Australian Standard®

Methods of testing rocks for engineering purposes

Method 4.2: Rock strength tests— Determination of uniaxial compressive strength

METHOD

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. The test is mainly intended for strength classification and characterization of intact rock.

2 REFERENCED DOCUMENT The following document is referred to in this Standard:

AS
2193 Methods for calibration and grading of force-measuring systems of testing machines

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 (see Note 1).

(b) Discs having a Rockwell hardness of not less than 30 HRC 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 (see Note 2).

(c) A measuring instrument such as venier or micrometer callipers capable of measuring specimen dimensions with a precision of 0.1 mm.

4 SAMPLES AND SPECIMEN PREPARATION

(a) From the samples prepare at least five specimens having the following characteristics (see Note 3):

(i) Test specimens shall be straight circular cylinders having a length to diameter ratio of 2.5 to 3.0 and a diameter preferably of not less than 50 mm. The diameter of the specimen shall be at least ten times the size of the largest grain in rock.