

**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 05 16, MASONRY GROUTING.
2. Section 04 20 00, UNIT MASONRY.

B. Mortar Color: Section 09 06 00, SCHEDULE FOR FINISHES.

**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).
  - g. Color admixture.

C. 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****2.1 HYDRATED LIME**

ASTM C207, Type S.

**2.2 AGGREGATE FOR MASONRY MORTAR**

A. ASTM C144 and as follows:

**2.3 BLENDED HYDRAULIC CEMENT**

ASTM C595, Type IS, IP.

**2.4 MASONRY CEMENT**

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

B. Use white masonry cement whenever white mortar is specified.

**2.5 MORTAR CEMENT**

ASTM C1329, Type N, S or M.

**2.6 PORTLAND CEMENT**

A. ASTM C150, Type I.

B. Use white Portland cement wherever white mortar is specified.

**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. 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, and color admixtures unless approved by COR.
  - 2. Do not use antifreeze compounds.
- C. Colored Mortar:
  - 1. Maintain uniform mortar color for exposed work throughout.
  - 2. Match mortar color in approved sample.
  - 3. Color of mortar for exposed work in alteration work to match color of existing mortar unless specified otherwise in section 09 06 00, SCHEDULE FOR FINISHES.
- D. Color Admixtures:
  - 1. Proportion as specified by manufacturer.
  - 2. For color, see Section 09 06 00, SCHEDULE FOR FINISHES.

**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. Use Type S mortar for masonry containing vertical reinforcing bars (non-engineered) and engineered reinforced unit masonry work .
- B. For brick veneer over frame back up walls, use Type N portland cement-lime mortar or Type S masonry cement or mortar cement mortar.
- C. Use Type N mortar for other masonry work, except as otherwise specified.
- D. Use pointing mortar for items specified.

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