



Designation: C 1436 – 99 (Reapproved 2004)

Standard Specification for Materials for Shotcrete¹

This standard is issued under the fixed designation C 1436; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers materials for use in hydraulic-cement concrete mixtures to be placed by shotcreting. It does not cover mixing, placement, curing, or protection of the concrete placed by shotcreting.

1.2 This specification covers materials for both wet-mix and dry-mix shotcreting.

1.3 The values stated in SI units are to be regarded as the standard.

1.4 *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 the 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:*²

C 33 Specification for Concrete Aggregates

C 125 Terminology Relating to Concrete and Concrete Aggregates

C 150 Specification for Portland Cement

C 330 Specification for Lightweight Aggregates for Structural Concrete

C 595 Specification for Blended Hydraulic Cements

C 1116 Specification for Fiber-Reinforced Concrete and Shotcrete

C 1141 Specification for Admixtures for Shotcrete

C 1157 Performance Specification for Hydraulic Cement

C 1385 Practice for Sampling Materials for Shotcrete

3. Terminology

3.1 The terms used in this specification are defined in Terminology C 125 or Specification C 1141.

¹ This specification is under the jurisdiction of Committee C09 on Concrete and Concrete Aggregates and is the direct responsibility of Subcommittee C09.46 on Shotcrete.

Current edition approved July 1, 2004. Published July 2004. Originally approved in 1999. Last previous edition approved in 1999 as C 1436 - 99.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

4. Ordering Information

4.1 In the absence of designated applicable general specifications, the purchaser shall include the following information in the purchase contract or order, if applicable:

4.1.1 The specification designation and date of issue,

4.1.2 Specification for cement and type (see 5.1.1),

4.1.3 Grading number for total combined aggregates required (see 5.1.2),

4.1.4 Specification, type, and grade(s) for admixtures required (see 5.1.4), and

4.1.5 Specification, type, length, and, if appropriate, the diameter (or equivalent cross-sectional dimensions) of fiber required (see 5.1.5).

5. Material Requirements

5.1 In the absence of designated applicable specifications covering requirements for quality of materials, the following requirements shall govern:

5.1.1 *Cement*—Cement shall be in accordance with Specification C 150, Specification C 595, or Performance Specification C 1157. If special properties are required, the purchaser shall limit the choice of cements to those suitable for the special use.

5.1.2 *Aggregates*—Aggregates shall be in accordance with Specification C 33 or Specification C 330 if lightweight shotcrete is specified by the purchaser except that the grading of the total aggregate constituent of the shotcrete shall be in accordance with the requirements prescribed in Table 1 for the grading number specified.

NOTE 1—The ranges shown in Table 1 are by necessity wide in order to accommodate nationwide conditions. For quality control of any specific operation, a producer should develop an average grading for the particular source and production facilities, and control the grading within reasonable tolerances from this average.

5.1.3 *Water*—The mixing water shall be in accordance with the requirements for water prescribed in Specification C 1116.

5.1.4 *Admixtures*—Mineral and chemical admixtures shall be in accordance with Specification C 1141.

5.1.5 *Fibers*—Fibers shall be in accordance with the requirements for fibers prescribed in Specification C 1116.

TABLE 1 Grading Limits for Combined Aggregate for Shotcrete

Percent by Mass Passing Individual Sieve		
Sieve Size, U.S. Standard	Grading, No. 1	Grading, No. 2
12.5 mm (½ in.)	-	100
9.5 mm (¾ in.)	100	90 - 100
4.75 mm (No. 4)	95 - 100	70 - 85
2.36 mm (No. 8)	80 - 98	50 - 70
1.18 mm (No. 16)	50 - 85	35 - 55
600 µm (No. 30)	25 - 60	20 - 35
300 µm (No. 50)	10 - 30	8 - 20
150 µm (No. 100)	2 - 10	2 - 10

6. Sampling

6.1 Access shall be provided to the purchaser for sampling, either at the point of manufacture or at the site of the work, as specified by the purchaser. Sampling of materials shall be in accordance with Practice C 1385.

ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.

This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or service@astm.org (e-mail); or through the ASTM website (www.astm.org).

7. Number of Tests and Retests

7.1 Testing, number of tests, and retests to be performed on specified materials shall be in accordance with the referenced ASTM standard.

8. Inspection

8.1 Inspection of the materials shall be agreed upon between the purchaser and the supplier as part of the purchase contract.

9. Rejection, Certification, and Product Marking

9.1 Rejection, certifications, and product markings on specified materials shall be in accordance with the referenced ASTM specification.

10. Keywords

10.1 dry-mix shotcrete, materials for; ordering; shotcrete; specification; testing; wet-mix shotcrete

Document Preview

[ASTM C1436-99\(2004\)](#)

[/catalog/standards/astm/34ea04cf-dff3-4ed5-8918-8be3c5cf5b6e/astm-c1436-99-2004](#)