

**SECTION 04 05 13  
MASONRY MORTARING**

**PART 1 - GENERAL**

**1.1 DESCRIPTION:**

Section specifies mortar materials and mixes.

**1.2 RELATED WORK:**

- A. Mortar used in Section:
  - 1. Section 04 20 00, UNIT MASONRY.
  - 2. Section 04 05 31, MASONRY TUCK POINTING.

**1.3 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Certificates:
  - 1. Indicating that following items meet specifications:
    - a. Portland cement.
    - b. Masonry cement.
    - c. Mortar cement.
    - d. Hydrated lime.
    - e. Fine aggregate (sand).
- C. Laboratory Test Reports:
  - 1. Mortar, each type.
  - 2. Admixtures.
- D. Manufacturer's Literature and Data:
  - 1. Cement, each kind.
  - 2. Hydrated lime.
  - 3. Admixtures.
  - 4. Liquid acrylic resin.

**1.6 PRODUCT DELIVERY, STORAGE AND HANDLING**

- A. Deliver masonry materials in original sealed containers marked with name of manufacturer and identification of contents.

- B. Store masonry materials under waterproof covers on planking clear of ground, and protect damage from handling, dirt, stain, water and wind.

## **1.7 APPLICABLE PUBLICATIONS**

- A. Publications listed below form a part of specification to extent referenced. Publications are referenced in text by basic designation only.
- B. American Society for Testing and Materials (ASTM):
  - C40-04.....Organic Impurities in Fine Aggregates for Concrete
  - C91-05.....Masonry Cement
  - C109-08 .....Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or 50-MM Cube Specimens)
  - C144-04 .....Aggregate for Masonry Mortar
  - C150-09 .....Portland Cement
  - C207-06 .....Hydrated Lime for Masonry Purposes
  - C270-10 .....Mortar for Unit Masonry
  - C307-03(R2008) .....Tensile Strength of Chemical - Resistant Mortar, Grouts, and Monolithic Surfacing
  - C321-00(R2005) .....Bond Strength of Chemical-Resistant Mortars
  - C348-08 .....Flexural Strength of Hydraulic Cement Mortars
  - C595-10 .....Blended Hydraulic Cement
  - C780-10 .....Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry
  - C979-10 .....Pigments for Integrally Colored Concrete
  - C1329-05 .....Mortar Cement

## **PART 2 - PRODUCTS**

ASTM C207, Type S.

### **2.2 AGGREGATE FOR MASONRY MORTAR**

- A. ASTM C144 and as follows:
  - 1. Light colored sand for mortar for laying face brick.
  - 2. White plastering sand meeting sieve analysis for mortar joints for pointing and laying of structural facing tile units except that 100 percent passes No. 8 sieve, and not more than 5 percent retained on No. 16 sieve./
- B. Test sand for color value in accordance with ASTM C40. Sand producing color darker than specified standard is unacceptable.

### **2.3 BLENDED HYDRAULIC CEMENT**

ASTM C595, Type IS, IP.

## **2.4 MASONRY CEMENT**

- A. ASTM C91. Type N, S, or M.

## **2.5 MORTAR CEMENT**

ASTM C1329, Type N, S or M.

## **2.6 PORTLAND CEMENT**

- A. ASTM C150, Type I.

## **2.7 LIQUID ACRYLIC RESIN**

A formulation of acrylic polymers and modifiers in liquid form designed for use as an additive for mortar to improve physical properties.

## **2.8 WATER**

Potable, free of substances that are detrimental to mortar, masonry, and metal.

## **2.9 POINTING MORTAR**

- A. For Cast Stone or Precast Concrete: Proportion by volume; One part white Portland cement, two parts white sand, and 1/5 part hydrated lime.

## **2.10 MASONRY MORTAR**

- A. Conform to ASTM C270.
- B. Admixtures:
  - 1. Do not use mortar admixtures, except for high bond mortar, unless approved by Resident Engineer.
  - 2. Submit laboratory test report showing effect of proposed admixture on strength, water retention, and water repellency of mortar.
  - 3. Do not use antifreeze compounds.
- C. Colored Mortar:
  - 1. Maintain uniform mortar color for exposed work throughout.
  - 2. Match mortar color in approved
- D. Color Admixtures:
  - 1. Proportion as specified by manufacturer.

## **2.11 HIGH BOND MORTAR**

- A. Mixture by volume, one-part Portland cement, 1/4-part hydrated lime, three-parts sand, water, and liquid acrylic resin.
- B. Mortar properties when tested in accordance with referenced specifications.
  - 1. Compressive Strength, ASTM C109: Minimum 19,305 kPa (2800 psi), using 50 mm (2 inch) cubes.
  - 2. Tensile Strength, ASTM C307: 3861 kPa Minimum (560 psi), using the 25mm (1 inch) briquettes.
  - 3. Flexural Strength, ASTM C348: Minimum 6067 kPa (880 psi), using flexural bar.

4. Bond Strength, ASTM C321: Minimum 2965 kPa (430 psi), using crossed brick.

## **2.12 COLOR ADMIXTURE**

- A. Pigments: ASTM C979.
- B. Use mineral pigments only. Organic pigments are not acceptable.
- C. Pigments inert, stable to atmospheric conditions, nonfading, alkali resistant and water insoluble.

## **PART 3 - EXECUTION**

### **3.1 MIXING**

- A. Mix in a mechanically operated mortar mixer.
  1. Mix mortar for at least three minutes but not more than five minutes.
- B. Measure ingredients by volume. Measure by the use of a container of known capacity.
- C. Mix water with dry ingredients in sufficient amount to provide a workable mixture which will adhere to vertical surfaces of masonry units.
- D. Mortar that has stiffened because of loss of water through evaporations:
  1. Re-tempered by adding water to restore to proper consistency and workability.
  2. Discard mortar that has reached its initial set or has not been used within two hours.
- E. Pointing Mortar:
  1. Mix dry ingredients with enough water to produce a damp mixture of workable consistency which will retain its shape when formed into a ball.
  2. Allow mortar to stand in dampened condition for one to 1-1/2 hours.
  3. Add water to bring mortar to a workable consistency prior to application. //

### **3.2 MORTAR USE LOCATION**

- A. For brick veneer over frame back up walls, use Type N portland cement-lime mortar or Type S masonry cement or mortar cement mortar.
- B. Use Type N mortar for other masonry work, except as otherwise specified.

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