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Standard Specification for Perforated-Plate Sieves for Testing Purposes[1]

This standard is issued under the fixed designation E323; 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.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This specification covers perforated plate with either round or square apertures, normally mounted in a frame for use as sieves in precision testing in the classification of materials according to designated nominal particle size. A method for checking the accuracy of perforated sieve plates is included as information in Appendix X1.

NOTE 1—The perforated-plate sieves covered by this specification are intended for general precision testing. Some industries may require more restricted specifications for sieves for special testing purposes.

NOTE 2—For other types of sieves see Specifications E11 and E161.

NOTE 3—Complete instructions and procedures on the use of test sieves are contained in *ASTM STP 447, Manual on Test Sieving Methods.* This manual also contains a list of all ASTM published standards on sieve analysis procedures for specific materials or industries.

1.2 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

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:*[2]

E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves

E161 ~~Specification for Precision Electroformed Sieves~~

[1] This specification is under the jurisdiction of ASTM Committee E29 on Particle and Spray Characterization and is the direct responsibility of Subcommittee E29.01 on Sieves, Sieving Methods, and Screening Media.

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[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.

Specification for Precision Electroformed Sieves
E1638 Terminology Relating to Sieves, Sieving Methods, and Screening Media
2.2 *Other Documents:*[3]
Fed. Std. No. 123 Marking for Shipment (Civil Agencies)
MIL-STD-129 Marking for Shipment and Storage

3. Terminology

3.1 *Definitions*—For definitions of related terms, refer to Terminology E1638.

4. Perforated Sieve Plates

~~3~~4.1 Materials used in the manufacture of perforated sieve plates shall be steel, stainless steel, brass, bronze, or other rigid material and shall not be painted, plated, or otherwise coated. The thickness of materials used for perforated sieves plates shall conform to the requirements of column (7) in Table 1, but may vary within the limits shown in column (10).

~~3.2Round~~4.2 Round apertures shall be arranged with their centers nominally at the vertices of equilateral triangles as shown in Fig. 1. The diameter of any aperture shall not vary from the nominal diameter given in columns (1) and (2) of Table 1 by more than the maximum variation given in column (3). The preferred centers for round apertures shall be as given in column (4) of Table 1 but may vary within the range given in column (6).

~~3~~4.3 Square apertures shall be arranged in a staggered pattern with their midpoints nominally at the vertices of isosceles triangles whose bases shall equal their heights or shall be arranged in line with their midpoints nominally at the vertices of squares as shown in Fig. 2. The midsection of any aperture shall not vary from the nominal midsection dimension given in columns (1) and (2) of Table 1 by more than the maximum variation given in column (3). The preferred centers for square apertures shall be as given in column (4) of Table 1, but may vary within the range given in column (6).

NOTE 4—The percentage of open area for square apertures is identical for both staggered and straight-line patterns.

~~4.~~

5. Sieve Plate Frames

~~4.1~~

5.1 Standard frames for perforated-plate sieves with apertures 0.16 in. (4.00 mm) and larger shall be made of hardwood or steel and shall be designed to hold 12.0-in. (304.8-mm), 16.0-in. (406.4-mm), or 18.0-in. (457.2-mm) square sieve plates. The use of rectangular, circular, or other shaped frames of other dimensions is not precluded for special purposes. Frames shall have a maximum of a 0.5-in. (12.7-mm) flange on the inside of all four sides for sealing the joint and for mounting the sieve plates. Perforated sieve plates that are square or rectangular in shape shall have a maximum of 0.5-in. (12.7-mm) solid border on all four sides. Perforated sieve plates that are circular in shape may be furnished without solid borders. The sides of the frame shall be a minimum of 2.0 in. (50.8 mm) and not over 4.0 in. (101.6 mm) in height.

NOTE 5—The frame may be designed to nest with compatible frames if so specified, but in general, perforated sieve plates are removable from the frame and one frame is used with a series of perforated sieve plates.

~~4~~5.2 Standard frames for perforated-plate sieves with apertures smaller than 0.16 in. (4.00 mm) may be designed as in ~~4.1~~5.1 or may be the standard 8.0-in. (203.2-mm) circular sieve frame as described in Specification E11 for wire-cloth sieve frames.

NOTE 6—Care should be taken to install the sieve plate in the frame with the side on which the manufacturer has indicated the aperture size uppermost.

~~5.Label Marking~~

~~5.1Each perforated sieve plate shall bear a label or be stamped with the aperture size expressed both in millimetres and inches. The manufacturer shall ensure that the marking is done on the punch side of the sieve plate.~~

~~5.2Each perforated-plate sieve with apertures smaller than 0.16 in. (4.00 mm) that has the sieve plate permanently affixed in the frame may carry the size markings, expressed in millimetres and inches, on the frame instead of on the sieve plate itself.~~

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7. Keywords

~~6~~7.1 opening; particle size; perforated plate sieves; precision testing; seive analysis; sieve perforated plate; test sieve

[3] Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, http://dodssp.daps.dla.mil.