



Designation: D1633 – 17

Standard Test Methods for Compressive Strength of Molded Soil-Cement Cylinders¹

This standard is issued under the fixed designation D1633; 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 U.S. Department of Defense.

1. Scope*

1.1 This test method covers the determination of the compressive strength of soil-cement using molded cylinders as test specimens.

1.2 Two alternative procedures are provided as follows:

1.2.1 *Method A*—This procedure uses a test specimen prepared in a mold complying with Test Methods **D698** (4.0 in. (101.6 mm) in diameter and 4.6 in. (116.8 mm) in height), sometimes referred to as a proctor mold, resulting in a height over diameter ratio of 1.15. This test method may be used only on materials with 30 % or less retained on the 19.0-mm ($3/4$ -in.) sieve. See **Note 2**.

1.2.2 *Method B*—This procedure uses a test specimen with a height over diameter ratio of 2.0 prepared in a cylindrical mold in accordance with Practice **D1632** (2.8 in. (71.1 mm) in diameter and 9.0 in. (229 mm) in height). This test method is applicable to those materials that pass the 4.75-mm (No. 4) sieve.

1.3 *Units*—The values stated in inch-pound units are to be regarded as standard, except as noted in below. The values given in parentheses are mathematical conversions to SI units, and are provided for information only and are not considered standard. Sieve sizes are identified by the standard designations in Specification **E11**. The alternative sieve size designation given in parentheses is for information only and does not represent a different standard sieve size.

1.3.1 The gravitational system of inch-pound units is used when dealing with inch-pound units. In this system, the pound (lbf) represents a unit of force (weight), while the unit for mass is slugs.

1.3.2 The slug unit of mass is almost never used in commercial practice, that is, density, balances, etc. Therefore,

the standard unit for mass in this standard is either kilogram (kg) or gram (g), or both. Also, the equivalent inch-pound unit (slug) is not given/presented in parentheses.

1.3.3 It is common practice in the engineering/construction profession to concurrently use pounds to represent both a unit of mass (lbm) and of force (lbf). This implicitly combines two separate systems of units; that is, the absolute system and the gravitational system. It is scientifically undesirable to combine the use of two separate sets of inch-pound units within a single standard. As stated, this standard includes the gravitational system of inch-pound units and does not use/present the slug unit for mass. However, the use of balances or scales, recording pounds of mass (lbm) or recording density in lbm/ft³ shall not be regarded as nonconformance with this standard.

1.4 All observed and calculated values shall conform to the guidelines for significant digits and rounding established in Practice **D6026** unless superseded by this test method.

1.4.1 The procedures used to specify how data are collected/recorded and calculated in the standard are regarded as the industry standard. In addition, they are representative of the significant digits that generally should be retained. The procedures used do not consider material variation, purpose for obtaining the data, special purpose studies, or any considerations for the user's objectives; and it is common practice to increase or reduce significant digits of reported data to be commensurate with these considerations. It is beyond the scope of these test methods to consider significant digits used in analysis methods for engineering data.

1.5 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

¹ This test method is under the jurisdiction of ASTM Committee **D18** on Soil and Rock and is the direct responsibility of Subcommittee **D18.15** on Stabilization With Admixtures.

Current edition approved Nov. 1, 2017. Published November 2017. Originally approved in 1959. Last previous edition approved in 2007 as D1633 – 00(2007), which was withdrawn in July 2016 and reinstated in November 2017. DOI: 10.1520/D1633-17.