desired finish after initial set.
5. The recommended application range of MasterEmaco OneMix is from 40 to 90 °F (4 to 32 °C). Follow ACI 305 and 306 for hot or cold weather guidelines.

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### FORM AND POUR APPLICATION

1. Build forms in accordance with ACI 347R. Keep the unrestrained surface area of the repair to a minimum.
2. Saturate the prepared concrete substrate by

- filling the prepared formwork with clean water 24 hours before placement.
3. Immediately before the placement of MasterEmaco OneMix, completely drain this water and seal the drainage outlets, leaving the substrate saturated surface-dry (SSD) with no ponded water remaining.
  4. In jobsite circumstances where the formwork cannot be filled with water to achieve an SSD surface, the prepared concrete substrates must be thoroughly hosed down with clean water to achieve an equal level of saturation. Apply the repair material with sufficient pressure to ensure intimate contact with the substrate.
  5. Alternatively, a long open-time bonding agent such as MasterEmaco P 124 may be used in place of a saturated substrate. In such a case, place the MasterEmaco OneMix before the bonding agent becomes tack free.
  6. Immediately after mixing, pump or pour the MasterEmaco OneMix into the formed area. The material does not require vibrating.
  7. The recommended temperature range for application of MasterEmaco OneMix is 40 to 90 °F (4 to 32 °C). Follow ACI 305 and 306 for hot or cold weather guidelines.

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### SCREED APPLICATION

1. Dampen the surface with potable water; it must be saturated surface-dry (SSD) with no standing water.
2. After removing all standing water, thoroughly scrub a thin layer of bond coat into the saturated surface with a stiff-bristled broom or brush. Do not dilute the bond coat with water. Do not apply more bond coat than can be covered with mortar before the bond coat dries. Do not retemper the bond coat.
3. Immediately place the repair mortar from one side of the prepared area to the other. Work the material firmly into the bottom and sides of the patch to ensure good bond. Level the MasterEmaco OneMix and screed it to the elevation of the existing concrete. Apply the appropriate finish.
4. Finish the completed repair, as required, taking care not to overwork the surface.
5. The recommended application range of MasterEmaco OneMix is from 40 to 90 °F (4 to 32 °C). Follow ACI 305 and 306 for hot or

- cold weather.
5. A maximum of 15 minutes should be allowed to mix, place and finish MasterEmaco OneMix at 70 °F (21 °C).

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### MIXING

1. Precondition material to 70 °F ±5° (21 °C ±3°) before mixing.
2. Add recommended potable water for the intended application to the mixing container for each bag of MasterEmaco OneMix. If required, add the correct amount of aggregate to the mixer.
3. Add Power Pak directly to mix water. There is no need to open Power Pak.
4. Add the base powder to the water while continuously mixing with a slow speed drill and paddle, mortar mixer, or other forced action mixer.
5. Mix for a minimum of 3 minutes until fully homogeneous.

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### AGGREGATE EXTENSION

1. For repair areas 2–6" (51–150 mm) in depth, the minimum recommended addition is 15–25 lbs. (6.8–11.4 kg) of ¾" (9 mm) washed, graded, rounded, SSD, low absorption, high-density aggregate per 50 lbs. (22.6 kgs) bag.
2. For areas greater than 6" (150 mm) in depth, the recommended addition is 25 lbs. (11.4 kgs) of ¾" (9 mm) washed, graded, rounded, SSD, low absorption, high-density aggregate per 50 lbs. (22.69 kgs) bag.
3. Aggregate must comply with the requirements of ASTM C 33.

#### CURING

1. Leave the formwork in place until the compressive strength reaches 2,500 psi (17.2 MPa) or a strength specified by the engineer.
2. Cure with an approved curing compound compliant with ASTM C 309 or preferably ASTM C 1315 (MasterSeal CC 1315 WB). If the repair area will receive a coating, wet curing is recommended.

#### CLEAN UP

Clean tools and equipment with clean water immediately after use. Cured material must be removed mechanically.

#### FOR BEST PERFORMANCE

- Recommended ambient, surface, and material temperature is 40-90 °F (4-32 °C).
- Do not mix longer than 5 minutes.
- Minimum application thickness is 0.5" (13mm) for horizontal repairs, 0.25" (6mm) for vertical and overhead repairs.
- Do not mix partial bags.
- Do not vibrate.
- Do not add other additives other than the recommended Power Pak.
- For professional use only; not for sale to or use by the general public.
- Make certain the most current versions of product data sheet and SDS are being used; visit [www.master-builders-solutions.com/en-us](http://www.master-builders-solutions.com/en-us) to verify the most current versions.
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