

TEST REPORT

PF23012

**Fire resistance test for Inspection Hatch
installed in a vertical separating element**

Client:	Firestop Centre Ltd
Test method:	AS1530.4-2014
Report Date:	18/03/2024
Test number:	PF24012


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1.1 Document revision schedule

Revision #	Date	Description
1	18/03/2024	Initial issue for Client review

1.2 Signatories

Report	Name	Signature	Date
Reviewed by:	Alex Kokorin		18/03/2024
Authorised by:	Andrew Bain (Authorized signatory)		18/03/2024



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

2. Report Summary

A 64mm steel stud framed wall with one layer of 13mm FR plasterboard on both sides was divided in two sections to incorporate Specimen A - FIRESTOP Inspection Hatch (300mm) installed to fire side of the wall and Specimen B – FIRESTOP Inspection Hatch (300mm) installed to non-fire side of the wall.

Specimen A – fire side

Test results	
Structural adequacy	Not applicable
Integrity	No Failure at 64 minutes
Insulation	63 minutes
Fire resistance level (FRL)	-/60/60

Specimen B – non-fire side

Test results	
Structural adequacy	Not applicable
Integrity	No Failure at 64 minutes
Insulation	60 minutes
Fire resistance level (FRL)	-/60/60

3. General Information

3.1 Testing Scope

Applicable Standards:

AS 1530.4-2014 Section 10: Service penetrations and control joints

Departures from Testing Method:

No departures from the testing method

Performance Criteria:

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) 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.
- c) Flaming to the unexposed face for 10 seconds or longer shall be deemed to be an Integrity failure.

Documentation:

Testing products were checked and tested based on the Client description, refer to the Specimens description below. No additional documentation was provided.

3.2 Contact Details

IANZ registered Testing Authority

Fire TS Lab - 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

Client/Applicant:

Firestop Centre Ltd
657 Great South Rd, Penrose, Auckland, 1061
New Zealand
Contact e-mail: info@firestopcentre.co.nz

Manufacturer:

Same as Client/Applicant

3.3 Specimen Preparation, Conditioning and Timeline

Specimens conditioning and delivery to Laboratory:

Separating element was built by the Laboratory in line with Client instructions. Installation of fire stopping system was performed by Laboratory in line with Client instructions. The Laboratory was not involved in sampling of the materials. Laboratory checked materials during construction of the specimen.

Testing date:

01/03/2024

Installation completion date:

23/02/2024

Termination of The Test:

The test was discontinued at 64 minutes.

3.4 Use of the Report

This report shall not be reproduced, except in full.

This report details the methods of construction, test conditions and the results obtained when the specific element of construction described herein was tested following 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.

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. Specimen Description

4.1 Supporting Construction

Separating element		
1.1	Item	64mm Rondo Steel Tracks with one layer of 13mm GIB Fyrelite Plasterboard at each side
	Dimensions	Width / Length (W/L): 1200mm x 1200mm
		Thickness (T): 90mm
		Cavity: 64mm
		Aperture: Two 300mm x 300mm (one on each side of the wall)

Materials		
1.2	Item	Rondo Steel Track
	Dimensions	Width / Height (W/H): 64mm x 30mm
		Thickness (T): 0.55 BMT
	Installation	Used to construct top and bottom of steel frame
1.3	Item	Rondo Steel Stud
	Dimensions	Width / Height (W/H): 64mm x 34mm
		Thickness (T): 050 BMT
	Installation	Used to construct the stud of the steel frame
1.4	Item	GIB FYRELINE Plasterboard
	Dimensions	Width / Height (W/H): 1200mm x 1200mm
		Thickness (T): 13mm
	Installation	installed to each side of steel frame
1.5	Item	41mm GIB Grabber Self Tapping Screw
	Dimensions	6g x 41mm
	Installation	Used to fix plasterboard to steel stud frame

4.2 Specimens

FIRESTOP Inspection Hatch (300mm)		
2.1	Item	Steel Frame
	Dimensions	Width/Height (W/H): 340mm x 340mm
	Installation	Fitted to the aperture and flush with plasterboard on all four sides.
2.3	Item	Load Spreader
	Dimensions	Leg Length /Leg Width (LL/LH): 120mm x 23mm
	Installation	Placed at each corner of steel frame and fixed with screws.
2.4	Item	Cover Plate
	Dimensions	Width/Height (W/H): 380mm x 380mm
	Installation	Positioned the cover plate over the steel frame and fixed it on frame with screws.

