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Title:

The Fire Resistance Performance of Seven, Single-Acting, Single-Leaf Access Panels incorporated in an EI 120-minute standard flexible supporting construction with Group A 70mm steel stud, when tested in accordance with BS EN 1364-1:2015 and BS EN 1363-1: 2020

Date Of Test:

27/06/2023

Version No. 1 Issue Date:

14/03/2024

WF Report No:

WF533331

Prepared for:

Ritherdon & Co Ltd

Lorne Street, Darwen,
Lancashire, BB3 1QW

Approved Body No: 1314

1762

Test Specimen

Summary of Tested Specimen

For the purposes of the test the access panels were referenced as A, Aa, B, Bb, C, Cc and D.

Access Panel A (FireSeal Vented Panel) had overall nominal dimensions of 950 mm high by 600 mm wide, incorporating a door leaf with overall dimensions of 900 mm high by 550 mm wide by 1.2 mm thick, opening into the furnace.

Access Panel Aa (FireSeal Vented Panel) had overall nominal dimensions of 950 mm high by 600 mm wide, incorporating a door leaf with overall dimensions of 900 mm high by 550 mm wide by 1.2 mm thick, opening away from the furnace.

Access Panel B (FireSeal CD3 Panel) had overall nominal dimensions of 1500 mm high by 950 mm wide, incorporating a door leaf with overall dimensions of 1500 mm high by 950 mm wide by 1.2 mm thick, opening into the furnace.

Access Panel Bb (FireSeal CD3 Panel) had overall nominal dimensions of 1500 mm high by 950 mm wide, incorporating a door leaf with overall dimensions of 1500 mm high by 950 mm wide by 1.2 mm thick, opening away from the furnace.

Access Panel C (FireSeal CD2 Panel) had overall nominal dimensions of 1000 mm high by 650 mm wide, incorporating a door leaf with overall dimensions of 1000 mm high by 650 mm wide by 1.2 mm thick, opening into the furnace.

Access Panel Cc (FireSeal CD2 Panel) had overall nominal dimensions of 1000 mm high by 650 mm wide, incorporating a door leaf with overall dimensions of 1000 mm high by 650 mm wide by 1.2 mm thick, opening away from the furnace.

Access Panel D (FireSeal CD1 Panel) had overall nominal dimensions of 750 mm high by 500 mm wide, incorporating a door leaf with overall dimensions of 750 mm high by 500 mm wide by 1.2 mm thick, opening away from the furnace.

All panels have been incorporated in an EI 120-minute standard flexible supporting construction with Group A 70mm steel stud, comprising of 2 layers of 15mm Gypsum boards Type F, EN 520, on each side of the frame.

Detailed drawings of the test specimen and a comprehensive description of the test construction based on a detailed survey of the specimen and information supplied by the sponsor of the test are included in the Test Specimen and Schedule of Components sections of this report.

Performance Criteria and Test Results

This section summarises the results achieved by the test specimen against the performance criteria listed in BS EN 1364-1:2015 and BS EN 1363-1:2020 for the following parameters:

Integrity: The specimen must retain its separating function, without causing either ignition of a cotton pad when applied or permitting the penetration of a gap gauge as specified in BS EN 1363-1:2020, or resulting in sustained flaming on the unexposed surface.

Insulation: The mean temperature rise (ΔTm) of the unexposed surface must not be greater than 140°C and the maximum temperature rise (ΔTM) must not be greater than 180°C. Insulation failure also occurs simultaneously with integrity failure as specified in BS EN 1363-1:2020.

Radiation: Elements for which the radiation criteria is evaluated must be given by the time for the measured radiation to exceed the values of 5, 10, 15, 20, 25 kW/m² as specified in BS EN 1363-2:1999.

The test results only apply to the tested orientation.

Test results

Performance criteria	Results Panel A	Panel Aa	Panel B	Panel Bb	Panel C	Panel Cc	Panel D
Integrity							
Sustained flaming	91 (Ninety-one) minutes	No failure for this criterion	115(One hundred and fifteen) minutes	102(One hundred and two) minutes	111(One hundred and eleven) minutes	No failure for this criterion	No failure for this criterion
Gap gauge	No failure for this criterion	No failure for this criterion	No failure for this criterion	No failure for this criterion	No failure for this criterion	No failure for this criterion	No failure for this criterion
Ignition of a cotton pad	22 (Twenty-two) minutes	No failure for this criterion	24(Twenty-four) minutes	46 (Forty-six) minutes	27(Twenty-seven) minutes	88 (Eighty-eight) minutes	No failure for this criterion
Insulation							
ΔTm = 180°C	1 (One) minute	3 (Three) minutes	1 (One) minute	2 (Two) minutes	1 (One) minute	2 (Two) minutes	2 (Two) minutes
ΔTm = 140°C	1 (One) minute	3 (Three) minutes	1 (One) minute	1 (One) minute	1 (One) minute	3 (Three) minutes	2 (Two) minutes
Radiation							
Maximum radiation intensity > 5 kW/m²	27 (Twenty-seven)						
Maximum radiation intensity > 10 kW/m²	60 (Sixty) minutes						
Maximum radiation intensity > 15 kW/m²	96 (Ninety-six) minutes reached						
The test was discontinued after 122 minutes.							

Quality Management

Version	Date	Information about the report		
1	14 March 2024	Description	Initial issue	
			Prepared by	Authorised by
		Name	Marian Coman	Adam Scott
		Signature	DocuSigned by: Marian Coman 319F27A547E54F9...	DocuSigned by: Adam Scott 3D47558F2D7645D...

Signed for and on behalf of Warringtonfire Testing and Certification Limited

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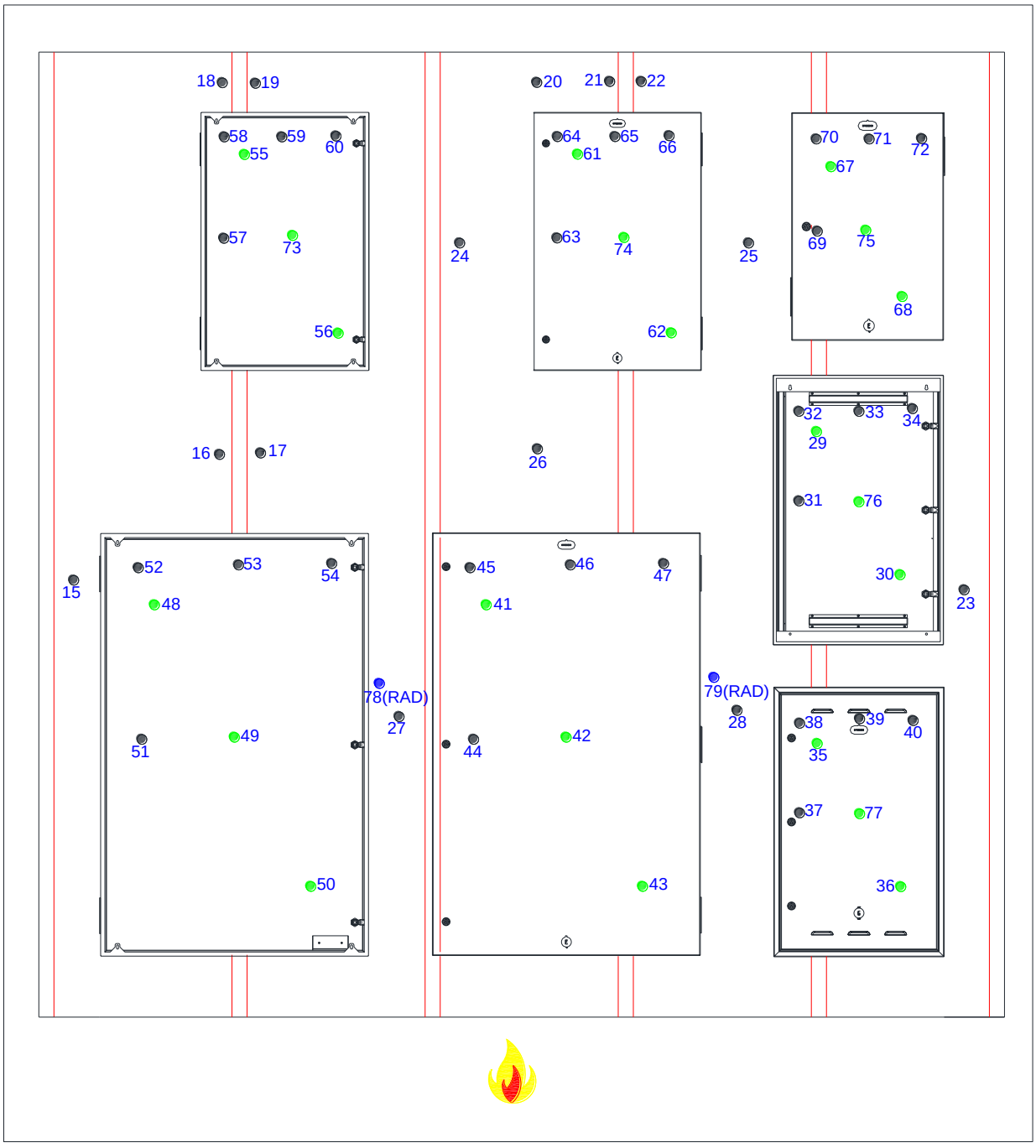
Test Conditions

Standard	BS EN 1364-1:2015, Fire resistance tests for non-loadbearing elements Part 1: Walls and BS EN 1363-1:2020, Fire resistance tests Part 1: General requirements.
Deviations from test method	None
Sampling	Warringtonfire was not involved in factory sampling of the products and materials used for the test specimen described in this report, and as such the results of this test apply to the sample as received.
Installation	The components were received during the month of June 2023. The partition system was constructed and installed directly into a refractory lined steel restraint frame by representatives of the client with the assistance of **Warringtonfire**, as necessary.
Conditioning	Warringtonfire stored the specimens in climatic conditions approximate to those expected in normal service and used the guidelines of Annex F.1 of BS EN 1363 – 1: 2020 to establish a suitable conditioned level where possible.
Ambient Temperature	The ambient air temperature in the vicinity of the test construction was 21ºC at the start of the test with a maximum variation of +7ºC during the test.
Furnace	The furnace was controlled so that its mean temperature complied with the requirements of BS EN 1363-1: 2020 Clause 5.1 using eight plate thermometers, distributed over a plane 100±50mm from the surface of the test construction.
Thermocouples	Thermocouples were provided to monitor the unexposed surface of the specimen. The output of all instrumentation was recorded at no less than one minute intervals. The locations and reference numbers of the various unexposed surface thermocouples are shown in Figure 1.
Radiation	A water-cooled foil heat-flux meter was used to record the heat radiation from the partition. The heat-flux meter was positioned at mid-height at a distance of 1 metre from the centre of the partition.
Furnace Pressure	After the first 5 minutes of the test, the furnace pressure was maintained at -1.3Pa ±5Pa and after 10 minutes was maintained at -1.3Pa ±3Pa with respect to atmosphere, at a point 0.5 m from the notional floor level, equating to a pressure of 20 Pa at the head of the wall.

