



Standard Test Method for Determination of the Point Load Strength Index of Rock and Application to Rock Strength Classifications¹

This standard is issued under the fixed designation D5731; 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 guidelines, requirements, and procedures for determining the point load strength index of rock. This is an index test and is intended to be used to classify rock strength.

1.2 Specimens in the form of rock cores, blocks, or irregular lumps with a test diameter from 30 to 85 mm can be tested by this test method.

1.3 This test method can be performed in either the field or laboratory. The test is typically used in the field because the testing machine is portable, little or minimal specimen preparation is required, and specimens can be tested within a short time frame of being collected.

1.4 This test method applies to medium strength rock (compressive strength over 15 MPa).

1.5 This test method does not cover which type of specimen should be tested or whether anisotropic factors should be considered. The specifics of the point load test program need to be developed prior to testing and possibly even before sampling. Such specifics would be dependent on the intended use of the data, as well as possible budgetary constraints and possible other factors, which are outside the scope of this test method.

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 and 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 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 these test

methods to consider significant digits used in analysis methods for engineering design

1.7 The values stated in the SI units are to be regarded as standard.

1.8 *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

D2216 Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

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

D5079 Practices for Preserving and Transporting Rock Core Samples

D6026 Practice for Using Significant Digits in Geotechnical Data

D7012 Test Methods for Compressive Strength and Elastic Moduli of Intact Rock Core Specimens under Varying States of Stress and Temperatures

E18 Test Methods for Rockwell Hardness of Metallic Materials

E122 Practice for Calculating Sample Size to Estimate, With Specified Precision, the Average for a Characteristic of a Lot or Process

2.2 ISRM Standard:

Suggested Methods for Determining Point Load Strength³

¹ This test method is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.12 on Rock Mechanics.

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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.

³ "Suggested Methods for Determining Point Load Strength", International Society for Rock Mechanics Commission on Testing Methods, *Int. J. Rock. Mech. Min. Sci. and Geomechanical Abstr.*, Vol 22, No. 2, 1985, pp. 51–60.