



MAPECEM 102
Medium-Build, One-Component, Fast-Setting Mortar

SECTION 03 01 30
MAINTENANCE OF CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Products for maintenance of concrete, including the following:
 - 1. Rapid-setting horizontal concrete repair.
 - 2. Polymer-modified horizontal repair.
 - 3. Silica-fume-enhanced concrete repair.

1.2 RELATED SECTIONS

- A. Section 03 53 00 - Cast-in-Place Concrete.
- B. Section 03 54 00 – Cast Underlayment

1.3 REFERENCES

- A. ASTM International:
 - 1. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum 5 years' experience manufacturing similar products.
- B. Installer Qualifications: Minimum 2 years' experience installing similar products.
- C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Finish areas designated by Architect.
 - 2. Do not proceed with remaining work until workmanship is approved by Architect.
 - 3. Refinish mock-up area as required to produce acceptable work.

1.6 PRE-INSTALLATION MEETINGS

- A. Convene at least two weeks prior to starting work of this section.



1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.
- B. Handling: Handle materials to avoid damage.

1.8 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.9 SEQUENCING

- A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Product Performance:

Compressive Strength – ASTM C109 (CAN/CSA-A5)

1 day > 5,800 psi (40 MPa)
7 days > 7,250 psi (50 MPa)
28 days > 7,975 psi (55 MPa)

Flexural Strength – ASTM C348 (CAN/CSA-A23.2-8C)-

1 day > 750 psi (5.17 MPa)
7 days > 1,150 psi (7.93 MPa)
28 days > 1,350 psi (9.31 MPa)

Pull-out strength (rupture of concrete substrate) – ASTM C1583

3 days > 250 psi (1.72 MPa)
7 days > 275 psi (1.90 MPa)
28 days > 290 psi (2 MPa)

Volume change – ASTM C157 (modified)

7 days, dry-cured < -0.05%, max. 0.06% expansion
28 days, dry-cured < -0.06%, max. 0.06% expansion

Freeze/thaw resistance – ASTM C666-A

300 cycles Good – 98% durability factor
500 cycles Good – 95% durability factor

Resistance to de-icing salts – ASTM C672

Very good – 0 rating, no scaling

Permeability to chlorides – ASTM C1202 (AASHTO T277)

Very low, in the range of 100 to 1,000 coulombs



B. Acceptable manufacturer:

MAPEI North America
1144 E. Newport Center Dr.; Deerfield Beach, FL 33442
Toll-Free for CRS Technical Service: Tel. 888-365-0614
Email: CRS@mapei.com
Web: www.mapei.com

C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

D. Substitutions: Not permitted

2.2 HORIZONTAL CONCRETE REPAIR PRODUCTS

A. One-Component, Polymer-Modified, Fast-Setting, Cementitious Repair Material: Packaged, dry mix for repair of concrete, and containing a latex additive as either a dry powder or a separate liquid added during mixing.

1. Product: Subject to compliance with requirements, provide MAPEI Corporation; Mapecem 102.
2. Compressive Strength: Not less than 5,800 psi (40 MPa) within 28 days when tested according to ASTM C109.

2.3 MISCELLANEOUS MATERIALS

A. Portland Cement: ASTM C150, Type I, II or III unless otherwise indicated.

B. Water: Potable.

2.4 MIXES

A. General: Mix products, in clean containers, according to manufacturer's written instructions.

1. Do not add water, thinners or additives unless recommended by manufacturer.
2. When practical, use manufacturer's premeasured packages to ensure that materials are mixed in proper proportions. When premeasured packages are not used, measure ingredients using graduated measuring containers; do not estimate quantities or use shovels or trowels as units of measure.
3. Do not mix more materials than can be used within time limits recommended by manufacturer. Discard materials that have begun to set.

B. Mortar Scrub Coat: Mix dry ingredients with enough water to provide consistency of thick cream.

C. Dry-Pack Mortar: Mix required type(s) of patching-mortar dry ingredients with just enough liquid to form damp cohesive mixture that can be squeezed by hand into a ball but is not plastic.

D. Concrete: Comply with Section 03 30 00 - Cast-in-Place Concrete.



PART 3 EXECUTION

3.1 EXAMINATION

- A. Properly prepared concrete at least 28 days old, stable and dry.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Concrete surface must be clean and free of loose particles, efflorescence, paints, tars, grease, asphaltic materials, bond breakers, curing compounds, wax, and any foreign substance or any conditions that may affect product performance or proper bonding.
- B. Mechanically profile and prepare concrete surfaces by engineer-approved methods in accordance with the most current ICRI 310.2R guidelines.
- C. Ensure that the concrete substrate is saturated surface-dry (SSD) before installation of Mapecem 102.

3.3 MIXING

Before product use, take appropriate safety precautions. Refer to the Safety Data Sheet for details.

- A. Into a clean mixing pail, pour 4/5 of the recommended amount of cool, clean potable water.
- B. Slowly add Mapecem 102 with to the water while mixing, using a low-speed mixer. Next, add as much of the remaining 1/5 of water as needed to achieve the desired consistency. Mix for up to 4 minutes and remix to a smooth, homogenous consistency.
- C. For an extended mix, add 20% by weight (11 lbs. or 4.99 kg) of non-reactive (washed, clean and SSD) 3/8" (10 mm) pea gravel.
- D. Do not overmix.
- E. Do not overwater the material.

3.4 INSTALLATION

- A. Read all installation instructions thoroughly before installation.
- B. Before application of Mapecem 102, mechanically roughen the concrete surface, SSD and scrub-coat to ensure a secure bond. Quickly apply Mapecem 102 mix while the slurry bond coat is still wet.
- C. Apply with a trowel or a screed, with or without formwork (screed rail), on a horizontal surface. Neat thickness per lift can range from 1/4" to 2" (6 mm to 5 cm). Use an extended mix of 20% by weight for deeper repair patching up to 6" (15 cm) thick.

3.5 CURING

- A. Do not wet-cure; however, protect the placed material from excessively hot or windy conditions with damp burlap during the first 4 hours of curing, to minimize shrinkage and cracking and improve physical properties. Alternatively, utilize an ASTM C309 water-based



curing compound. Do not use a solvent-based curing compound. Reference ACI 308 regarding curing.

3.6 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch up, repair or replace damaged products before substantial completion.

END OF SECTION