



Standard Test Method for Performing the Flat Plate Dilatometer¹

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1. Scope*

1.1 This test method describes an in-situ penetration plus expansion test. The test is initiated by forcing the steel, flat plate, dilatometer blade², with its sharp cutting edge, into a soil. Each test consists of an increment of penetration, generally vertical, followed by the expansion of a flat, circular, metallic membrane into the surrounding soil. The test provides information about the soil's in-situ stratigraphy, stress, strength, compressibility, and pore-water pressure for use in the design of earthworks and foundations.

1.2 This method includes specific requirements for the preliminary reduction of dilatometer test data. It does not specify how to assess or use soil properties for engineering design.

1.3 This method applies best to those sands, silts, clays, and organic soils that can be readily penetrated with the dilatometer blade, preferably using static push (see 4.2). Test results for soils containing primarily gravel-sized particles and larger may not be useful without additional research.

1.4 This method is not applicable to soils that cannot be penetrated by the dilatometer² blade without causing significant damage to the blade or its membrane.

1.5 The text of this standard references notes and footnotes that provide explanatory material. These notes and footnotes shall not be considered as requirements of the standard. The illustrations included in this standard are intended only for explanatory or advisory use

1.6 *Units*—The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard. Reporting of test results in units other than SI shall not be regarded as nonconformance with this test method

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

1.8 The procedures used to specify how data are collected/recorded and calculated in this standard are regarded as the industry standard. In addition, they are representative of the significant digits that should generally 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 commensurate with these considerations. It is beyond the scope of this standard to consider significant digits used in analysis methods for engineering design.

1.9 ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

1.10 *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
- D1586 Test Method for Penetration Test (SPT) and Split-Barrel Sampling of Soils
- D2435 Test Methods for One-Dimensional Consolidation Properties of Soils Using Incremental Loading
- D3441 Test Method for Mechanical Cone Penetration Tests of Soil (Withdrawn 2014)⁴

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 The dilatometer is covered by a patent. Interested parties are invited to submit information regarding the identification of an acceptable alternative(s) to this patented item to the ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend.

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.

⁴ The last approved version of this historical standard is referenced on www.astm.org.