Fire Testing Laboratory

TEST REPORT

PF25075

Pilot scale fire resistance test for the doorset hardware variation

Client:	**LSC NZ Limited**
Test method:	AS1530.4-2014 (Appendix B11)
Report Date:	27/08/2025
Test number:	PF25075

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1.1 Document revision schedule

Revision #	Date	Description
1	27/07/2025	Initial Issue for Client review

1.2 Signatories

Report	Name	Signature	Date
Prepared by:	Alexey Kokorin		
Authorised by:	Andrew Bain (Authorized signatory)		

ACCREDITED
TESTING LABORATORY

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

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2. Report Summary

The tested door sample featured an 800mm x 1150mm x 55mm door leaf with timber frame, installed to open into the furnace. Three specimens of door hardware were installed on unexposed side, or on both sides of the door leaf (as outlined in the table below).

Pilot scale test was conducted on the reduced door sample as per AS1530.4-2014 Section 2 and Appendix B11 for the purpose of the assessment of the hardware variation to the full-scale prototype.

SP #	Products Name	Installation Side	Actual Integrity (min)	Actual Insulation (min)
A	Pcore (Halspan XT FD60) Door leaf	Both faces	68NF	68NF
B	McGrath Locks WINDSOR Fire Rated Digital Bluetooth Lock and Tubular Latch	Both faces	68NF	68NF
C	McGrath Locks HAMILTON DDA Compliant Digital Bluetooth Lock and Tubular Latch	Both faces	68NF	68NF
D	ABUS AC7436 door closer	Unexposed face	68NF	68NF

NF – No failure during the test

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3. General Information

3.1 Testing Scope

Applicable Standards:

AS1530.4-2014 Section 2 and Appendix B11 - Pilot fire test for fire doors.

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. The use of the cotton pad shall be discontinued over areas where the temperature exceeds 300°C measured by a thermocouple (fixed or roving) with the edge of the pad aligned with the edge of the gap in accordance with AS1530.4:2014 clause 2.13.2.1.

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

d) Integrity failure shall be deemed to occur when a 6mm gap gauge can be passed through the specimen so that the gap gauge projects into the furnace and can be moved a distance of 150mm along the gap.

e) Integrity failure shall be deemed to occur when a 25mm gap gauge can be passed through the specimen so that the gap gauge projects into the furnace

3.2 Contact Details

Accredited testing laboratory

FTSL - 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

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Client/Applicant:

LSC NZ Limited

32A Poland Road, Glenfield, Auckland, 0627

New Zealand

Contact e-mail: CAndrewartha@lsc.co.nz

Manufacturer/Supplier:

Same as applicant

3.3 Specimen Preparation, Conditioning and Timeline

Specimens conditioning and delivery to Laboratory:

The doorset was provided by the Client. The door hardware was provided and installed by the Client. Construction of the separating element was performed by the Client. The laboratory was not involved in sampling of the materials. The laboratory checked and tested the sample 'as delivered'.

Testing date:

12/08/2025

Installation completion date:

29/07/2025

Termination of The Test:

The test was discontinued at 68 minutes.

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3.4 Use of Reports

This report shall not be reproduced, except in full.

This report documents the findings of the fire resistance test of a pilot fire door in accordance with Sections 2 and Appendix B11 of AS 1530.4:2014. The report is produced for the purpose of the variations assessment of the full scale doorsets tested in accordance with AS1530.4:2014 Section 7. A door hardware assessment will be required to assign an FRL rating for the door hardware as integral part of the doorset of particular construction.

The specimen was an asymmetrical construction.

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.

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4. Specimen Description

4.1 Supporting Construction

Separating element		
1.1	Item	90mm x 45mm timber stud frame with one layer of 13mm GIB Fyreline plasterboard each side
	Dimensions	Width / Height (W/H): 1200mm × 1200mm
		Wall Thickness (T): 116mm
		Cavity: 90mm
		Trimmed Opening (W/H): 880mm × 1200mm (nominal)

Material		
1.2	Item	Laser Frame SG8 Timber
	Dimensions	Width / Height (W/H): 45mm × 90mm
	Installation	Used to construct separating element
1.3	Item	GIB Fyreline Plasterboard
	Dimensions	Width / Height (W/H): 1200mm × 1200mm
		Thickness (T): 13mm
	Installation	Used to construct separating element
1.5	Item	GIB Grabber Self Tapping Screw
	Dimensions	32mm × 6g
	Installation	Used to fix plasterboard to timber stud frame

4.2 Specimen A: Doorset- opening into the furnace

Door Frame		
2.1	Item / Product Name	Hardwood (Grarapa) Timber Frame
	Dimensions	Overall Width / Overall Height (W/H): 866mm x 1186mm Thickness / Width (T/W): 32mm x 118mm
	Density	780kg/m^3
2.2	Item / Product Name	Hardwood (Grarapa)Door Stop

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	Dimensions	Thickness / Width (T/W): 30mm x 20mm
	Density	780kg/m^3
2.3	Item / Product Name	Pine Architraves
	Dimensions	Thickness / Width (T/W): 10mm x 60mm (30mm at top)
	Installation	Installed on the jamb and wall to cover the wedging gap, with a 5mm recess from the internal edge of the jamb.

Frame Seal		
2.4	Item / Product Name	Intumescent strips
	Dimensions	Thickness (T): 4mm Width (W):15mm
	Installation	Two strips recessed into the internal surface of the frame on all three sides.
2.5	Item / Product Name	EPL 25861 (GAQ) Smoke Seal
	Dimensions	Width (W):10mm & 10mm
	Installation	Installed along the joint where the door frame meets the frame stop on all three sides, with one wing attached to the frame and the other attached to the stop.