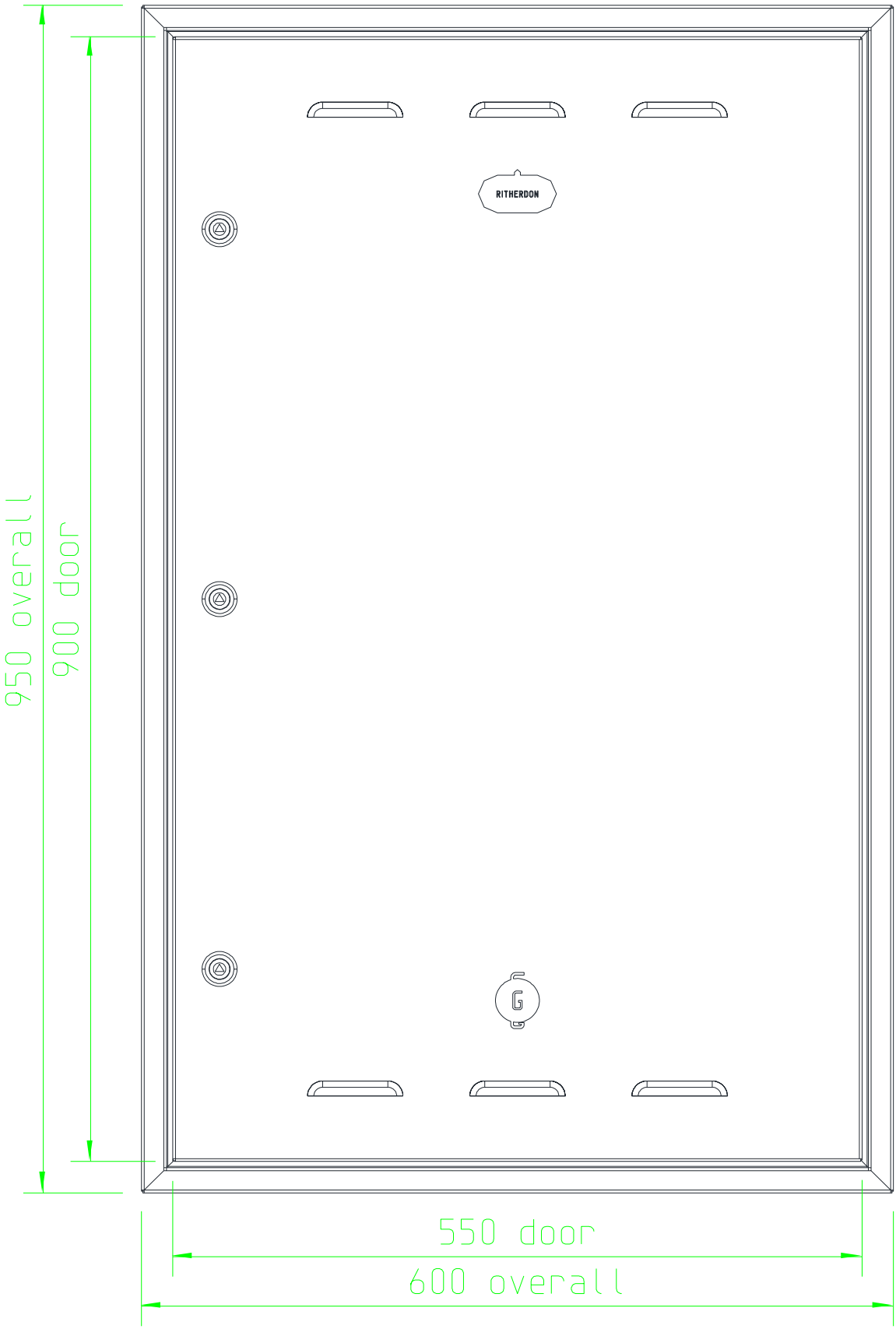
Test Specimen Drawings

Figure 1 – General elevation of the test construction and thermocouple locations



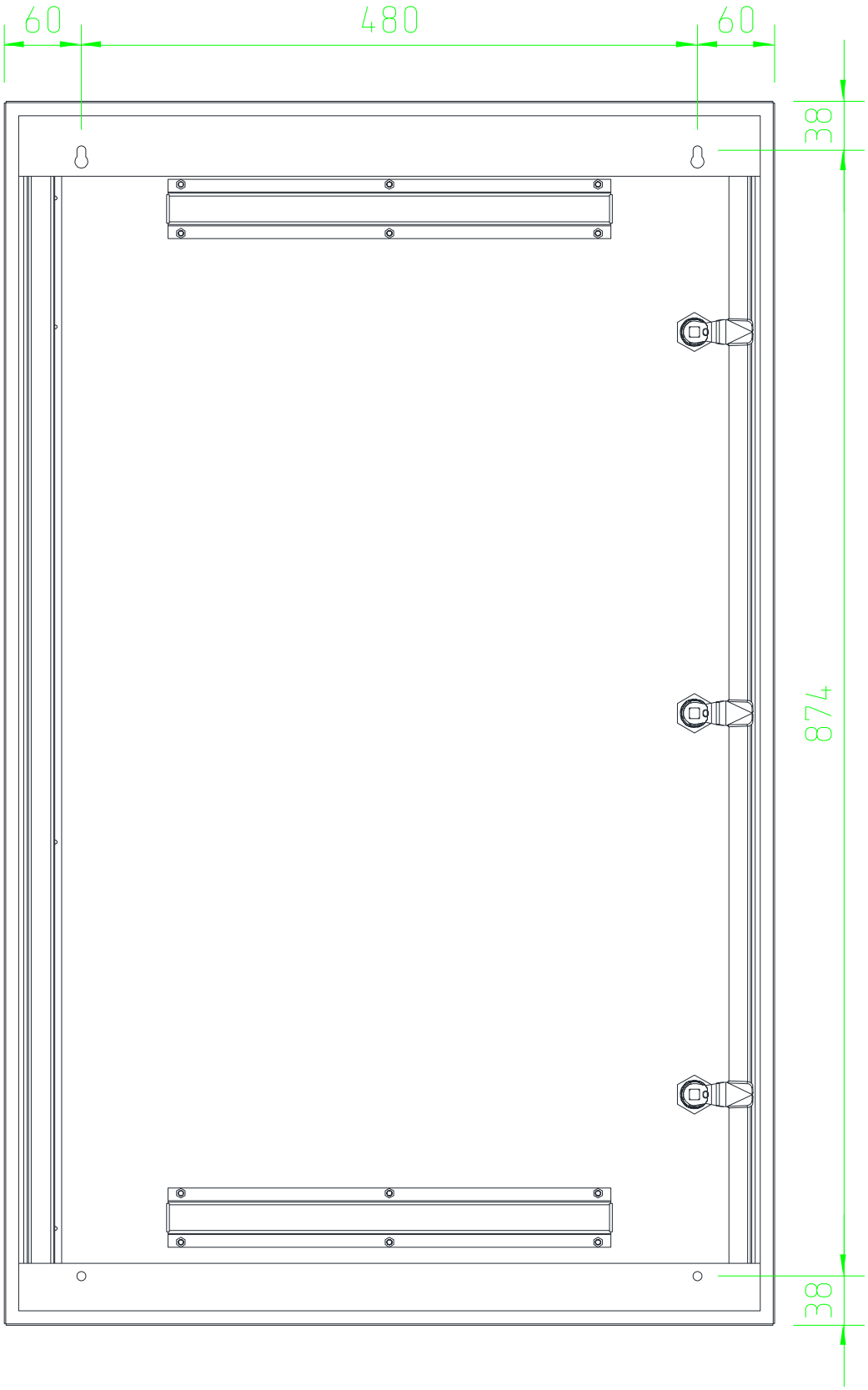
Do not scale. All dimensions are in mm

Figure 2 – General elevation of opening face of Specimen A and Aa



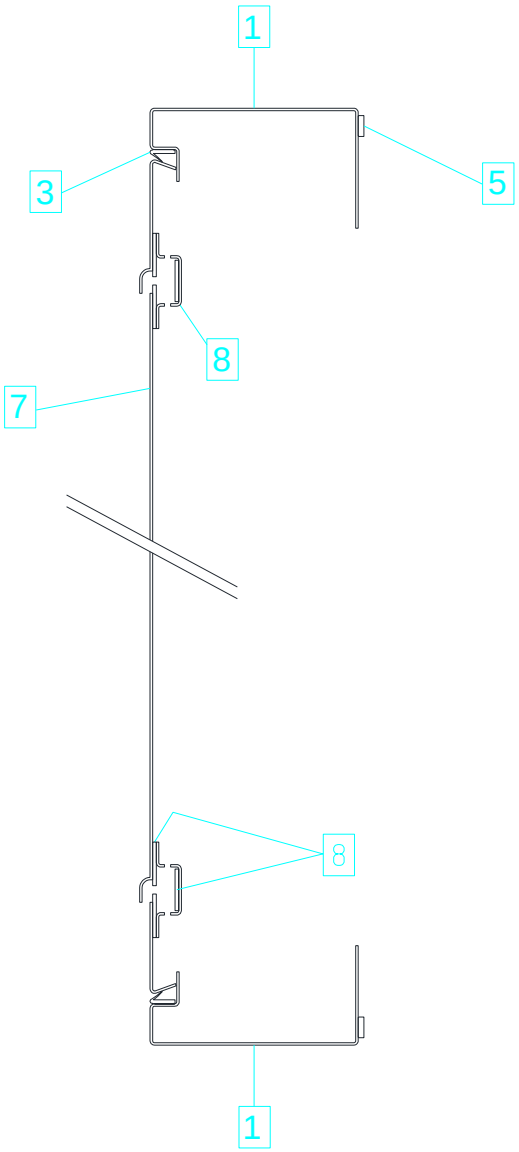
Do not scale. All dimensions are in mm

Figure 3 – General elevation of closing face of Specimen A and Aa



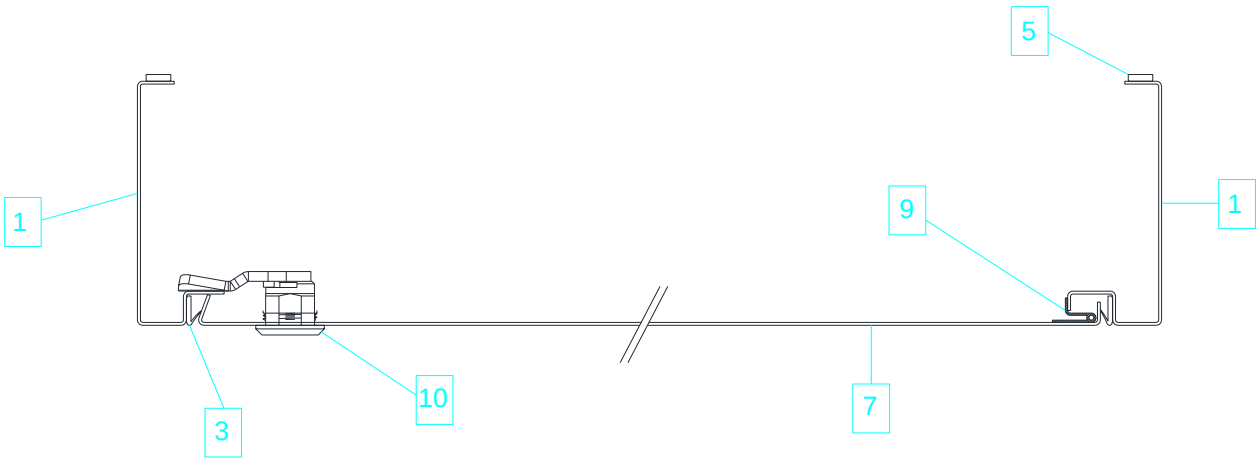
Do not scale. All dimensions are in mm

Figure 4 – Vertical cross section of Specimen A and Aa



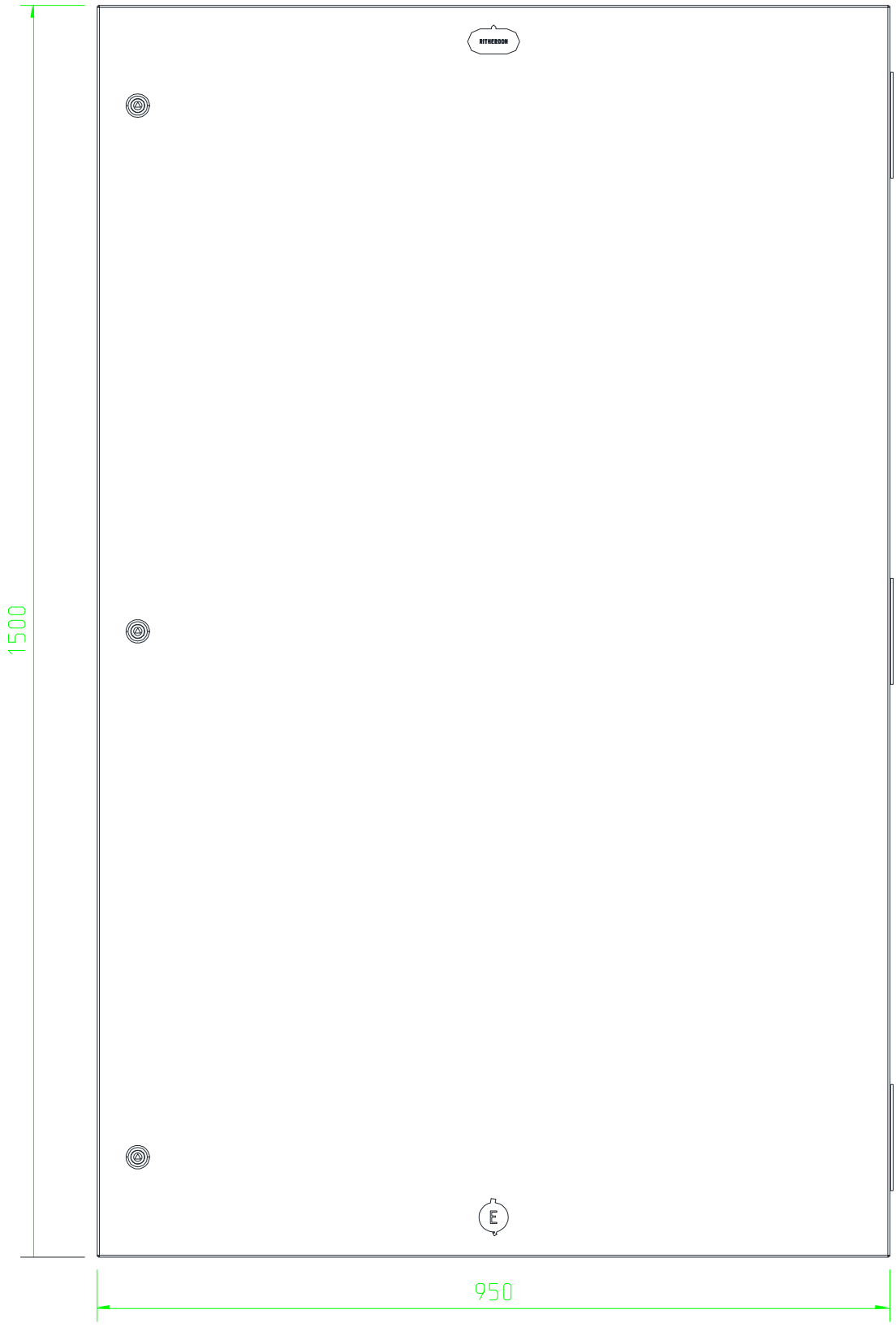
Do not scale. All dimensions are in mm

Figure 5 – Horizontal cross section of Specimen A and Aa



Do not scale. All dimensions are in mm

Figure 6 – General elevation of opening face of Specimen B and Bb

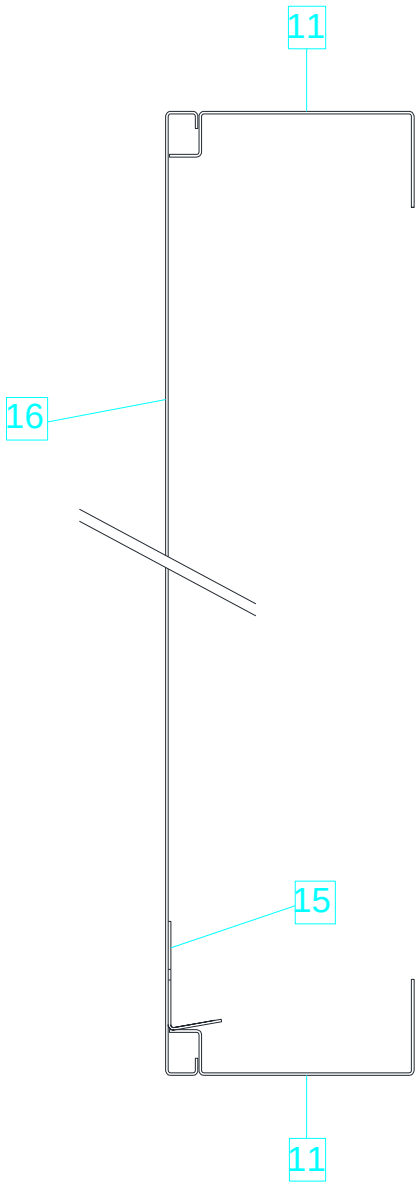


Do not scale. All dimensions are in mm

Figure 7 – General elevation of closing face of Specimen B and Bb

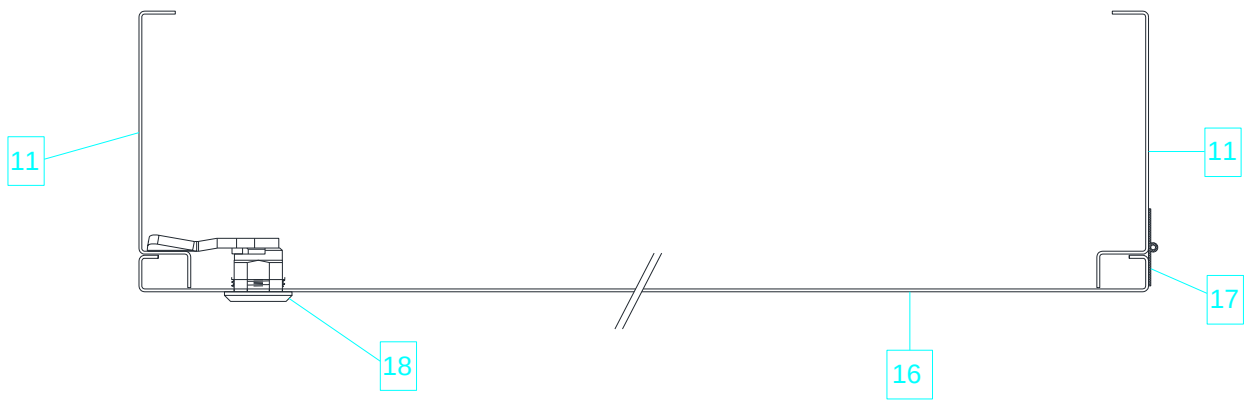