Seals		
3.1	Item	Intumescent seal (supplied attached to the Inspection hatch)
	Dimensions	Length / Width / Thickness (L/W/T): 320mm x 20mm x 1.36mm
	Installation	Along the edge of internal face of cover plate

Fixings		
4.1	Item	Self-Tapping Screws M4 x 40 CSK #1 SQ Fastite 2000ZN
	Dimensions	Diameter / Length (D/L): 4mm x 40mm
	Installation	Used to fix the load spreader with steel frame of Inspection hatch
4.2	Item	Self-Tapping Screws M4 x 10 CSK #1 SQ Fastite 2000ZN
	Dimensions	Diameter / Length (D/L): 4mm x 10mm
	Installation	Used to attach the cover plate to steel frame of inspection hatch.

5. Test Conditions

5.1 Equipment

Furnace:

1200X1200mm Indicative 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:

Keypare 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.

5.2 Furnace Data

Furnace Temperature:

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

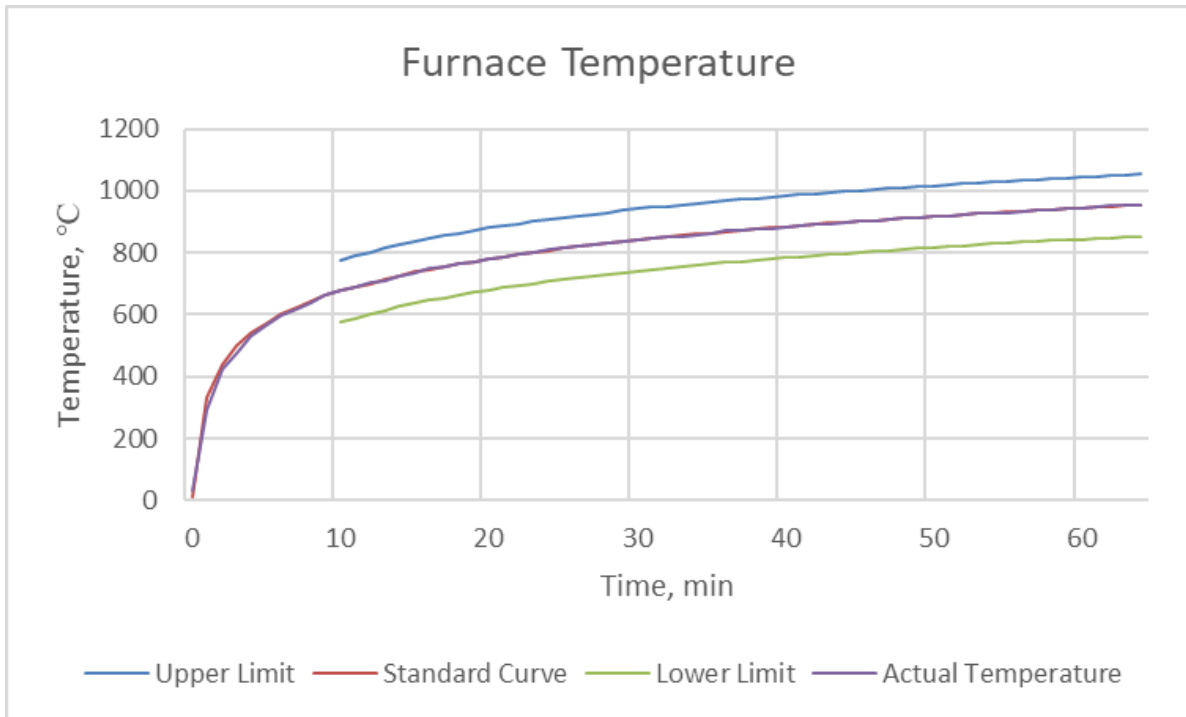


Figure 1 – Furnace Temperature during the test

Ambient Temperature:

The ambient temperature of the test area 15 minutes before the test and at the commencement of the test was 23°C.

Furnace Pressure:

The probe was located 500mm above the furnace floor, the furnace pressure was maintained at 16 ± 3 Pa after the first 5 minutes of the test.

