

Test report # PF21079

Test Number 21079

**Client: Blue Building Solutions Australia
Limited**

Trading as VENT Systems

**Fire resistance test for the non-loadbearing
framed wall incorporating VENT VB ventilation
cavity battens**

Test method: AS 1530.4:2014

Report Date 09/12/2021



1. Table of Contents

1. Table of Contents	2
1.1 Document revision schedule	3
1.2 Signatories	3
2. Contact details.....	4
2.1 IANZ registered Testing Authority	4
2.2 Client/Applicant.....	4
2.3 Manufacturer.....	4
3. Test Results	5
4. Test overview	6
5. Equipment.....	8
6. Test Conditions.....	9
6.1 Furnace Temperature	9
6.2 Ambient Temperature	9
6.3 Pressure Readings.....	10
7. Schedule of martials.....	11
8. Testing details	13
8.1 Thermocouples positions	13
8.2 Observations during the test.....	14
9. Specimen description	15
10. Specimen results	18
10.1 General results.....	18
10.2 Temperature readings	18
10.3 Deflection	19
11. Permissible variations	20
12. Additional photographs.....	21
12.1 Materials used	21
12.2 During and after the test	22

1.1 Document revision schedule

Revision #	Date	Description
1	01/12/2021	Initial Issue for Client review
2	09/12/2021	Issued to Client

1.2 Signatories

Report	Name	Signature	Date
Prepared by:	Alexey Kokorin (Technical Manager)		09/12/2021
Authorized by:	Andrew Bain (Authorized signatory)		09/12/2021



All tests reported herein
have been performed in
accordance with the
laboratory's scope of
accreditation

2. Contact details

2.1 IANZ registered Testing Authority

Passive Fire Inspection and Test Services Ltd

Accreditation Number - 1335

1/113 Pavilion Drive, Mangere, Auckland, 2022

New Zealand

Contact e-mail: tests@firelab.co.nz

2.2 Client/Applicant

Blue Building Solutions Australia Limited

Trading as VENT Systems

37 Kurrawa Way Iluka, WA 6028

Australia

Contact e-mail: james@vent.nz



2.3 Manufacturer

Same as Client

3. Test Results

Results for the non-loadbearing framed wall	
Structural adequacy	Not applicable
Integrity	55 minutes
Insulation	43 minutes
Fire resistance level (FRL)	-/30/30

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The test results relate to the specimens of the product in the form in which they were tested. Differences in the composition or thickness of the product may significantly affect the performance during the test and may therefore invalidate the test results. Care should be taken to ensure that any product, which is supplied or used, is fully represented by the specimens, which were tested.

The specimens were supplied by the sponsor and the Laboratory was not involved in any of selection or sampling procedures.

The results of these fire tests may be used to directly assess fire hazard, but it should be recognized that a single test method will not provide a full assessment of fire hazard under all fire conditions.

4. Test overview

Test Specification Fire Resistance:

Failure shall be deemed to have occurred when one of the following occurs:

- a) the temperature at any location on the unexposed face of the test specimen exceeds the initial temperature by more than 180 °C
- b) the average temperature on the unexposed face of the test specimen exceeds the initial temperature by more than 140 °C
- c) Integrity failure shall be deemed to have occurred upon ignition of the cotton pad when glowing or flaming occurs or for a period of 30 seconds.
- d) Flaming to the unexposed face for 10 seconds or longer shall be deemed Integrity failure.

Testing scope:

AS 1530-2014 Part 4 Section 3 – Non-loadbearing wall

Documentation:

Testing products were verified and tested based on Client description, refer to Specimen description below.

Vent ventilated cavity batten VENT VB20 datasheet

Vent ventilated cavity batten VENT VB10 datasheet

Sponsored research data SR21061

Testing date:

22/11/2021

Installation completion date:

18/11/2021

Specimens conditioning:

The specimen was constructed by the Laboratory in line with Client instructions. Laboratory was not involved in sampling and selection of the materials. The specimen was kept indoors inside the Laboratory.

