

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
**METHODS OF SAMPLING AND TESTING MORTAR FOR MASONRY
CONSTRUCTION**

AS 2701.8
**METHOD FOR DETERMINATION OF AIR
CONTENT — GRAVIMETRIC METHOD**

1 SCOPE. This standard sets out the method for determination of air content of mortar by the gravimetric method.

NOTE: This is the reference method for the determination of air content of mortar. Other methods may be used provided that they give results which correlate with those given by the gravimetric method.

2 REFERENCED DOCUMENTS. The following standards are referred to in this standard:

- AS 1141 Method for Sampling and Testing Aggregates
 Section 5 — Bulk Density and Water Absorption of Fine Aggregate
- AS 2701 Methods of Sampling and Testing Mortar for Masonry Construction
 Part 3 — Method of Preparation of Fresh Mortar for Testing.

3 PRINCIPLE. The air content of the mortar is calculated from the measured density of the mortar and the densities of the constituents.

4 APPARATUS. The following apparatus is required:

- (a) *Measure.* The measure shall be rigid, thick-walled and made of corrosion-resistant brass, of about 0.5 L capacity with an internal diameter of about 75 mm. The joint between the bottom and the walls shall preferably have a slight radius.
- (b) *Glass plate.* The glass plate shall be of sufficient size to cover the measure (approximately 300 mm square).
- (c) *Palette knife.*
- (d) *Balance.* A balance of sufficient capacity and accurate to 0.5 g.

5 CALIBRATION OF MEASURE. The measure shall be calibrated as follows:

- (a) Weigh the measure and glass plate in a dry condition.
- (b) Fill the measure with distilled water of room temperature and determine the temperature of the water.
- (c) Place the glass plate over the top, making certain that no air bubbles are trapped under it. Weigh the measure, with the glass plate.
- (d) Repeat steps (a) to (c) twice, and then calculate the average mass and the average temperature.
- (e) Calculate the capacity of the measure in cubic centimetres using standard tables for the density of water at different temperatures.

6 DENSITIES OF MATERIALS.

6.1 Determination of density.

6.1.1 By experiment. The density of each constituent material shall, where possible be determined experimentally, using the following procedures:

- (a) *Sand*—in accordance with AS 1141, Section 5.
- (b) *Powders*, e.g. cements and limes—in the usual manner by displacement of liquid in a density bottle as follows:
 - (i) Prepare a suitable liquid which does not change in density by more than 0.5 kg/m³ when evacuated for 5 h.

NOTE: A suitable liquid can be prepared in the laboratory by redistilling kerosine and collecting the fraction condensing at 200°C to 240°C. Petroleum fractions with boiling ranges within the range 190°C to 225°C and with sufficiently stable density characteristics are commercially available and are also suitable.