

Australian Standard®

AS 1012.6:2014

Methods of testing concrete

Method 6: Determination of bleeding of concrete

1 SCOPE

This Standard sets out the method for determining the relative quantity and rate that mixing water will bleed from a sample of freshly mixed concrete under the conditions of the test. The Standard applies only to concrete in which the maximum aggregate size is 40 mm or less.

The Standard provides for compaction of the sample either by rodding or vibrating.

NOTES:

- 1 The results obtained will be dependent on the compaction method used.
- 2 This Standard may involve hazardous materials, operations, and equipment. The Standard does not purport to address all of the safety problems associated with its use. 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

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| 1012 | Methods of testing concrete |
| 1012.1 | Method 1: Sampling of fresh concrete |
| 1012.2 | Method 2: Preparation of concrete mixes in the laboratory |
| 1012.3.1 | Method 3.1: Determination of properties related to the consistency of concrete—Slump test |
| 1012.8.1 | Method 8.1: Method for making and curing concrete—Compression and indirect tensile test specimens |

3 DEFINITION

For the purpose of this Standard the definition below applies.

3.1 Self compacting concrete (SCC)

Concrete that is able to flow and consolidate under its own weight, completely fill the formwork or bore hole even in the presence of dense reinforcement, whilst maintaining homogeneity and without the need for additional compaction. SCC is also known as 'self-consolidating concrete' and 'super-workable concrete'.

4 APPARATUS

4.1 Container

A cylindrical container of approximately 0.015 m³ capacity, and having an inside diameter of 250 ±3 mm and an inside height of at least 280 mm, shall be used. It shall be made of metal not less than 3 mm thick, and shall be watertight and sufficiently rigid to maintain its shape with rough usage. It may be of split construction to facilitate emptying and cleaning, but any joints shall be completely watertight. The inside surface shall be smooth and free from corrosion, coatings or lubricants.

The container shall have a circumferential mark on the inside surface 250 ±1 mm above the base and shall be provided with carrying handles and a suitable vapour tight cover.

The internal cross-sectional area of the container at the level of the circumferential mark shall be determined and shall be either marked or stamped on the outside of the container.

4.2 Suction device

A pipette, suction hose or similar device shall be used for drawing off free water from the surface of the test specimen.

NOTE: In the laboratory a device comprising a vacuum pump with a tap fitting together with a plastics tube, a pipe with a partly flattened end and a Buchner flask to collect the bleed water has been found to be satisfactory.

4.3 Measuring cylinders

One measuring cylinder shall be of 100 mL capacity and one shall be of 25 mL capacity.

4.4 Balance

A balance shall be used capable of weighing to an accuracy of 0.1% in the range 30 kg to 60 kg.

4.5 Rod

The rod used for compacting concrete shall comply with the relevant requirements of AS 1012.3.1.

4.6 Mallet

The mallet used to release any large air bubbles and to close any surface voids in the hand compaction method shall be fitted with a hard rubber or hard plastic head weighing approximately 0.25 kg.

4.7 Scoop

A scoop, shovel or other receptacle used for sampling concrete, with a capacity of no less than 1 L.

4.8 Vibrators

Internal vibrators used for compaction of concrete shall have a frequency of vibration of at least 115 Hz. The outside diameter of the vibrating element inserted into the concrete shall be not more than one fifth of the least dimension of the measuring bowl but shall be at least 15 mm.

External vibrators used for compaction of concrete shall have a frequency of vibration of at least 50 Hz. Provision shall be made for clamping the measuring bowl securely to the vibrator.

5 SAMPLING

5.1 Field sampling

For concrete sampled in the field, the test sample shall be obtained in accordance with the requirements of AS 1012.1.

NOTE: Because of the time delay prior to testing associated with concrete sampled in the field and possible variations in the ambient conditions and concrete temperature, it is probable that the results of this test will vary when carried out in the field and the laboratory.

5.2 Laboratory sampling

For concrete made in the laboratory, the test sample shall be prepared in accordance with AS 1012.2.

5.3 Time of sampling

The time at which the test sample is taken shall be recorded.

6 TEST CONDITIONS

6.1 General

In the laboratory and in the field, the ambient temperature, the relative humidity, and the concrete temperature shall be measured and recorded at the commencement of the test. In cases of prolonged set, further readings of ambient temperature shall be taken hourly.

6.2 Field

In the field, the test specimen shall be moulded in a location where it is protected from adverse weather conditions, such as hot sunshine, drying wind, and rain.

6.3 Laboratory

In the laboratory, the test specimen shall be prepared in accordance with the provisions of AS 1012.2, Clause 8.

7 GENERAL PROCEDURE

The general procedure shall be as follows:

- (a) Take the test sample of concrete as quickly as possible to the place selected for the test.
- (b) Give the sample a minimum of mixing to offset any segregation that may have occurred during transportation.
- (c) For concrete sampled in the field commence the test immediately following the completion of mixing the test sample. For concrete prepared in the laboratory commence the test in accordance with AS 1012.2.
- (d) Place and compact the concrete in the cylinder by one of the procedures described in Clause 8, taking care to avoid segregation or excessive laitance. Where no-slump concrete is to be tested, use only the vibration procedure described in Clause 8.2. Ensure that compaction is completed within 10 min of commencement of placing and compaction.
- (e) After compaction of the final layer has been completed, level the top surface of the concrete to a reasonably smooth surface. Record the time and reckon subsequent bleeding time from this time.
- (f) Remove any excess concrete on the outside surface of the container. Weigh the container with the concrete and determine the mass of concrete (S).
- (g) Measure the bleed water by the procedure described in Clause 9.