Door Leaf		
2.6	Item	Pcore (Halspan XT FD60)
	Dimensions	Width / Height (W/H): 800mm x 1150mm
		Core thickness: 36mm (nominal)
	Density	450-550kg/m^3
2.7	Item	Marine Grade Plywood
	Dimensions	Width / Height (W/H): 800mm x 1150mm
		Thickness (T): 9mm (nominal)
2.8	Item	Hardwood (Grarapa) timber leaf edge
	Dimensions	Width / Thickness (W/T): 55mm x 7mm

Hinges		
	Item	Stainless steel hinges

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2.9	Plate Dimensions	Width / Height (W/H): 75mm x 100mm
		Thickness (T): 2.5mm
	Installation	Recessed into door jamb and door leaf. Three hinges, measured from the top of the door leaf, located at 200mm 600mm and 1000mm.

Fixings and packers		
2.10	Item / Product Name	BREMICK SUREQUIK Exterior Screws
	Dimensions	10g x 75mm
	Installation	Used to fix the door frame on wall frame

Sealant		
2.11	Item / Product Name	Fire rated sealant
	Dimensions	600ml sausage
	Installation	Used to apply in the wedging gap, flush with the surface of the wall.

4.3 Specimen B: McGrath Locks WINDSOR Fire Rated Digital Bluetooth Lock & Tubular Latch

Head Hatch		
3.1	Item / Product Name	McGrath Locks WINDSOR Fire Rated Digital Bluetooth Lock and Tubular Latch
	Dimension	Lock (external) - Height / Width / Depth (H/W/D): 184mm x 76.3mm x 25mm Backset Length (L): 70mm Faceplate Height / Width (H/D): 56mm x 25mm Spindle Diameter (D): 8mm Strike Plate Length / Strike Plate Width (L/W): 70mm x 46 mm Strike Plate Cut-out Diameter / Depth (D/D): 20mm x 20mm Latch Cut-out Diameter / Depth (D/D):20mm x 90mm

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	Installation	Installed on latch edge of the door leaf, with the centre of the tubular latch positioned 380 mm below the top edge of the door leaf.

4.4 Specimen C: McGrath Locks HAMILTON DDA Compliant Digital Bluetooth Lock & Tubular Latch

Head Hatch		
4.1	Item / Product Name	McGrath Locks HAMILTON DDA Compliant Digital Bluetooth Lock and Tubular Latch
	Dimension	Lock (external) - Height / Width / Depth (H/W/D): 260mm x 45mm x 23mm Backset Length (L): 70mm Faceplate Height / Width (H/D): 56mm x 25mm Spindle Diameter (D): 8mm Strike Plate Length / Strike Plate Width (L/W): 70mm x 46 mm Strike Plate Cut-out Diameter / Depth (D/D): 20mm x 20mm Latch Cut-out Diameter / Depth (D/D):20mm x 90mm
	Installation	Installed on latch edge of the door leaf, with the centre of the tubular latch positioned 800 mm below the top edge of the door leaf.

4.5 Specimen D: ABUS AC7436 door closer

Door Closer		
5.1	Item / Product Name	ABUS AC7436 door closer
	Dimensions	Length / Width / Height (L/W/H): 264mm x 45mm x 61mm
	Location	101mm from hinge edge, 85mm below top edge of door leaf
	Installation	Installed on the unexposed face of the door leaf, with one end of the arm attached to the bracket and the other end mounted on the door stop, positioned 225 mm to the left of the hinge edge of the door leaf.

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4.6 Gap Measurement from between door frame and door leaf

Figure 1 – Gap Measurement Location

Gap Measurement from exposed face:

A – 2.5mm	B – 2mm	C – 1.5mm	D – 2.5mm	E – 2.5mm
F – 3mm	G – 2.5mm	H – 3.5mm	I – 4mm	

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:

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.

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5.2 Furnace Data

Furnace Temperature:

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

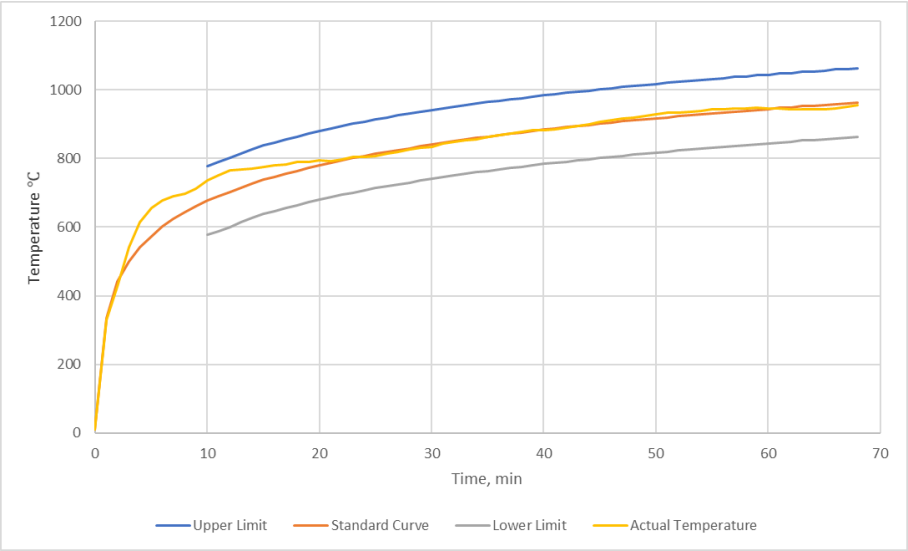

Figure 2 – Furnace Temperature during the test

Ambient Temperature

The ambient temperature of the test area 15 minutes before the test and at the commencement of the test was 12°C.

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Furnace Pressure

After the first 5 minutes of the test, the furnace pressure was maintained at 8±3 Pa with respect to atmosphere. The probe was located 500mm above the furnace floor.