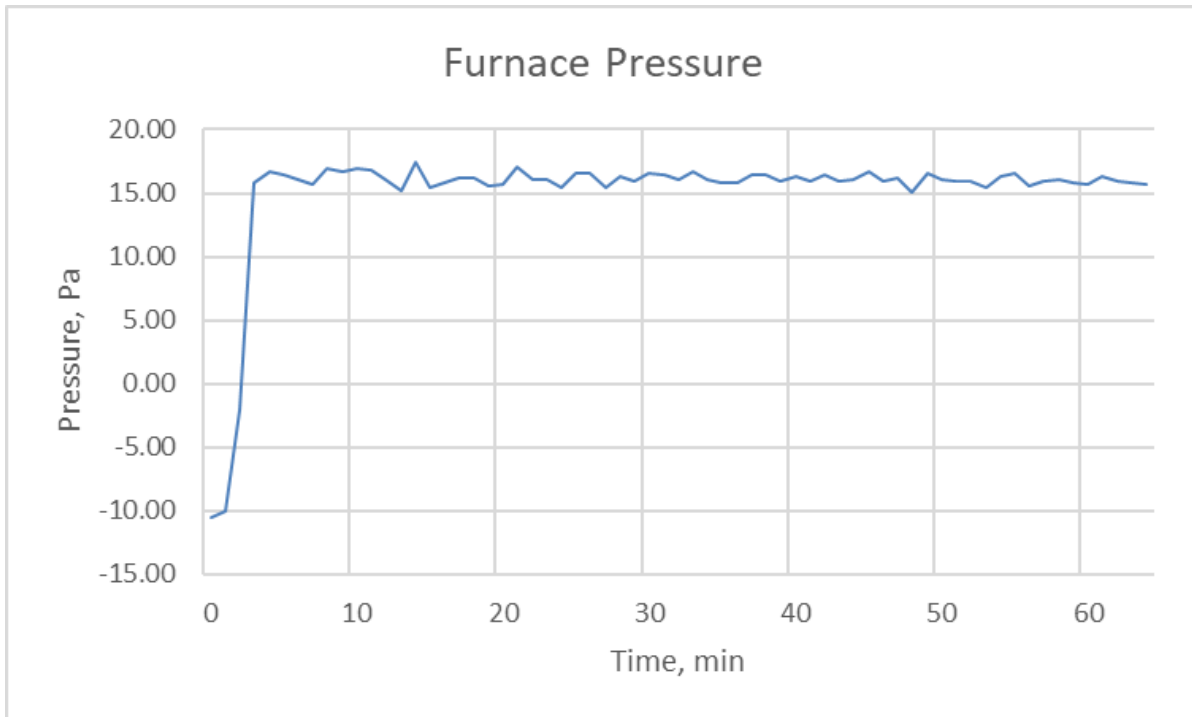


Figure 2 – Furnace Pressure during the test

5.3 Thermocouple locations



Figure 3 – Unexposed face Thermocouples location

TC#	THERMOCOUPLE LOCATION DESCRIPTION
1	On unexposed face of separating element, 385mm down from the top edge of separating element, 180mm right of left edge of separating element.
2	On unexposed face of separating element, 25mm above the top edge of inspection hatch cover plate, 180mm left of right edge of separating element.
3	On unexposed face of separating element, 475mm down from the top edge of separating element, 180mm right of left edge of separating element.
4	On surface of inspection hatch cover plate, 65mm down from the top edge of inspection hatch cover plate, 180mm left of right edge of separating element.
5	On unexposed face of separating element, mid height of separating element, 300mm right of left edge of separating element.
6	On unexposed face of separating element, mid height of separating element, 425mm right of left edge of separating element.

7	On unexposed face of separating element, mid height of separating element, 515mm right of left edge of separating element.
8	On unexposed face of separating element, mid height of separating element, 515mm left of right edge of separating element.
9	On surface of inspection hatch cover plate, 65mm right of the left edge of inspection hatch cover plate, mid height of inspection hatch cover plate.
10	At the centre of inspection hatch cover plate.
11	On surface of separating element, 275mm down from mid height of separating element, 175mm right of left edge of separating element.
12	On surface of inspection hatch cover plate, 65mm above the bottom edge of inspection hatch cover plate, 175mm left of right edge of separating element.
13	On surface of separating element, 365mm down from mid height of separating element, 175mm right of left edge of separating element.
14	On surface of separating element, 25mm down from bottom edge of inspection hatch cover plate, 175mm left of right edge of separating element.