Termination of The Test:

The test was discontinued at 55 minutes

Use of Reports:

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This report details the methods of construction, test conditions and the results obtained when the specific element of construction described herein was tested follow the procedure outlined in AS 1530.4. Any significant variation with respect to size, constructional details, loads, stresses, edge or end conditions, other than that allowed under the field of direct application in the relevant test method, is not covered by this report.

Because of the nature of fire resistance testing and the consequent difficulty in quantifying the uncertainty of measurement of fire resistance, it is not possible to provide a stated degree of accuracy of the result.

5. Equipment

Furnace:

3000x3000mm Vertical full-scale furnace designed to operate to AS1530.4-2014

Temperature:

Furnace Temperature measurements were controlled with 3mm Type K MIMS thermocouples set within 50-100 mm from the face of the specimens in line with AS1530.4-2014. All thermocouples are calibrated by ISO/IEC 17025 accredited laboratory - a signatory to the International Laboratory Accreditation Corporation (ILAC) through their Mutual Recognition Agreement (MRA) to the accuracy required by AS 1530.4-2014.

Pressure measurement:

Kepware Siemens Data logging system including multi-channel recording data at 5 second intervals. Calibrated by ISO/IEC 17025 accredited laboratory - a signatory to the International Laboratory Accreditation Corporation (ILAC) through their Mutual Recognition Agreement (MRA) to the accuracy required by AS 1530.4-2014.

Ambient Temperature:

Ambient temperature was recorded 15 minutes before the test was commenced, at the start of the test and monitored during the test. All thermocouples are calibrated by ISO/IEC 17025 accredited laboratory - a signatory to the International Laboratory Accreditation Corporation (ILAC) through their Mutual Recognition Agreement (MRA) to the accuracy required by AS 1530.4-2014.

Specimen thermocouples:

Specimen Thermocouples were installed to the unexposed face. Type K copper disk thermocouples fixed within the required locations referenced from AS1530.4-2014. Thermocouples are calibrated by ISO/IEC 17025 accredited laboratory - a signatory to the International Laboratory Accreditation Corporation (ILAC) through their Mutual Recognition Agreement (MRA) to the accuracy required by AS 1530.4-2014.

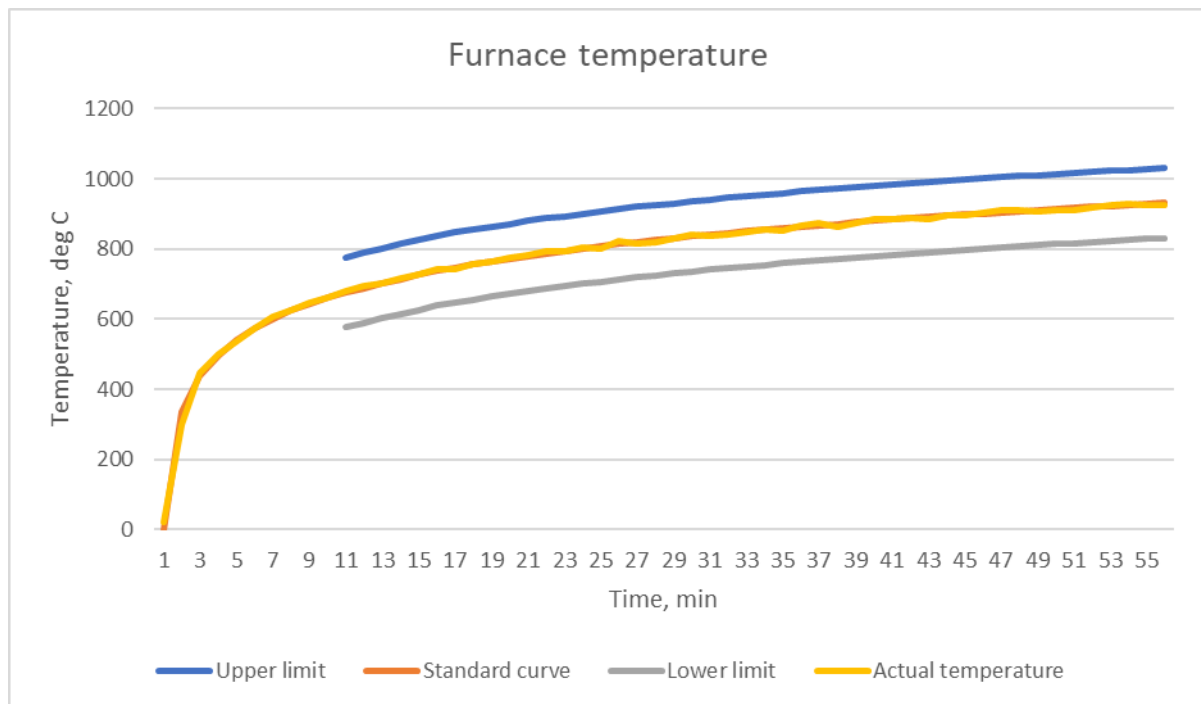
Dimensional measurements:

