

Australian Standard®

AS 1012.8.4:2015

Methods of testing concrete

Method 8.4: Method for making and curing concrete—Drying shrinkage specimens prepared in the field or in the laboratory

1 SCOPE

This Standard sets out a method for preparing concrete drying shrinkage specimens. It provides for preparation of specimens in the laboratory or in the field, in which the nominal size of aggregate in the concrete, in accordance with AS 2758.1, does not exceed 40 mm.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

1012	Methods of testing concrete
1012.1	Method 1: Sampling of concrete
1012.2	Method 2: Preparing 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—Slump flow, T_{500} and J-ring test
1012.4.1	Method 4.1: Determination of air content of freshly mixed concrete—Measuring reduction in concrete volume with increased air pressure
1012.8.1	Method 8.1: Method for making and curing concrete—Compression and indirect tensile test specimens
1012.13	Method 13: Determination of the drying shrinkage of concrete for samples prepared in the field or in the laboratory
2758	Aggregates and rock for engineering purposes
2758.1	Part 1: Concrete aggregates

3 DEFINITIONS

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

3.1 Standard moist curing conditions

As required by AS 1012.8.1 for lime-saturated water.

NOTE: Standard temperate conditions are required for a minimum of 24 h prior to initial measurement.

3.2 Self-compacting concrete (SCC)

Concrete that is able to flow and consolidate under its own weight, and 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

The following apparatus shall be used.

4.1 Moulds

4.1.1 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. The moulds shall be substantial enough to hold their form without distortion and shall be substantially leak-proof.

Each mould shall be provided with a base plate to which two end plates are securely fastened by screws, two side plates which are fastened to the end plates by screws, and two partially loose end plates which act as gauge stud holders. Each gauge stud holder shall fit inside the end of the mould and shall locate and secure a gauge stud during the setting period of the concrete. Each gauge stud holder shall be held in position against the end plate by a retaining screw and shall be capable of release after compaction of the concrete. The opposite side plates shall be parallel and the distance between them shall be 75 ± 1 mm. The inside height shall be 75 ± 1 mm.

4.1.2 Construction of the mould

The construction of the mould shall be aligned coaxially along the central axis of the moulded specimen, with the distance between the inner ends of the two studs being 250 ± 0.5 mm, and that between the outer ends 295 ± 1 mm. Gauge studs shall protrude from the gauge stud holders to a distance of 15 ± 1 mm. A suitable form of construction of the moulds is shown in Figure 1.

4.2 Gauge studs

Gauge studs shall be of stainless steel and shall comply with the dimensions shown in Figure 2. The radius of the gauge stud end shall be as follows:

- (a) Horizontal comparator approximately 150 mm.
- (b) Vertical comparator approximately 5 mm.

Gauge studs for horizontal and vertical comparators shall not be interchanged.