6. Test Results

6.1 Observations during the test

Time min	Test face	SP#	OBSERVATIONS/REMARKS
8	E	Hatch A	Inspection hatch cover discoloured along its four edges
11	U	SE	Clear liquid droplets accumulated at separating element next to the top left corner of hatch cover.
11	E	Hatch A	Inspection cover plate discoloured towards its centre.
20	U	Hatch B	At bottom left and right corner of cover plate, small amount of clear liquid travel downwards.
28	U	SE	SE discoloured at the area next to top left corner of hatch cover.
39	U	Hatch B	The discolouration developed.
45	E	Hatch A	Small cracks developed at the four edges of cover plate.
51	U	SE & Hatch B	SE discoloured at the left-hand edge, mid height; Top hatch cover plate deflected outwards, two screw caps started to melt.
55	U	Hatch B	Smoke at the gap between cover plate and SE, caused by deflection
60	U	Hatch B	Hatch cover plate partially detached from SE at top left corner.
64			Test Discontinued

NOTE: E – Exposed Face (inside furnace)
U – Unexposed Face (outside furnace)
SE – Separating element

6.2 Specimen A

Local fire-stopping system	
Aperture	300x300mm on fire side only
Application	Asymmetrical (Specimen installed to fire side only)
System description	A 340mm x 340mm steel frame fitted to the aperture and flush with plasterboard on all four sides. Four Load spreaders placed at each corner of steel frame and fixed on plasterboard with screws. 380mm x 380mm inspection hatch cover plate is positioned over the steel frame and fixed on frame with screws. Four straps of intumescent seal attached along four edges of internal face cover plate.

Test results

Structural adequacy	Not applicable
Integrity	No Failure at 64 minutes
Insulation	Failure at 63 minutes