All linear measurements are made with equipment calibrated by ISO/IEC 17025 accredited laboratory - a signatory to the International Laboratory Accreditation Corporation (ILAC) through their Mutual Recognition Agreement (MRA) to the accuracy required by AS 1530.4-2014.

6. Test Conditions

6.1 Furnace Temperature

The furnace was controlled to follow the temperature/time relationship specified in AS 1530.4-2014 as closely as possible.

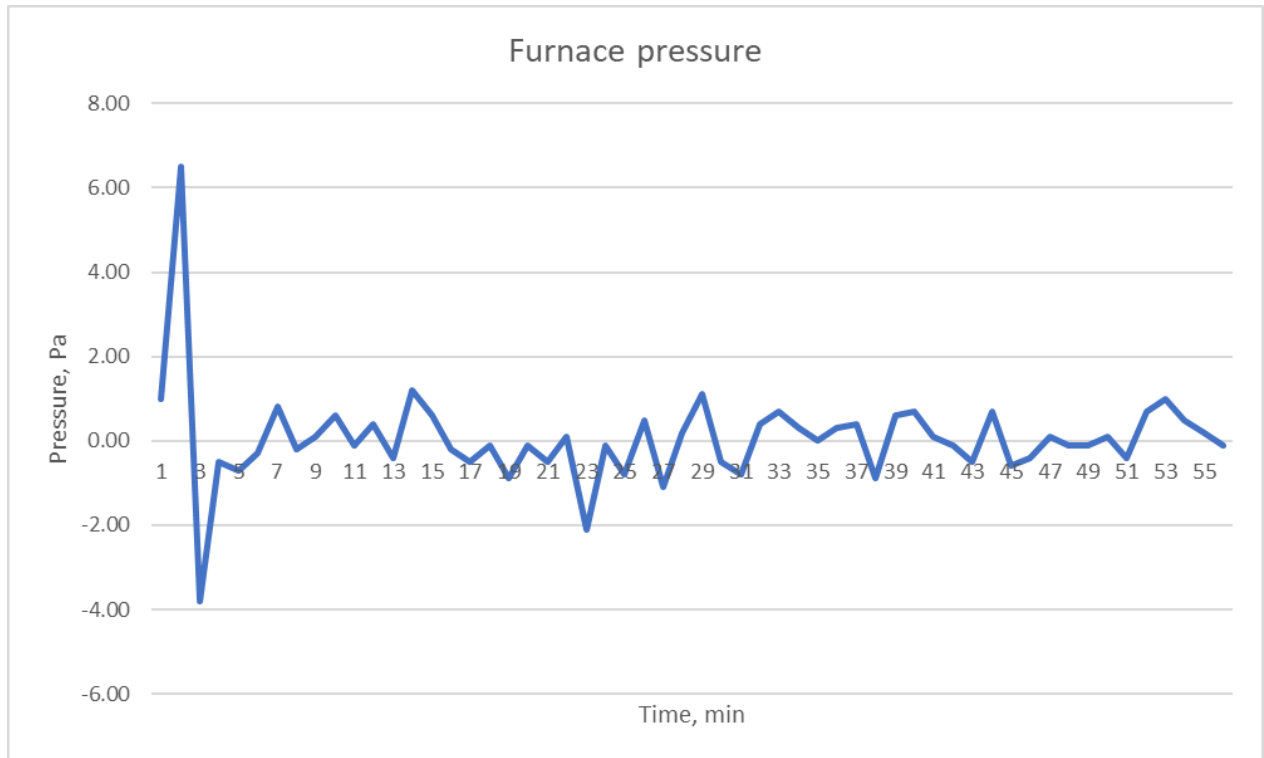


6.2 Ambient Temperature

The ambient temperature of the test area 15 minutes before the test and at the commencement of the test was 24 °C.

6.3 Pressure Readings

Pressure prods were installed at 500mm above furnace floor and set to 0Pa to control furnace pressure.



7. Schedule of materials

Separating Element		
1.1	Item / Product Name	Timber stud exterior wall
	Measurements	3000mm x 3000mm
	Thickness	122mm
1.2	Item / Product Name	Red Stag SG8 Timber
	Measurements	Width / Height (W/H): 90mm x 45mm
	Additional Info	Used to construct timber frame separating element
1.3	Item / Product Name	USG Boral FireStop
	Measurements	Width / Height (W/H): 1200mm x 3000mm
		Thickness (T): 13mm
	Additional Info	Fixed to unexposed face of separating element
1.4	Item / Product Name	Bradford Gold Hi-Performance Insulation
	Measurements	Width / Height (W/H): 570mm x 1160mm
		Thickness (T): 90mm
	Insulation	R Value: R2.5
	Additional Info	Installed between timber framing of separating element
1.5	Item / Product Name	Dristud Wallwrap
	Measurements	Width / Length (W/L): 1370mm x 18.5m
	Additional Info	Fixed to exposed face of separating element
1.6	Item / Product Name	VENT VB10 Ventilated Cavity Batten
	Measurements	Width / Length (W/L): 45.5mm x 1800mm
		Thickness (T): 10mm
	Additional Info	Fixed to unexposed face of separating element on wallwrap
1.7	Item / Product Name	James Hardie Axon Panel
	Measurements	Width / Height (W/H): 1200mm x 3000mm
