



Designation: D 5444 – 05

Standard Test Method for Mechanical Size Analysis of Extracted Aggregate¹

This standard is issued under the fixed designation D 5444; 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 covers a procedure for determination of the particle size distribution of fine and coarse aggregates extracted from bituminous mixtures using sieves with square openings.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

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

C 670 Practice for Preparing Precision and Bias Statements for Test Methods for Construction Materials

D 2172 Test Method for Quantitative Extraction of Bitumen from Bituminous Paving Mixtures

D 6307 Test Method for Asphalt Content of Hot-Mix Asphalt by Ignition Method

E 11 Specification for Wire Cloth and Sieves for Testing Purposes

2.2 *AASHTO Standard:*

AASHTO Test Method T 30 Mechanical Analysis of Extracted Aggregate³

3. Significance and Use

3.1 This test method is used to determine the grading of aggregates extracted from bituminous mixtures. The results are used to determine compliance of the particle size distribution with applicable specifications requirements, and to provide

¹ This test method is under the jurisdiction of ASTM Committee D04 on Road and Paving Materials and is the direct responsibility of Subcommittee D04.51 on Aggregate Tests.

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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.

³ Available from the American Association of State Highway and Transportation Officials, 444 N. Capitol St., N.W., Washington, DC 20001.

TABLE 1 Size of Sample

	Minimum Mass of Sample, kg
4.75 (No. 4)	0.5
9.5 ($\frac{3}{8}$ in.)	1
12.5 ($\frac{1}{2}$ in.)	1.5
19.0 ($\frac{3}{4}$ in.)	2
25.0 (1 in.)	3
37.5 ($1\frac{1}{2}$ in.)	4

necessary data for control of the production of various aggregates to be used in bituminous mixtures.

4. Apparatus

4.1 *Balances*, or scales, readable to 0.1 g and accurate to 0.1 g or 0.1 % of the test load, whichever is greater, at any point within the range of use.

4.2 *Sieves*, with square openings, mounted on substantial frames constructed in a manner that will prevent the loss of materials during sieving. Suitable sieve sizes shall be selected to furnish the information required by the specifications covering the material to be tested. The woven wire cloth sieves shall conform to the requirements of Specification **E 11**.

4.3 *Mechanical Sieve Shaker*—If used, it shall impart a vertical, or lateral and vertical, motion to the sieve, causing the particles thereon to bounce and turn so as to present different orientations to the sieving surface. The sieving action shall be such that the criterion for adequacy of sieving described in **6.8** is met in a reasonable time period.

4.4 *Oven*, of appropriate size, capable of maintaining a uniform temperature of $110 \pm 5^\circ\text{C}$ ($230 \pm 9^\circ\text{F}$).

4.5 *Container*—A pan or vessel of a size sufficient to contain the sample covered with water and to permit vigorous agitation without loss of any of the sample or water.

5. Sample

5.1 The sample shall consist of the entire sample of aggregate from Test Method **D 2172** or Test Method **D 6307**.

5.1.1 Aggregate extracted by the ignition method in Test Method **D 6307** shall not be used for gradation analysis if the correction factor obtained in Test Method **D 6307** is greater than 1.0 (see **Note 1**).

5.2 The size of the test sample shall be governed by the nominal maximum aggregate size and shall conform to the mass requirements shown in Table I.