Do not scale. All dimensions are in mm

Figure 8 – Vertical cross section of Specimen B and Bb



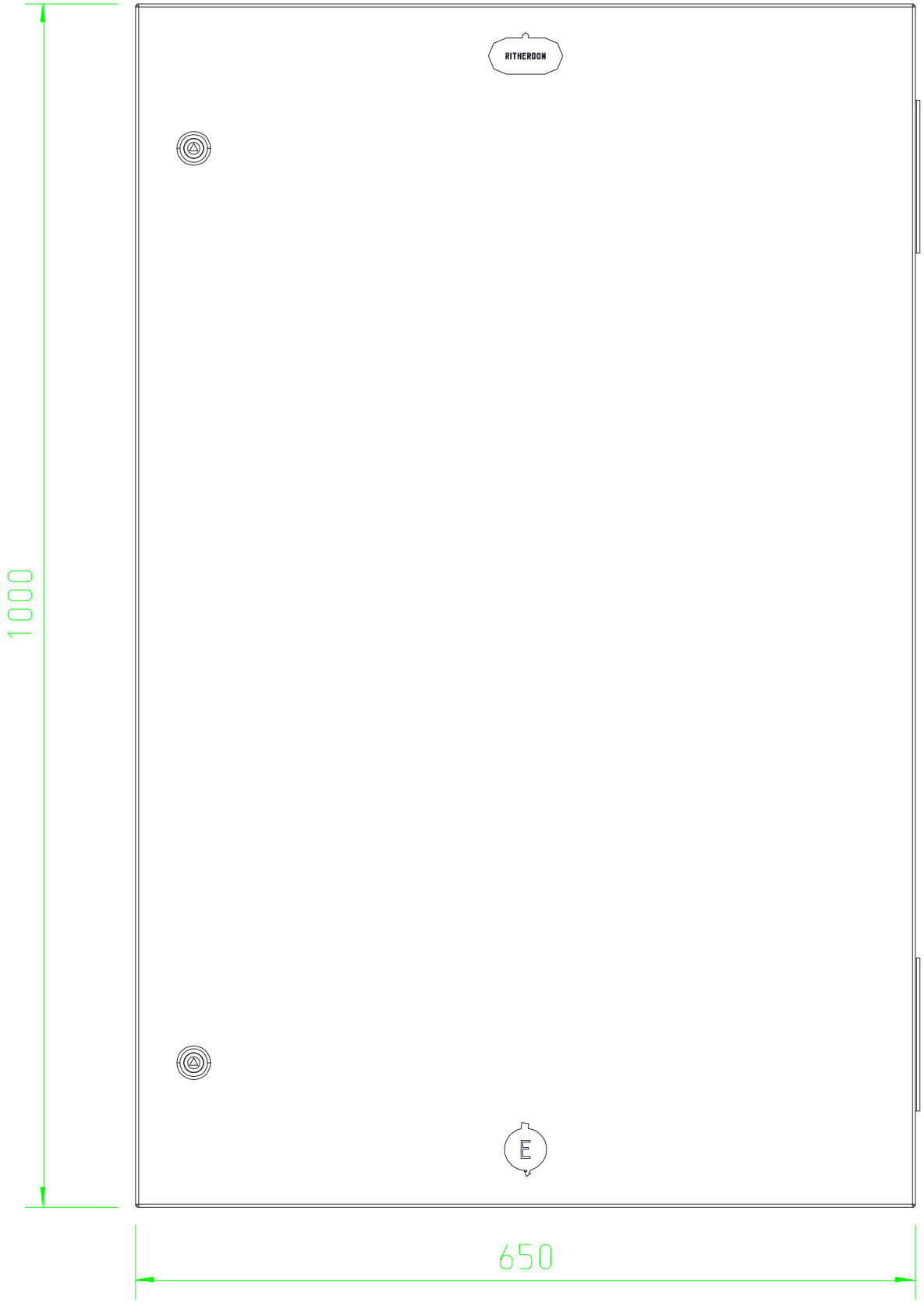
Do not scale. All dimensions are in mm

Figure 9 – Horizontal cross section of Specimen B and Bb



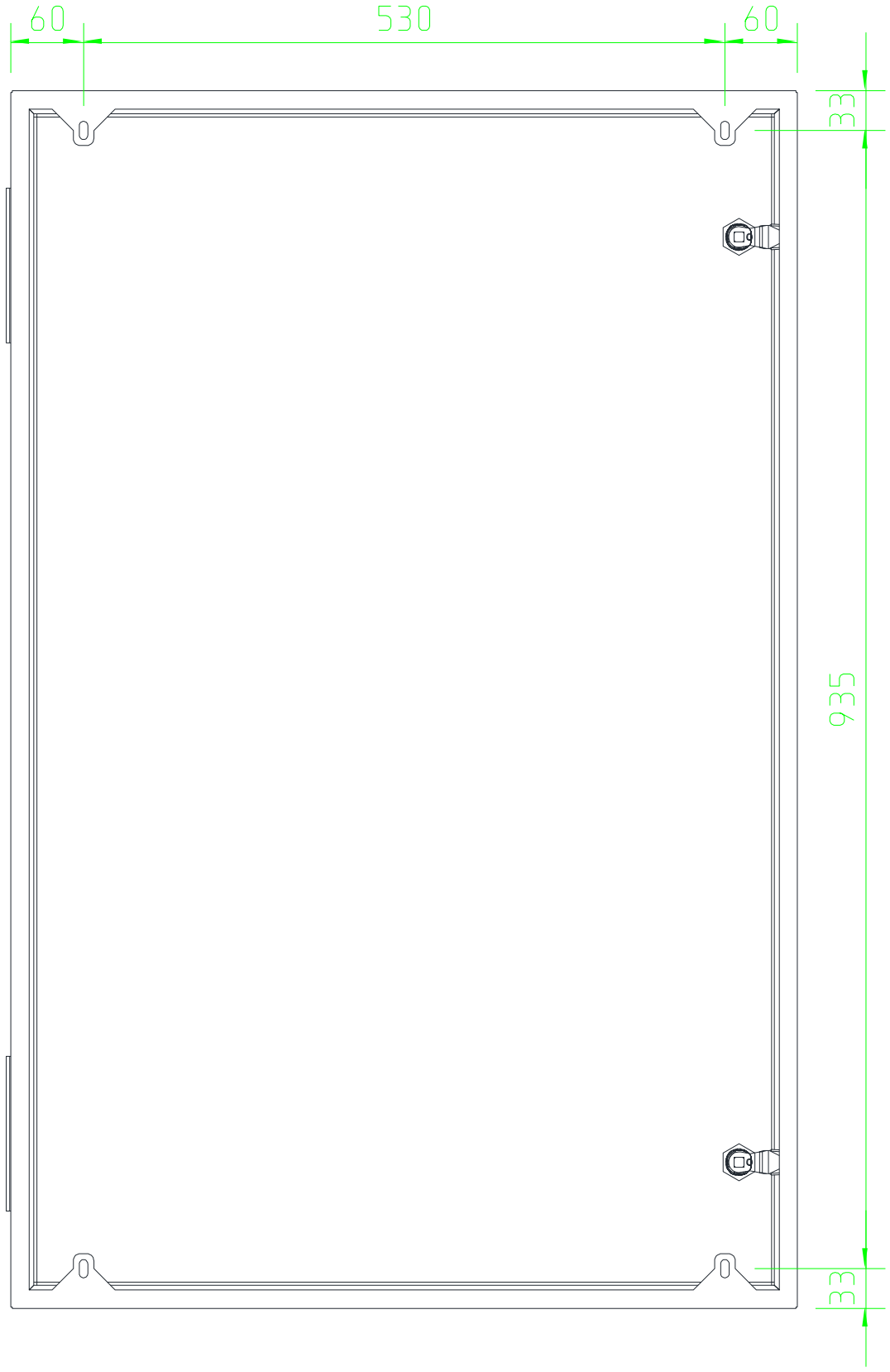
Do not scale. All dimensions are in mm

Figure 10 – General elevation of opening face of Specimen C and Cc



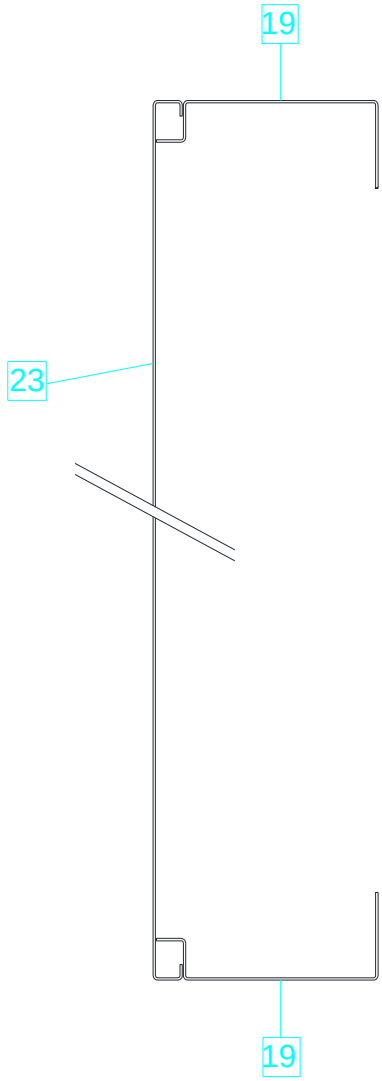
Do not scale. All dimensions are in mm

Figure 11 – General elevation of closing face of Specimen C and Cc



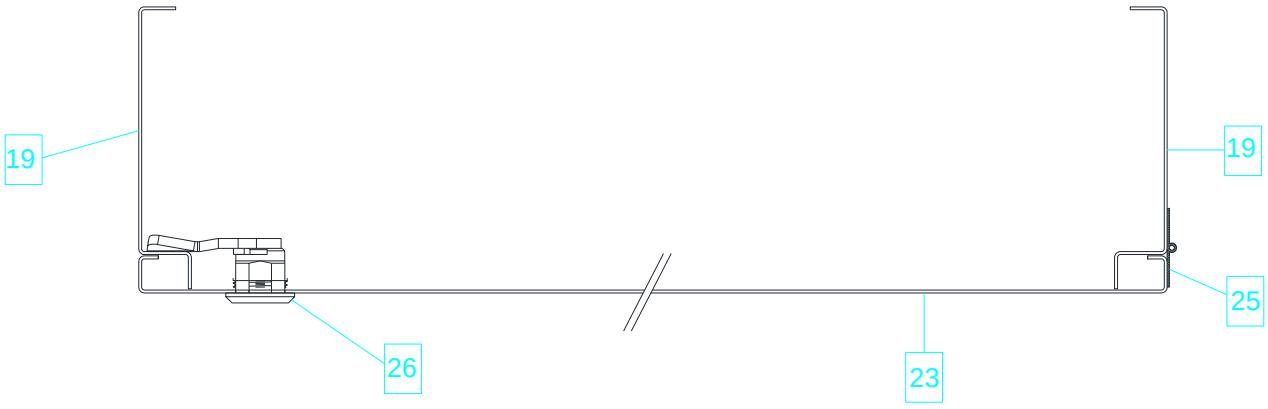
Do not scale. All dimensions are in mm

Figure 12 – Vertical cross section of Specimen C and Cc



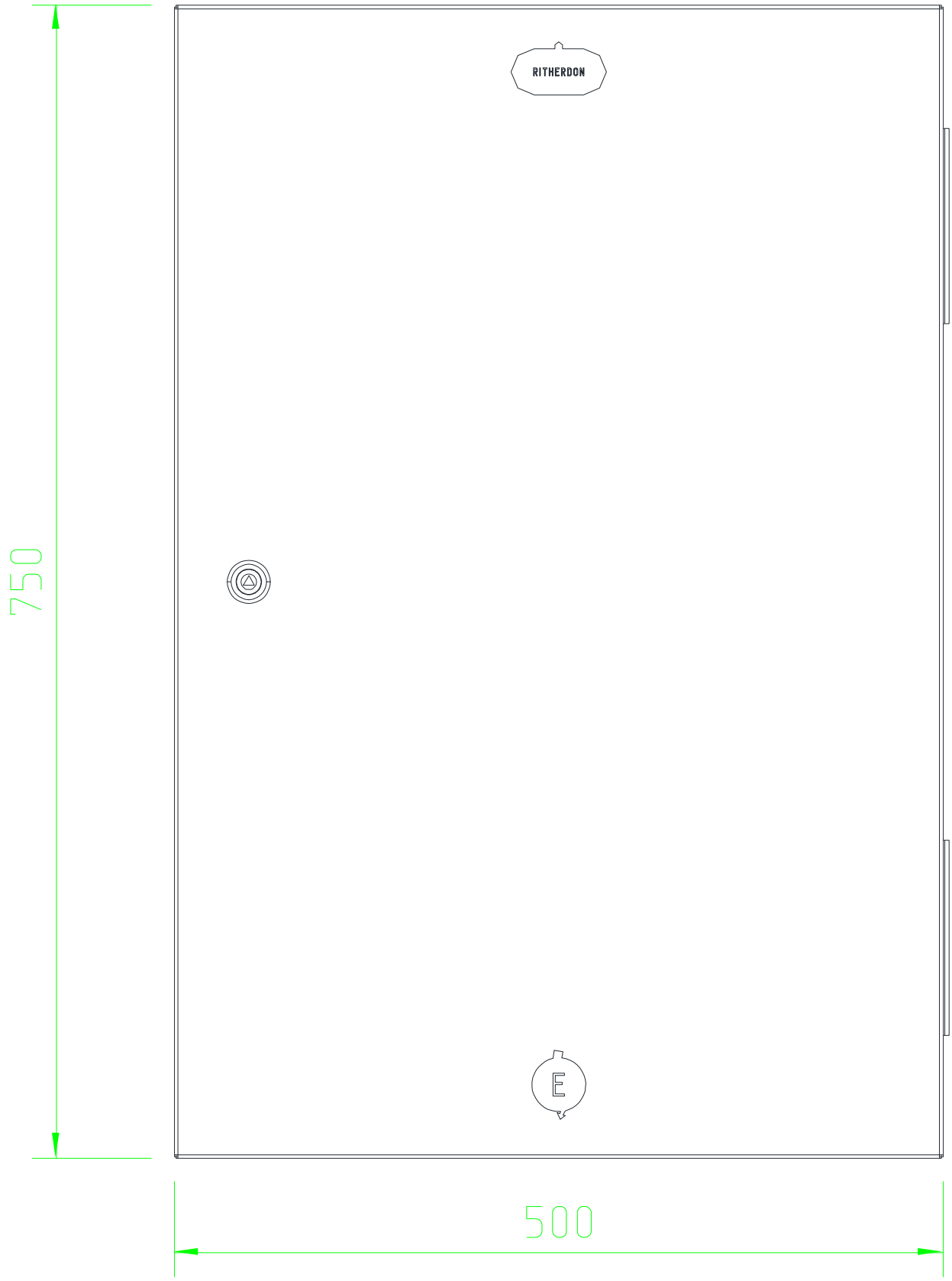
Do not scale. All dimensions are in mm

Figure 13 – Horizontal cross section of Specimen C and Cc



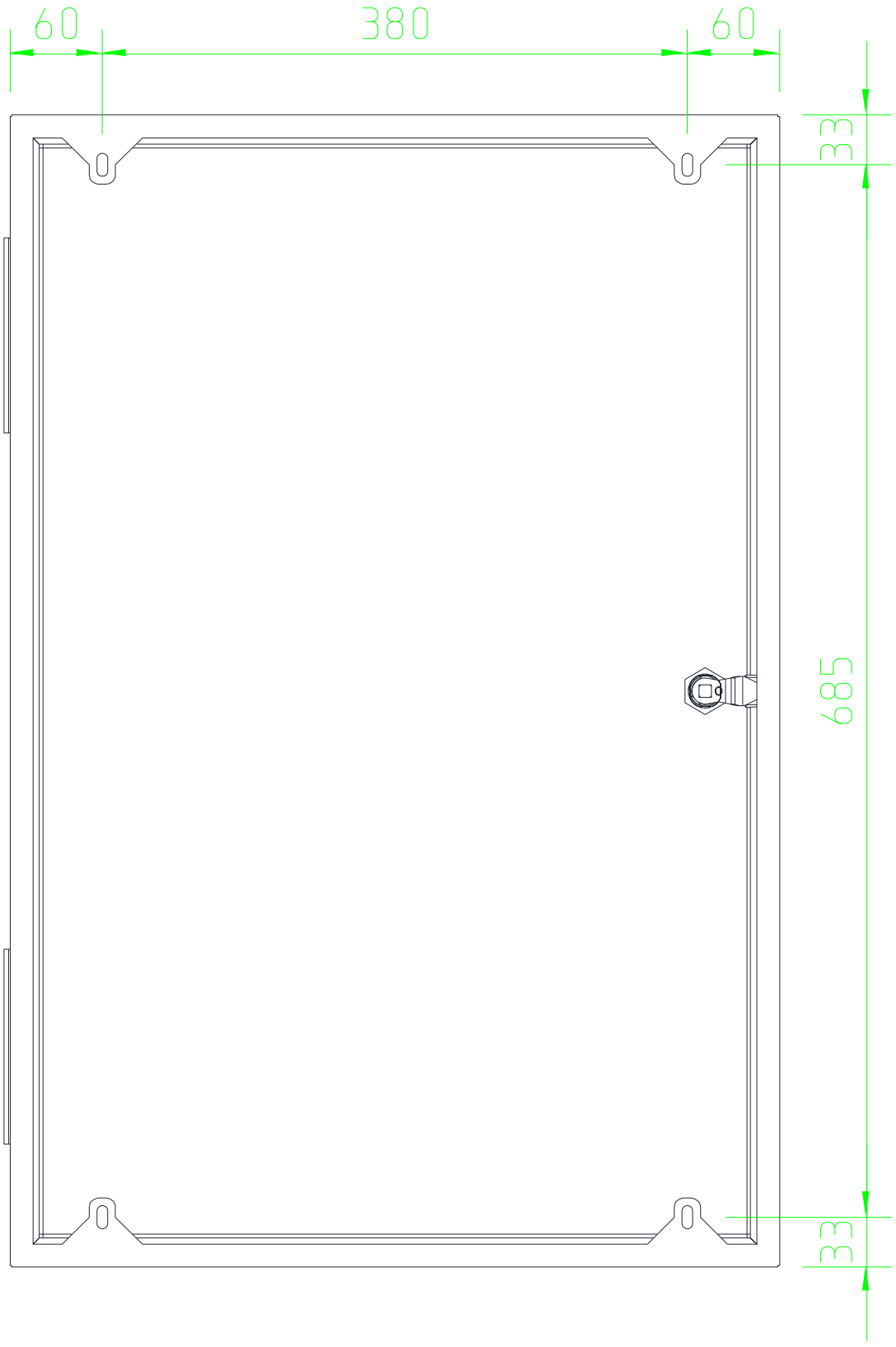
Do not scale. All dimensions are in mm

Figure 14 – General elevation of opening face of Specimen D



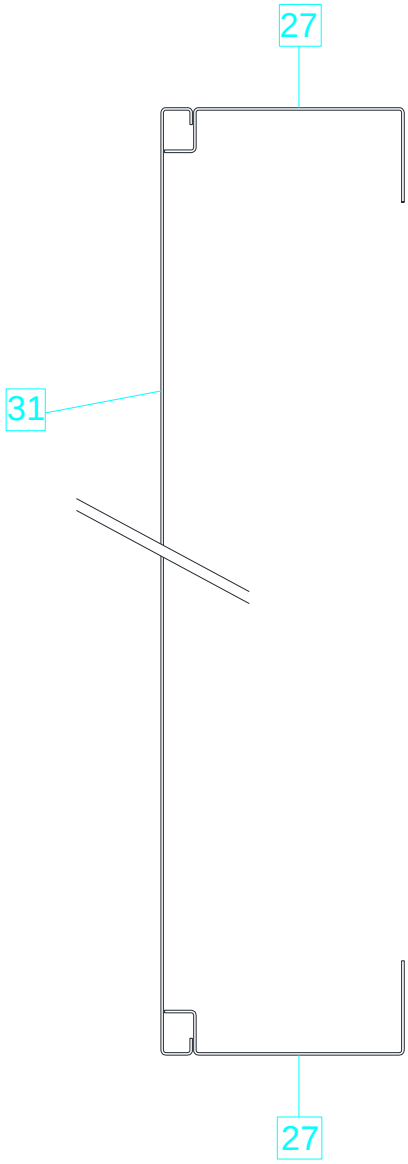
