

1.7 Concrete Masonry Wall Units

Introduction

The specification for concrete masonry wall units was initially covered by NZS 595, superceded by NZS 3102:1983 and finally overtaken by a joint Australian/New Zealand Standard *AS/NZS 4455 Masonry units, pavers, flags and segmental retaining wall units*. This latest document covers all masonry products, i.e. not just concrete as was the case of the earlier New Zealand Standard.

AS/NZS 4455 is published in three parts:

1. AS/NZS 4455 Part 1 Masonry units, pavers, flags and segmental retaining wall units - Masonry units.
2. AS/NZS 4455 Part 2 Masonry units, pavers, flags and segmental retaining wall units - Pavers and flags.
3. AS/NZS 4455 Part 3 Masonry units, pavers, flags and segmental retaining wall units - Segmental retaining wall units.

There is a testing suite of Standards *AS/NZS 4456 Masonry units, segmental pavers and flags - Methods of test* which details test procedures covering the performance parameters set out in *NZS 4456*.

The tests listed are:

- **4456.1** Sampling for testing
- **4456.2** Assessment of mean and standard deviation
- **4456.3** Determining dimensions
- **4456.4** Determining compressive strength of masonry units
- **4456.5** Determining the breaking load of segmental pavers and flags
- **4456.6** Determining potential to effloresce
- **4456.7** Determining core percentage and material thickness
- **4456.8** Determining moisture content, dry density and ambient density
- **4456.9** Determining abrasion resistance

- **4456.10** Determining resistance to salt attack
- **4456.11** Determining coefficients of expansion
- **4456.12** Determining coefficients of contraction
- **4456.13** Determining pitting due to lime particles
- **4456.14** Determining water absorption properties
- **4456.15** Determining lateral modulus of rupture
- **4456.16** Determining permeability to water
- **4456.17** Determining initial rate of absorption (suction)
- **4456.18** Determining tensile strength of masonry units and segmental pavers
- **4456.19** Determination of bow

Summary

The following are the principal requirements of *AS/NZS 4455 Part 1 Masonry Units* relating to concrete wall units. For full details, consultation of the full document is required.

- **Dimensional deviations**

Test method DW4 *AS/NZS 4456.3*:

Standard deviation of not more than 2 mm and a difference between the mean and work size of not more than 3 mm.

- **Unconfined Compression Strength**

Test Method *AS/NZS 4456.4*:

The minimum strength required for concrete masonry is specified by *NZS 4210* as:

1. 12.5 MPa for structural masonry.
2. 10 MPa for non-structural external units.

- **Integrity**

There are provisions to ensure the thickness and shape of units are suitable for transportation and handling.

- **Durability**

The minimum requirement for durability for concrete masonry specified by *NZS 4210* is 10 MPa.

Provisions for freeze thaw or salt attack resistance may be required for special locations.

- **Demonstration of Compliance for Strength**

The standard does set compliance requirements:

1. Single Lot:

Mean value greater than specified characteristic value + 1.20.

S (standard deviation) is based on 30 specimen's results or taken as 0.15 times mean value.

2. Lots taken in continuous manufacture:

Central level shall be greater than specified characteristic value $\pm 1.65 S - \frac{2S}{\sqrt{n}}$.

Each sample shall be at least five samples.

- **Requirements of New Zealand Concrete Masonry Association**

The Associations requires its members to produce masonry to meet the requirements of nationally set Standards, i.e. *NZS 4210* and *AS/NZS 4455* using the testing methods defined in *AS/NZS 4456*.

Specification outlines for *AS/NZS 4455* Parts 2 and 3 are contained in Section 7 of the Manual.

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