		Thickness (T): 9.35mm

	Additional Info	Fixed to unexposed face of separating element on cavity battens
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Finishing Materials		
3.1	Item / Product Name	USG Boral Total Joint Finish
	Measurements	12kg
	Installation	Used for plasterboard stopping
3.2	Item / Product Name	USG Boral BaseCote 45
	Measurements	25kg bag
	Installation	Used for plasterboard stopping base coat
3.3	Item / Product Name	Exterior Grade 2-part Builders fill
	Measurements	1kg Tin
	Installation	Used to skim over nail heads on exposed face
3.3	Item / Product Name	Sikaflex AT-Façade
	Measurements	600mL Sausage
	Installation	Installed in junction between Axon Panels

Fixings		
4.1	Item / Product Name	Paslode Framing Nails
	Measurements	90mm
	Installation	Used to fix timber frame
4.2	Item / Product Name	GIB Grabber screws
	Measurements	32mm
	Installation	Used to fix plasterboard to timber frame
4.3	Item / Product Name	Galvanised Nails
	Measurements	60 x 3.15mm
	Installation	Used to fix Axon Panel to timber frame/battens

8. Testing details

8.1 Thermocouples positions

TC#	THERMOCOUPLE LOCATION DESCRIPTION
1	Separating element, centre of top left quartile
2	Separating element, centre of top right quartile
3	Separating element, vertical and horizontal centre of specimen
4	Separating element, centre of bottom left quartile
5	Separating element, centre of bottom right quartile
6	Separating element, 25mm below head, horizontal centre of specimen
7	Separating element, 25mm below head, 15mm left of the rightmost plasterboard junction
8	Separating element, 25mm below head, in line with the outer edge of the 5 th stud from the left
9	Separating element, vertical centre of specimen, 100mm right of the fixed edge
10	Separating element, vertical centre of specimen, 15mm left of the rightmost plasterboard junction
11	Separating element, vertical centre of specimen, 150mm left of the free edge