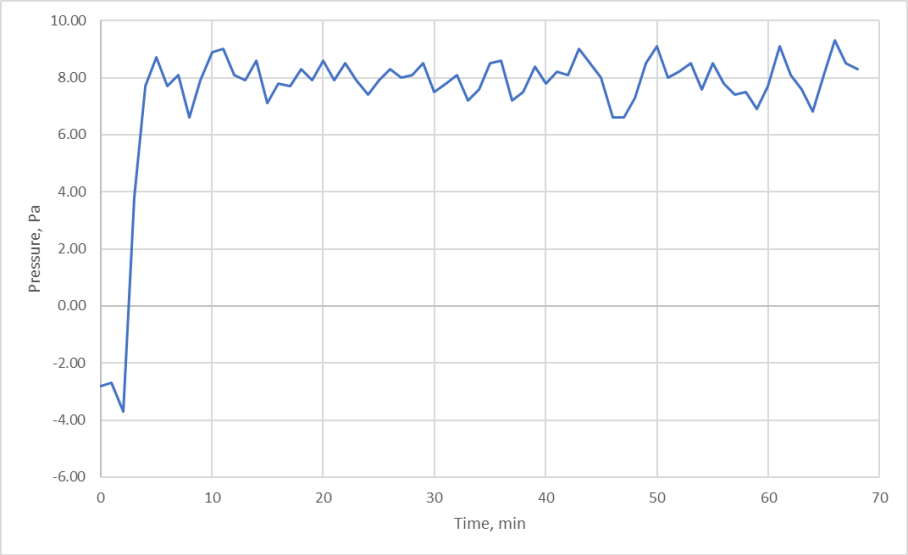

Figure 3 – Furnace Pressure during the test

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5.3 Thermocouple locations

Figure 4 – Thermocouple locations

TC#	THERMOCOUPLE LOCATION DESCRIPTION
1	Separating element, mid-height of doorset, 50mm left of left architrave.
2	Separating element, 50mm left of left architrave, 25mm below the top edge of Separating element.
3	Separating element, 50mm right of right architrave, 25mm below the top edge of Separating element.
4	Separating element, mid-height of doorset, 50mm right of right architrave.
5	Door frame, mid-height of left architrave, flush with the left edge of left architrave.
6	Door frame, 50mm right of left leaf corner, flush with the top edge of head architrave.
7	Door frame, mid-width of leaf, flush with the top edge of head architrave.
8	Door frame, 50mm left of right leaf corner, flush with the top edge of head architrave.
9	Door frame, mid-height of right architrave, flush with the right edge of right architrave.

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10	On the door leaf, 100mm right of the left edge of door leaf and 100mm below top edge of door leaf.
11	On the door leaf, at mid-width and 100mm below top edge of door leaf.
12	On the door leaf, 100mm below bottom edge of door closer and 100mm left of the left edge of door closer.
13	On the door leaf, 100mm below bottom edge of door closer and 100mm left of the right edge of door leaf.
14	On the door leaf, 100mm right of the left edge of door leaf, 100mm below the Hamilton digital lock furniture.
15	On the door leaf, 100mm right of the left edge of door leaf, 100mm below the Windsor digital lock furniture.
16	Door leaf, centre of top left quartile
17	Door leaf, centre of top right quartile
18	Door leaf, centre of door leaf
19	Door leaf, centre of bottom left quartile
20	Door leaf, centre of bottom right quartile

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6. Test results

6.1 Observations during the test

Time min	Test face	SP#	OBSERVATIONS/REMARKS
1	U	A	Light smoke observed from the top right and left corners between the leaf and the frame.
3	U	C	Smoke was observed on the underside of the lock furniture.
4	U	C	A clear liquid was observed dripping from the bottom of the lock furniture.
7	U	A	The top left and right corner of door leaf discoloured.
10	U	B	Smoke was observed from the handle joint.
12	E	B&C	Handles detached from the lock furniture.
20	U	B	Discolouration was observed at the top of lock furniture.
22	U	B	A brown liquid was observed flowing down from the bottom of the lock furniture onto the surface of the door leaf.
40	U	A	Discolouration was observed on the architraves around TC6.
45	U	B	The plastic cover of the lock furniture melted.
53	U	A	Discolouration was observed on the door leaf in the areas around both lock furniture.
59	U	A	The plastic cover of the lock furniture melted.
68			**TEST DISCONTINUED - Latch mechanism still visibly engaged.**

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

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6.2 Specimen A: Doorset - opening into the furnace

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 68 minutes
Insulation	No failure at 68 minutes

