

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

RECONFIRMATION

OF

AS/NZS 2350.3:2006

Methods of testing portland, blended and masonry cements

Method 3: Normal consistency

RECONFIRMATION NOTICE

Technical Committee BD-010 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 24 February 2016.

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The following are represented on Technical Committee BD-010:

AUSTROADS

Cement and Concrete Association of New Zealand

Cement Concrete and Aggregates Australia

Cement Concrete and Aggregates Australia—Cement

Cement Concrete and Aggregates Australia—Concrete

Concrete Institute of Australia

Concrete Masonry Association of Australia

Engineers Australia

Portland Cement Association

NOTES

Australian/New Zealand StandardTM

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Methods of testing portland, blended and masonry cements**Method 3: Normal consistency**

PREFACE

This Standard incorporates Amendment No. 1 (September 2008). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

1 SCOPE

This Standard sets out the method for determining the normal consistency of cement.

NOTES:

- 1 The testing procedure herein may involve the use of materials or equipment that require safety measures to be observed.
- 2 This Standard does not purport to address all of the safety concerns, if any, associated with its use.
- 3 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/NZS

2350 Methods of testing portland, blended and masonry cements

2350.1 Part 1: Sampling

ASTM

C451 Method of test for false set of portland cement (Paste method)

3 PRINCIPLE

Normal consistency is defined as the property of cement paste having a specified resistance to penetration by a standard plunger.

4 APPARATUS AND RELATED CONDITIONS**4.1 Laboratory**

The air within the laboratory where the preparation and testing of the specimen takes place shall be maintained at a temperature of $23 \pm 2^\circ\text{C}$ and at a relative humidity of not less than 50%.

4.2 Apparatus

The following apparatus is required and shall be maintained within the tolerances specified:

- (a) *Balance* The balance shall have a capacity appropriate to the mass required and an accuracy of 0.5 g in the range used.
- (b) *Mixer* The mixer shall consist of the following:
 - (i) A stainless steel mixing bowl with a capacity of approximately 5 L and of the general shape and size shown in Figure 1, provided with means by which it can be fixed securely to the mixer frame during mixing and by which the height of the bowl in relation to the mixer blade and, to some extent, the gap between blade and bowl can be finely adjusted and fixed.
 - (ii) A stainless steel mixer blade of the general shape, size and tolerances shown in Figure 1, revolving about its own axis as it is driven in a planetary movement around the axis of the bowl by an electric motor at controlled speeds. The two directions of rotation shall be opposite.

The gap between blade and bowl, as shown in Figure 1, shall be checked, using the flexible wedge gauge shown in Figure 2, and recorded every month, or whenever there is any change to or adjustment of the apparatus.

The mixer shall operate at the speed given in Table 1.

TABLE 1
SPEED OF MIXER BLADE

Speed setting	Mixer blade r/min	Planetary movement r/min
Low speed	140 ±5	62 ±5

- (c) *Plunger apparatus* The apparatus shall, in principle, conform to the design shown in Figure 3 and the tolerances shown thereon. The plunger shall be of corrosion-resistant metal and have a plane square surface. All moving parts shall be truly vertical, without appreciable friction, and their axis shall coincide with that of the plunger.
- (d) *Mould* The mould to contain the paste under test shall be of a rigid non-corrodible material, and shall be provided with a plane baseplate larger than the mould and minimum 2.5 mm thick.
- (e) *Gloves* Gloves made of rubber or a suitable plastics material.
- (f) *Timer* A timer readable to 1 s.
- (g) *Trowel* A mixing trowel of approximately 200 mm length with a true straightedge of minimum length 100 mm.
- (h) *Scraper* A semi-rigid rubber or suitable plastics blade attached to a handle about 150 mm long, with a blade of about 75 mm long, 50 mm wide, and tapered to a thin edge about 1.5 mm wide.

5 MATERIALS

The following materials shall be used:

- (a) Distilled or de-ionized water, for making the paste.
- (b) Cement, water and apparatus, to make and test the paste. The paste shall be maintained at a temperature of $23 \pm 2^\circ\text{C}$.