



Dear Customer

Please find attached the January 2017 amendments to C/VM1 Verification Method for Solid Fuel Appliances and C/AS1 Acceptable Solution for Buildings with Sleeping (residential) and Outbuildings (Risk Group SH), published by the Ministry of Business, Innovation and Employment.

To update your printed copy of C/VM1 and C/AS1, please make the following changes:

Section	Previous version	January 2017 Amendment 4
C/VM1 Verification Method for Solid Fuel Appliances and C/AS1 Acceptable Solution for Buildings with Sleeping (residential) and Outbuildings (Risk Group SH)		
Title pages	Remove title page and document history/status	Replace with new title page and document history/status
References	Remove page 7/8	Replace with new page 7/8
C/AS1 Parts 2 and 3	Remove page 21/22	Replace with new page 21/22
C/AS1 Part 5	Remove page 25/26	Replace with new page 25/26



**MINISTRY OF BUSINESS,
INNOVATION & EMPLOYMENT**
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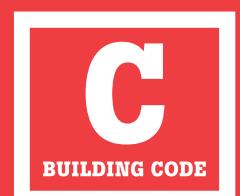
C/VM1

Verification Method for Solid Fuel Appliances

C/AS1

Acceptable Solution for Buildings with Sleeping (residential) and Outbuildings (Risk Group SH)

For New Zealand Building Code Clauses
C1-C6 Protection from Fire



Using this Verification Method or Acceptable Solution

The Ministry of Business, Innovation and Employment may amend parts of this document at any time. People using this document should check on a regular basis whether new versions have been published. The current version can be downloaded from www.dbh.govt.nz/compliance-documents

Users should make themselves familiar with the preface to the New Zealand Building Code Handbook, which describes the status of Verification Methods and Acceptable Solutions and explains other ways of achieving compliance.

Defined words (italicised in the text) are explained in the Building Code Clause A2 and in the Definitions section of this document. Classified uses of buildings are explained in the Building Code Clause A1.

Enquiries about the content of this document should be directed to:



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Status of C/VM1 and C/AS1

This Verification Method C/VM1 and the Acceptable Solution C/AS1 in this document provide a means of compliance with the New Zealand Building Code Clauses C1-C6 Protection from Fire. C/VM1 and C/AS1 are issued under section 22 of the Building Act 2004 respectively as a Verification Method and an Acceptable Solution.

This Verification Method and Acceptable Solution provide one way that can be used to show compliance with the New Zealand Building Code Clauses C1-C6 Protection from Fire. Other ways of complying with the Building Code are described, in general terms, in the preface of the New Zealand Building Code Handbook.

When can you use C/VM1 and C/AS1

This Acceptable Solution and Verification Method are effective from 1 January 2017. They can be used to show compliance with the Building Code Clauses C1-C6 Protection from Fire. They do not apply to building consent applications submitted before 1 January 2017.

The previous version, Amendment 3, of this Acceptable Solution and Verification Method can be used to show compliance with the Building Code Clauses C1-C6 Protection from Fire until 30 May 2017. It can be used for building consent applications submitted before 31 May 2017.

Document History		
	Date	Alterations
New document	Effective from 10 April 2012	C/VM1 and C/AS1 are a new publication that can be used to show compliance with the Building Code Clauses C1-C6 Protection from Fire.
Amendment 1 (Errata 1)	Effective from 15 February 2013 until 18 June 2014	p. 5 Contents pp. 7–8 References p. 15 C/VM1 1.1.1 p. 17 C/AS1 Table 1.1 p. 19 C/AS1 1.3 pp. 25–26 C/AS1 5.1, 5.3.1, 5.3.2, 5.4, 5.5 p. 37 C/AS1 C4.1.2 and C5.1.1 p. 40 Index
Amendment 2	Effective from 19 December 2013 until 28 February 2015	p. 5 Contents p. 7 References p. 12 Definitions p. 17 C/AS1 1.1.1, Table 1.1 p. 18 C/AS1 Figure 1.1 p. 19 C/AS1 1.3 p. 21 C/AS1 Table 2.1 p. 22 C/AS1 3.4, Table 3.2 pp. 23–24 C/AS1 4.2, 4.3 pp. 25–26 C/AS1 5.1, 5.3.1, Table 5.1 p. 27 C/AS1 6.1 p. 29 C/AS1 7.2 p. 36 B2.1.1 p. 38 C6.1.2 p. 40 Index
Amendment 3	Effective from 1 July 2014 to 30 May 2017	p. 5 Contents pp. 7–8 References pp. 9 and 12 Definitions p. 17 C/AS1 1.1.1, Table 1.1 p. 19 C/AS1 1.3 p. 20 C/AS1 2.2.1 p. 22 C/AS1 Table 3.2 pp. 23–24 C/AS1 4.2, 4.3 pp. 25–26 C/AS1 5.1, 5.3, Figure 5.1, Table 5.1 p. 27 C/AS1 6.1 p. 29 C/AS1 7.4 p. 37 C1.1, C2.1, C4.1.2, C5.1.1 p. 40 Index
Amendment 4	Effective 1 January 2017	p. 7 References p. 21 2.3.1 p. 22 C/AS1 Table 3.2 p. 25 C/AS1 5.1.2

