



Standard Practice for Sampling Materials for Shotcrete¹

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1. Scope

1.1 This practice covers procedures for obtaining representative samples of materials to be shotcreted. The practice covers sampling from stationary and truck mixers, volumetric and continuous mixing equipment, and bag and bulk delivery.

1.2 The values stated in either inch-pound or SI units are to be regarded separately as standard. Within the text, the SI units are shown in parentheses. The values stated in each system are not exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with this practice.

2. Significance and Use

2.1 This practice is used to obtain representative samples of materials delivered to the shotcrete machine. These samples are used to perform tests to determine compliance with the specifications under which the material is furnished.

3. Procedure

3.1 Composite samples are required by this practice, unless specifically excepted by procedures governing the tests to be performed, such as tests to determine uniformity of consistency and mixer efficiency. Procedures used to select the specific test batches are not described in this practice, but it is recommended that random sampling be used to determine overall specification compliance.

3.2 The size of an individual sample shall be a minimum of 25 lb (12 kg), the size of the composite sample shall be a minimum of 75 lb (35 kg). The composite sample shall be large enough to perform the required tests.

3.3 Sampling shall be performed as the shotcrete material is delivered to the shotcrete machine. The procedures used in sampling shall include the use of every precaution that will assist in obtaining samples that are truly representative of the

nature and condition of the material sampled as follows:

3.3.1 *Sampling Dry Process Shotcrete Materials*—Sample the material by collecting two or more portions taken at regularly spaced intervals during discharge of the middle of the batch or two or more random portions from the discharge of continuous mixers. Combine the portions into one sample for testing purposes. Do not obtain portions of the composite sample from the first 15 % or the last 15 % of the discharge.

3.3.2 *Sampling Wet Process Shotcrete Material*—Sample as described in 3.3.1 within the following limits.

3.3.2.1 The elapsed time between obtaining the first and last portions of the composite sample shall be as short as possible but in no instance shall exceed 15 min.

3.3.2.2 Start test for slump or air content, or both, within 5 min. after obtaining last portion of the composite.

3.3.3 *Alternative Procedure for Truck and Stationary Mixers*—The mixer shall be stopped and material portions removed by any suitable means at approximately equal distances from the front and back of the drum. Composite the portions into one sample for testing. Do not obtain portions from the very front and back of the drum. Sample wet process shotcrete material within the time limits described in 3.3.2.1 and 3.3.2.2.

3.3.4 *Sampling Bagged Prepackaged Material*—Randomly select a single package, or more if required to perform the specified tests, from a lot. A lot is the quantity normally placed on a pallet. In general, this quantity will weigh from 2000 to 4000 lbs (900 to 1300 kg).

3.3.5 *Sampling Bulk Prepackaged Material*—Sample the material at the point of delivery to the shotcrete machine by collecting three or more portions at regular intervals during discharge of the container or transportation unit. Obtain portions from the first, middle, and last third of the unit. Do not sample the first 15 % or last 15 % of the discharge. Combine portions for testing.

4. Keywords

4.1 dry process; sampling; shotcrete; wet process

¹ This practice is under the jurisdiction of ASTM Committee C-9 on Concrete and Concrete Aggregates and is the direct responsibility of Subcommittee C09.46 on Shotcrete.

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