



Designation: C 127 – 88 (Reapproved 2001)

Standard Test Method for Specific Gravity and Absorption of Coarse Aggregate¹

This standard is issued under the fixed designation C 127; 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.

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

1. Scope

1.1 This test method covers the determination of specific gravity and absorption of coarse aggregate. The specific gravity may be expressed as bulk specific gravity, bulk specific gravity (SSD) (saturated-surface-dry), or apparent specific gravity. The bulk specific gravity (SSD) and absorption are based on aggregate after 24 h soaking in water. This test method is not intended to be used with lightweight aggregates.

1.2 The values stated in SI units are to be regarded as the standard.

1.3 *This standard does not purport to address all of the safety problems, 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 29/C 29M Test Method for Unit Weight and Voids in Aggregate²
- C 125 Terminology Relating to Concrete and Concrete Aggregates²
- C 128 Test Method for Specific Gravity and Absorption of Fine Aggregate²
- C 136 Test Method for Sieve Analysis of Fine and Coarse Aggregates²
- C 566 Test Method for Total Moisture Content of Aggregate by Drying²
- C 670 Practice for Preparing Precision and Bias Statements for Test Methods for Construction Materials²
- C 702 Practice for Reducing Field Samples of Aggregate to Testing Size²
- D 75 Practice for Sampling Aggregates³
- D 448 Classification for Sizes of Aggregate for Road and Bridge Construction³

E 11 Specification for Wire-Cloth and Sieves for Testing Purposes⁴

E 12 Terminology Relating to Density and Specific Gravity of Solids, Liquids, and Gases⁵

2.2 AASHTO Standard:

AASHTO No. T 85 Specific Gravity and Absorption of Coarse Aggregate⁶

3. Terminology

3.1 Definitions:

3.1.1 *absorption*—the increase in the weight of aggregate due to water in the pores of the material, but not including water adhering to the outside surface of the particles, expressed as a percentage of the dry weight. The aggregate is considered “dry” when it has been maintained at a temperature of $110 \pm 5^\circ\text{C}$ for sufficient time to remove all uncombined water.

3.1.2 *specific gravity*—the ratio of the mass (or weight in air) of a unit volume of a material to the mass of the same volume of water at stated temperatures. Values are dimensionless.

3.1.2.1 *apparent specific gravity*—the ratio of the weight in air of a unit volume of the impermeable portion of aggregate at a stated temperature to the weight in air of an equal volume of gas-free distilled water at a stated temperature.

3.1.2.2 *bulk specific gravity*—the ratio of the weight in air of a unit volume of aggregate (including the permeable and impermeable voids in the particles, but not including the voids between particles) at a stated temperature to the weight in air of an equal volume of gas-free distilled water at a stated temperature.

3.1.2.3 *bulk specific gravity (SSD)*—the ratio of the weight in air of a unit volume of aggregate, including the weight of water within the voids filled to the extent achieved by submerging in water for approximately 24 h (but not including the voids between particles) at a stated temperature, compared to the weight in air of an equal volume of gas-free distilled water at a stated temperature.

NOTE 1—The terminology for specific gravity is based on terms in Terminology E 12, and that for absorption is based on that term in Terminology C 125.

¹ This test method is under the jurisdiction of ASTM Committee C09 on Concrete and Concrete Aggregates and is the direct responsibility of Subcommittee C09.20 on Normal Weight Aggregates.

Current edition approved Oct. 31, 1988. Published December 1988. Originally published as C 127 – 36 T. Last previous edition C 127 – 84.

² *Annual Book of ASTM Standards*, Vol 04.02.

³ *Annual Book of ASTM Standards*, Vol 04.03.

⁴ *Annual Book of ASTM Standards*, Vol 14.02.

⁵ *Annual Book of ASTM Standards*, Vol 15.05.

⁶ Available from American Association of State Highway and Transportation Officials, 444 North Capitol St. N.W., Suite 225, Washington, DC 20001.