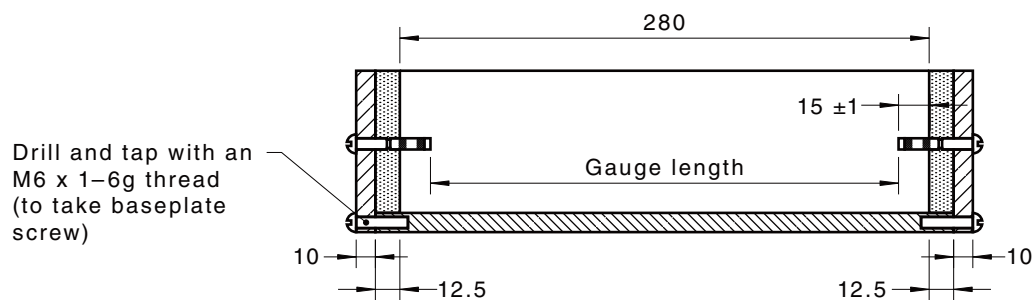
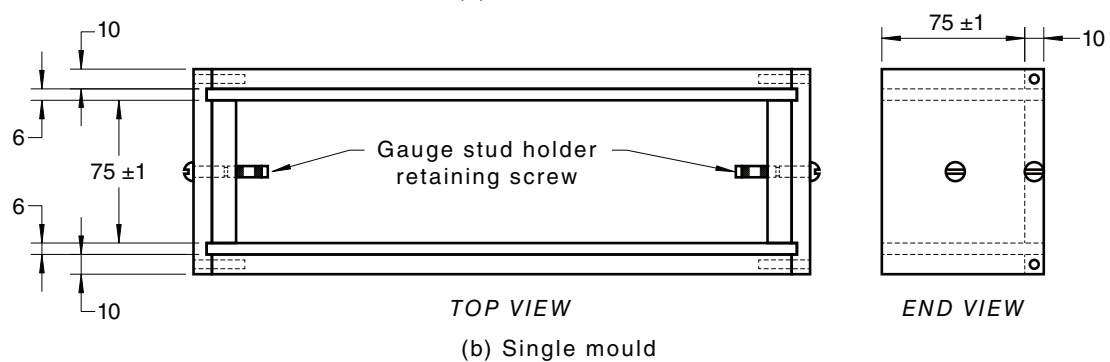
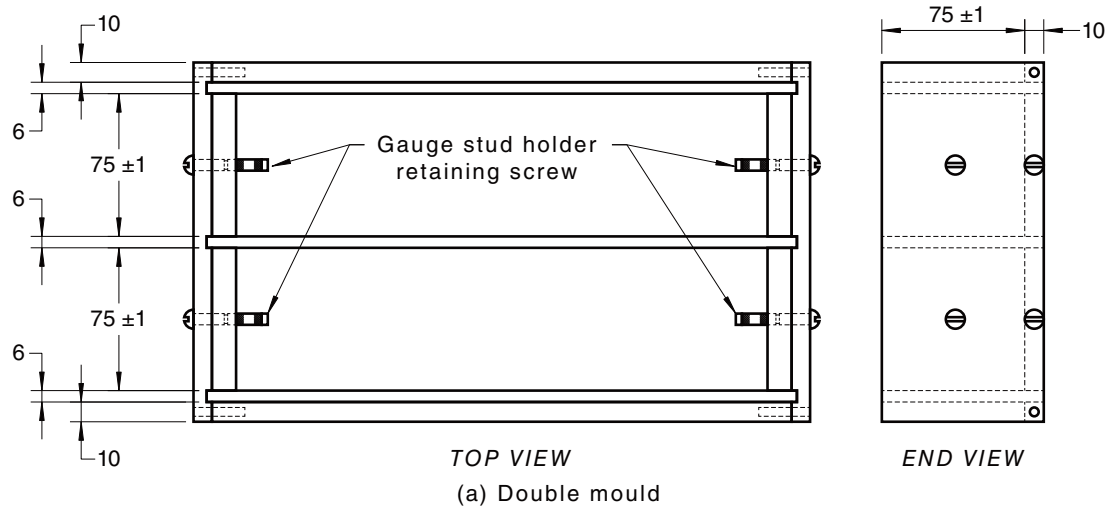
NOTE: As gauge studs are not interchangeable, it is recommended that the preparing laboratory confirm that the proposed gauge studs are compatible with the measuring laboratory's equipment.

4.3 Length gauge

A length gauge shall be provided for checking the nominal length between gauge studs. The length gauge shall be made of metal and shall have a diameter of at least 6 mm and a length of 250 ± 0.2 mm. The ends of the bar shall be flat and perpendicular to its length.

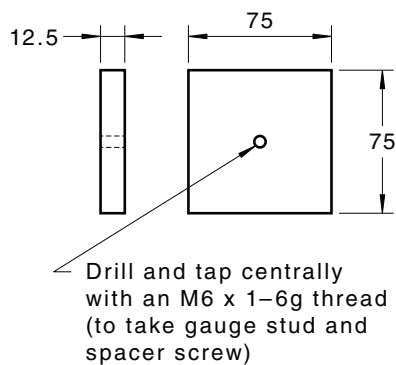
4.4 Tamping bar (hand compaction)

The bar used for compacting concrete in the moulds shall be a straight metal rectangular bar having nominal dimensions of 25 mm × 10 mm × 300 mm long with a ramming face square with the axis.

