



Designation: D 5444 – 98

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 reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

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:

C 670 Practice for Preparing Precision and Bias Statements for Test Methods for Construction Materials²

D 2172 Test Method for Quantitative Extraction of Bitumen from Bituminous Paving Mixtures²

E 11 Specification for Wire-Cloth Sieves for Testing Purposes³

2.2 AASHTO Standard:

AASHTO Test Method T 30 Mechanical Analysis of Extracted Aggregate⁴

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

¹ This test method is under the jurisdiction of ASTM Committee D-4 on Road and Paving Materials and is the direct responsibility of Subcommittee D04.51 on Aggregate Tests.

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² Annual Book of ASTM Standards, Vol 04.03.

³ Annual Book of ASTM Standards, Vol 14.02.

⁴ 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

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.

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.

6. Procedure

6.1 Dry the sample at $110 \pm 5^\circ\text{C}$ ($230 \pm 9^\circ\text{F}$) to constant weight. Determine the weight to the nearest 0.1 % of the sample weight. The total weight of aggregate in the bituminous