



Reinforced Autoclaved Aerated Concrete

Part 1: Structures



This Australian Standard® was prepared by Committee BD-106, Autoclaved Aerated Concrete. It was approved on behalf of the Council of Standards Australia on 23 November 2015.

This Standard was published on 23 December 2015.

The following are represented on Committee BD-106:

- Association of Consulting Structural Engineers of NSW
 - Australian Building Codes Board
 - Australian Institute of Building
 - Building Designers Association of Australia
 - Consult Australia
 - CSIRO
 - Engineers Australia
 - Housing Industry Association
 - Master Builders Australia
 - National Precast Concrete Association Australia
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This Standard was issued in draft form for comment as DR AS 5146.1:2015.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

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Australian Standard[®]

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First published as AS 5146.1:2015.
Reissued incorporating Amendment No. 1 (November 2018).

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Published by SAI Global Limited under licence from Standards Australia Limited, GPO Box 476, Sydney, NSW 2001, Australia

ISBN 978 1 76035 353 7

PREFACE

This Standard was prepared by the Standards Australia Committee BD-106, Autoclaved Aerated Concrete.

This Standard incorporates Amendment No. 1 (November 2018). 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.

The objective of this Standard is to provide minimum requirements for the design and construction of structures incorporating Reinforced Autoclaved Aerated Concrete (Reinforced AAC) members, including built-in components, for use by architects, engineers and builders.

Statements expressed in mandatory terms in notes to tables are deemed to be requirements of this Standard.

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STANDARDS AUSTRALIA

Australian Standard

Reinforced Autoclaved Aerated Concrete

Part 1: Structures

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies minimum requirements for the design and construction of structures incorporating Reinforced Autoclaved Aerated Concrete (Reinforced AAC) members.

Reinforced AAC structures and Reinforced AAC members designed and constructed in accordance with AS 5146.2 comply with this Standard for the applications defined therein.

Reinforced AAC structures and Reinforced AAC members designed and constructed in accordance with AS 5146.3 comply with this Standard for the applications defined therein.

NOTES:

- 1 This Standard uses the term 'AAC' to refer to autoclaved aerated concrete material and 'Reinforced AAC' to refer to members made of the AAC material into which steel reinforcement has been cast.
- 2 This Standard does not cover the design or construction of structures consisting of unreinforced autoclaved aerated concrete blocks.
- 3 This Standard applies only to cases where the design has been performed by an experienced structural engineer and design actions, material properties, section properties, bending moments, shears and deflections have been determined in accordance with the provisions of this Standard and AS 5146.2.
- 4 This Standard should not be interpreted in a way that prevents the design and construction of structures that use alternative materials or methods of design or construction not specifically referred to herein. However, the design and construction of such structures are outside the scope of this Standard.

1.2 NORMATIVE REFERENCES

The following are the normative documents referenced in this Standard.

- A1 | All references in the body of this Standard to the deleted undated normative references shall be replaced by the corresponding dated Australian Standard references.

NOTE: Documents referenced for informative purposes are listed in the Bibliography.

AS

- | | |
|------------------|---|
| 1170 | Structural design actions |
| 1170.4 | Part 4: Earthquake actions in Australia |
| 1530 | Methods for fire tests on building materials, components and structures |
| 1530.4 | Part 4: Fire-resistance test of elements of construction |
| 4055 | Wind loads for housing |
| 5146 | Reinforced autoclaved aerated concrete |
| A1 5146.2:2018 | Part 2: Design |
| 5146.3:2018 | Part 3: Construction |

AS/NZS

1170	Structural design actions
1170.0	Part 0: General principles
1170.1	Part 1: Permanent, imposed and other actions
1170.2	Part 2: Wind actions
1170.3	Part 3: Snow and ice actions
2699	Built-in components for masonry construction
2699.2	Part 2: Connectors and accessories
2699.3	Part 3: Lintels and shelf angles (durability requirements)
NCC	National Construction Code

1.3 DEFINITIONS

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

1.3.1 Autoclaved Aerated Concrete (AAC)

Material manufactured from binders such as cement and/or lime combined with fine siliceous based material, cell generating material and water.

NOTE: The raw materials are mixed together and cast into moulds where the mix is allowed to rise and set into cakes. After this part of the process, the cake is cut into components of the required sizes and cured with high-pressure steam in autoclaves.

1.3.2 Built-in components for Reinforced AAC construction

Metal items used for connecting Reinforced AAC to its supporting structure including, but not limited to, the following:

- (a) Anchors.
- (b) Connectors.
- (c) Shelf angles.
- (d) Lintel bars.
- (e) Bolts and fixings.

1.3.3 Characteristic value

- 1 For strength properties, the value of the material property that is exceeded by 95% of the material.
- 2 For coefficients of expansion and contraction, the value that is exceeded by 5% of the material.

1.3.4 Connectors

Bolts, nuts, screws, screwed rod, brackets, straps and the like, used to fix Reinforced AAC members to supporting elements in the structure.

1.3.5 Design documents

Drawings and specifications that set out the work to be executed.

1.3.6 Exposure environments**1.3.6.1 Severe marine**

Areas up to 100 m from a non-surf coast and up to 1 km from breaking surf.

NOTE: The distances specified are from the mean high-water mark.

1.3.6.2 *Marine*

Areas from 100 m up to 1 km from a non-surf coast and from 1 km up to 10 km from breaking surf.

NOTE: The distances specified are from the mean high-water mark. Sheltered bays such as Port Phillip Bay and Sydney Harbour are considered to be non-surf coast.

1.3.6.3 *Industrial*

Areas within 1 km of major industrial complexes producing significant acidic pollution.

NOTE: There are only a few such regions in Australia; for example, around Port Pirie.

1.3.6.4 *Moderate*

Areas with light industrial pollution or very light marine influence, or both.

NOTE: Moderate areas include built-up areas within 50 km of the coast and more than 1 km from a non-surf coast and more than 10 km from breaking surf, including suburban areas of cities such as Melbourne, Adelaide and Hobart, many areas of Sydney, Perth and Brisbane, and many inland cities.

1.3.6.5 *Mild*

Areas more than 50 km from the coast, and not classed as industrial, which are subdivided as follows:

- (a) *Mild-tropical* Areas more than 50 km from the coast and falling within the tropical climatic zone shown in Figure 1.3.6.
- (b) *Mild-temperate* Areas more than 50 km from the coast and falling within the temperate climatic zone shown in Figure 1.3.6.
- (c) *Mild-arid* Areas more than 50 km from the coast and falling within the arid climatic zone shown in Figure 1.3.6.

1.3.6.6 *Special*

Areas that are not defined in Clauses 1.3.6.1 to 1.3.6.5, which have durability requirements different to those set out in Table 2.2.1.

NOTE: Special environments are often more aggressive than severe marine environments, thus requiring greater protection of some or all of the components than would be afforded by compliance with the requirements of Table 2.2.1 for a severe marine environment.