



Standard Test Method for Field Vane Shear Test in Cohesive Soil¹

This standard is issued under the fixed designation D 2573; 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.

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 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 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.²

1.3 This method is often used in conjunction with fluid rotary drilling (D 5783) or hollow-stem augers (D 6151). Some apparatuses have the vane retracted in protective shoe for advancement and incremental testing. Sampling, such as with thin wall tubes (D 1587) is often combined with vane testing. Subsurface geotechnical explorations are reported in accordance with practice (D 5434).

1.4 Undrained shear strength and sensitivity of cohesive soils can also be measured in Unconfined Compression D 2166 and Laboratory Vane Test (D 4648).

1.5 The values stated in SI units are to be regarded as the standard. English (Imperial) units are given in parentheses.

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:

D 653 Terminology Relating Soil and Rock and Contained Fluids³

D 1587 Practice for Thin-Walled Tube Sampling of Soils³

D 2166 Test Method for Unconfined Compressive Strength of Cohesive Soil³

D 2488 Practice for Description and Identification of Soils (Visual-Manual Procedure)³

D 3740 Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction³

D 4648 Test Method for Laboratory Miniature Vane Shear Test for Saturated Fine-Grained Clayey Soil³

D 5434 Guide for Field Logging of Subsurface Explorations of Soil and Rock³

D 5783 Guide for the Use of Direct-Rotary Drilling with Water-Based Drilling Fluid for Geoenvironmental Exploration and the Installation of Subsurface Water-Quality Monitoring⁴

D 6151 Practice for Hollow-Stem Auger Drilling and Sampling of Soil for Geotechnical Purposes⁴

2.2 Other Standards:

Recommended Standard for Field Vane Shear Test, Swedish Geotechnical Society, SGF Report 2:93E, Swedish Geotechnical Institute, Linköping: www.swedgeo.se
EuroCode 7: Geotechnical Design—Part 3 Design Assisted by Field Testing, ENV 1997-3:1999E, CEN

3. Terminology

3.1 Definitions:

3.1.1 For common definitions of terms in this standard, refer to Terminology D 653.

3.1.2 *sensitivity*—the effect of remolding on the consistency of cohesive soil.

3.1.3 *vane shear test (VST)*—an in-place shear test in which a rod with thin radial vanes at the end is forced into the soil and the resistance to rotation of the rod is determined.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *remolded undrained shear strength*—shear strength of fine-grained soil in rapid loading with little or no drainage of pore water pressure after significant failure and remolding of

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

³ Annual Book of ASTM Standards, Vol 04.08.

⁴ Annual Book of ASTM Standards, Vol 04.09.