Do not scale. All dimensions are in mm

Figure 15 – General elevation of closing face of Specimen D



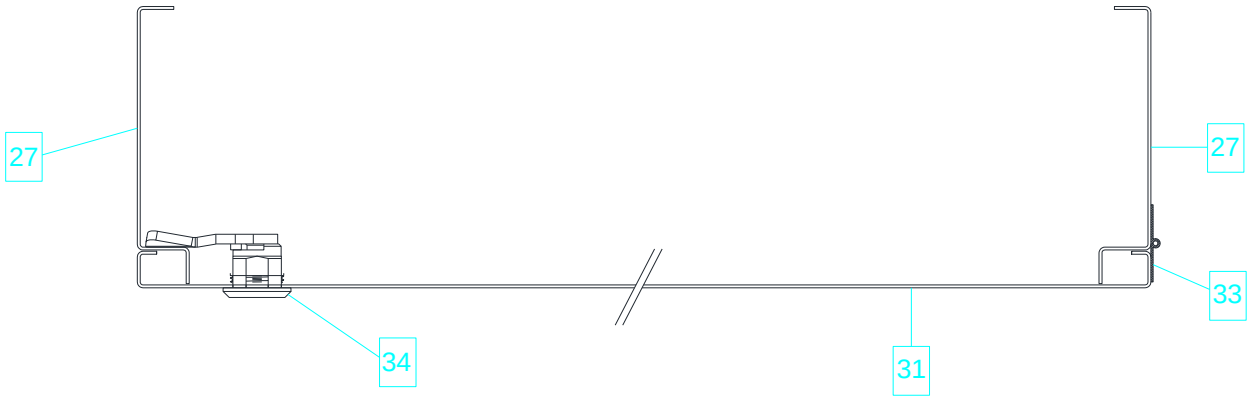
Do not scale. All dimensions are in mm

Figure 16 – Vertical cross section of Specimen D



Do not scale. All dimensions are in mm

Figure 17 – Horizontal cross section of specimen D



Do not scale. All dimensions are in mm

Schedule of Components

(Refer to Figures 1 to 17)
(All values are nominal unless stated otherwise)
* Stated by sponsor, not verified by laboratory

Access Panel A
Frame

1. Frame	
Manufacturer	Ritherdon & Co Ltd*
Reference	FireSeal Vented*
Material	1.2mm stainless steel*
Density	7.74 g/cm³*
Moisture content	n/a*
Overall size	950 x 600mm*
Frame (Head)	600mm wide*
Frame (Jambs)	950mm high*
Stop	n/a
Jamb to Head jointing method, fixing detail and location	Welded*
Stop to Frame jointing method, fixing detail and location	Welded*
Presence of Adhesives	N/A

2. Frame Fixing Method to Supporting Construction	
Manufacturer	Generic*
Reference	n/a
Type & material	Self-tapping screw & washer, bright zinc plated*
Overall size	50 x 4.2mm screw, 20 x 6mm washer*
Spacing	874mm vertical, 480mm horizontal*
Does the fixing penetrate intumescent seal within frame reveal	n/a
Packing Material	n/a
Packing Material Dimension	n/a
Packing Material Location	n/a

3. Smoke seal to frame reveal	
Manufacturer	Pyroplex*
Reference	30144*
Material	Expandable graphite contained within polymer, polyurethane flipper*
Overall section size	12 x 1.8mm*
Application method	Self-adhesive*
Location	Inside reveal*
Presence of Adhesives	n/a

4. Frame Paint / Finish	
Manufacturer	Paramount Powders (UK) Ltd *
Reference	RAL9010*
Material	Polyester powder*
Application method	Electrostatic*
Location	Outside visible surfaces*
Curing method	Thermoset*

Fire stopping

5. Frame to supporting construction fire stopping detail	
Manufacturer	Pyroplex*
Reference	8492*
Material	Expandable graphite contained within polymer*
Overall dimension	10 x 2.5mm*
Application method	Self-adhesive*

