



Designation: C 430 – 96 (Reapproved 2003)

## Standard Test Method for Fineness of Hydraulic Cement by the 45- $\mu$ m (No. 325) Sieve<sup>1</sup>

This standard is issued under the fixed designation C 430; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This test method covers the determination of the fineness of hydraulic cement by means of the 45- $\mu$ m (No. 325) sieve.

1.2 The values stated in SI units are to be regarded as the standard. The inch-pound equivalents of SI units may be approximate.

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:

- E 11 Specification for Wire Cloth and Sieves for Testing Purposes<sup>2</sup>
- E 161 Specification for Precision Electroformed Sieves<sup>2</sup>
- E 177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods<sup>2</sup>

### 3. Apparatus

#### 3.1 Sieve:

3.1.1 *Sieve Frame*—The sieve frame shall be of metal not subject to corrosion by water and shall be circular, either  $51 \pm 6$  mm ( $2.0 \pm 0.25$  in.) when woven-wire cloth is mounted in the frame or  $76 \pm 6$  mm ( $3.0 \pm 0.25$  in.) in diameter when an electroformed sheet is mounted in the frame. The depth of the sieve from the top of the frame to the cloth or sheet shall be  $76 \pm 6$  mm ( $3.0 \pm 0.25$  in.). The frame shall have either side walls of  $89 \pm 6$  mm ( $3.5 \pm 0.25$  in.) in total height, or legs at least 12 mm (0.5 in.) in length, sufficient to allow air circulation beneath the sieve cloth or electroformed sheet.

3.1.2 *Sieve Cloth or Electroformed Sheet*—The sieve frame shall be fitted with either a 45- $\mu$ m (No. 325) stainless steel AISI Type 304 woven-wire sieve cloth, conforming to the requirements of Specification E 11 or a 45- $\mu$ m electroformed rein-

forced nickel sieve sheet conforming to the requirements of Specification E 161 with the exception that the number of openings shall be  $71 \pm 2$  per linear centimetre ( $180 \pm 5$  per linear inch).

#### 3.1.3 Cloth or Sheet Mounting:

3.1.3.1 *Woven-Wire Cloth Mounting*—Type 304 stainless steel woven-type cloth shall be mounted in the frame without distortion, looseness, or wrinkling. For a sieve fabricated by soldering the cloth to the frame, the joint shall be made smooth to prevent the cement from catching in the joints between the sieve cloth and the frame. Two-piece sieves shall clamp tightly on the cloth to prevent the cement from catching in the joints between the sieve cloth and the frame.

3.1.3.2 *Electroformed Sieve Sheet Mounting*—Electroformed reinforced nickel sieve sheet shall be mounted in the frame without distortion, looseness, or wrinkling. The joint between the sieve cloth and the frame shall be made smooth with a material impervious to water.

3.2 *Spray Nozzle*—The spray nozzle (Fig. 1) shall be constructed of metal not subject to corrosion by water and shall be 17.5 mm (0.69 in.) in inside diameter with a central hole drilled in line with the longitudinal axis, an intermediate row of eight holes drilled 6 mm (0.23 in.) center-to-center at an angle of  $5^\circ$  from the longitudinal axis, and an outer row of eight holes drilled 11 mm (0.44 in.) center-to-center at an angle of  $10^\circ$  from the longitudinal axis. All holes shall be 0.5 mm (0.02 in.) in diameter. The spray nozzle shall have been checked within six months prior to testing a cement sample to ensure that the flow rate is between 1500 and 3000 g/min at  $69 \pm 3$  kPa ( $10 \pm 0.4$  psi).

3.3 *Pressure Gage*—The pressure gage shall be 76 mm (3.0 in.) minimum diameter, and shall be graduated in 7-kPa (1-psi) increments, and shall have a maximum capacity of 207 kPa (30 psi). The accuracy at 69 kPa (10 psi) shall be  $\pm 2$  kPa ( $\pm 0.25$  psi).

### 4. Calibration of 45- $\mu$ m (No. 325) Sieve

4.1 Place 1.000 g of the current lot of National Institute of Standards and Technology standard sample No. 114 on the clean, dry, 45- $\mu$ m (No. 325) sieve and proceed as in Section 5. The sieve correction factor is the difference between the test residue obtained and the assigned residue value indicated by

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee C01 on Cement and is the direct responsibility of Subcommittee C01.25 on Fineness.

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 14.02.