Australian Standard™

Methods of testing soils for engineering purposes

Method 2.1.4: Soil moisture content tests—Determination of the moisture content of a soil—Microwave-oven drying method (subsidiary method)

1 SCOPE

This Standard sets out the method for the determination of the moisture content of a soil as a percentage of its dry mass using a microwave oven.

Microwave-oven drying is a rapid method and is considered less accurate than the standard method (see AS 1289.2.1.1).

This method is not suitable for soils containing gypsum, calcareous material or organic matter unless a temperature-controlled microwave oven is used.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS		
1289	Methods of testing soils for engineering purposes	
1289.1.1	Method 1.1:	Sampling and preparation of soils—Preparation of disturbed soil samples for testing
1289.2.1.1	Method 2.1.1:	Soil moisture content tests—Determination of the moisture content of a soil—Oven drying method (standard method)
1289.2.3.1	Method 2.3.1:	Soil moisture content tests—Establishment of correlation—Subsidiary method and the standard method

3 APPARATUS

The following apparatus is required:

(a) Microwave oven.

NOTE: Microwave ovens that offer temperature control are available. This facility, which may need adjustment to obtain temperature control in the range 105°C to 110°C, should enable moisture content determinations to be made comparable with those determined by the conventional oven drying; however, the time taken in this case may be so long as to prevent the test being considered a rapid method.

(b) Heat-resistant non-absorbent, non-metallic containers.

(c) Perforated non-metallic covers for the containers, if required.

NOTE: The action of microwave heating can violently crack stones and can, particularly with soils of high moisture content, cause spattering leading to ejection of material from the container. Covering the container with a perforated cover of non metallic heat-resistant material will overcome the ejection problem. Care is required to ensure that no soil is lost by adhering to this cover during drying.

(d) Suitable balance with limit of performance as shown in Table 1.