

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