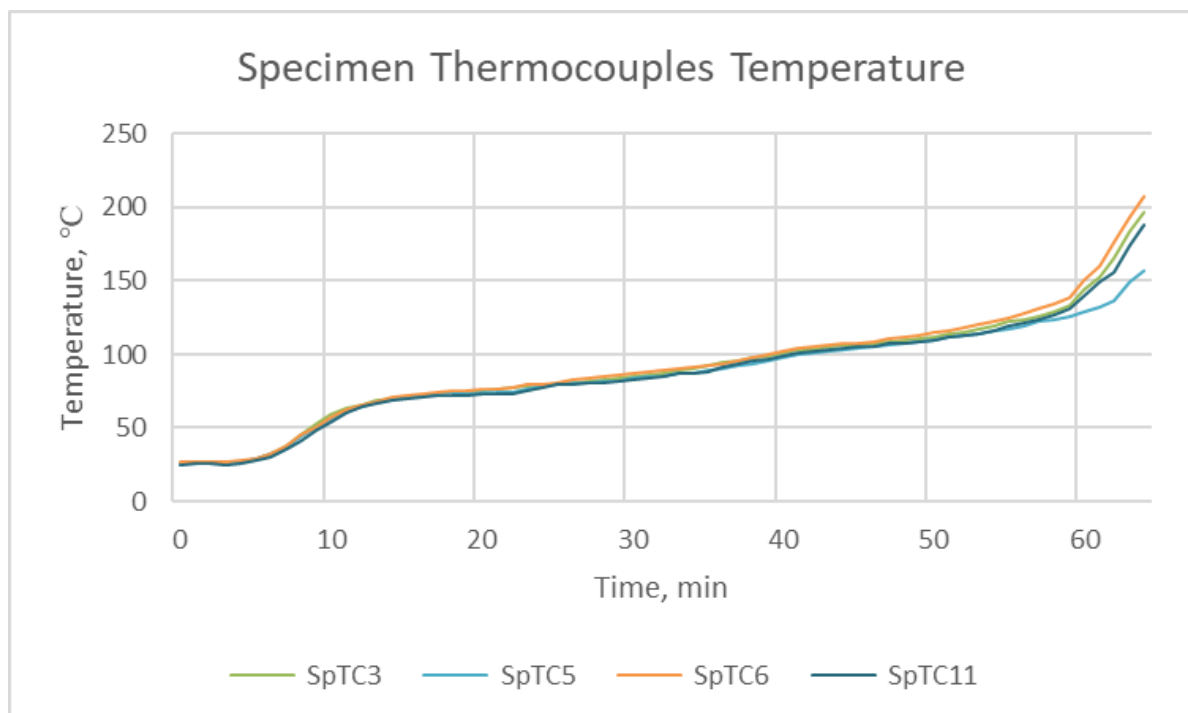
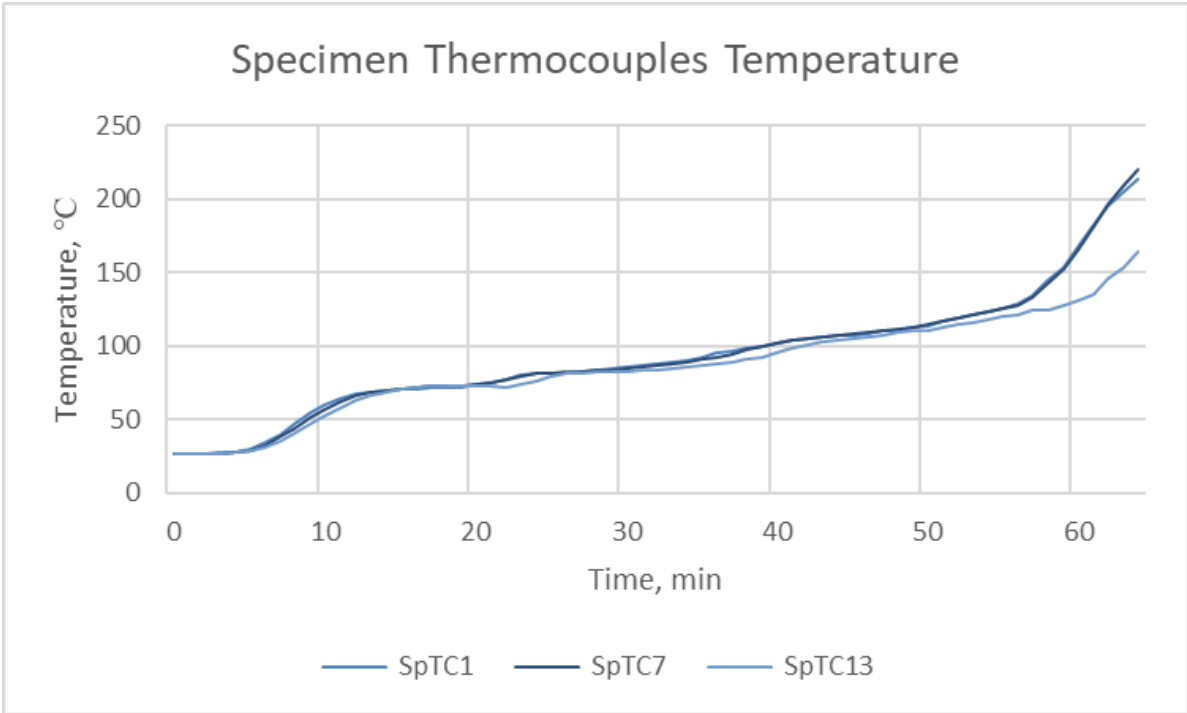


Figure 4 – Thermocouples readings at center of left half of SE and 275mm outwards



**Figure 5 – Thermocouples readings 365mm from center of left half of SE*
*SpTC1&SpTC7 exceeded the insulation failure criteria at 63minutes**

6.3 Specimen B

Local fire-stopping system	
Aperture	300x300mm on non-fire side only
Application	Asymmetrical (Specimen installed to non-fire side only)
System description	A 340mm x 340mm steel frame fitted to the aperture and flush with plasterboard on all four sides. Four Load spreaders placed at each corner of steel frame and fixed on plasterboard with screws. 380mm x 380mm inspection hatch cover plate is positioned over the steel frame and fixed on frame with screws. Four straps of intumescent seal attached along four edges of internal face cover plate.

