Australian Standard®

Methods of testing rocks for engineering purposes

Method 4.3.1: Rock strength tests—Determination of deformability of rock materials in uniaxial compression—Strengths of 50 MPa and greater

1 SCOPE

This Standard sets out the method for determining the stress-strain characteristics and Young's modulus, and Poisson's ratio in uniaxial compression 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 REFERENCED DOCUMENT

The following document is referred to in this Standard:

AS
2193 Calibration and classification of force-measuring systems

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) Steel discs having a Rockwell hardness of not less than 30 HRC. The discs 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 their flatness shall be within 0.02 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 this Clause should be removed or placed in a locked position with the two loading faces of the machine parallel to each other.