

# MasterEmaco® N 400 RS

Rapid-setting polymer-modified high-build repair mortar for vertical and overhead surfaces

FORMERLY HBA REPAIR MORTAR

## PACKAGING

45 lb (20.4 kg) polyethylene bags  
(MasterEmaco A 400 liquid sold  
separately)

NO. 2 KIT: 225 lbs (102 kg) powder  
and 5 gallon (18.9 L) liquid

## YIELD

45 lbs (20.4 kg) of MasterEmaco N 400  
mixed with 1 gallon (3.8 L)  
of MasterEmaco A 400 yields  
0.5 ft<sup>3</sup> (0.015 m<sup>3</sup>)

NO. 2 KIT: 2.50 ft<sup>3</sup> per 225 lb bag  
(0.076 m<sup>3</sup> per 102 kg bag)

## STORAGE

Store and transport in unopened  
containers in cool, clean, dry  
conditions. Do not allow the liquid  
component to freeze.

## SHELF LIFE

12 months when properly stored

## VOC CONTENT

0 g/L less water and exempt solvents

## DESCRIPTION

MasterEmaco N 400 RS is a two-component polymer-modified rapid-setting mortar. It is used to repair vertical and overhead concrete surfaces in deep lifts.

## PRODUCT HIGHLIGHTS

- Very rapid setting so repairs can be returned to service within hours
- Very high-build; up to 3" on vertical and 1½" on overhead surfaces
- Shrinkage compensation minimizes stresses on the bond line
- Low permeability provides protection against carbon dioxide and chloride intrusion
- Polymer modification improves adhesion and provides increased freeze/thaw stability
- Readily mixes with MasterEmaco A 400 to produce a workable consistency

## APPLICATIONS

- Interior and exterior
- Vertical and overhead
- Above and below grade
- Spalls or holes in concrete
- Deteriorated edges

## SUBSTRATES

- Concrete
- Masonry

## HOW TO APPLY

### SURFACE PREPARATION

1. Substrate 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 ¼" (6 mm).
3. The surface to be repaired must be clean, free of laitance and saturated surface-dry (SSD) following ICRI Guideline no. 310.2 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.

**Technical Data**

**Composition**

MasterEmaco N 400 RS is a proprietary blend of cement, graded aggregate, shrinkage-compensating agents, additives, and latex.

**Test Data**

The following results were obtained with a liquid / powder ratio of 3.7 quarts per 45 lb (3.5 L per 20.5 kg) bag.

PROPERTY	RESULTS	TEST METHODS
<b>Fresh wet density</b> , lb/ft <sup>3</sup> (kg/m <sup>3</sup> )	112 (1,794)	ASTM C 138
<b>Set time</b> , min, at 72° F (22° C), 50% relative humidity		ASTM C 191
Initial	15	
Final	30	
<b>Compressive strength</b> , psi (MPa), 2" (51 mm) cubes		ASTM C 109
1 day	1,700 (11.7)	
7 days	3,000 (20.7)	
28 days	5,000 (34.5)	
<b>Compressive strength</b> , psi (MPa), 3 by 6" (76 by 152 mm) cylinders, at 28 days	4,000 (27.6)	ASTM C 39
<b>Flexural strength</b> , psi (MPa) at 28 days	750 (5.2)	ASTM C 348
<b>Slant shear bond strength</b> , psi (MPa)		ASTM C 882, modified <sup>1</sup>
7 days	1,100 (7.6)	
at 28 days	1,250 (8.6)	
<b>Splitting tensile strength</b> , psi (MPa)		ASTM C 496
7 days	300 (2.1)	
28 days	360 (2.5)	
<b>Elastic modulus</b> , psi (GPa)	1.9 × 10 <sup>6</sup> (13.3)	ASTM C 469
<b>Coefficient of thermal expansion</b> <sup>2</sup> 1" (25 mm) prisms, in/in/° F (cm/cm/° C)	4.8 × 10 <sup>-6</sup> (8.6 × 10 <sup>-6</sup> )	CRD C 39
<b>Drying shrinkage</b> , µstrain, at 28 days	350	ASTM C 157
<b>Freeze/thaw resistance</b> , % RDM <sup>3</sup> , at 300 cycles	96	ASTM C 666
<b>Rapid chloride permeability</b> , coulombs	670 (very low)	ASTM C 1202

All application and performance values are typical for the material, but may vary with test methods, conditions, and configurations.

<sup>1</sup>No bonding agent scrubbed into prepared surface.

<sup>2</sup>Portland cement concrete, typical range is 4.0–8.0 × 10<sup>-6</sup> in/in/° F (7.2–14.4 × 10<sup>-6</sup> cm/cm/° C), according to American Concrete Institute.

<sup>3</sup>Relative dynamic modulus

### MIXING

1. Precondition material to 70° F ±5° (21° C ±3°) before mixing.
2. For the occasional 1 bag mix, mechanically mix at slow speed with a ¾" drill and mixing paddle.
3. Add approximately 3 quarts (2.8 L) of MasterEmaco A 400 into a clean mixing container. Gradually sift in powder ½ at a time while mixing continuously at slow speed (high speeds may entrain air). Mix for a minimum of 3 minutes to ensure a uniform, lump-free consistency. Do not exceed a total of 1 gallon (3.8 L) of mixing liquid per 43 lb (19.8 kg) bag.
4. For normal applications, place 3 quarts (2.8 L) of MasterEmaco A 400 into the clean mixer for each complete 45 lb (20.5 kg) bag of MasterEmaco N 400 RS. The powder should always be added to the liquid.
5. Ensure that MasterEmaco N 400 RS is thoroughly mixed; a forced-action mixer is essential. Do not use free-fall mixers.
6. Mix 3 minutes until fully homogeneous. Do not overmix. Never retemper MasterEmaco N 400 RS.
7. Depending on the ambient temperature and the desired consistency, additional MasterEmaco A 400 may be added, but the maximum liquid content should not exceed 1 gallon (3.8 L) per 45 lb (20.5 kg) bag of MasterEmaco N 400 RS.

### 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. MasterEmaco N 400 RS can be applied in single lifts up to 3" (76 mm) in thickness on vertical surfaces and up to 1½" (38 mm) in thickness on overhead surfaces (without the use of form work). Placement time is approximately 10 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 N 400 RS is from 40 to 90° F (4 to 32° C). Follow ACI 305 and 306 for hot or cold weather guidelines.

### CURING

Cure with an approved water based curing compound compliant with ASTM C 309 or preferably ASTM C 1315. 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

- Do not mix partial bags.
- Do not overwork material
- Do not add plasticizers, accelerators, retarders, or other additives.
- Do not add any admixtures or extend with aggregate.
- Bonding agents are recommended for large areas as well as permanently damp areas.
- Protect from freezing for 24 hours after application.
- For warm-weather applications, consider using MasterEmaco N 400.
- 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.basf.us](http://www.master-builders-solutions.basf.us) to verify the most current versions.
- Proper application is the responsibility of the user. Field visits by BASF personnel are for the purpose of making technical recommendations only and not for supervising or providing quality control on the jobsite.

### HEALTH, SAFETY AND ENVIRONMENTAL

Read, understand and follow all Safety Data Sheets and product label information for this product prior to use. The SDS can be obtained by visiting [www.master-builders-solutions.basf.us](http://www.master-builders-solutions.basf.us), e-mailing your request to [basfbscst@basf.com](mailto:basfbscst@basf.com) or calling 1(800)433-9517. Use only as directed.

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