Test results

Structural adequacy	Not applicable
Integrity	No Failure at 64 minutes
Insulation	Failure at 60 minutes

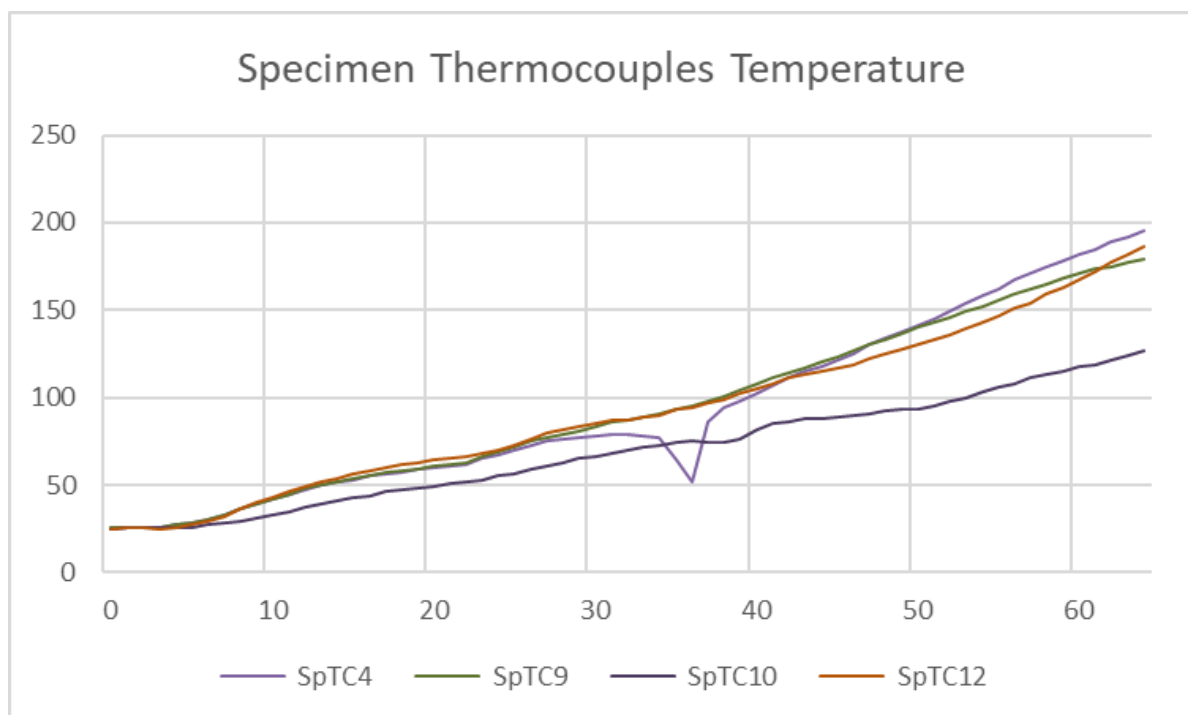


Figure 6 – Thermocouples readings at center Inspection Hatch Cover Plate and 65mm from edge of cover plate