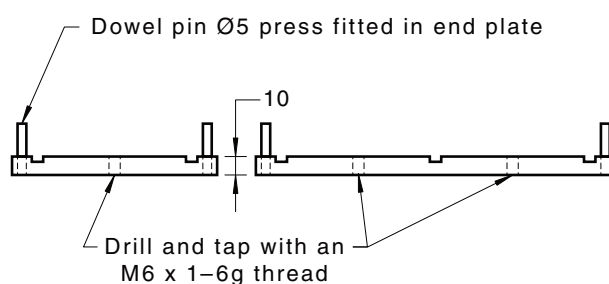


NOTE: Dimensions of 280 mm is approximate because of positioning requirements of gauge studs.

(c) Section of mould



(d) Gauge stud holder



(e) End plate details

DIMENSIONS IN MILLIMETRES

FIGURE 1 DETAILS OF A TYPICAL MOULD

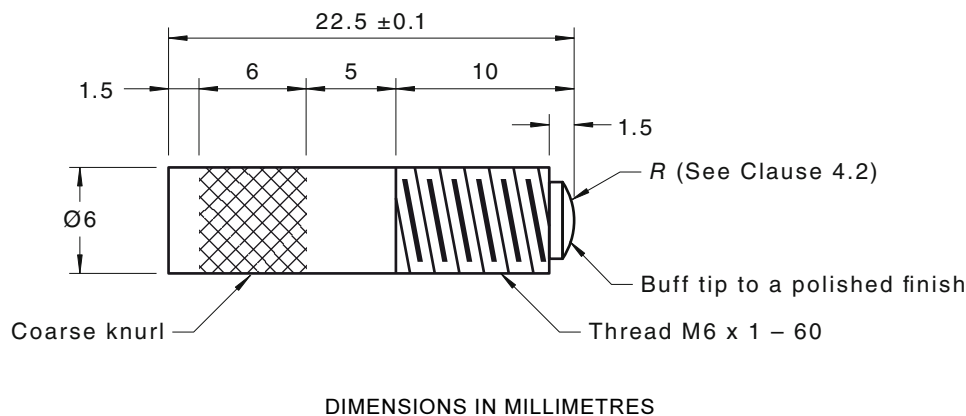


FIGURE 2 GAUGE STUD DETAILS

4.5 Vibrator

The external vibrator used to compact concrete in the moulds shall be a table type with provision for clamping of the mould. Internal vibrators shall not be used.

NOTE: A vibrating table with a nominal frequency of vibration of 50 Hz is usually suitable.

4.6 Mallet

The mallet used in the moulding of specimens shall comply with the relevant requirements of AS 1012.4.1.

4.7 Wooden float

A wooden float is the flat surfaced tool that is used for smoothing the surface of the moulded specimens.

5 SAMPLING AND TEST SPECIMENS

5.1 General

Specimens may be prepared either in the laboratory or in the field. Particular care should be taken to ensure sampling and preparation are strictly in accordance with this Clause (5) as these activities are crucial to the accuracy and repeatability of the test. Full records shall also be kept for inclusion in the report (see Clauses 7 and 8).

5.2 Sampling

5.2.1 Field sampling

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

5.2.2 Laboratory sampling

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

5.3 Preparation of test specimens

5.3.1 General

At least three specimens shall be prepared for each sample of concrete. The nominal size of the aggregate in the concrete, in accordance with AS 2758.1, shall not exceed 40 mm.

5.3.2 Size and shape of standard test specimens

The test specimen shall be a prism 75 mm × 75 mm and approximately 280 mm long. A stainless steel gauge stud shall be cast into each end of the specimen. The gauge studs shall be cast so that their principal axis coincides with the principal axis of the test specimen, and shall extend into the specimen approximately 15 mm.