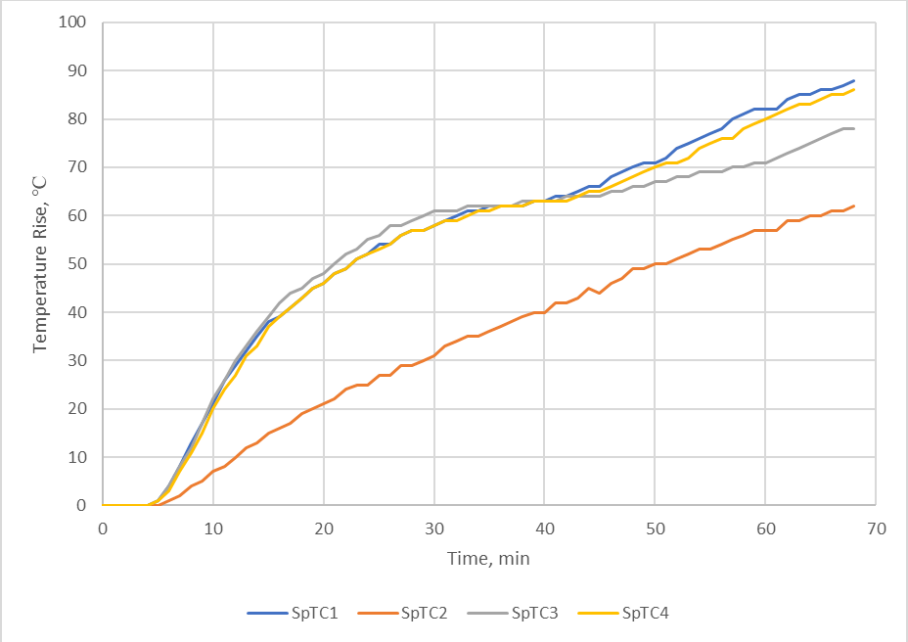

Figure 5 –Maximum Temperature of Separating Element

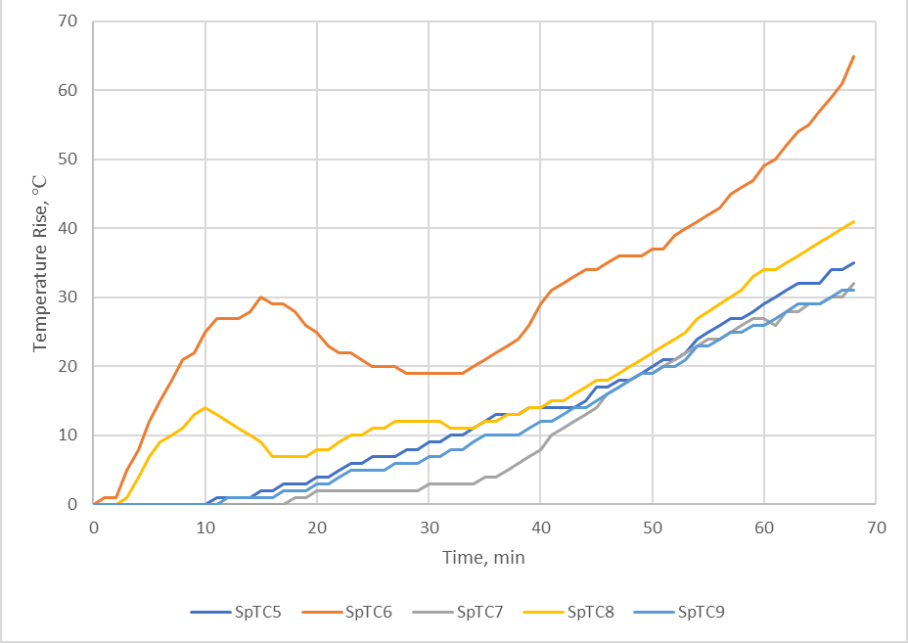

Figure 6 – Maximum Temperature of Door Frame

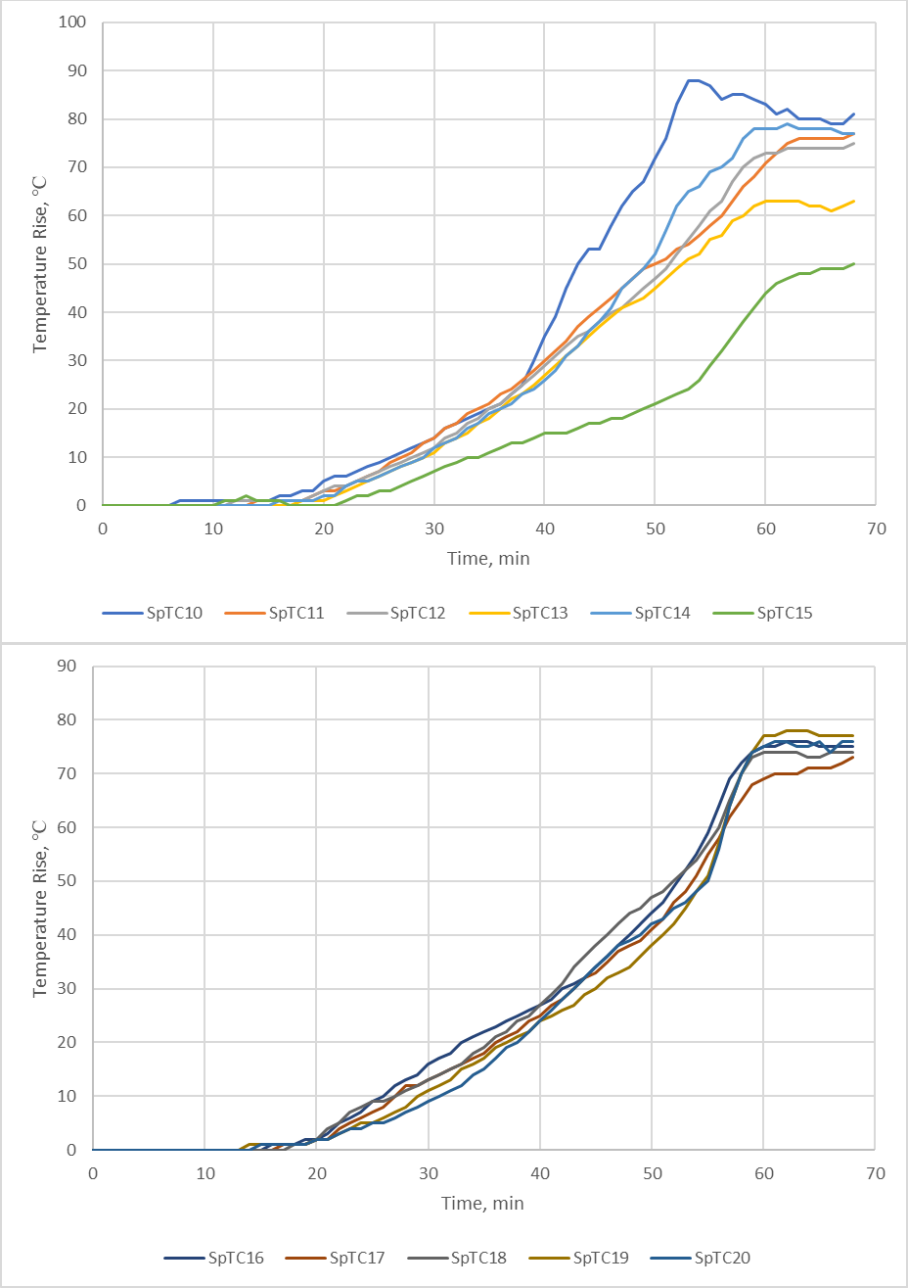

Figure 7 – Maximum Temperature of Door leaf

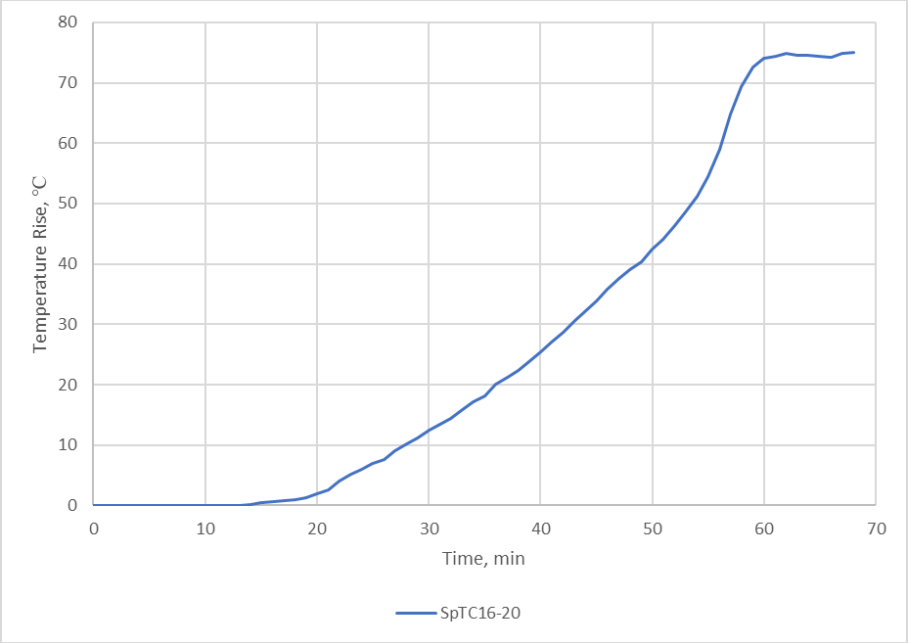

Figure 8 – Average Temperature of Door leaf

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6.3 Specimen B: McGrath Locks WINDSOR Fire Rated Digital Bluetooth Lock & Tubular Latch