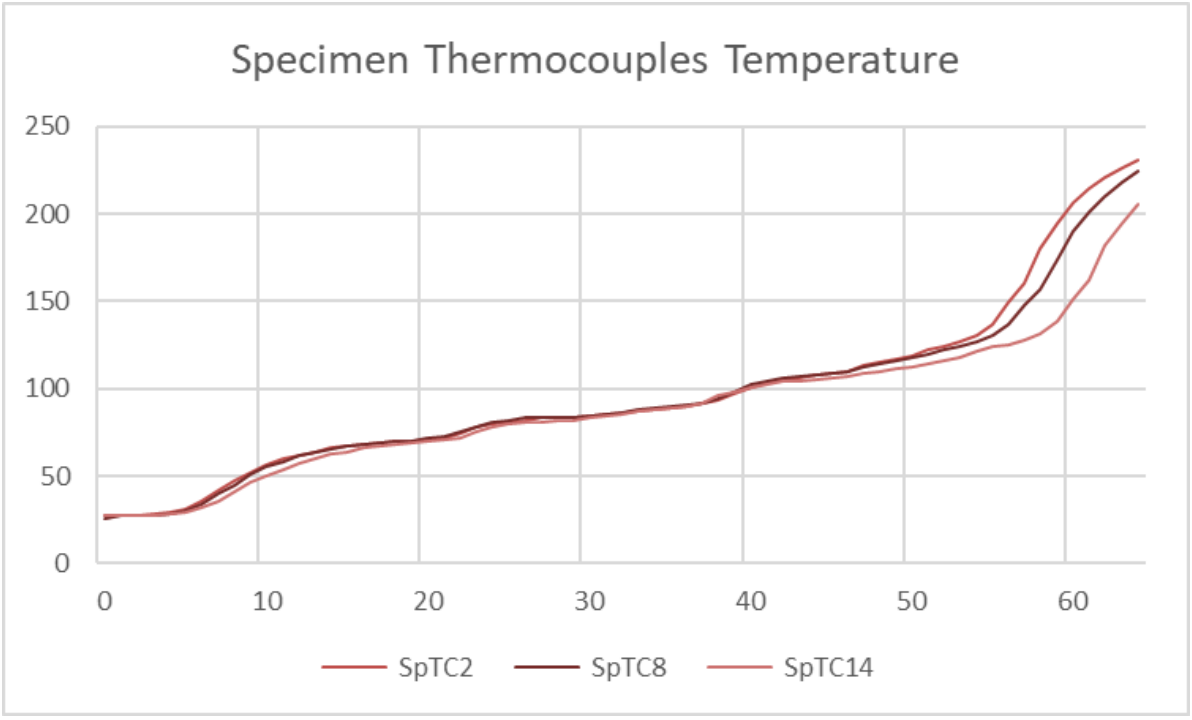


Figure 7 – Thermocouples readings on SE, 25mm from edge of Inspection Hatch Cover Plate*

