



Designation: D 1863 – 93 (Reapproved 2003)

## Standard Specification for Mineral Aggregate Used on Built-Up Roofs<sup>1</sup>

This standard is issued under the fixed designation D 1863; 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 ( $\epsilon$ ) 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 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 SI units are to be regarded as the standard. The values given in parentheses are for information only.

### 2. Referenced Documents

#### 2.1 ASTM Standards:

C 29/C 29M Test Method for Bulk Density (“Unit Weight”) and Voids in Aggregate<sup>2</sup>

C 33 Specification for Concrete Aggregates<sup>2</sup>

C 117 Test Method for Materials Finer Than 75- $\mu$ m (No. 200) Sieve in Mineral Aggregates by Washing<sup>2</sup>

C 136 Test Method for Sieve Analysis of Fine and Coarse Aggregates<sup>2</sup>

D 75 Practice for Sampling Aggregates<sup>3</sup>

D 448 Classification for Sizes of Aggregate for Road and Bridge Construction<sup>3</sup>

D 1864 Test Method for Moisture in Mineral Aggregate Used on Built-Up Roofs<sup>4</sup>

D 1865 Test Method for Hardness of Mineral Aggregate Used on Built-Up Roofs<sup>4</sup>

E 11 Specification for Wire Cloth and Sieves for Testing Purposes<sup>5</sup>

### 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.

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee D08 on Roofing and Waterproofing and is the direct responsibility of Subcommittee D08.03 on Surfacing and Bituminous Materials for Membrane Waterproofing and Built-up Roofing.

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 04.02.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 04.03.

<sup>4</sup> *Annual Book of ASTM Standards*, Vol 04.04.

<sup>5</sup> *Annual Book of ASTM Standards*, Vol 14.02.

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 E 11)	Amounts Finer than Sieve Specified, mass %		
	Size 6 <sup>A</sup> 19.0 to 9.5 mm ( $\frac{3}{4}$ in. to $\frac{3}{8}$ in.)	Size No. 67 <sup>A</sup> 19.0 to 4.75 mm ( $\frac{3}{4}$ in. to No. 4)	Size No. 7 <sup>A</sup> 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

<sup>A</sup> Size number and requirements data are from Specification C 33 and Classification D 448.

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 <sup>A</sup>
Unit mass (loose), min, kg/m <sup>3</sup> (lb/ft <sup>3</sup> )	960 (59.9)
Dust, max, %	2.0
Hardness, max, percentage passing a 3.35-mm (No. 6) sieve	20

<sup>A</sup> 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.