



Standard Test Method for Field Vane Shear Test in Saturated Fine-Grained Soils¹

This standard is issued under the fixed designation D2573/D2573M; 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 field vane test in saturated clay and silt soils for determination of undrained shear strength. Knowledge of the nature of the soil in which each vane test is to be made is necessary for assessment of the applicability and interpretation of the test. The test is not applicable for sandy soils or non-plastic silts, which may allow drainage during the test.

1.2 This test method addresses testing on land and for testing in drill holes or by self-drilling or continuous push methods from the ground surface. This method does not address specifically marine testing where special test requirements or variations in equipment may be required. The user is referred to ASTM STP 1014 for additional information on in-place vane shear testing used in marine exploration.²

1.3 This method is often used in conjunction with fluid rotary drilling (D5783), hollow-stem augers (D6151), or cone penetration testing (D5778). Some apparatuses have the vane retracted in a protective shoe for advancement and incremental testing. Sampling, such as with thin wall tubes (D1587) is often combined with vane testing. Subsurface geotechnical explorations are reported in accordance with Practice (D5434).

1.4 Undrained shear strength and sensitivity of cohesive soils can also be measured in Laboratory Vane Test (D4648).

1.5 *Units*—The values stated in either SI units or inch-pound units [presented in brackets] are to be regarded separately as standard. The values 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. Reporting of test results in units other than SI shall not be regarded as nonconformance with this test method.

1.5.1 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. The rationalized slug unit is not given, unless dynamic ($F = ma$) calculations are involved.

1.6 All observed and calculated values shall conform to the guidelines for significant digits and rounding established in Practice D6026.

1.6.1 The procedures used to specify how data are collected/recorded or calculated in this 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 or reported data to be commensurate with these considerations. It is beyond the scope of this standard to consider significant digits used in analytical methods for engineering design.

1.7 *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:³

- D653 Terminology Relating to Soil, Rock, and Contained Fluids
- D1587 Practice for Thin-Walled Tube Sampling of Soils for Geotechnical Purposes
- D2166 Test Method for Unconfined Compressive Strength of Cohesive Soil
- D2488 Practice for Description and Identification of Soils (Visual-Manual Procedure)
- D2850 Test Method for Unconsolidated-Undrained Triaxial Compression Test on Cohesive Soils
- D3740 Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as

¹ This test method is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.02 on Sampling and Related Field Testing for Soil Evaluations.

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² ASTM STP 1014 on Vane Shear Strength Testing in Soils (1988).

³ 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.