8.2 Observations during the test

Time Minutes	Test Face	Observations
5	E/U	No notable changes
10	E	Visible discolouring to face of specimen. Darker discolouring surrounding sheet joints with consistent combustion at the joints
15	E	Visible outwards deflection, darker discolouring around sheet joints
15	E	Visible cracks in Axon panels near the centre
24	E	Axon panels Deflection/Falling away from specimen (approximately 40% have fallen away)
24	E	Very large combustion
27	E	Further panels have fallen, visible combustion of insulation
30	E	Further right-side insulation has either combusted or has fallen out of the cavity
33	U	Visible discolouring at top left cavity
38	U	Visible discolouring at the next cavity to the right, further discolouring of top left
40	U	Visible discolouring starting in cavity below TC11, and below top left corner
42	U	Two cavities to the left side of TC9 are discolouring
44	U	Visible discolouring to bottom left and right cavities
44	U	Further discolouring to cavities below centre
46	U	Visible deflection
46	U	Cotton Pad test for 30 seconds at top left cavity – Pass
55	U	Flux meter at centre of specimen – 10.5kW/m ²
55		Test discontinued

Panels numbering from top to bottom and from left to right from unexposed face view

Key: U = unexposed face. E = Exposed face.

9. Specimen description

The timber frame separating element was constructed using 90x45 timber (1.2). The frame included a single top and bottom plate, 6 studs at 600mm centres, with one free and one fixed edge. Two double studs were included at 1200mm and 2400mm from the right side (Exposed view). The frame was fixed using Paslode Framing Nails (4.1). To fit the frame, one of the studs spacings was measured to be 505mm. The frame also included 3 rows of nogs at 800mm centres.

One layer of USG Boral FireStop (1.3) was fixed to the unexposed face using screws (4.2). Once fixed, two coats of BaseCote (3.2) were applied to the plasterboard junction, followed by one coat of Total Joint Finish (3.1).

Insulation (1.4) was cut to the size of the timber frame cavities, then pressed into their respective cavities.

One layer of Wall Wrap (1.5) was installed to the exposed face of the frame. The wrap was installed horizontally with a minimum overhang of 200mm. The wrap was fixed to the frame at 300mm centres using staples.

The adhesive cover of the Vent battens (1.6) were removed and installed to the wall wrap, on top of the timber frame. The battens were placed along the top and bottom plate, as well as all studs.

One layer of Axon Panels (1.7) were fixed to the exposed face of the frame. The panels were fixed using nails (4.3) at 300mm centres around the perimeter and down the centre of the panels. The nail fixing locations were predrilled using a 2mm drill bit, and nails were finished recessed into the Axon Panel. The nail heads were finished with an Exterior Grade 2-part Builders fill where applicable. A bead of Sealant (3.4) was applied to the shiplap joint between Axon Panels.

Test results

Structural adequacy	Not applicable
Integrity	55 minutes
Insulation	43 minutes



Unexposed face:



Exposed face:

