



Designation: D4719 – 20

Standard Test Methods for Prebored Pressuremeter Testing in Soils¹

This standard is issued under the fixed designation D4719; 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 pressuremeter testing of soils at a given depth in the ground within a suitable prebored, open test cavity. The pressuremeter test is an in situ, stress-strain test performed on the wall of a test cavity using a circular cylindrical probe that is expanded radially. To obtain viable test results, disturbance of the test cavity must be minimized with minimal clearance between the diameter of the probe and the test cavity. Alternatively, when preboring does not provide an acceptable test cavity, the probe may be directly inserted into the ground to form the test cavity.

1.2 This test method includes the procedure for test cavity preparation, inserting the probe, and conducting pressuremeter tests in both granular and cohesive soils, but does not include high pressure testing in rock. Knowledge of the type of soil to be tested is necessary for assessment of (1) the method of preparing the test cavity, (2) the interpretation of the test data, and (3) the acceptability of the test results.

1.3 This test method does not cover the self-boring pressuremeter, for which the hole is drilled by a mechanical or jetting tool inside the hollow core of the probe. This test method is limited to the type of pressuremeter that is inserted into predrilled boreholes or, under certain circumstances, is inserted by driving or pushing.

1.4 Two alternative testing procedures are provided as follows:

1.4.1 *Procedure A*—Equal Pressure Increments

1.4.2 *Procedure B*—Equal Volume Increments

NOTE 1—Pressuremeter tests performed in rock or using the self-boring pressuremeter follow similar test procedures to those described herein, but do not fall within the scope of this test method.

NOTE 2—Strain-controlled tests also can be performed, whereby the probe volume is increased at a constant rate and corresponding pressures are measured. Strain-controlled tests may yield different results than the procedures described in this test method.

¹ These test methods are 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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1.5 All observed and calculated values shall conform to the guidelines for significant digits and rounding established in Practice D6026.

1.6 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 be commensurate with these considerations. It is beyond the scope of this standard to consider significant digits used in analysis methods for engineering design.

1.7 The text of this standard references notes and footnotes which provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the standard.

1.8 The values stated in SI units are to be regarded as the 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 non-conformance with this test method.

1.9 *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.*

1.10 *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.*

2. Referenced Documents

2.1 *ASTM Standards:*²

D653 Terminology Relating to Soil, Rock, and Contained Fluids

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.

*A Summary of Changes section appears at the end of this standard