Access Panel Leaf A

6. Door Leaf	
Manufacturer (blank)	Ritherdon & Co Ltd*
Reference	FireSeal Vented*
Quantity of leaves on doorset	1

Overall leaf size supplied for testing	900 x 550mm*

7. Core element 1	
Manufacturer	Ritherdon & Co Ltd*
Reference	Door
Material	1.2mm stainless steel*
Location	Front – recessed*
Density	7.74 g/cm³*
Size and overall thickness and reduced thickness if door leaf incorporates fielded areas	n/a*
Application method	n/a*
Adhesives	n/a*

8. Core element 2	
Manufacturer	Ritherdon & Co Ltd*
Reference	Louvre Tray*
Material	1.2mm stainless steel*
Location	Inside door – top and bottom (behind ventilation louvres)*
Density	7.74 g/cm³*
Overall thickness and no reduced thickness	n/a*
Application method	Mechanical fixing (see below)*
Adhesives	n/a*
Presence of Mechanical Fixings	Yes*
Type, size, Material, location and Frequency	M4 studs, nuts and washers – six per Louvre Tray*

Hardware

9. Hinges	
Supplier	Gold & Wassall Hinges Ltd *
Reference	n/a*
Quantity	1*

Primary material	1mm stainless steel*
Type	Piano hinge*
Size	863.6 x 31.8mm*
Blades	n/a*
Fixing method	Spot welds to Door, max. 100mm centres Rivets to Frame, 6mm long x 3.2mm dia.*
Position of each hinge relative to the head of the leaf	-18.2mm*
Details of intumescent protection	n/a*
Interruptions to Intumescent within the frame reveal	n/a*

10. Lockset / Latch	
Manufacturer	Emka (UK) Ltd *
Reference	Quarter-turn camlock*
Material	Stainless Steel*
Overall sizes	28(dia.) x 32mm lock, 53 x 19mm cam*
Fixing method	Nut*
Operation of latch bolt	n/a*
Operation of lock bolt	Quarter-turn with supplied key*
Operation of Top and bottom lock bolts	Quarter-turn with supplied key*
Details of intumescent protection	n/a*
Location of centre of the spindle relative to the bottom of the leaf	+450mm*
Details of intumescent protection	n/a*
Location of centre of the spindle relative to the bottom of the leaf	+105mm, +795mm*

Access Panel B
Frame

11. Frame	
Manufacturer	Ritherdon & Co Ltd*
Reference	FireSeal CD3*
Material	1.2mm stainless steel*

Density	7.74 g/cm³*
Moisture content	n/a*
Overall size	1500 x 950mm*
Frame (Head)	950mm wide*
Frame (Jambs)	1500mm high*
Stop	n/a*
Jamb to Head jointing method, fixing detail and location	Welded*
Stop to Frame jointing method, fixing detail and location	Welded*
Presence of Adhesives	N/A*

12. Frame Fixing Method to Supporting Construction	
Manufacturer	Generic*
Reference	n/a*
Type & material	Self-tapping screw & washer, bright zinc plated*
Overall size	50 x 4.2mm screw, 20 x 6mm washer*
Spacing	717.5mm vertical, 830mm horizontal*
Does the fixing penetrate intumescent seal within frame reveal	N/A*

13. Frame Paint / Finish	
Manufacturer	Paramount Powders (UK) Ltd *
Reference	RAL9010*
Material	Polyester powder*
Application method	Electrostatic*
Location	Outside visible surfaces*
Curing method	Thermoset*

Fire stopping

14. Sealant to fire stopping detail	
Manufacturer	Pyroplex *
Reference	2WT310PY *
Material	Acrylic sealant*
Overall dimension	3mm bead (minimum)*
Application method	Sealant gun*
Location	Perimeter*

Access Panel Leaf B

15. Door Leaf	
Manufacturer (blank)	Ritherdon & Co Ltd*
Reference	FireSeal CD3*
Quantity of leaves on doorset	1*
Overall leaf size supplied for testing	1500 x 950mm*

16. Core element	
Manufacturer	Ritherdon & Co Ltd*
Reference	Door*
Material	1.2mm stainless steel*
Location	Front – surface*
Density	7.74 g/cm^3*
Size and overall thickness and reduced thickness if door leaf incorporates fielded areas	N/A*
Application method	N/A*
Adhesives	N/A*

Hardware

17. Hinges	
Supplier	Gold & Wassall Hinges Ltd *
Reference	N/A*

Quantity	4*
Primary material	1mm stainless steel*
Type	Piano hinge*
Size	127 x 31.8mm*
Blades	N/A*
Fixing method	Rivets, 6mm long x 3.2mm dia.*
Position of each hinge relative to the head of the leaf	-80mm, -484.5mm, -888.5mm, -1293mm*
Details of intumescent protection	N/A*
Interruptions to Intumescent within the frame reveal	N/A*

18. Lockset / Latch	
Manufacturer	Emka (UK) Ltd *
Reference	Quarter-turn camlock*
Material	Stainless Steel*
Overall sizes	28(dia) x 32mm lock, 53 x 19mm cam*
Fixing method	Nut*
Operation of latch bolt	N/A*
Operation of lock bolt	Quarter-turn with supplied key*
Operation of Top and bottom lock bolts	Quarter-turn with supplied key*
Details of intumescent protection	n/a*
Location of centre of the spindle relative to the bottom of the leaf	+750mm*
Details of intumescent protection	n/a*
Location of centre of the spindle relative to the bottom of the leaf	+120mm, +1380mm*

Access Panel C
Frame

19. Frame	
Manufacturer	Ritherdon & Co Ltd*
Reference	FireSeal CD2*
Material	1.2mm stainless steel*

Density	7.74 g/cm³*
Moisture content	n/a*
Overall size	1000 x 650mm*
Frame (Head)	650mm wide*
Frame (Jambs)	1000mm high*
Stop	n/a*
Jamb to Head jointing method, fixing detail and location	Welded*
Stop to Frame jointing method, fixing detail and location	Welded*
Presence of Adhesives	N/A*

20. Frame Fixing Method to Supporting Construction	
Manufacturer	Generic*
Reference	n/a*
Type & material	Self-tapping screw & washer, bright zinc plated*
Overall size	50 x 4.2mm screw, 20 x 6mm washer*
Spacing	935mm vertical, 530mm horizontal*
Does the fixing penetrate intumescent seal within frame reveal	n/a*
Packing Material	n/a*

21. Frame Paint / Finish	
Manufacturer	Paramount Powders (UK) Ltd *
Reference	RAL9010*
Material	Polyester powder*
Application method	Electrostatic*
Location	Outside visible surfaces*
Curing method	Thermoset*

Fire stopping

22. Sealant to fire stopping detail	
Manufacturer	Pyroplex *
Reference	2WT310PY *
Material	Acrylic sealant*
Overall dimension	3mm bead (minimum)*
Application method	Sealant gun*
Location	Perimeter*

Access Panel Leaf C

23. Door Leaf	
Manufacturer (blank)	Ritherdon & Co Ltd*
Reference	FireSeal CD2*
Quantity of leaves on doorset	1*
Overall leaf size supplied for testing	1000 x 650mm*

24. Core element	
Manufacturer	Ritherdon & Co Ltd*
Reference	Door*
Material	1.2mm stainless steel*
Location	Front – surface*
Density	7.74 g/cm^3*
Size and overall thickness and reduced thickness if door leaf incorporates fielded areas	n/a*
Application method	n/a*
Adhesives	n/a*
Presence of Mechanical Fixings	n/a*

Hardware

25. Hinges	
Supplier	Gold & Wassall Hinges Ltd *

Reference	n/a*
Quantity	3*
Primary material	1mm stainless steel*
Type	Piano hinge*
Size	127 x 31.8mm*
Blades	n/a*
Fixing method	Rivets, 6mm long x 3.2mm dia.*
Position of each hinge relative to the head of the leaf	-80mm, -436.5mm, -793mm*
Details of intumescent protection	n/a*
Interruptions to Intumescent within the frame reveal	n/a*

26. Lockset / Latch	
Manufacturer	Emka (UK) Ltd *
Reference	Quarter-turn camlock*
Material	Stainless Steel*
Overall sizes	28(dia) x 32mm lock, 53 x 19mm cam*
Fixing method	Nut*
Operation of Top and bottom lock bolts	Quarter-turn with supplied key*
Details of intumescent protection	n/a*
Location of centre of the spindle relative to the bottom of the leaf	+120mm, +880mm*

Access Panel D
Frame

27. Frame	
Manufacturer	Ritherdon & Co Ltd*
Reference	FireSeal CD1*
Material	1.2mm stainless steel*
Density	7.74 g/cm³*
Moisture content	n/a*

Overall size	750 x 500mm*
Frame (Head)	500mm wide*
Frame (Jambs)	750mm high*
Stop	n/a*
Jamb to Head jointing method, fixing detail and location	Welded*
Stop to Frame jointing method, fixing detail and location	Welded*
Presence of Adhesives	N/A*

28. Frame Fixing Method to Supporting Construction	
Manufacturer	Generic*
Reference	n/a*
Type & material	Self-tapping screw & washer, bright zinc plated*
Overall size	50 x 4.2mm screw, 20 x 6mm washer*
Spacing	685mm vertical, 380mm horizontal*
Does the fixing penetrate intumescent seal within frame reveal	n/a*
Packing Material	n/a*

29. Frame Paint / Finish	
Manufacturer	Paramount Powders (UK) Ltd *
Reference	RAL9010*
Material	Polyester powder*
Application method	Electrostatic*
Location	Outside visible surfaces*
Curing method	Thermoset*

Fire stopping

30. Sealant to fire stopping detail	
Manufacturer	Pyroplex *
Reference	2WT310PY *

30. Sealant to fire stopping detail	
Material	Acrylic sealant*
Overall dimension	3mm bead (minimum)*
Application method	Sealant gun*
Location	Perimeter*

Access Panel Leaf D

31. Door Leaf	
Manufacturer (blank)	Ritherdon & Co Ltd*
Reference	FireSeal CD1*
Quantity of leaves on doorset	1*
Overall leaf size supplied for testing	750 x 500mm*

32. Core element	
Manufacturer	Ritherdon & Co Ltd*
Reference	Door*
Material	1.2mm stainless steel*
Location	Front – surface*
Density	7.74 g/cm^3*
Size and overall thickness and reduced thickness if door leaf incorporates fielded areas	n/a*
Application method	n/a*
Adhesives	n/a*
Presence of Mechanical Fixings	n/a*

Hardware

33. Hinges	
Supplier	Gold & Wassall Hinges Ltd *
Reference	n/a*
Quantity	2*
Primary material	1mm stainless steel*
Type	Piano hinge*
Size	127 x 31.8mm*
Blades	n/a*
Fixing method	Rivets, 6mm long x 3.2mm dia.*
Position of each hinge relative to the head of the leaf	-80mm, -543mm*
Details of intumescent protection	n/a*
Interruptions to Intumescent within the frame reveal	n/a*