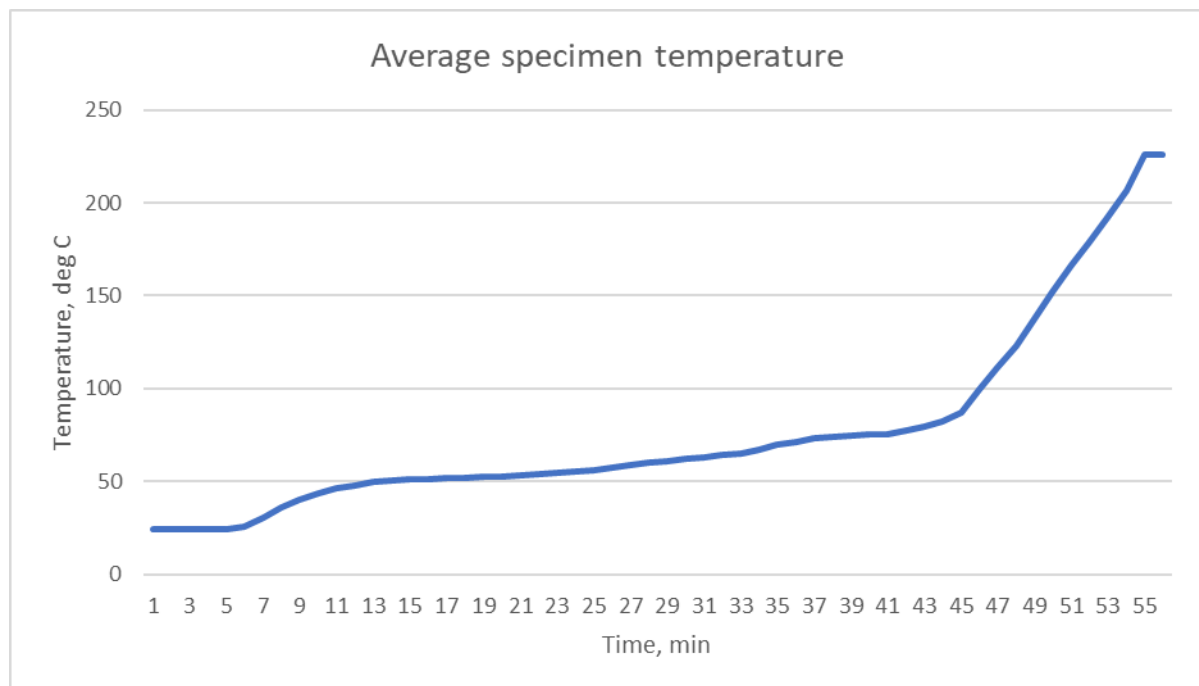


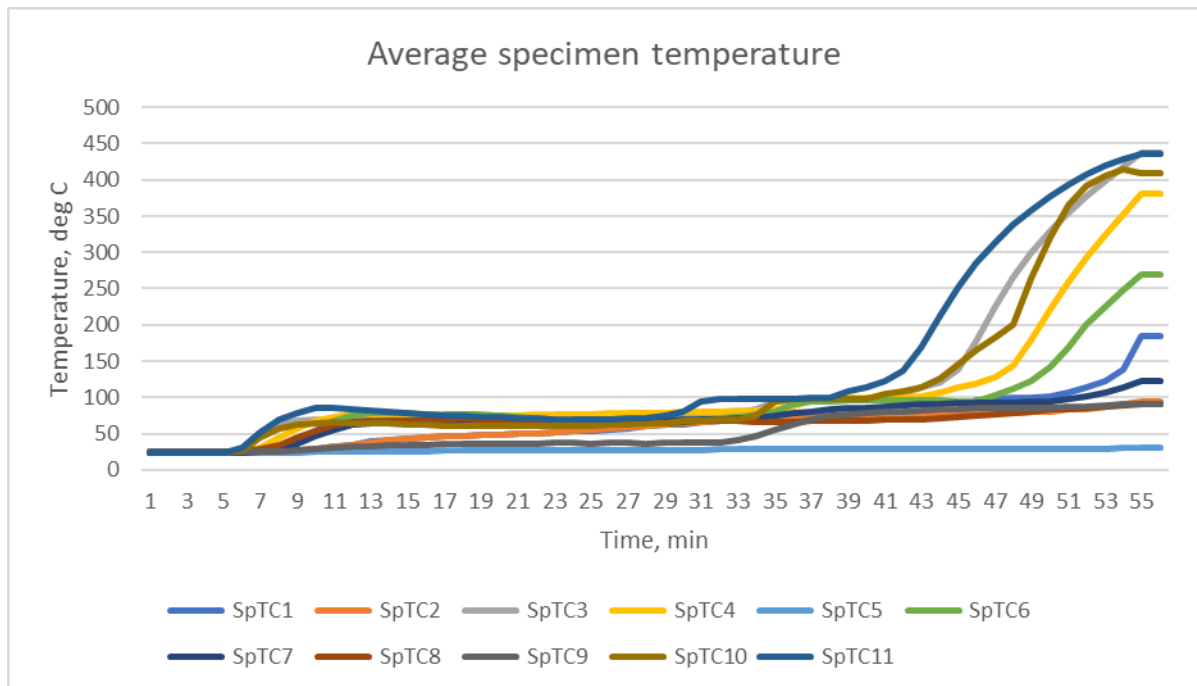
10. Specimen results

10.1 General results

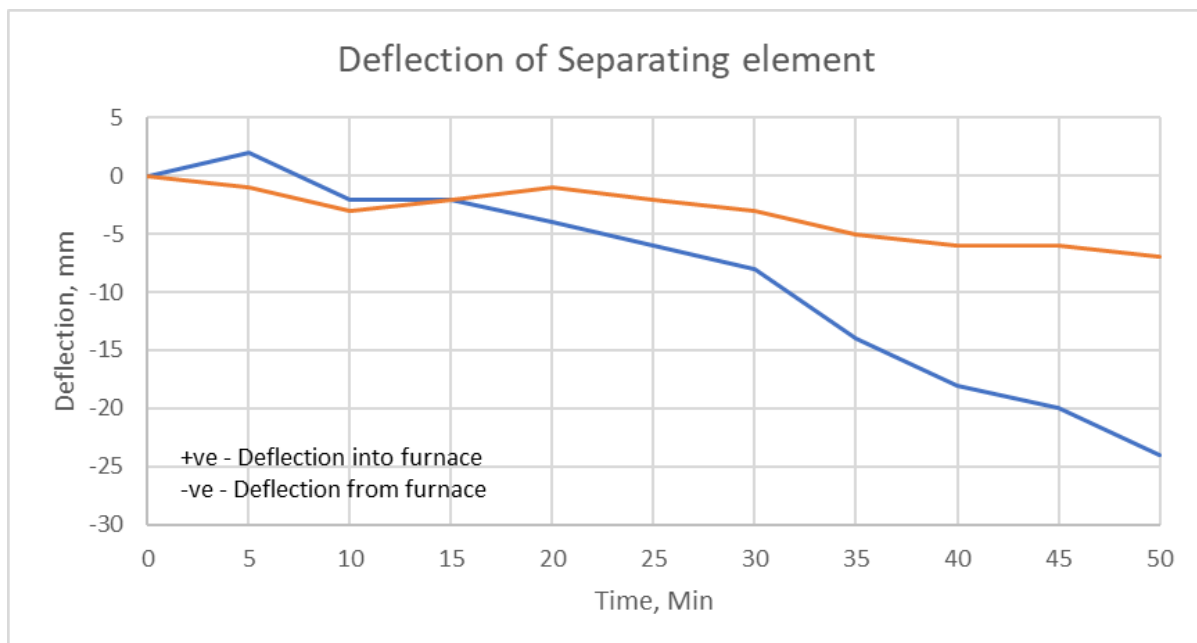
Test results	
Structural adequacy	Not applicable
Integrity	55 minutes
Insulation	43 minutes

10.2 Temperature readings





10.3 Deflection



11. Permissible variations

The results of the fire test contained in the test report are directly applicable, without reference to the testing authority, to similar constructions where one or more of the following changes have been made, provided no individual component is removed or reduced:

- a. increase in the length of a wall of identical construction
- b. increase in thickness of the wall;
- c. increase in timber density;
- d. increase in cross-sectional dimensions of the framing element(s);
- e. decrease in sheet or panel sizes;
- f. decrease in stud spacing;
- g. decrease in fixing centres of wall sheet materials;
- h. increase in the batten thickness up to 20mm

12. Additional photographs

12.1 Materials used



VENT VB10 Ventilated Cavity Batten

12.2 During and after the test

15 minutes:



30 minutes:



After the test:

