Australian Standard®

Methods of testing concrete

Method 8.1: Method for making and curing concrete—Compression and indirect tensile test specimens

1 SCOPE

This Standard sets out the method for the making and curing of compression and indirect tensile test specimens of concrete sampled in the laboratory or in the field.

NOTE: This Standard may involve hazardous materials, operations, and equipment. This 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		
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
1012.3.2	Method 3.2:	Determination of properties related to the consistency of concrete—Compacting factor test
1012.3.3	Method 3.3:	Determination of properties related to the consistency of concrete—Vebe test
1012.3.4	Method 3.4:	Determination of properties related to the consistency of concrete—Compactibility index
1012.3.5*	Method 3.5:	Determination of properties related to the consistency of concrete—Flow test and J ring
1012.4.1	Method 4.1:	Determination of air content of freshly mixed concrete—Measuring reduction in concrete volume with increased air pressure
1012.4.2	Method 4.2:	Determination of air content of freshly mixed concrete—Measuring reduction in air pressure in chamber above concrete
1012.4.3	Method 4.3:	Determination of air content of freshly mixed concrete—Measuring air volume when concrete dispersed in water
1012.9	Method 9:	Determination of the compressive strength of concrete specimens
1152	Test sieves	
2758	Aggregates and rock for engineering purposes	
2758.1	Part 1:	Concrete aggregates

* To be published.

3 DEFINITIONS

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

3.1 Designer

The person, persons or organization responsible for the design of the structure.

3.2 Concrete supplier

The person, persons or organization responsible for the supply of the concrete mix.

3.3 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 SAMPLING

4.1 Field sampling

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

4.2 Laboratory sampling

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

5 SHAPE AND DIAMETER OF STANDARD TEST SPECIMEN

5.1 Shape

The shape of the standard test specimen shall be a right cylinder having a height between 1.95 and 2.05 times the actual diameter of the specimen.

5.2 Diameter

The diameter of the standard test specimen shall be in accordance with either of the following:

(a) Between 145 mm and 155 mm, for a nominal 150 mm diameter test specimen, and the nominal maximum size of the aggregate in the concrete, in accordance with AS 2758.1, shall not exceed 40 mm.

(b) Between 95 mm and 105 mm, for a nominal 100 mm diameter test specimen, and the nominal maximum size of aggregate in the concrete, in accordance with AS 2758.1, shall not exceed 20 mm.

5.3 Limitations

The following limitations shall apply:

(a) Data from the 100 mm and 150 mm nominal diameter specimens shall not be combined.

(b) If the nominal maximum size of aggregate in the concrete exceeds that permitted for standard test specimens, then either of the following requirements shall apply:

  (i) The project specification shall provide detailed clauses regarding the making, curing and testing of appropriate test specimens.

(ii) The concrete shall be passed through an appropriate size of sieve, in accordance with AS 1152, to remove the larger aggregate portions enabling the remaining concrete to comply with the requirements for standard moulds.

NOTE: Test results from these specimens are not representative of the concrete as supplied, but can provide comparative data for purposes of control.

6 EQUIPMENT

6.1 Moulds

6.1.1 *General*

Moulds shall be made of non-absorbent material, which does not react with cement paste, and their internal surfaces shall have a smooth finish. Each mould shall be provided with a baseplate, which may be integral or separate. Moulds with separate baseplates shall be provided with lugs or suitable means for their attachment. The moulds shall be substantial enough to hold their form without distortion and shall be leak-proof.

Moulds shall be provided with suitable covers designed to minimize the loss of moisture from the specimens.

When compacting by ramming, moulds shall be fitted with a removable collar, approximately 150 mm high, mounted above and with the same internal diameter as the mould.

Each mould shall be marked for identification.

6.1.2 *Cylinder moulds*

When the cylinder moulds are clamped, they shall be capable of moulding specimens such that—

(a) the diameter of the cast specimen at any point shall not vary from the average for that mould by more than ±1 mm;

(b) the ends of the cast specimen shall be plane and perpendicular to the axis within ±0.5 degrees; and

(c) the height of the cast specimen shall be between 1.95 times and 2.05 times the average diameter.

6.1.3 *Baseplates*

The surface of the baseplate in contact with the concrete shall not vary from a plane by more than ±0.05 mm.

6.2 Rod for hand compaction

The rod used for the compaction of concrete in cylinder moulds shall comply with the relevant requirements of AS 1012.3.1, AS 1012.3.2 and AS 1012.3.3.

6.3 Vibrators

Internal vibrators used for the 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 20% of the least dimension of the mould to be filled, but shall be at least 15 mm.

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

6.4 Rammer

The steel rammer used for the compaction of low slump concrete shall comply with the relevant requirements of AS 1012.3.4.