

Australian/New Zealand Standard™

**Masonry units, segmental pavers and flags—
Methods of test****Method 16: Determining permeability to water**

This Standard incorporates Amendment No. 1 (August 2004). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

1 SCOPE

This Standard sets out a method for determining the permeability to water of masonry units.

NOTE: This test is normally used for assessing the characteristics of units to be used in single leaf masonry.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS/NZS

4456	Masonry units, segmental pavers and flags—Methods of test
4456.0	Part 0: General introduction and list of methods
4456.1	Method 1: Sampling for testing

3 DEFINITIONS

For the purpose of this Standard, the definitions given in AS/NZS 4456.0 apply.

4 PRINCIPLE

A unit is subjected to a measured head of water in a cylinder sealed to the face of the unit. The passage of water through the unit over a measured time is used to determine the permeability.

NOTE: The intention of this test is to give an indication of the permeability to liquid water through the face of the unit tested. It does not necessarily give an indication of the potential passage of water through a wall.

5 APPARATUS

A rigid metal cover, which shall be sealed to the face of a unit. The cover shall be fitted with a cylinder of transparent glass or plastic with an internal diameter of 60 ± 2 mm, graduated in millimetres, by means of which a head of water can be applied to the face of the unit. A deemed-to-comply apparatus is shown schematically in Figure 1.

NOTE: For products that cannot be accommodated in the apparatus shown in Figure 1, a modified apparatus may be used provided that the permeability is calculated from the equation given in Clause 7(d).

6 PREPARATION OF TEST SPECIMENS

Specimens accumulated from continuous sampling shall be deemed to meet the requirements of this method provided that the number of specimens accumulated is at least three. For assessment of an individual lot, 3 units shall be selected in accordance with AS/NZS 4456.1.

All vertical faces of the specimen shall be sealed with an impermeable coating.

Specimens shall be fully immersed in water for 24 h, immediately prior to testing.

7 PROCEDURE

The procedure shall be as follows:

- (a) Remove the specimen from the water and, in an area protected from draughts, clamp it in the test apparatus.
- (b) Add water to the graduated cylinder and establish within 1 min an initial test head of 200 mm.
- (c) Read the residual head at intervals for a period of 120 min or until the head has fallen by 100 mm, whichever occurs first.
- (d) Calculate the permeability from the following equation:

$$p = \frac{3.14d^2 h}{4At}$$

where

- p = permeability, in millimetres per minute
- d = internal diameter of the cylinder, in millimetres
- h = head loss during the test, in millimetres
- A = area of face subjected to head of water, in square millimetres
- t = duration of the test, in minutes

8 RECORDING

The following information shall be recorded:

- (a) Reference to this test method, i.e., AS/NZS 4456.16.
- (b) Description of the marking, location and identification of the lot.
- (c) Sample and specimen identification.
- (d) Date of sample and test.
- (e) Work sizes for the lot.
- (f) Area of face subjected to the head of water, in square millimetres.
- (g) For each specimen, the thickness of the unit, for hollow units the work size thickness of the face-shell subjected to water head, and the initial head, in millimetres.
- (h) For each specimen and for each reading of residual head, the time in minutes from the time of the first addition of water to the graduated cylinder, to the nearest minute.
- (i) For each specimen, the residual head corresponding to the recorded times, to the nearest millimetre.

9 REPORT

If a report is prepared, it shall include the following information:

- (a) Reference to this test method, i.e., AS/NZS 4456.16.
- (b) Description of the marking, location and identification of the lot.
- (c) Sample and specimen identification.
- (d) Date of sample and test.
- (e) Work sizes for the lot.
- (f) Area of face subjected to the head of water, in square millimetres, to the nearest 1000 mm².
- (g) For each specimen, the thickness of the unit, for hollow units the work size thickness of the face-shell subjected to water head, and the initial head in millimetres, to the nearest millimetre.
- (h) For each specimen and for each reading of residual head, the time in minutes from the time of the first addition of water to the graduated cylinder, to the nearest minute.
- (i) For each specimen, the residual head corresponding to the recorded times, to the nearest millimetre.
- (j) For each specimen, the mean permeability expressed in millimetres per minute over the duration of the test, calculated in accordance with AS/NZS 4456.2, to one decimal place.