References

For the purposes of New Zealand Building Code compliance, the New Zealand and other Standards, and other documents referred to in this Verification Method and Acceptable Solution (primary reference documents) shall be the editions, along with their specific amendments, listed below. Where the primary reference documents refer to other Standards or other documents (secondary reference documents), which in turn may also refer to other Standards or other documents, and so on (lower order reference documents), then the applicable version of these secondary and lower order reference documents shall be the version in effect at the date this Verification Method and Acceptable Solution were published.

		Where quoted		
Standards New Zealand				
	NZS/BS 476:- Part 21: 1987	Fire tests on building materials and structures Methods for determination of the fire resistance of loadbearing elements of construction	AS1 C5.1.1	
	Part 22: 1987	Methods for determination of the fire resistance of non-loadbearing elements of construction	AS1 C5.1.1	
	AS/NZS 1668:- Part 1: 1998	The use of ventilation and air conditioning in buildings Fire and smoke control in multi-compartment buildings <i>Amend: 1</i>	VM1 1.1.1 AS1 A2.1.1	
Errata 1 Feb 2013	AS/NZS 2918: 2001	Domestic solid fuel burning appliances – installation	AS1 7.1.1, 7.1.2, 7.3.3 7.5.5, 7.5.10 Comment, Figure 7.2	
	NZS 4510: 2008	Fire hydrant systems for buildings <i>Amend: 1</i>	AS1 A2.1.1	
	NZS 4512: 2010	Fire detection and alarm systems in buildings	AS1 Table 2.1, Table 3.2, A2.1.1, C6.1.6	
Amend 4 Jan 2017	NZS 4514:2009	Interconnected Smoke Alarms for houses	AS1 Table 3.2	
	NZS 4515: 2009	Fire sprinkler systems for life safety in occupancies of less than 2000 m ²	AS1 6.1.1, Table 2.1, Table 3.2, Table 5.1, B3.1.1	Amends 2 and 3
	NZS 4517: 2010	Fire sprinkler systems for houses	AS1 Table 3.2	
	NZS 4520: 2010	Fire resistant doorsets	AS1 C6.1.1	
	NZS 4541: 2013	Automatic fire sprinkler systems	Definitions, B2.1.1	
	AS/NZS 5601:- Part 1: 2010	Gas installation General installations <i>Amend: 1</i>	AS1 7.2.1, 7.2.2	
Amend 2 Dec 2013	AS/NZS 60598: 2001	Luminaires Part 2.2 Particular requirements – Recessed luminaires <i>Amend: AA</i>	AS1 7.4.1	

Standards Australia

AS 1366:-	Rigid cellular plastics sheets for thermal insulation
Part 1: 1992	Rigid cellular polyurethane (RC/PUR) <i>Amend: 1</i>
Part 2: 1992	Rigid cellular polyisocyanurate (RC/PIR)
Part 3: 1992	Rigid cellular polystyrene – moulded (RC/PS-M) <i>Amend: 1</i>
Part 4: 1989	Rigid cellular polystyrene – extruded (RC/PS-E)
AS 1530:-	Methods for fire tests on building materials, components and structures
Part 1: 1994	Combustibility test for materials AS1 C4.1.1
Part 2: 1993	Test for flammability of materials
Part 4: 2005	Fire-resistance tests of elements of building construction
AS 1691: 1985	Domestic oil-fired appliances – installation
AS 4072:-	Components for the protection of openings in fire-resistant separating elements
Part 1: 2005	Service penetrations and control joints <i>Amend: 1</i>

Errata 1
Feb 2013**European Standards**Errata 1
Feb 2013**International Standards Organisation**

ISO 5660:-	Reaction-to-fire tests – Heat release, smoke production and mass loss rate
Part 1: 2002	Heat release rate (cone calorimeter method)
Part 2: 2002	Smoke production rate (dynamic measurement)
ISO 9239:-	Reaction to fire tests for flooring
Part 1: 2010	Determination of the burning behaviour using a radiant heat source.
ISO 9705: 1993	Fire tests – Full scale room test for surface products

