



Standard Practice for Proportioning Grout Mixtures for Preplaced-Aggregate Concrete¹

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1. Scope

1.1 This practice describes the laboratory procedure for selecting proportions for grout mixtures required in the production of preplaced-aggregate (PA) concrete.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are provided for information purposes only.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

- C 39 Test Method for Compressive Strength of Cylindrical Concrete Specimens²
- C 109/C 109M Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or 50-mm Cube Specimens)³
- C 150 Specification for Portland Cement³
- C 185 Test Method for Air Content of Hydraulic Cement Mortar³
- C 192 Practice for Making and Curing Concrete Test Specimens in the Laboratory²
- C 618 Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete²
- C 637 Specification for Aggregates for Radiation-Shielding Concrete²
- C 937 Specification for Grout Fluidifier for Preplaced-Aggregate Concrete²
- C 939 Test Method for Flow of Grout for Preplaced-Aggregate Concrete²
- C 940 Test Method for Expansion and Bleeding of Freshly Mixed Grouts for Preplaced-Aggregate Concrete in the Laboratory²

¹ This practice is under the jurisdiction of ASTM Committee C-9 on Concrete and Concrete Aggregates and is the direct responsibility of Subcommittee C09.41 on Concrete for Radiation Shielding.

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² Annual Book of ASTM Standards, Vol 04.02.

³ Annual Book of ASTM Standards, Vol 04.01.

C 941 Test Method for Water Retentivity of Grout Mixtures for Preplaced-Aggregate Concrete in the Laboratory²

C 942 Test Method for Compressive Strength of Grouts for Preplaced-Aggregate Concrete in the Laboratory²

C 943 Practice for Making Test Cylinders and Prisms for Determining Strength and Density of Preplaced-Aggregate Concrete in the Laboratory²

3. Summary of Practice

3.1 Grouts at fluid consistency are prepared from one or more mixtures of cement, pozzolan, fine aggregate, grout fluidifier, with or without other chemical admixtures, and water, and tested to determine:

- 3.1.1 The properties of the grout, and
 - 3.1.2 The properties of PA concrete made with the grout when the grout is intended for such use.
- 3.2 The procedure and equipment required for mixing this grout are prescribed in this practice.

4. Significance and Use

4.1 This practice provides a standard procedure for selecting proportions for mixtures of grout to be used at fluid consistency in the production of PA concrete meeting applicable criteria for strength, density, and other properties.

4.2 This practice is also useful for determining the composition of grout mixed at fluid consistency and meeting specified requirements for filling voids, cavities, and spaces in rock, foundations, and concrete structures.

5. Apparatus

5.1 *Mixer*, constructed as shown in Fig. 1. The three mixer blades shall be made of steel plate, 3-mm (1/8-in.) thick, with a 100 by 125-mm (4 by 5-in.) elliptical shape. Each blade shall have two 25 by 75-mm (1 by 3-in.) slots centered on the major axis, and shall be welded to the shaft at an angle of approximately 23° with the horizontal in such a way as to force grout to the bottom of the mixer during rotation. The mixer blades shall be powered to rotate at approximately 275 r/min under load.

5.2 *Scales or Balance*, accurate to within 0.3 % of the test mass at any point within range of use.

6. Materials

6.1 Materials for test purposes, except mixing water, shall