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 68 minutes
Insulation	No failure at 68 minutes

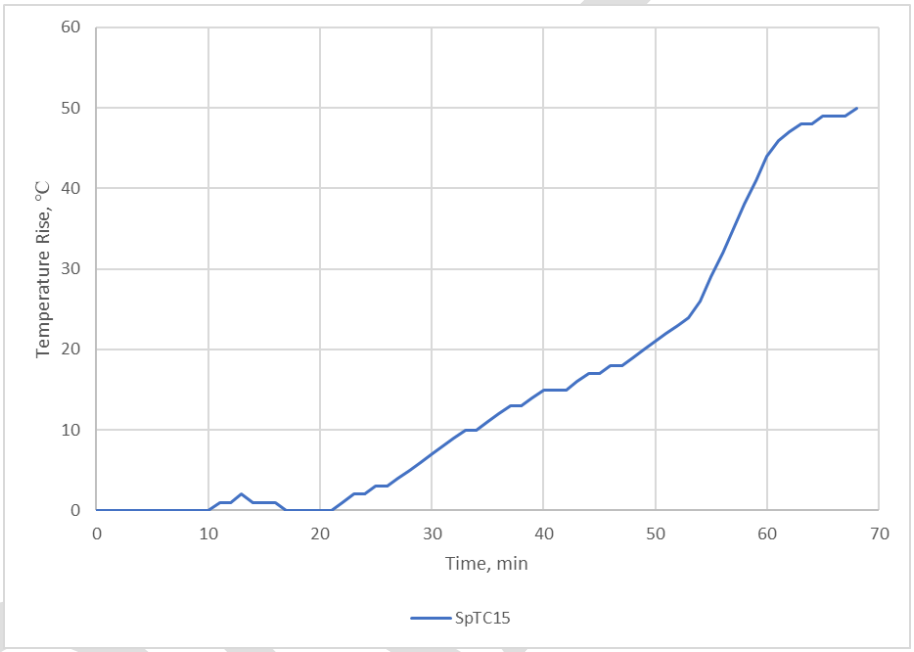

Figure 9 – Maximum temperature of the door leaf 100mm away from the Lock

6.4 Specimen C: McGrath Locks HAMILTON DDA Compliant Digital Bluetooth Lock & Tubular Latch

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 68 minutes
Insulation	No failure at 68 minutes

