Australian Standard®

Methods of testing rocks for engineering purposes

Method 4.2.1: Rock strength tests—Determination of uniaxial compressive strength of 50 MPa and greater

1 SCOPE

This Standard sets out the method for determining the uniaxial compressive strength of a rock sample in the form of specimens of regular geometry.

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

2 NORMATIVE REFERENCES

The following referenced documents are indispensable for the application of this document:

AS
2193 Calibration and classification of force-measuring systems

4133 Methods of testing rocks for engineering purposes
4133.1.1.1 Method 1.1.1: Rock moisture content tests—Determination of the moisture content of rock—Oven drying method (Standard method)

3 APPARATUS

The following apparatus is required:

(a) A suitable machine for applying and measuring axial load to the specimen. It shall be of sufficient capacity and capable of applying load at the rate specified in Clause 5. The machine shall include a force-measuring device meeting the accuracy and repeatability requirements of AS 2193 Class B testing machines for the range of forces used in the test.

(b) Discs with a Rockwell hardness of not less than 30 HRC, which shall be placed at the specimen ends. The diameter of the discs shall be the same as the diameter of the specimen. The thickness of the discs shall be not less than the larger of 15 mm or $D/3$, where D is the specimen diameter. Surfaces of the discs shall be ground and shall be flat to 0.005 mm. One of the two discs shall incorporate a spherical seat. The spherical seat shall be placed on the upper end of the specimen. It shall be lightly lubricated with mineral oil so that it locks after the dead-weight of the cross-head has been picked up. The specimen, the discs and spherical seat shall be accurately centred with respect to one another and to the axis of load application of the loading machine. The curvature centre of the spherical seat surface shall coincide with the centre of the specimen top face.

NOTE: A spherical seat that does not comply with Clause 3(b) should be removed or placed in a locked position with the two loading faces of the machine parallel to each other.