Errata 1
Feb 2013**New Zealand Legislation**

Hazardous Substances and New Organisms Act 1996

Where quoted

AS1 4.3	Amend 3 Jul 2014
AS1 4.3	
AS1 4.3	
AS1 4.3	
Definitions,	
AS1 C3.1	
AS1 C5.1.1	
AS1 7.3.1, 7.3.2	
AS1 C5.1.2	

Table 2.1 Fire safety systems specified in this Acceptable Solution		
Type of system	System description	Relevant Standards for installation
1	Domestic smoke alarm	Acceptable Solution F7/AS1
4	Smoke detection and alarm system with manual call points	NZS 4512
5	Enhanced smoke detection and alarm system with manual call points	NZS 4512
6	Automatic fire sprinkler system	NZS 4515
7	Automatic fire sprinkler system with smoke detection and alarm system	NZS 4515, NZS 4512

Amend 2
Dec 2013

2.3 Fire resistance ratings

FRR values

2.3.1 Unless explicitly stated otherwise in this Acceptable Solution, the *fire resistance ratings (FRRs)* that shall apply for this *risk group* are as follows:

Life rating = 30 minutes.

Property rating = 30 minutes.

Amend 4
Jan 2017

Comment:

Throughout this Acceptable Solution, minimum *FRRs* are specified for particular situations. It is therefore essential to check for specific requirements.

Part 3: Means of escape

CONTENTS

- 3.1 This paragraph deliberately left blank**
- 3.2 Number of escape routes**
- 3.3 Height and width of escape routes**
- 3.4 Length of escape routes**

3.1 THIS PARAGRAPH DELIBERATELY LEFT BLANK

3.2 Number of escape routes

Risk group SH may be served by a single *escape route* provided the permitted *dead end open path* distance specified in Paragraph 3.4 is not exceeded.

3.3 Height and width of escape routes

There are no restrictions (other than those required by other Building Code Clauses) on the height and width of *escape routes* for *risk group SH*.

3.4 Length of escape routes

An *escape route* in outbuildings may be any length, but the lengths of *dead ends* and total *open paths* in other *buildings* to which this Acceptable Solution applies shall not exceed the distances given in Table 3.2.

Amend 2
Dec 2013

Table 3.2 Travel distances on escape routes					
	Type 1 system only	NZS 4514 Interconnected Smoke Alarms	NZS 4517 Sprinkler system with Type 1 (in single household units only)	NZS 4515 Sprinkler system with Type 1	NZS 4515 Sprinkler system and NZS 4512 Smoke detection system
<i>Dead end open path</i>	25 m	35 m	35 m	40 m	50 m
<i>Total open path</i>	60 m	75 m	75 m	90 m	120 m
For definition of system types, see Table 2.1.					
If systems are installed in order to extend permissible travel distance in accordance with this table and are not a requirement of Paragraph 2.2.1 then Fire Service connection is not required.					

Amends
2 & 4

Amend 3
Jul 2014

Part 5: Control of external fire spread

CONTENTS

- 5.1 Fire resistance ratings
- 5.2 Roof projections
- 5.3 Exterior surface finishes
- 5.4 Carports and similar construction

Notional boundary – firecells on the same property

5.1.2 For *firecells* containing sleeping *risk groups* under common ownership in the same *building*, or in separate *buildings* on the same property, a *notional boundary* shall be used instead of the *relevant boundary*. The words *relevant boundary* shall be interpreted as *notional boundary*.

Amend 4
Jan 2017

Amend 3
Jul 2014

5.1 Fire resistance ratings

5.1.1 Where the *building* is protected with a sprinkler system, *external walls* do not need an *FRR*.

Where the *building* is not protected with a sprinkler system, *external walls* shall have an *FRR* of no less than 30/30/30 in the following circumstances:

- a) Outbuildings, single *household units* and attached side by side *multi-unit dwellings* where part of the *external wall* is less than 1.0 m and less than 90° from the *relevant boundary*. See Figure 5.1. The wall shall be *fire* rated to protect from both directions, and
- b) *Multi-unit dwellings* located one above the other where the *external wall* is less than 5.0 m from the *relevant boundary*. If there are windows more than 1.0 m from the *relevant boundary* in a *household unit* wall requiring a *FRR*, the windows do not need to be *fire* rated

Amend 2
Dec 2013

Errata 1
Feb 2013

Amend 3
Jul 2014

5.2 Roof projections

5.2.1 Where the *external wall* is required to have an *FRR*, the eaves projection shall either have an *FRR* of 30/30/30 or the wall shall be extended to the underside of the roof.

5.2.2 Where roof eaves extend from an otherwise unrated *external wall* to within 650 mm of the *relevant boundary*, the total eaves *construction* and the *external wall* from which they project shall have an *FRR* of no less than 30/30/30.