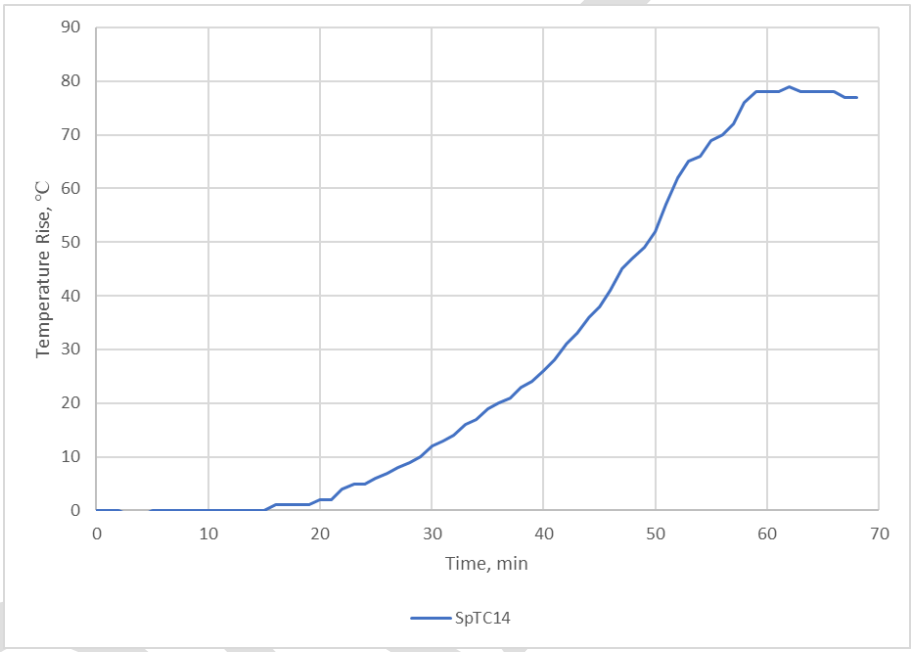

Figure 10 – Maximum temperature of the door leaf 100mm away from the lock

6.5 Specimen D: ABUS AC7436 door closer

Test results	
Structural adequacy	Not applicable
Integrity	No failure at 68 minutes
Insulation	No failure at 68 minutes

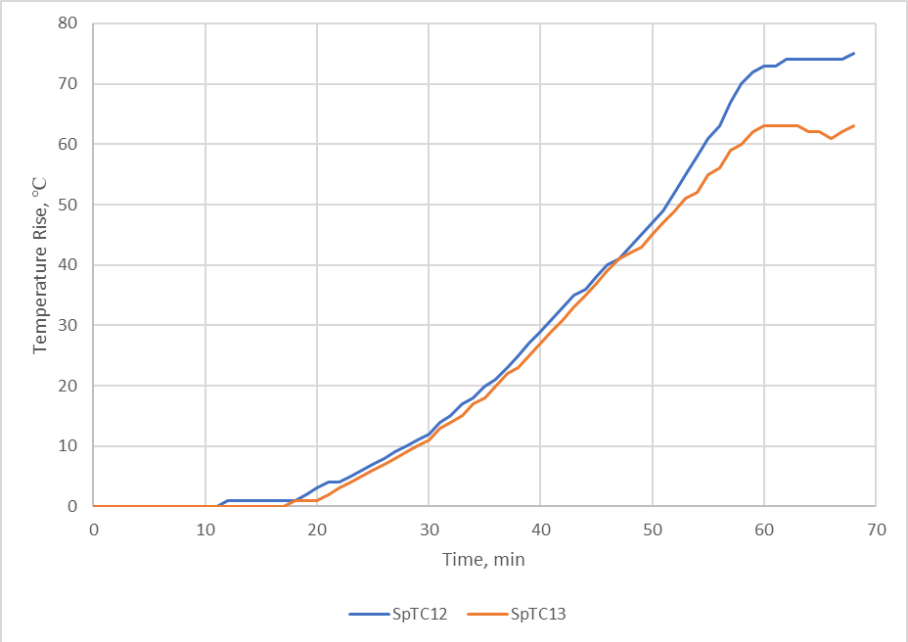

Figure 11 – Maximum temperature of the door leaf 100mm away from Door Closer

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7. Photos

7.1 Photos before the test

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Figure 12 – Unexposed face prior to test commencement

Figure 13 – Exposed face prior to test commencement

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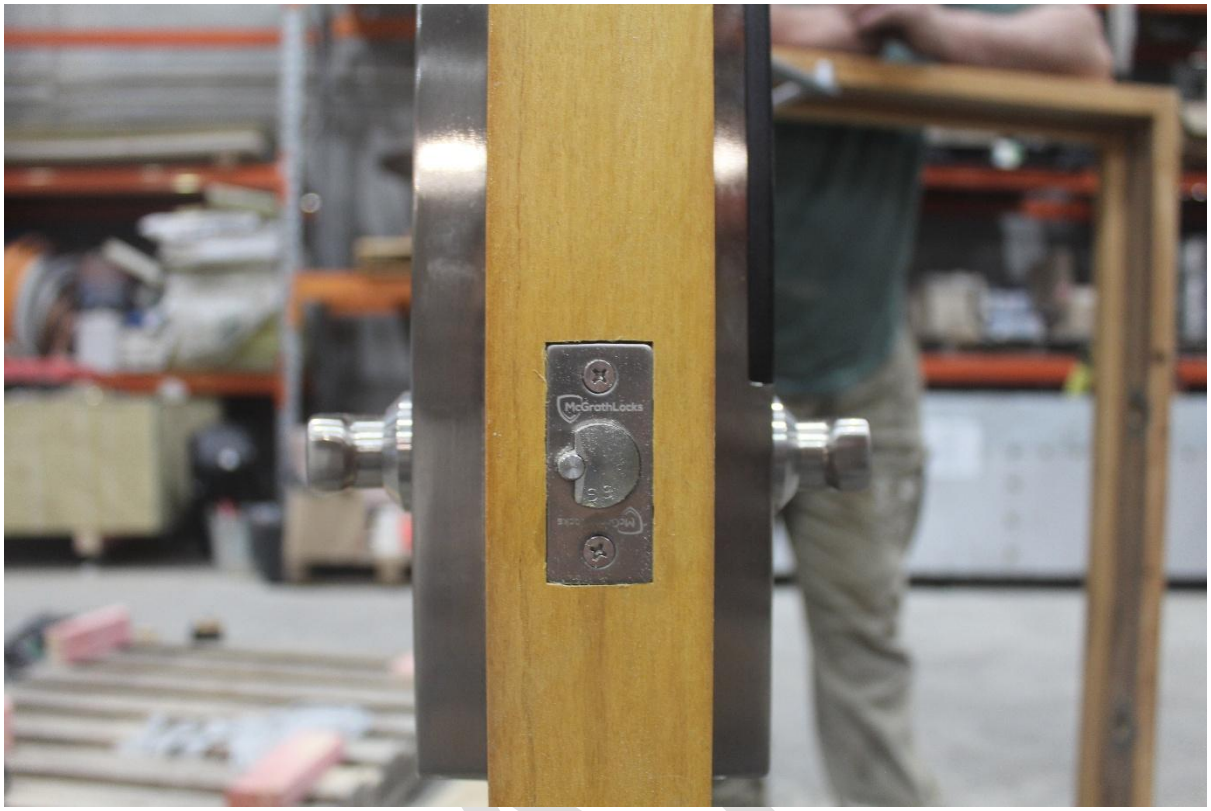
McGrathLocks


