



Designation: D293/D293M – 26

Standard Test Method for the Sieve Analysis of Coke¹

This standard is issued under the fixed designation D293/D293M; 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 test method describes the separation of a coke sample into defined size fractions and expressing said fractions as a mass [weight] fraction of the gross sample.

1.2 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system are not necessarily exact equivalents; therefore, to ensure conformance with the standard, each system shall be used independently of the other, and values from the two systems shall not be combined.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*²

D346 Practice for Collection and Preparation of Coke Samples for Laboratory Analysis

E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves

E323 Specification for Perforated-Plate Sieves for Testing Purposes

¹ This test method is under the jurisdiction of ASTM Committee D05 on Coal and Coke and is the direct responsibility of Subcommittee D05.15 on Metallurgical Properties of Coal and Coke.

Current edition approved April 1, 2026. Published July 2026. Originally approved in 1928. Last previous edition approved in 2018 as D293 – 18. DOI: 10.1520/D0293_D0293M-26.

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

3. Significance and Use

3.1 This test method determines the size distribution of coke for conformance to specifications of percentages retained on designated screen sizes.

4. Apparatus

4.1 *Sieves*—Use square-hole perforated plates conforming to Specification E323 and wire sieves conforming to Specification E11. Where sieves larger than 100 mm [4 in.] are required, the specifications for same shall be by mutual agreement between interested parties. Permissible variations in sieve openings and spacings shall be in accordance with Specifications E11 and E323.

4.1.1 For complete characterization of the size range of a coke sample, the number and size of the selected sieves shall be such that no more than 25 % of the gross sample mass or weight will be retained on any given sieve.

4.1.2 For coke equal to or larger than 38.1 mm [1½ in.] in size, sieves of heavy double-crimped wire and square or rectangular frames with 0.56 m² to 0.84 m² [6.0 ft² to 9.0 ft²] of sieve area are satisfactory. For coke smaller than 38.1 mm [1½ in.] in size, sieves of double-crimped wire and square or circular frames with 0.19 m² to 0.37 m² [2.0 ft² to 4.0 ft²] of sieve area are usually more convenient.

4.2 *Balance*, preferably of the platform type, having a sensitivity of 0.025 kg [0.05 lb] or better, at rated capacity and with graduations such that 0.05 kg [0.1 lb] can be read without interpolation.

5. Test Sample

5.1 The test sample shall be taken in accordance with Practice D346.

6. Procedure

6.1 Starting with the sieve having the largest opening, sieve the sample of coke in quantities small enough to prevent plugging and clogging of the sieve.

6.1.1 Hand-fit each piece of coke retained on the 38.1 mm [1½ in.] or larger sieve. A piece is considered undersize if, in some position and without forcing, it passes the sieve opening.



6.1.2 Shake vigorously on each succeeding sieve coke pieces passing the 38.1 mm [1½ in.] sieve. This shaking may be performed manually or mechanically provided mechanical shaking yields results equivalent to manual shaking. Note that the objectives of shaking, either manual or mechanical, are to ensure that all of the naturally occurring pieces of a given size range are on the appropriate sieve and to avoid degradation of the naturally occurring sizes.

6.2 Record to the nearest 0.05 kg [0.1 lb] the mass [weight] of coke retained on each sieve and that which passes the smallest sieve used. For routine testing, the sum of all the size-fraction masses [weights] may be taken as the total mass [weight] of coke tested.

6.2.1 Samples containing pieces retained on 50 mm [2 in.] sieves and larger need not be dried. However, when a higher degree of accuracy is desired, dry the gross sample to less than 1 % moisture and accurately determine the mass [weight] before sieving. Dry all samples of coke containing only pieces which pass a 50 mm [2 in.] sieve to less than 1 % moisture before testing.

7. Report

7.1 Report the masses [weights] of the size fractions as a percentage of the mass [weight] of the gross sample. Calculate percentage to the nearest 0.1 %. Record the results starting

with the fraction of largest sieve size, which may be shown for separate fractions or cumulatively.

7.2 For those tests in which the mass [weight] of the gross sample is determined before sieving, the sum of the masses [weights] of all size fractions should equal the measured gross mass [weight]. In cases in which the cumulative mass [weight] of the size fractions differs from the initial gross mass [weight] by 0.5 % or less of the gross mass [weight], adjustment can be made in the mass [weight] of the size fraction passing the smallest sieve size. With careful procedure, this difference should not exceed 0.5 %.

8. Precision and Bias

8.1 *Repeatability*—The precision of this test method is being investigated by a task group. At this time the values have not been determined.

8.2 *Reproducibility*—No precision statement has been developed for this test method because of the impracticality of obtaining, transporting, and handling representative splits of the materials in the quantities that would be needed to establish the precision statement.

8.3 *Bias*—The lack of a reference material precludes a bias statement.

9. Keywords

9.1 breakage; coke; degradation; increments

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), or through the ASTM website (www.astm.org/contact).