



Standard Practices for Calibration of Laboratory Mechanical-Rammer Soil Compactors¹

This standard is issued under the fixed designation D2168; 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 These practices for the calibration of mechanical soil compactors are for use in checking and adjusting mechanical devices used in laboratory compacting of soil and soil-aggregate in accordance with Test Methods [D698](#), [D1557](#), Practice [D6026](#), and other methods of a similar nature that might specify these practices. Calibration for use with one practice does not qualify the equipment for use with another practice.

1.2 The weight of the mechanical rammer is adjusted as described in [5.4](#) and [6.5](#) in order to provide for the mechanical compactor to produce the same result as the manual compactor.

1.3 Two alternative procedures are provided as follows:

		Section
Practice A	Calibration based on the compaction of a selected soil sample	5
Practice B	Calibration based on the deformation of a standard lead cylinder	6

1.4 If a mechanical compactor is calibrated in accordance with the requirements of either Practice A or Practice B, it is not necessary for the mechanical compactor to meet the requirements of the other practice.

1.5 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

1.5.1 It is common practice in the engineering profession to concurrently use pounds to represent both a unit of mass (lbm) and a 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. This standard has been written using the gravitational system of units when dealing with the inch-pound system. In this system, the pound (lbf) represents a unit of force (weight).

¹ These practices are under the jurisdiction of ASTM Committee [D18](#) on Soil and Rock and are the direct responsibility of Subcommittee [D18.03](#) on Texture, Plasticity and Density Characteristics of Soils.

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However, the use of balances or scales recording pounds of mass (lbm) or the recording of density in lbm/ft³ shall not be regarded as a nonconformance with this standard.

1.6 *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:²

[D653 Terminology Relating to Soil, Rock, and Contained Fluids](#)

[D698 Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort \(12 400 ft-lbf/ft³ \(600 kN-m/m³\)\)](#)

[D1557 Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort \(56,000 ft-lbf/ft³ \(2,700 kN-m/m³\)\)](#)

[D2487 Practice for Classification of Soils for Engineering Purposes \(Unified Soil Classification System\)](#)

[D3740 Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction](#)

[D6026 Practice for Using Significant Digits in Geotechnical Data](#)

[E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves](#)

[E145 Specification for Gravity-Convection and Forced-Ventilation Ovens](#)

3. Significance and Use

3.1 Mechanical compactors are commonly used to replace the hand compactors required for Test Methods [D698](#) and [D1557](#) in cases where it is necessary to increase production.

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.