Australian Standard®

Methods of testing rocks for engineering purposes

Method 4.3.2: Rock strength tests—Determination of the deformability of rock materials in uniaxial compression—Rock strength less than 50 MPa

AS 4133.4.3.2—2013

1 SCOPE

This Standard sets out the method for determining uniaxial compressive strength, the stress-strain characteristics, Young's modulus and Poisson's ratio of a rock sample in compression in the form of specimens of regular geometry of strength less than 50 MPa. The test is intended for strength classification and characterization of intact rock.

NOTE: Where the measured strength using this method exceeds 50 MPa this method may result in a measured strength that is less than the strength obtained in test method AS 4133.4.3.1.

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

2 REFERENCED DOCUMENTS

The following documents are referenced in this Standard:

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)

4133.4.2.2 Method 4.2.2: Rock strength tests—Determination of uniaxial compressive strength—Rock strength less than 50 MPa

3 APPARATUS

The following apparatus are required:

(a) A suitable loading machine meeting the requirements for a Class A force-measuring system, as defined in AS 2193, for applying and measuring axial load to the specimen. It shall be of sufficient capacity and capable of applying load at a uniform strain rate as specified in Clause 5.

(b) Discs having 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 their flatness shall be within 0.02 mm. One of the two discs shall incorporate a spherical seat. The seat shall be 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.