McGrath

Figure 14 – Latch mechanism

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Figure 15 – Door closer

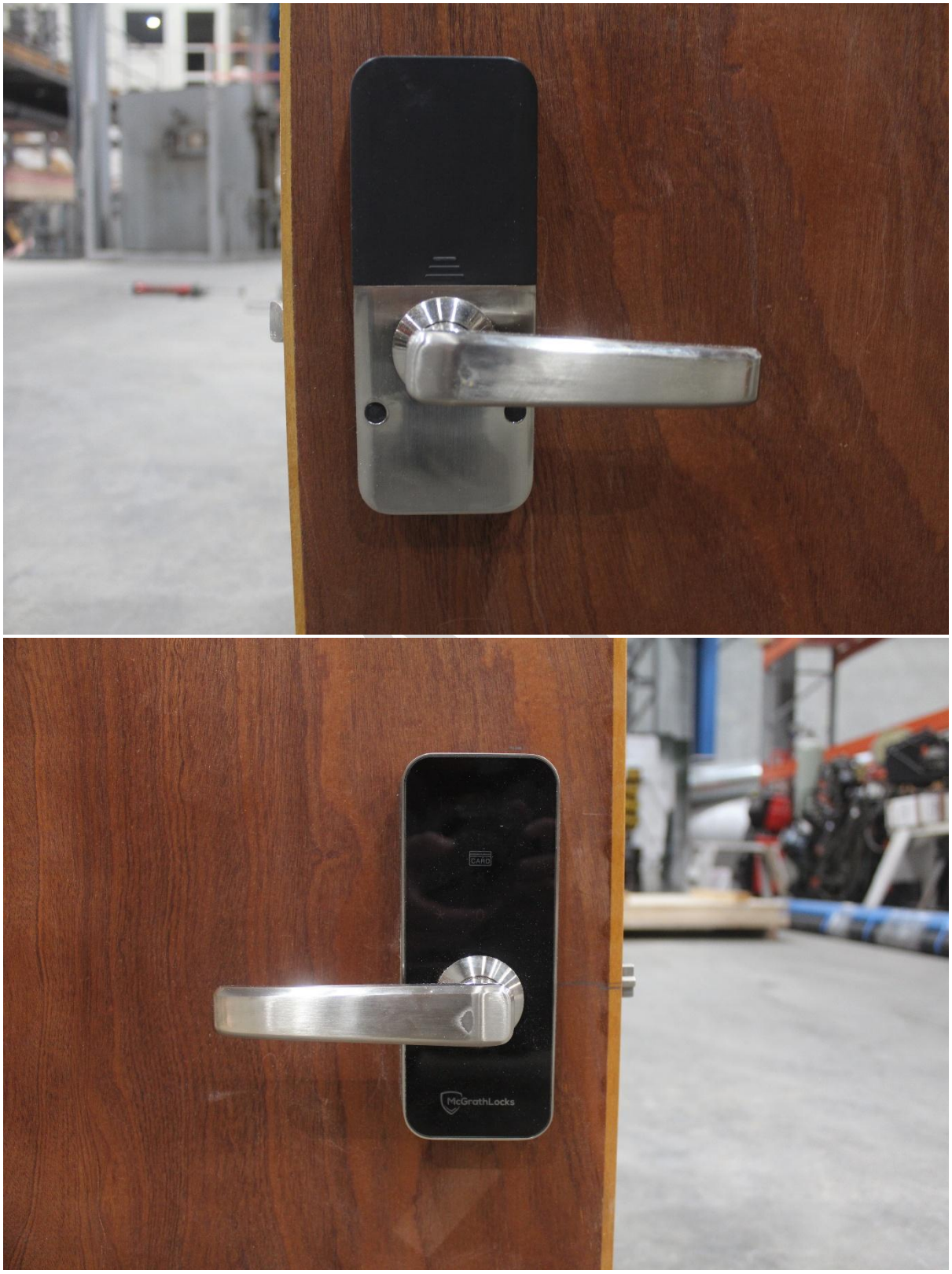

Figure 16 – Furniture

Figure 17 – Intumescent seal on the top edge

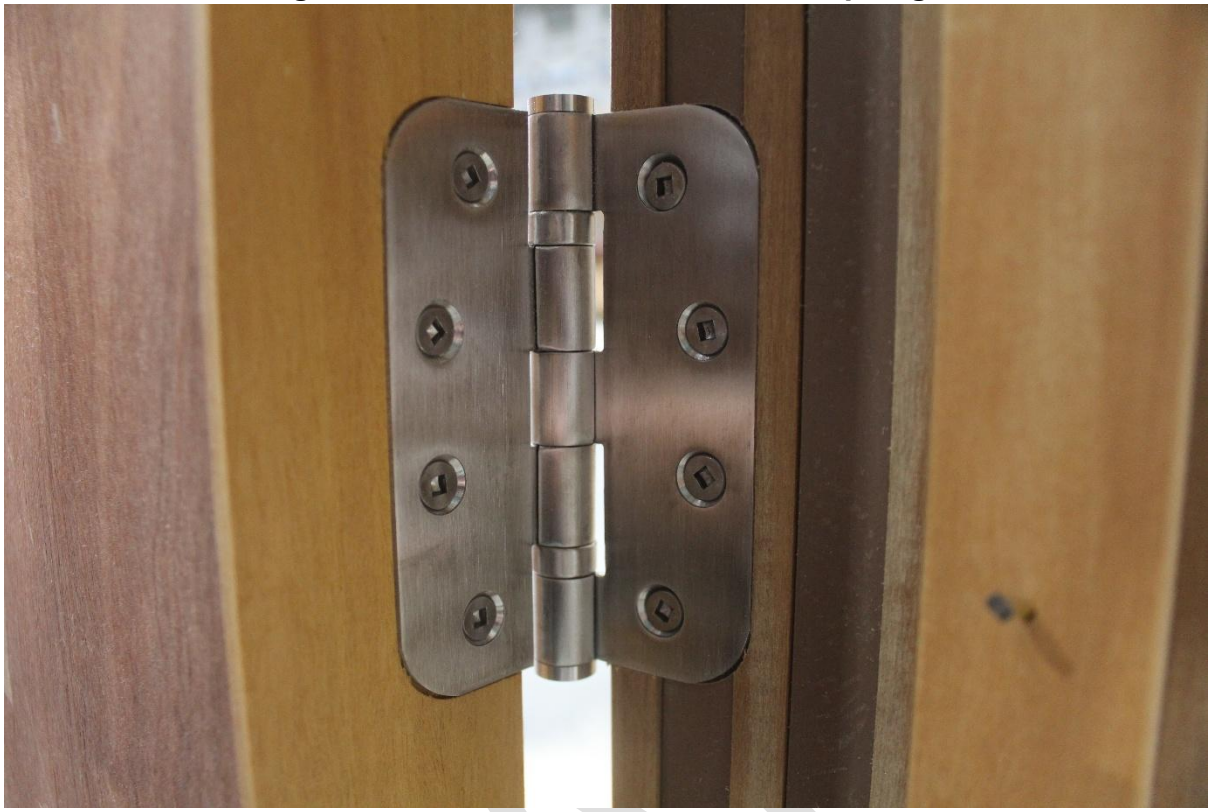

Figure 18 – Door hinge

Figure 19 – Frame seals, smoke seal and door stop on door frame