34. Lockset / Latch	
Manufacturer	Emka (UK) Ltd *
Reference	Quarter-turn camlock*
Material	Stainless Steel*
Overall sizes	28(dia) x 32mm lock, 53 x 19mm cam*
Fixing method	Nut*
Operation of lock bolt	Quarter-turn with supplied key*
Operation of Top and bottom lock bolts	n/a*
Details of intumescent protection	n/a*
Location of centre of the spindle relative to the bottom of the leaf	+375mm*
Details of intumescent protection	n/a*
Location of centre of the spindle relative to the bottom of the leaf	n/a*

Test Observations

Time		All observations are from the unexposed face unless noted otherwise.
Mins	secs	
00	00	The test has started.
01	57	There is smoke issuing at A, B, and C
02	57	There is discolouration at A, Aa, B, Bb, C, Cc, and D
08	15	All the seals are reacting
13	40	The paint is coming away from Aa, B, and C
15	00	There is smoke issuing at all the locks
18	46	The seal has reacted at the perimeter on Aa, Bb, and Cc
22	49	There is a glow visible at the top closing corner and the top hanging corner of A, B, and C
22	33	A cotton pad test was performed at the top hanging corner of A which resulted in the ignition of the cotton pad thereby constituting **integrity failure**
24	40	A cotton pad test was performed at the top closing corner of B which resulted in the ignition of the cotton pad thereby constituting **integrity failure**
27	05	A cotton pad test was performed at the top closing corner of C which resulted in the ignition of the cotton pad thereby constituting **integrity failure**
38	52	No visible change observed
41	00	There is a glow visible at the perimeter of Bb
46	45	A cotton pad test was performed at the perimeter of Bb which resulted in the ignition of the cotton pad thereby constituting **integrity failure**
50	57	There is a glow visible at the perimeter of C
52	54	There is discolouration at the perimeter of Bb, Cc, D, and Aa
64	20	The door gaps are opening up on C

Time		All observations are from the unexposed face unless noted otherwise.
Mins	**secs**	
74	00	No visible change observed
88	27	A cotton pad test was performed at the perimeter on Cc which resulted in the ignition of the cotton pad thereby constituting **integrity failure**
90	00	A cotton pad test was performed at the perimeter on D which did not result in the ignition of the cotton pad. No failure
91	15	There is continuous flaming at the top of A thereby constituting **further integrity failure**
101	37	There is intermittent flaming at the perimeter of Bb
102	16	There is continuous flaming at the perimeter of Bb thereby constituting **further integrity failure**
111	07	There is continuous flaming at the bottom corner of C thereby constituting **further integrity failure**
115	36	There is continuous flaming at the top hanging corner on B thereby constituting **further integrity failure**
122	00	Test terminated.

Test Photographs

The unexposed face prior to testing

The unexposed face after a test duration of 10 minutes

The unexposed face after a test duration of 20 minutes

The unexposed face after a test duration of 30 minutes

The unexposed face after a test duration of 40 minutes

The unexposed face after a test duration of 50 minutes

The unexposed face after a test duration of 60 minutes

The unexposed face after a test duration of 70 minutes

The unexposed face after a test duration of 80 minutes

The unexposed face after a test duration of 90 minutes

The unexposed face after a test duration of 100 minutes

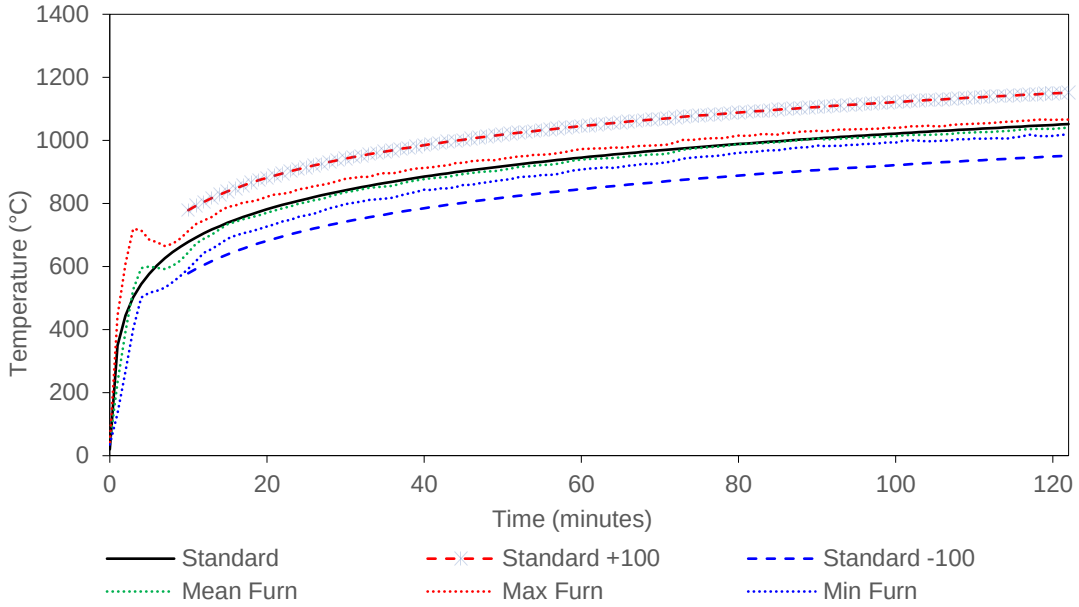
The unexposed face after a test duration of 110 minutes

The unexposed face after a test duration of 120 minutes

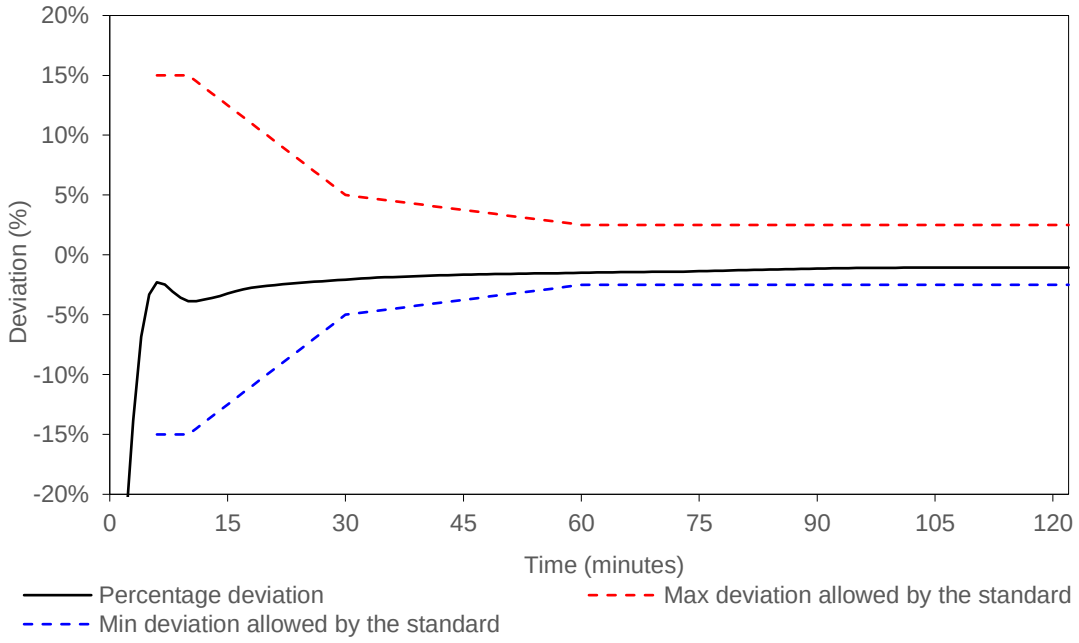
The exposed face after the completion of the test

Furnace Temperature

Graph showing mean furnace temperature, together with the temperature/time relationship and associated tolerances specified in BS EN 1363-1: 2020

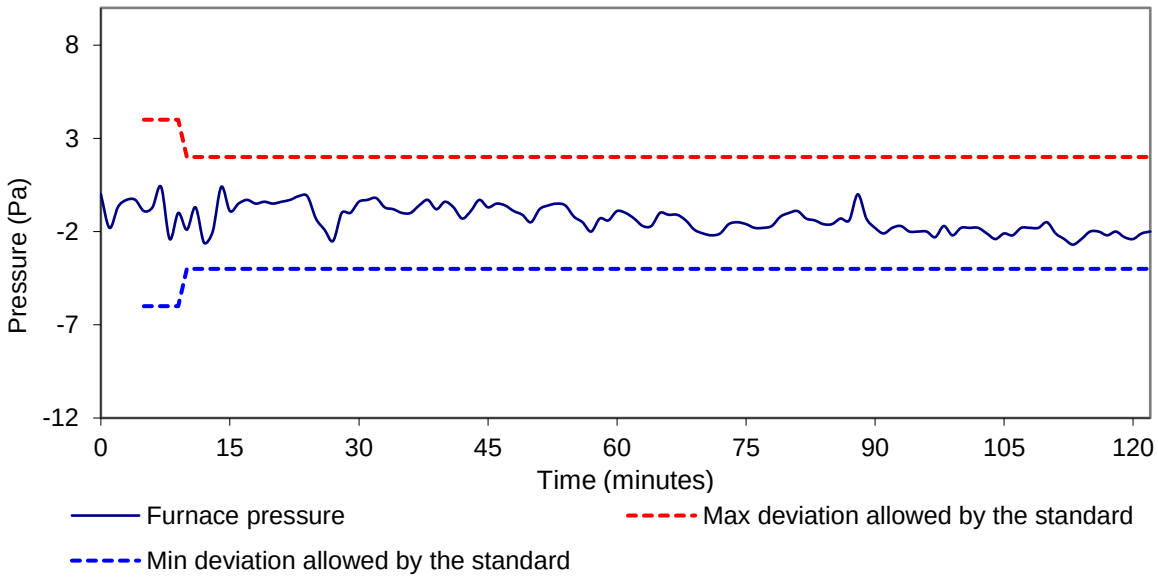


Graph showing percentage temperature deviation, together with the associated tolerances specified in BS EN 1363-1: 2020



