



Standard Specification for Mineral Aggregate Used on Built-Up Roofs¹

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

^{ε1} NOTE—Units information was editorially corrected in January 2012.

1. Scope

1.1 This specification covers the quality and grading of crushed stone, crushed slag, and water-worn gravel suitable for use as coarse mineral aggregate on built-up roofs.

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 may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

2. Referenced Documents

2.1 ASTM Standards:²

C29/C29M Test Method for Bulk Density (“Unit Weight”) and Voids in Aggregate

C33 Specification for Concrete Aggregates

C117 Test Method for Materials Finer than 75-μm (No. 200) Sieve in Mineral Aggregates by Washing

C136 Test Method for Sieve Analysis of Fine and Coarse Aggregates

D75 Practice for Sampling Aggregates

D448 Classification for Sizes of Aggregate for Road and Bridge Construction

D1864 Test Method for Moisture in Mineral Aggregate Used on Built-Up Roofs

D1865 Test Method for Hardness of Mineral Aggregate Used on Built-Up Roofs

E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves

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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. Materials and Manufacture

3.1 *Crushed Stone and Gravel*—The crushed stone and gravel at the time of application shall be hard, durable, opaque, and free of clay, loam, sand, or other foreign substances.

3.2 *Crushed Slag*—Crushed slag shall be hard, air-cooled, blast-furnace slag, or electric furnace phosphate slag that is free of sand, clay, or other foreign substances at the time of application.

4. Requirements

4.1 The aggregate shall conform to the gradation requirements specified in **Table 1**.

TABLE 1 Gradation Requirements

Sieve (Specification E11)	Amounts Finer than Sieve Specified, mass %		
	Size 6 ^A 19.0 to 9.5 mm [$\frac{3}{4}$ in. to $\frac{1}{2}$ in.]	Size No. 67 ^A 19.0 to 4.75 mm [$\frac{3}{4}$ in. to No. 4]	Size No. 7 ^A 12.5 to 4.75 mm [$\frac{1}{2}$ in. to No. 4]
25 mm [1 in.]	100	100	...
19 mm [$\frac{3}{4}$ in.]	90 to 100	90 to 100	100
12.5 mm [$\frac{1}{2}$ in.]	20 to 55	...	90 to 100
9.5 mm [$\frac{3}{8}$ in.]	0 to 15	20 to 55	40 to 70
4.75 mm [No. 4]	0 to 5	0 to 10	0 to 15
2.36 mm [No. 8]	...	0 to 5	0 to 5

^A Size number and requirements data are from Specification C33 and Classification D448.

4.2 The aggregate shall conform to the physical properties specified in **Table 2**.

TABLE 2 Physical Properties

Moisture, max, %:	
Crushed stone and gravel	2.0
Crushed roofing slag	5.0 ^A
Unit mass (loose), min, kg/m ³ [lb/ft ³]	960 [59.9]
Dust, max, %	2.0
Hardness, max, percentage passing a 3.35-mm [No. 6] sieve	20

^A A higher moisture content is permitted for slag because of moisture entrapment in the internal pores of the pieces of slag.

4.3 Suggested Field Checks:



- 4.3.1 Aggregate shall be free of ice and snow.
- 4.3.2 A handful of aggregate shall not drip water.
- 4.3.3 The aggregate shall be dry and clean enough to adhere to the hot bitumen flood coat when installed.

5. Sampling

5.1 Sample aggregates received in bulk in accordance with Practice **D75**.

5.2 For aggregates received in bags or small containers, select a number of bags or small containers at random equivalent to the cube root of the total number in the shipment.

6. Test Methods

- 6.1 *Gradation*—Test Method **C136**.
- 6.2 *Moisture*—Test Method **D1864**.
- 6.3 *Unit Mass (Loose)*—Test Method **C29/C29M**, utilizing the shoveling procedure.
- 6.4 *Dust*—Test Method **C117**.
- 6.5 *Hardness*—Test Method **D1865**.

7. Inspection

7.1 Inspection of the material shall be as agreed upon between the purchaser and the supplier.

8. Rejection and Rehearing

8.1 Failure to conform to any of the requirements prescribed in this specification shall constitute grounds for rejection. In case of rejection, the seller shall have the right to re-inspect the rejected material and resubmit the lot after removal of those items not conforming to the requirements. The buyer will then have the option to inspect the reworked lot for compliance to specification.

9. Certification

9.1 Certification of material shall be as agreed upon between the purchaser and the supplier.

10. Keywords

10.1 built-up roofs; crushed slag; crushed stone; gravel; mineral aggregate

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