

STANDARDS AUSTRALIA

RECONFIRMATION
OF
AS 5101.5—2008
Methods for preparation and testing of stabilized materials
Method 5: Absorption, swell and capillary rise of compacted materials

RECONFIRMATION NOTICE

Technical Committee CE-009 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 20 January 2017.

The following are represented on Technical Committee CE-009:

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NOTES

Australian Standard®

AS 5101.5—2008

Methods for preparation and testing of stabilized materials**Method 5: Absorption, swell and capillary rise of compacted materials****1 SCOPE**

This Standard sets out the method for determining the water absorption, swell and capillary rise of water in compacted specimens of unbound, bound and self-cementing materials.

Specimens tested using this Standard are not used for determining the unconfined compressive strength of the material.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

- 1141 Methods for sampling and testing aggregates
- 1141.1 Method 1: Definitions
- 1141.2 Method 2: Basic testing equipment
- 1152 Specification for test sieves
- 1289 Methods of testing soils for engineering purposes
- 1289.1.2.1 Method 1.2.1: Sampling and preparation of soils—Disturbed samples—Standard method
- 1289.2.1.1 Method 2.1.1: Soil moisture content tests—Determination of the moisture content of a soil—Oven drying method (standard method)
- 1289.5.1.1 Method 5.1.1: Soil compaction and density tests—Determination of the dry density/moisture content relation of a soil using standard compactive effort
- 1289.5.2.1 Method 5.2.1: Soil compaction and density tests—Determination of the dry density/moisture content relation of a soil using modified compactive effort

3 DEFINITIONS

For the purpose of this Standard, the definitions in AS 1141.1 and those below apply.

3.1 Bound material

A material to which a binder such as lime, cement, bitumen or similar binding agent has been added to produce structural stiffness.

3.2 Laboratory density ratio

The ratio of the dry density of a test specimen to the maximum dry density of that material, as determined by test in accordance with AS 1289.5.1.1 or AS 1289.5.2.1, expressed as a percentage.

3.3 Laboratory moisture ratio

The ratio of the moisture content of a test specimen to the optimum moisture content of that material, as determined by test in accordance with AS 1289.5.1.1 or AS 1289.5.2.1, expressed as a percentage.

3.4 Self-cementing materials

A material that gains tensile strength with time without the addition of a binder.

3.5 Unbound material

A material that is not self-cementing and does not contain a binder.

4 APPARATUS

The following apparatus, complying with the relevant provisions of AS 1141.2, is required:

- (a) *Balance*—of sufficient capacity, with a limit of performance not exceeding ± 5 g.
- (b) *Base*—a level rigid foundation on which to compact the specimen; for example, a sound concrete floor about 100 mm or more in thickness or a cubical concrete block of at least 100 kg mass.
- (c) *Cabinet*—a humidity cabinet capable of maintaining a humidity of not less than 90% at a temperature within the range 21°C to 25°C. Alternatively, a water bath equipped with snug-fitting lid and perforated metal false bottom with supports to provide a 50 mm space below the perforated plate and about 10 mm above the water surface. Other curing temperatures may be used but the temperature range shall be reported.
- (d) *Oven(s)*—capable of maintaining a temperature within the range of 50°C to 60°C and 105°C to 110°C.
- (e) *Dishes*—metal dishes.
- (f) *Mould*—a cylindrical metal mould having an internal diameter of 105 mm and internal effective height of 115.5 mm in accordance with AS 1289.5.1.1, Mould A. A split mould having the same dimensions may be used to facilitate removal of the compacted specimen.
- (g) *Rammer*—in accordance with AS 1289.5.1.1 or AS 1289.5.2.1, as appropriate for compacting to a defined compactive effort.

NOTE: A mechanical compactor may be used, provided the essential dimensions are adhered to and the rammer has a free vertical fall of the correct height. It is also essential that the design of the machine is such that the mould rests on a solid base.

Alternatively, a suitable electric or pneumatic vibrating hammer may be used when compacting to a predetermined laboratory density ratio.

- (h) *Ruler*—300 mm readable to 1.0 mm.
- (i) *Vernier scale or micrometer*—capable of measuring the diameter of the specimen to the nearest 0.5 mm.
- (j) *Sample dividers (riffle boxes)*—of appropriate size openings (optional).
- (k) *Sample extractor*—jack, level and frame, or other device, suitable for extruding compacted specimens from the mould (optional if split mould is used).
- (l) *Sieves*—19.0 mm and 4.75 mm, in accordance with AS 1152.
- (m) *Steel straightedge*—a suitable size being about 300 mm long, 25 mm wide and 3 mm thick, preferably with a bevelled edge.
- (n) *Tray*—a metal mixing and quartering tray of adequate size.