5.3 Protection from a lower roof in multi-unit dwellings

5.3.1 *Fire* spread from a roof close to and lower than an *external wall* of an attached sleeping unit or attached *building* on *other property* shall be prevented by providing an *FRR* of 30/30/30 to either:

- a) The part of the roof within 5.0 m horizontally of the wall, or
- b) Any part of the wall within 9.0 m vertically of the roof.

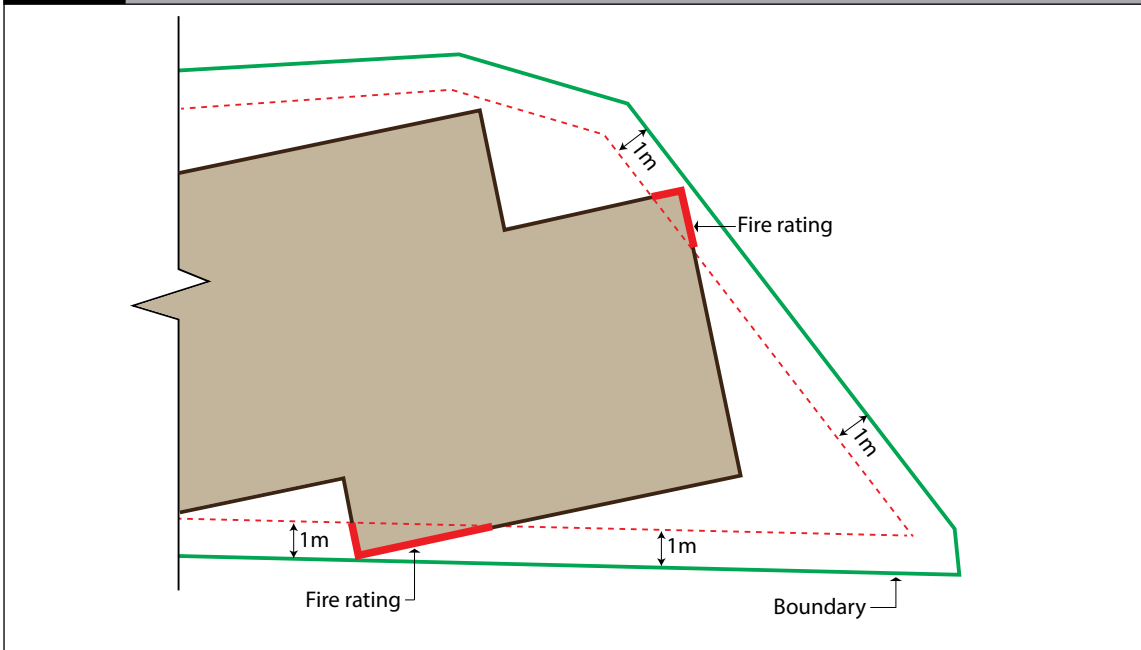
5.3.2 *Fire* rating of the roof is not required if the *household unit* is protected with a sprinkler system complying with NZS 4515.

Amend 3
Jul 2014

Amend 2
Dec 2013

Errata 1
Feb 2013

Figure 5.1 Fire rating of external walls
Paragraph 5.1



Amend 3
Jul 2014

Errata 1
Feb 2013

5.4 Exterior surface finishes

External wall cladding systems shall be tested to the *standard test* described in Appendix C C7.1 and the peak rate of heat release and the total heat released shall not exceed the limits given in Table 5.1.

These requirements do not apply if *surface finishes* are no more than 1 mm in thickness and applied directly to a *non-combustible* substrate.

Errata 1
Feb 2013

5.5 Carports and similar construction

A carport is permitted to have walls and roof with 100% *unprotected area* provided that all the following conditions are met:

- a) At least two sides are completely open to the environment, and
- b) The carport and adjacent *building* are under the same *ownership*, and
- c) For a roof plan area of no more than than 40 m², no part of the roof is closer than 0.3 m to a *relevant boundary*.

Errata 1
Feb 2013

Table 5.1 Requirements for external wall claddings

Column A	Column B	Column C	Column D	
	Distance to <i>relevant boundary</i> (angle between wall and boundary is less than 90°)			
	Less than 1.0 m	Distance greater than or equal to 1.0 m and <i>building height</i> less than or equal to 10 m	Distance greater than or equal to 1.0 m and <i>building height</i> greater than 10 m	
			Unsprinklered	Sprinklered to NZS 4515
Peak heat release rate (kW/m ²)	100	No requirement	150	No requirement
Total heat released (MJ/m ²)	25	No requirement	50	No requirement

Note: Table 5.1 applies to separate *buildings*. It does not apply to *household units* within the same *building* whether they are side by side or one above the other.

Errata 1
Feb 2013

Amend 2
Dec 2013

Amend 3
Jul 2014