

**SECTION 04 05 16
MASONRY GROUTING**

SPEC WRITER NOTE: Delete text between // // not applicable to project. Edit remaining text to suit project.

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Grout for filling hollow concrete masonry cores.

1.2 RELATED WORK

SPEC WRITER NOTE: Update and retain references only when specified elsewhere in this section.

- A. Section 03 45 00, PRECAST ARCHITECTURAL CONCRETE: Grout
- B. Section 04 20 00, UNIT MASONRY: Grout
- C. Section 04 72 00, CAST STONE MASONRY: Grout
- D. Section 09 06 00, SCHEDULE FOR FINISHES: Grout Color
- E. Section 09 30 13, CERAMIC/PORCELAIN TILING: Ready-Mixed Grout.
- F. Section 09 91 00, PAINTING

1.3 APPLICABLE PUBLICATIONS

- A. Comply with references to extent specified in this section
American National Standards Institute (ANSI):
A118.6-19 -Standard Cement Grouts for Tile Installation.
- B. ASTM International (ASTM):
C40/C40M-20 -Organic Impurities in Fine Aggregates for
Concrete.
C150/C150M-20 -Portland Cement.
C207-18 -Hydrated Lime for Masonry Purposes.
C404-18 -Aggregates for Masonry Grout.
C476-20 -Grout for Masonry.
C595/C595M-20 -Blended Hydraulic Cement.
C979/C979M-16 -Pigments for Integrally Colored Concrete.
C1019-19 -Sampling and Testing Grout.

1.4 SUBMITTALS

- A. Submittal Procedures: Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES. All items indicated below are required submittals requiring Contracting Officer's Representative (COR) review and approval.
- B. Manufacturer's Literature and Data:

1. Description of each product.

C. Sustainable Construction Submittals:

SPEC WRITER NOTE: Retain sustainable construction submittals appropriate to product.

1. Recycled Content: Identify pre-consumer recycled content percentage by weight.

D. Test Reports: Certify each product complies with specifications.

1. Grout, each type.
2. Cement.
3. Aggregate.

E. Certificates: Certify each product complies with specifications.

1. Blended hydraulic cement.
2. Portland cement.
3. Grout.
4. Hydrated lime.
5. Aggregate.
6. Color admixture.

1.5 QUALITY ASSURANCE

A. Preconstruction Testing:

SPEC WRITER NOTE: Include testing when directed by Contracting Officer Representative.

1. Engage independent testing laboratory to perform tests and submit reports.

a. Deliver samples to laboratory in number and quantity required for testing.

2. Grout:

a. Test compressive strength according to ASTM C1019 standard.

SPEC WRITER NOTE: The nonstaining requirement applies only to grout required to be nonstaining to limestone.

3. Cement:

a. Test for water soluble alkali (nonstaining) when nonstaining cement is specified.

b. Nonstaining cement containing more than 0.03 percent water soluble alkali.

4. Aggregate:

- a. Test for deleterious substances, organic impurities, soundness and grading.

1.6 DELIVERY

- A. Deliver products in manufacturer's original sealed packaging.
- B. Mark packaging, legibly. Indicate manufacturer's name or brand, type, production run number, and manufacture date.

1.7 STORAGE AND HANDLING

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

1.8 WARRANTY

SPEC WRITER NOTE: Always retain construction warranty. FAR includes Contractor's one year labor and material warranty.

- A. Construction Warranty: FAR clause 52.246-21, "Warranty of Construction."

PART 2 - PRODUCTS

SPEC WRITER NOTE: Make material requirements agree with applicable requirements specified in the referenced Applicable Publications. Update and specify only that which applies to the project.

2.1 MATERIALS

- A. Grout Components:

- 1. Hydrated Lime: ASTM C207, Type S.
- 2. Aggregate For Masonry Grout: ASTM C404, Size 8.
- 3. Blended Hydraulic Cement: ASTM C595, Type IS, IP.

SPEC WRITER NOTE: For grout used in concealed applications, white cement and color admixes are not required.

- 4. Portland Cement: ASTM C150, Type I.

SPEC WRITER NOTE: Include resin admix when tile setting materials rather than masonry grout is used.

- 5. Liquid Acrylic Resin:

- a. A formulation of acrylic polymers and modifiers in liquid form designed for use as an additive for mortar to improve physical properties.
- 6. Water: Potable, free of substances that are detrimental to grout, masonry, and metal.

2.2 PRODUCTS - GENERAL

A. Provide each product from one manufacturer // and from one production run //.

B. Sustainable Construction Requirements:

SPEC WRITER NOTE:

1. Specify products containing greatest recycled content practicable to maximize material recovery. See EPA Comprehensive Procurement Guidelines (CPG) for guidance about individual products and available recycled content. Section 01 81 13 sets overall project recycled content requirements.
 2. Select product required.
1. Blended Hydraulic Cement Recycled Content: // _____ // percent // total // recycled content, minimum. // Select products with recycled content to achieve overall Project recycled content requirement. //
 - a. // Fly Ash: 25 percent total recycled content, minimum. //
 - b. // Combined Fly Ash and Pozzolan: 25 percent total recycled content, minimum. //
 - c. // Ground Granulated Blast-Furnace Slag: 50 percent total recycled content, minimum. //
 - d. // Combined Fly Ash or Pozzolan and Ground Granulated Blast-Furnace Slag: 50 percent Portland cement minimum, with fly ash or pozzolan not exceeding 25 percent total recycled content, minimum. //

2.3 MIXES

A. Grout: ASTM C476; fine grout and coarse grout.

SPEC WRITER NOTE: Delete below when grout is for concealed applications only.

1. Color Admixture:
 - a. Pigments: ASTM C979, inert, stable to atmospheric conditions, nonfading, alkali resistant, and water insoluble.

- b. Use mineral pigments only. Organic pigments are not acceptable.
- B. Ready-Mixed Grout: ANSI A118.8.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Examine and verify substrate suitability for product installation.
- B. Protect existing construction and completed work from damage.
- C. Clean mortar from masonry cells protruding more than 13 mm (1/2 inch) to permit grout flow.
- D. Remove debris from grout spaces.
- E. Verify reinforcement is correctly placed before placing grout.

3.2 MIXING

- A. Mix grout in mechanically operated mixer.
 - 1. Mix grout for five minutes, minimum.
- B. Measure ingredients by volume using container of known capacity.
- C. Mix water with grout dry ingredients.
 - 1. Slump Range: 200 to 275 mm (8 to 11 inches).

3.3 GROUTING

- A. Install grout according to Section 04 20 00, UNIT MASONRY.
- B. Use fine grout for filling wall cavities and hollow concrete masonry units where smallest cell dimension is 50 mm (2 inches) or less.
- C. Use either fine grout or coarse grout for filling wall cavities and hollow concrete masonry units where smallest cell dimension is greater than 50 mm (2 inches).
- D. Use grout for filling bond beam or lintel units.

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