

Australian Standard®

Methods of testing portland, blended and masonry cements

Method 13: Determination of drying shrinkage of cement mortars

AS 2350.13—2006

1 SCOPE

This Standard sets out the method for determining the drying shrinkage of cement mortars of defined composition.

NOTES:

- 1 The test results indicate the potential performances of cement in mortar and concrete mixtures. It should be recognized, however, that drying shrinkage of mortar and concrete is affected by many factors other than cement.
- 2 The testing procedure herein may involve the use of materials or equipment that require safety measures to be observed.
- 3 This Standard does not purport to address all of the safety concerns, if any, associated with its use.
- 4 The user of this Standard should establish appropriate safety and health practices, and determine the applicability of regulatory limitations prior to use.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

- 2350 Methods of testing portland, blended and masonry cements
2350.12 Method 12: Preparation of a standard mortar and moulding of specimens

AS/NZS

- 2350 Methods of testing portland, blended and masonry cements
2350.1 Method 1: Sampling

3 PRINCIPLE

The method comprises the determination of drying shrinkage of prismatic test specimens 40 mm × 40 mm × 150 mm in size.

The mortar is prepared and the specimens are moulded in accordance with AS 2350.12.

The specimens in the mould are stored in a moist atmosphere for 24 h and then the demoulded specimens are stored under drying conditions of 50 ± 5% RH and 23 ± 2°C. Measurement of the specimen length is carried out on demoulding and at the age of 7 d, 14 d, 21 d and 28 d from moulding.

4 APPARATUS

The apparatus specified in AS 2350.12 and that below is required.

4.1 Reference drying chamber

The drying chamber for the storage of specimens shall provide a suitably controlled environment in accordance with the following requirements:

- (a) The temperature in the drying chamber shall be maintained at $23 \pm 1^\circ\text{C}$ for at least 95% of each 24 h period, with the remaining time in the range $23 \pm 2^\circ\text{C}$.

- (b) The relative humidity in the drying chamber shall be maintained at $50 \pm 5\%$.

NOTE: Humidity and temperature may deviate from specification when specimens are being placed in or removed from the drying chamber. These deviations should not be taken to indicate non-compliance with the specification, provided they do not exceed 1% of the total test period.

- (c) The rate of evaporation, determined using the method given in Appendix A, shall be within the range of 15 g to 50 g per 24 h. Checks on the evaporation rate shall be carried out at least monthly.

NOTE: It is recommended to vary the location of the containers within the drying chamber on a monthly basis or where conditions have changed.

- (d) The drying chamber shall be fitted with suitable shelving to provide a substantially unidirectional airflow from the back to the front of the chamber.

- (e) Supporting racks shall be constructed of nominal 100 mm square stainless steel mesh. The wire used in the mesh shall be a nominal 5 mm diameter. The mesh shall have 'legs' fashioned from the free ends of the mesh so that the specimens will be supported at not less than 12 mm above the plate of the shelf. Clearance of not less than 25 mm shall be provided between the specimens. A means of correct relocation of this rack on the shelf shall be provided (see Figure 1).

- (f) Storage positions shall always be kept occupied (with dummy specimens if necessary).

NOTE: It is recommended that the dummy specimens be prisms of the same dimensions as the test specimens.

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