Australian Standard®

Methods of testing rocks for engineering purposes

Method 4.1: Rock strength tests—Determination of point load strength index

1 SCOPE

This Standard sets out the method for determining the strength of rock specimens in the field using portable equipment. Specimens in the form of either rock core (the 'diametral' and 'axial' tests) or irregular lumps (the 'irregular lump' test) are broken by application of a concentrated load using a pair of conical platens. A point load strength index ($I_{s(50)}$) is obtained and may be used to classify rocks by strength.

NOTES:

1 This test is intended as a simple procedure for field strength classification of rocks. Where necessary, the recommended procedures may be modified to overcome practical limitations, provided such modifications are clearly stated in the report.

2 Comparisons of point load strength indices from different rock domains should take into account systematic variations in sample size and shape.

3 If a relationship between point load strength index and uniaxial compressive strength is required, the relationship should be established by testing.

CAUTION: SOME OF THE TESTS SPECIFIED IN THIS STANDARD INVOLVE THE USE OF PROCESSES THAT COULD LEAD TO A HAZARDOUS SITUATION.

2 APPARATUS

The following apparatus is required:

(a) A loading device comprised of a loading frame, pump, ram and platens. The device shall have the following essential features:

(i) The device shall be adjustable to accept and test available rock specimens, e.g., in the size range 25 mm to 100 mm, for which a loading capacity of up to 50 kN is commonly required.

(ii) A quick-retracting ram, to help minimize delay between tests, with a low ram friction so as not to impair the accuracy of the load measurement.

(iii) Conical platens, of included angle 60° with a 5 mm radius spherical tip, to transmit the load to the specimen. The platens shall be hardened to a Rockwell hardness of 30 HRC. They shall be accurately aligned so that each is coaxial with the other and the device shall be rigid to ensure that the platens remain aligned during testing.

(iv) A spherical seat or other non-rigid component shall not be permitted in the loading system.