

Australian Standard[®]

Methods of testing concrete

Method 1: Sampling of concrete

1 SCOPE

This Standard sets out the method for obtaining samples of freshly-mixed concrete—

- (a) directly from mixers;
- (b) from agitator or non-agitator units;
- (c) from concrete deposited in readiness for casting; and
- (d) from concrete deposited in the forms.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

1012	Methods of testing concrete
1012.3	Method 3: Determination of properties related to consistency of concrete
1012.3.1	Method 3.1: Slump test
1012.3.2	Method 3.2: Compacting factor test
1012.3.3	Method 3.3: Vebe test
1012.3.4	Method 3.4: Compactibility index
1012.4	Method 4: Determination of air content of freshly mixed concrete
1012.4.1	Method 4.1: Measuring reduction in concrete volume with increased air pressure
1012.4.2	Method 4.2: Measuring reduction in air pressure in chamber above concrete
1012.4.3	Method 4.3: Measuring air volume when concrete dispersed in water
1012.5	Method 5: Method for the determination of mass per unit volume of freshly mixed concrete
1012.6	Method 6: Methods for the determination of bleeding of concrete
1012.8	Method 8: Method for making and curing concrete
1012.8.1	Method 8.1: Compression and indirect tensile test specimens
1012.8.2	Method 8.2: Flexure test specimens in the laboratory or in the field
1012.13	Method 13: Determination of the drying shrinkage of concrete for samples prepared in the field or in the laboratory
1012.16	Method 16: Methods for the determination of creep of concrete cylinders in compression (metric units)
1012.17	Method 17: Methods for the determination of the static chord modulus of elasticity and Poisson's ratio of concrete specimens
1012.18	Method 18: Method for the determination of setting time of fresh concrete, mortar and grout by penetration resistance (metric units)
1379	The specification and manufacture of concrete

3 DEFINITIONS

For the purpose of this Standard, the definitions below apply.

3.1 Composite sample

Three or more sample increments mixed in accordance with Clause 8.

3.2 Individual sample

A single sample increment of the concrete.

3.3 Sample increment

The basic unit of sampling. Sample increments are taken in approximately equal volumes so that three or more sample increments constitute a composite sample (see Clauses 4, 6 and 7). Each sample increment is not less than 0.005 m^3 (5 L) of concrete.

3.4 Self compacting concrete (SCC)

Self compacting concrete (SCC) is 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' or 'super-workable concrete'.

4 APPARATUS

4.1 Sample container

A container of sufficient size to hold a sample increment.

NOTE: A 9 L bucket is commonly used.

4.2 Scoop

A scoop, shovel or other receptacle used for sampling concrete, which shall have a capacity of not less than 1 L.

4.3 Thermometer

A thermometer which measures with an accuracy of 1°C .

4.4 Mixing surface

A mixing surface which shall—

- (a) contain the sample; and
- (b) be smooth, clean and non-absorbent.

Mixing surfaces shall be horizontal with a minimum surface area of 0.5 m^2 .

NOTE: A square surface measuring $0.75 \text{ m} \times 0.75 \text{ m}$ with raised edges would be suitable.

Where wheelbarrows are used, they shall have a minimum capacity of 100 L.

5 TEST SAMPLES

The test sample shall be a composite sample, except that individual samples may be taken when—

- (a) the batch volume being sampled is less than 1 m^3 ; or
- (b) unless otherwise specified in Clauses 7.3 and 7.4, the test is for consistence only.

The volume of the composite sample shall be sufficient to carry out all the tests required, but in any case shall be not less than 0.015 m^3 (15 L) of concrete.

NOTE: Where the range of tests being conducted on the composite sample requires a volume of concrete greater than 0.015 m^3 (15 L), references may be made to Appendix A, which tabulates minimum working volumes for each of the tests covered by this series of Standards.

6 SAMPLING LOCATIONS

Representative samples of concrete shall be obtained as follows:

- (a) Central or work-site mixers—from the discharge.
- (b) Truck mixers and agitators—from the discharge.
- (c) Non-agitator units—prior to discharge.
- (d) Where sampling in accordance with Item (a), (b) or (c) is impracticable (e.g. concrete deposited in readiness for casting), sampling shall be carried out in such a manner as to obtain a representative sample from other locations.

NOTE: Representative samples may be taken at other locations that have been agreed by all the interested parties.

7 SAMPLING PROCEDURE

7.1 General

Where sample increments are to be obtained using a scoop, no more than five scoops of concrete shall be used.

The operation of taking the sample increments and mixing the composite sample shall be completed as quickly as possible. In no case shall the elapsed time between the commencement of taking the sample increments and the completion of mixing the composite sample exceed 20 min.

7.2 Sampling from central and work-site mixers, truck mixers and agitators by gradual discharge (e.g. chute)

7.2.1 Uninterrupted discharge

The procedure for taking samples of concrete from central and work-site mixers, truck mixers and agitators by gradual discharge shall be as follows:

- (a) Do not take sample increments during the discharge of the first 0.2 m³ or from the last 0.2 m³ of the batch.
- (b) Take each sample increment by diverting the entire stream so that it discharges into a sample container or by using a scoop to otherwise obtain a representative sample of the concrete being discharged.

NOTE: The rate of discharge may be slowed in order to enable sampling of the entire discharge stream.

- (c) Do not regulate the rate of discharge to permit sampling by suppressing or diverting a part of the discharge stream.
- (d) When specified take three or more sample increments at regular intervals throughout the discharge period except that, from batches of 1 m³ or less, take an individual sample at about the halfway point of discharge.

Alternatively, for production control testing or where it can be shown that the mixer uniformity complies with AS 1379 three or more separate sample increments may be taken at any time during the discharge, provided it complies with Item (a).

7.2.2 Sampling for consistence test only

Where a batch is to be sampled for acceptance on a consistence-control basis, unless otherwise specified in Clause 7.3 or 7.4, an individual sample shall be obtained from the batch immediately after the discharge of the first 0.2 m³ of concrete.