Australian Standard™

Methods of testing rocks for engineering purposes

Method 3.2: Rock swelling and slake durability tests—Determination of the swelling strain for a radially confined specimen with axial surcharge

1 SCOPE

This Standard sets out the method for determining the swelling strain developed against a constant axial pressure or surcharge, when a radially confined, undisturbed rock specimen is immersed in water. It is particularly suitable for tests on materials that deteriorate on immersion in water.

NOTE: Information on the uncertainty of measurement is given in Appendix A.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
4133	Methods of testing rocks for engineering purposes
4133.1.1.1	Part 1.1.1: Rock moisture content tests—Determination of the moisture content of rock—Oven drying method (standard method)
ISO/IEC 17025	General requirements for the competence of testing and calibration laboratories
ISO	
GUM	Guide to the expression of uncertainty in measurement

3 APPARATUS

The following apparatus is required:

(a) A metal ring for rigid radial restraint of the specimen, polished and lubricated to reduce side friction and of depth at least sufficient to accommodate the specimen when fully swollen.

NOTE: The apparatus may be adapted from that used for soil consolidation testing, the essential features being shown in Figure 1.

(b) Porous plates to allow water access at the top and bottom of the specimen, the top plate of such a diameter as to slide freely in the ring and having a spherical seat for load application. Filter papers may be inserted between the specimen and plates.

(c) A cell to contain the specimen assembly, capable of being filled with water to a level above the top porous plate.

(d) A dial gauge or other deformation measurement device reading to 0.002 mm, mounted to measure the swelling displacement at the central axis of the specimen.