



Masonry units, segmental pavers and flags - Methods of test

Parts 0 - 19

AS/NZS 4456:2003

Australian/New Zealand Standard™

**Masonry units, segmental pavers and
flags—Methods of test**

**Part 0: General introduction and list of
methods**

AS/NZS 4456.0:2003

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee BD-026, Masonry and Paving Units. It was approved on behalf of the Council of Standards Australia on 6 June 2003 and on behalf of the Council of Standards New Zealand on 9 September 2003. It was published on 25 September 2003.

The following are represented on Committee BD-026:

Australasian Railway Association
Australian Electrical and Electronic Manufacturers Association
Australian Industry Group
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Department of Defence, Australia
Department of Mineral Resources, N.S.W.
Electrical Contractors Association of New Zealand
Electrical Regulatory Authorities Council
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Master Builders Australia

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STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard**Masonry units, segmental pavers and flags—Methods of test**

Part 0: General introduction and list of methods

1 SCOPE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee BD-026, Masonry and Paving Units, to supersede AS/NZS 4456.0:1997.

The test methods are grouped into the following categories:

- (a) Tests that relate to minimum performance requirements.
- (b) Tests that are optional and intended to be specified as appropriate.

2 REFERENCED DOCUMENTS

The following documents are referenced in this Standard.

AS

3700 Masonry structures

NZS

4230 Code of practice for the design of masonry structures

LIST OF METHODS

AS/NZS number	Date published	Title
Tests for required properties		
4456.1	2003	Sampling for testing
4456.2	2003	Assessment of mean and standard deviation
4456.3	2003	Determining dimensions
4456.4	2003	Determining compressive strength of masonry units
4456.5	2003	Determining the breaking load of segmental pavers and flags
Tests for optional properties		
4456.6	2003	Determining potential to effloresce
4456.7	2003	Determining core percentage and material thickness
4456.8	2003	Determining moisture content, dry density and ambient density
4456.9	2003	Determining abrasion resistance
4456.10	2003	Determining resistance to salt attack
4456.11	2003	Determining coefficients of expansion
4456.12	2003	Determining coefficients of contraction
4456.13	2003	Determining pitting due to lime particles
4456.14	2003	Determining water absorption properties
4456.15	2003	Determining lateral modulus of rupture
4456.16	2003	Determining permeability to water
4456.17	2003	Determining initial rate of absorption (suction)
4456.18	2003	Determining tensile strength of masonry units and segmental pavers
4456.19	2003	Determination of bow

3 DEFINITIONS

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

3.1 Abrasion resistance

The volume loss of a paver, expressed as an index, determined in accordance with AS/NZS 4456.9.

3.2 Block

See ‘masonry unit’.

3.3 Breaking load

The failure load determined in accordance with AS/NZS 4456.5.

3.4 Brick

See ‘masonry unit’.

3.5 Characteristic value

The value that will be exceeded by at least 95% of the units in the lot.

NOTE: If required, characteristic value is evaluated by using appropriate statistical techniques.

3.6 Compressive strength

See ‘unconfined compressive strength’.

3.7 Dimensional changes

- (a) *Coefficient of residual curing contraction*—the estimated long-term permanent contraction strain in millimetre per metre, determined in accordance with AS/NZS 4456.12.
- (b) *Coefficient of drying contraction*—the value of drying shrinkage strain in millimetre per metre, determined in accordance with AS/NZS 4456.12.
NOTE: The coefficient of drying contraction is a laboratory value determined for the purposes of masonry design in accordance with AS 3700, NZS 4230.1 and NZS 4230.2. It is not a direct measure of the shrinkage of masonry construction.
- (c) *Coefficient of expansion*—the calculated 15 y growth strain (expressed as an \bar{e}_m value in millimetre per metre), determined in accordance with AS/NZS 4456.11.

3.8 Dimensional deviation

The deviation from work size of units when determined in accordance with AS/NZS 4456.3.

3.9 Efflorescence

Salts left on the surface of units after evaporation of water. The surface deposits may take the form of either of the following:

- (a) Loose crystalline salts.
- (b) Amorphous films (non-crystalline salts).

The extent of efflorescence is determined by AS/NZS 4456.6.

3.10 Face

The surface of a unit intended to be exposed in a wall or pavement

3.11 Face-shells

Those parts of a hollow unit which are connected by webs and which are normally laid in the plane of the wall

3.12 Flag

Large format paving unit with a gross plan area greater than or equal to 0.08m^2 , laid on a bedding course material to form a surfacing layer

3.13 Lot

A group of units of a single type with specific characteristics and dimensions presented for sampling at the same time.

NOTE: A lot is to be as considered appropriate by the person requesting the sample.

3.14 Masonry unit

A pre-formed component, intended for use in masonry construction. The term includes the following:

- (a) *Solid unit*—unit that may contain recesses not greater than 10% of gross volume and intended to be laid with full bed joints.
- (b) *Cored unit*—unit with cores intended to be laid with its cores vertical and with full bed joints.
- (c) *Hollow unit*—unit with cores intended to be laid with its cores vertical and with face-shell-bedded joints.
- (d) *Horizontally cored unit*—unit with cores intended to be laid with its cores horizontal and with full bed joints.

- (e) *Special purpose unit*—unit intended for a special purpose that does not fall within the definitions of Items (a) to (d) above.

3.15 Sample

A group of specimens drawn from a lot to be subjected to testing.

3.16 Specimen

An individual unit to be subjected to testing.

3.17 Segmental paver

Paver with a gross plan area less than 0.08m^2 , laid on a bedding course material to form a surfacing layer

3.18 Pit

Surface defect caused by the disruptive effect of a substance in the body of the unit. Pitting due to lime is determined in accordance with AS/NZS 4456.13.

3.19 Salt attack

An attack by the action of soluble salts.

NOTE: Resistance to such attack is determined by the action of sodium sulphate or sodium chloride (see AS/NZS 4456.10).

3.20 Standard deviation

The unbiased standard deviation determined in accordance with AS/NZS 4456.2.

3.21 Unconfined compressive strength

The failure stress in compression converted by the application of an aspect ratio factor to account for platen restraint, determined in accordance with AS/NZS 4456.4.

3.22 Web

Any lateral connector joining face-shells in a hollow masonry unit

NOTE: Lateral connectors flush with the ends of a masonry unit are regarded as webs for testing purposes and not as face-shells.

3.23 Work size

The size of a unit specified for its manufacture, from which deviations are measured.

NOTES