***SpTC2 exceeded the insulation failure criteria at 60minutes**



7. Photos

7.1 Photos before the test



Figure 8 – Unexposed face prior to test commencement



Figure 9 – Exposed face prior to test commencement

7.2 During and after the test



Figure 11 – Unexposed face at 30 minutes

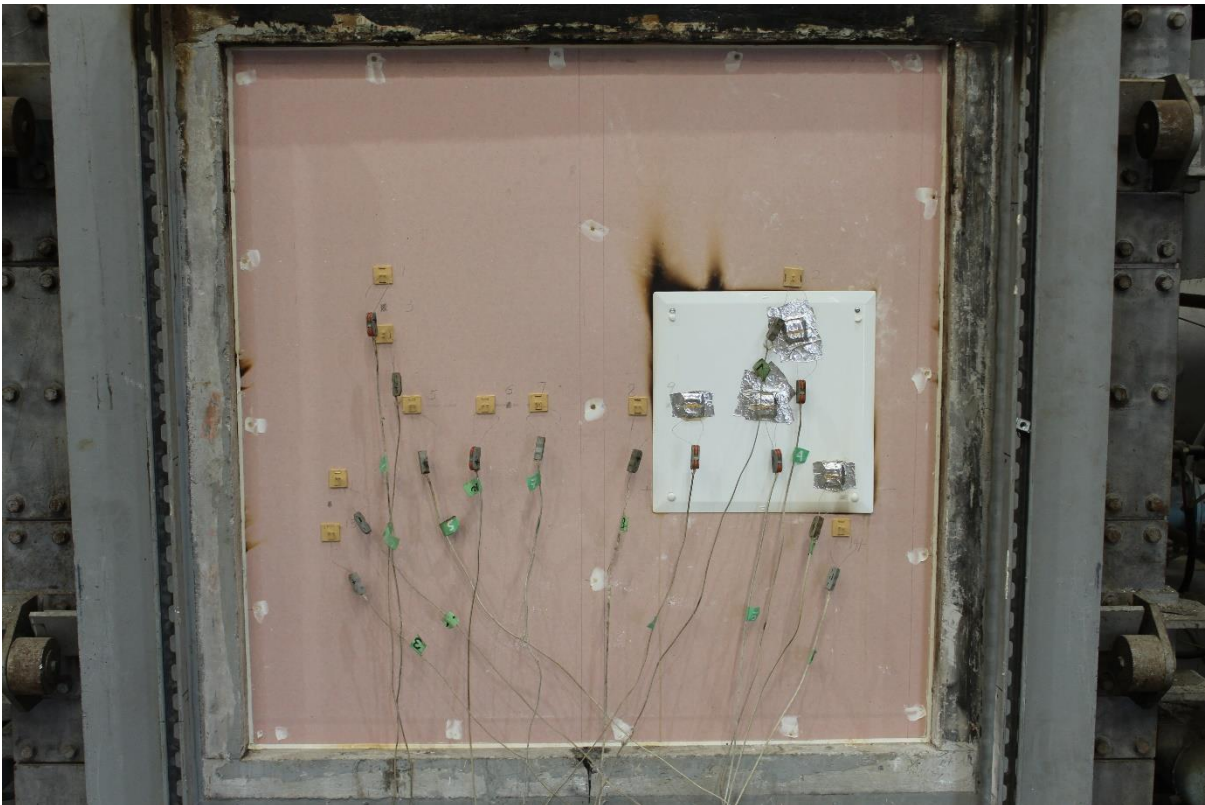


Figure 12 – Unexposed face after the test

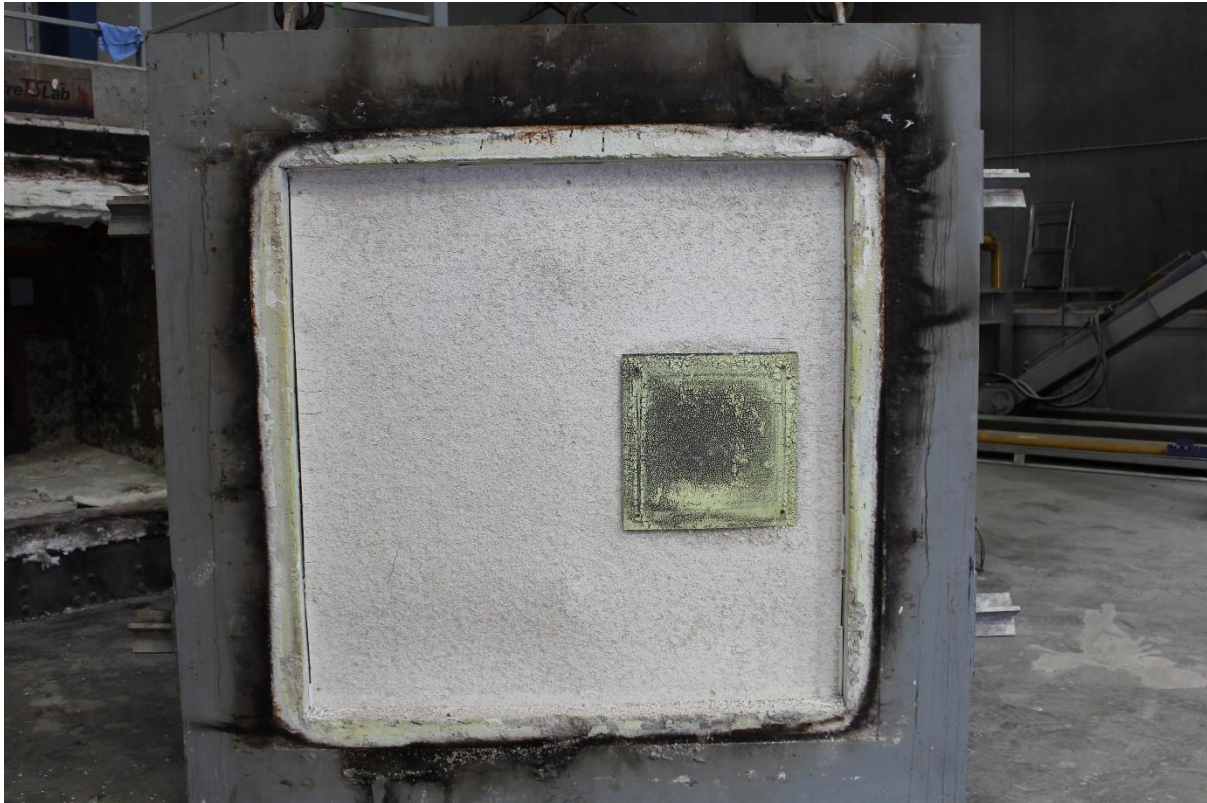


Figure 13 – Exposed face after the test