7.2 During and after the test

Figure 21 – Unexposed face at 15 minutes

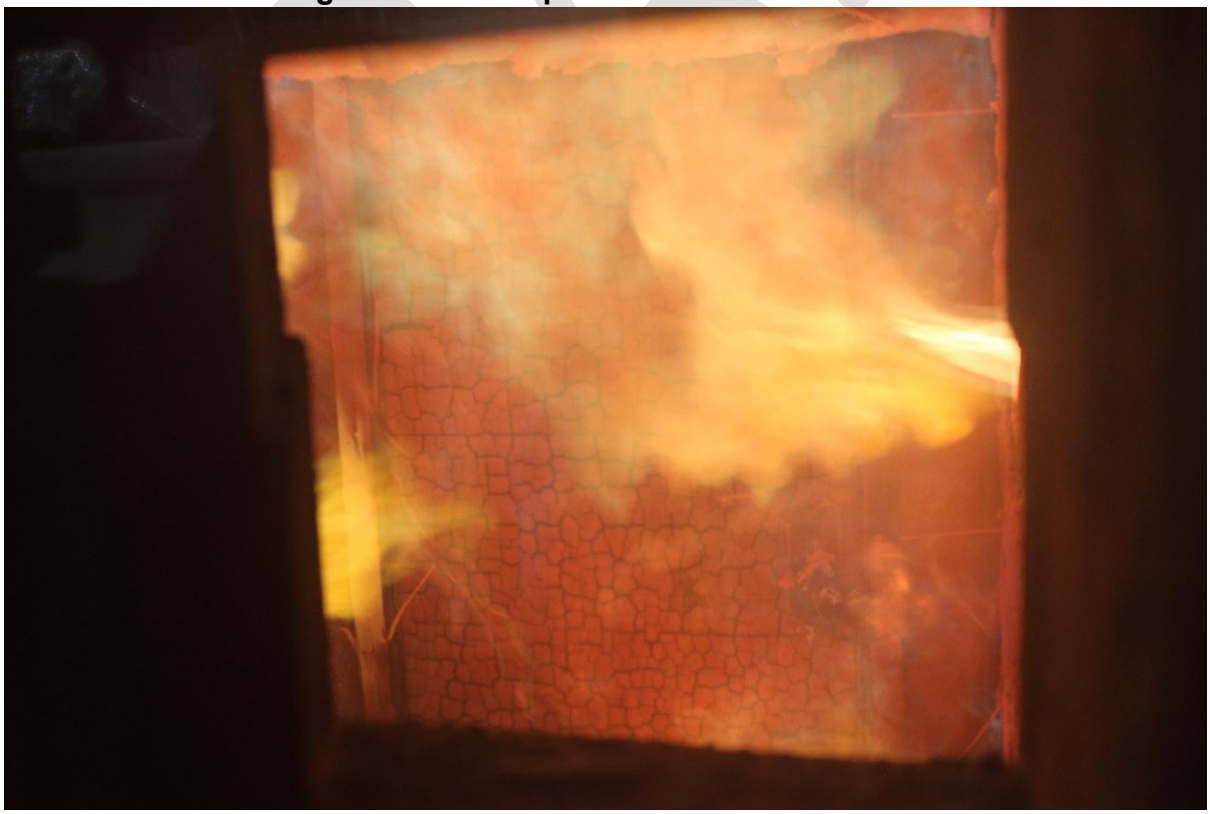

Figure 22 – Exposed face at 15 minutes

Figure 23 – Unexposed face at 30 minutes

Figure 24 – Unexposed face at 45 minutes

Figure 25 – Unexposed face at 60 minutes

Figure 26 – Exposed face after the test

Figure 27 – Latch mechanism after the test (Still engaged)