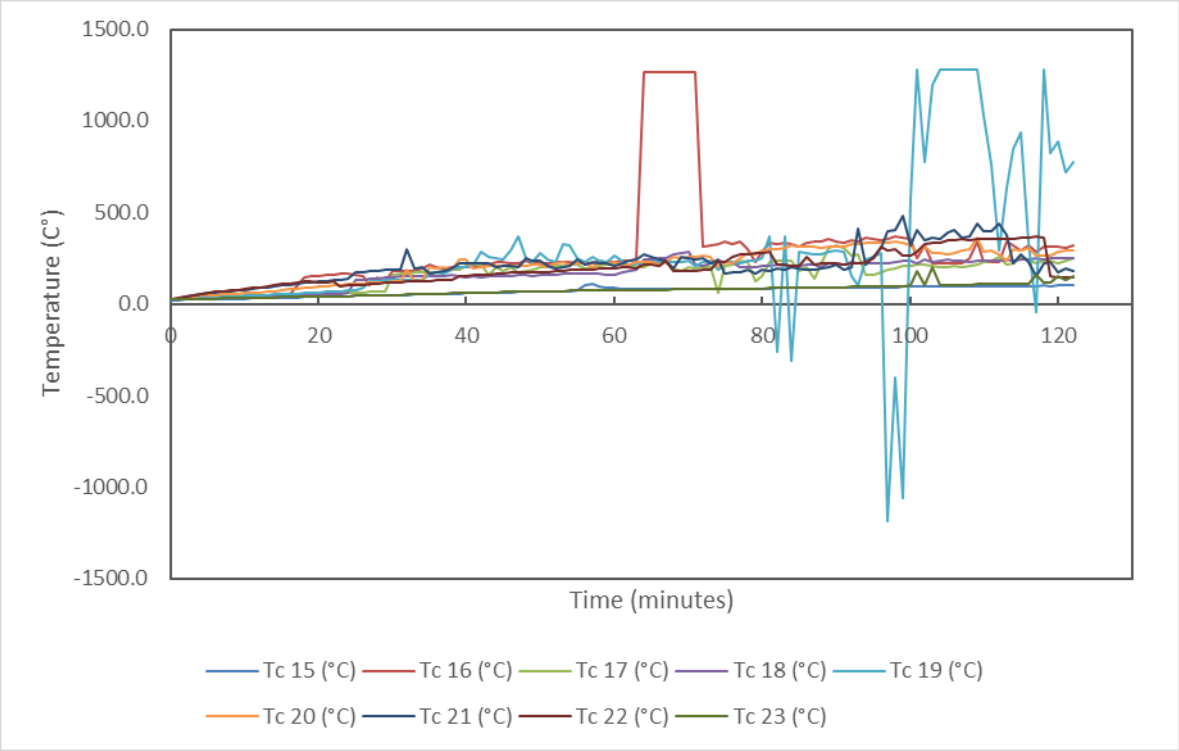
Furnace Pressure

Graph showing recorded furnace pressure at 0.5 m from the furnace floor



Specimen Temperature Data

Graph showing individual temperatures recorded at the maximum locations on the unexposed face



Individual temperatures recorded at the maximum locations on the unexposed face

Time (mins)	Tc 15 (°C)	Tc 16 (°C)	Tc 17 (°C)	Tc 18 (°C)	Tc 19 (°C)	Tc 20 (°C)	Tc 21 (°C)	Tc 22 (°C)	Tc 23 (°C)
0	21.3	23.1	23.3	24.3	24.4	25.2	25.6	25.9	22.9
1	21.4	24.0	24.1	25.1	26.0	27.0	28.3	29.3	23.1
2	21.9	26.8	26.7	26.7	29.2	32.5	36.1	37.4	24.0
3	22.7	30.0	30.1	28.2	31.9	38.4	45.8	47.5	25.2
4	23.7	32.6	32.6	29.8	34.5	43.5	54.4	56.0	26.6
5	24.4	33.1	32.7	31.3	36.4	45.5	58.7	61.0	27.8
6	24.9	33.9	33.5	32.0	37.2	49.4	63.6	65.9	28.4
7	25.4	34.8	34.0	32.4	38.3	50.1	66.4	69.0	29.1
8	25.8	35.8	35.0	33.3	40.2	51.6	69.1	72.1	29.5

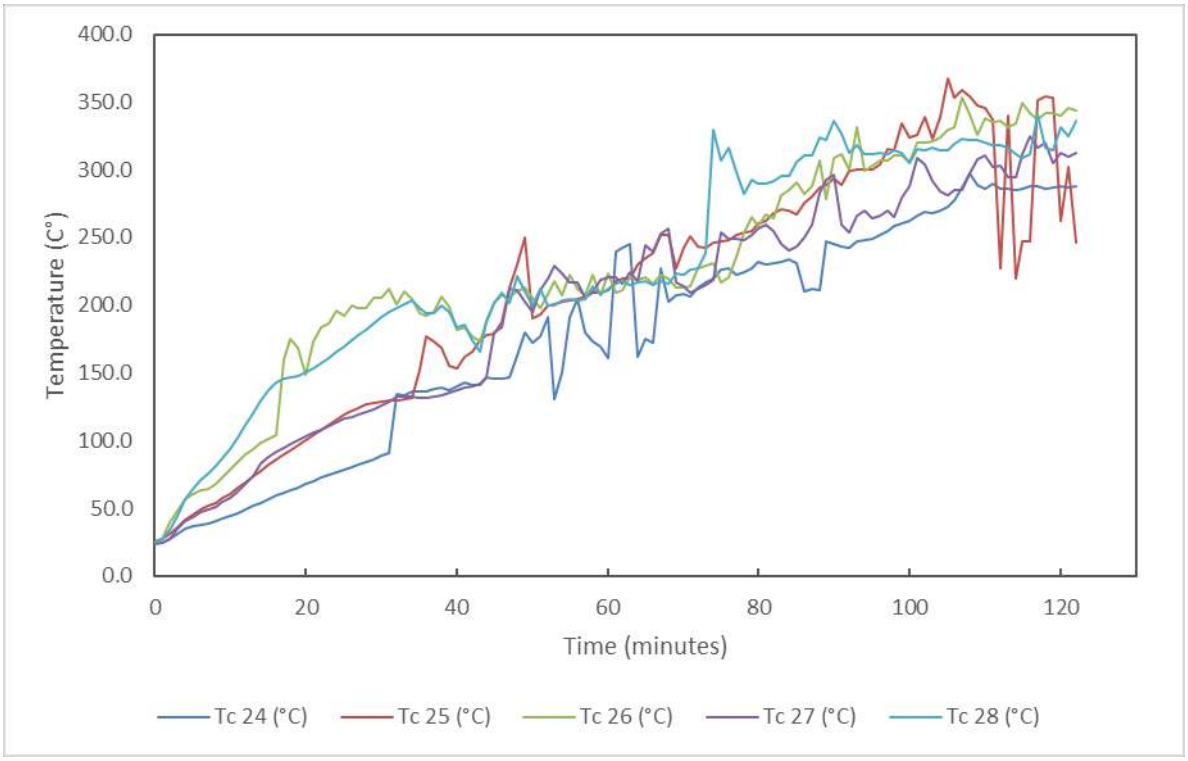
Time (mins)	Tc 15 (°C)	Tc 16 (°C)	Tc 17 (°C)	Tc 18 (°C)	Tc 19 (°C)	Tc 20 (°C)	Tc 21 (°C)	Tc 22 (°C)	Tc 23 (°C)
9	26.7	37.2	36.7	34.5	41.9	53.9	72.4	75.5	30.2
10	27.7	37.9	37.3	35.9	43.2	56.8	76.5	79.8	31.2
11	28.9	40.0	39.3	36.9	44.7	60.0	81.8	85.1	32.1
12	29.6	41.5	40.4	38.8	46.7	62.9	86.4	90.7	33.0
13	30.6	42.6	41.7	40.0	48.4	66.7	91.4	96.3	33.8
14	31.3	44.9	44.2	41.3	50.0	70.7	97.4	102.4	35.3
15	32.4	47.1	47.3	43.1	52.3	73.9	101.6	107.4	36.2
16	33.4	48.4	47.7	44.0	54.0	78.0	105.6	111.5	36.7
17	34.8	97.8	48.6	44.8	54.9	82.2	111.5	117.2	37.7
18	35.8	146.6	49.7	46.2	57.4	84.9	114.8	121.5	38.7
19	36.5	149.0	51.5	48.5	60.2	88.4	118.5	125.6	39.3
20	37.6	152.5	53.7	50.0	62.1	92.6	122.9	114.9	40.1
21	38.0	157.7	54.2	52.2	64.8	96.7	125.9	118.2	40.8
22	39.5	161.1	56.5	53.9	67.0	100.4	129.4	121.3	40.7
23	41.0	164.1	59.0	55.4	68.8	103.3	132.2	97.5	41.7
24	42.2	165.1	59.1	57.8	71.3	106.6	134.8	100.0	42.3
25	42.8	159.3	61.7	128.4	72.6	109.6	174.0	104.1	43.6
26	43.0	149.1	62.9	130.3	86.5	112.3	173.7	105.7	44.6
27	44.2	102.6	64.4	134.0	124.2	114.4	177.8	108.0	45.5
28	45.6	146.9	65.4	137.5	126.4	116.6	178.6	111.0	46.6
29	46.1	123.7	66.5	141.8	128.0	119.0	184.7	114.5	47.5
30	47.3	182.7	159.4	143.3	129.7	120.4	185.6	114.5	48.6
31	48.6	176.3	163.8	148.0	131.2	123.0	188.8	119.5	49.1
32	48.8	180.9	167.4	150.1	131.8	186.9	300.7	120.5	50.3

Time (mins)	Tc 15 (°C)	Tc 16 (°C)	Tc 17 (°C)	Tc 18 (°C)	Tc 19 (°C)	Tc 20 (°C)	Tc 21 (°C)	Tc 22 (°C)	Tc 23 (°C)
33	50.0	181.6	171.2	148.9	131.5	126.7	192.6	122.8	51.7
34	51.4	195.9	173.3	149.3	131.9	127.1	199.3	125.6	52.8
35	51.3	211.4	172.7	154.7	168.5	198.2	164.4	125.6	54.2
36	51.4	197.6	175.0	154.7	170.4	193.2	172.6	128.1	55.3
37	53.9	194.0	176.6	150.9	167.5	202.5	179.6	127.7	56.6
38	55.2	199.4	183.8	158.0	184.5	184.7	194.7	130.6	57.4
39	55.7	200.9	184.7	149.1	197.1	242.6	219.0	150.8	58.2
40	57.6	203.4	210.0	143.5	201.6	244.1	218.1	151.7	59.2
41	57.6	209.8	217.4	151.3	212.2	193.4	218.1	156.1	60.3
42	59.8	207.7	211.4	145.9	283.2	200.7	222.8	157.4	62.0
43	60.2	213.0	157.4	150.9	253.2	209.2	221.7	160.9	63.0
44	60.8	226.2	200.9	149.6	250.8	210.8	202.1	163.8	63.7
45	62.4	227.7	181.7	152.1	242.4	208.8	208.9	165.4	65.1
46	63.3	219.6	203.6	152.1	293.3	207.8	210.8	168.9	65.7
47	64.7	218.4	173.2	156.1	366.3	207.7	202.2	171.5	66.2
48	64.1	235.3	179.2	156.4	246.5	208.6	247.1	172.9	67.3
49	65.9	220.9	189.6	154.2	227.0	212.6	232.0	173.5	68.5
50	67.9	222.0	198.5	157.6	275.6	216.8	234.2	173.5	69.0
51	68.6	222.1	198.9	159.2	239.1	201.7	206.5	175.1	69.6
52	69.0	226.6	204.1	161.5	229.8	218.8	191.1	178.9	69.9
53	68.9	226.1	207.3	161.9	324.0	226.9	198.1	180.5	70.1
54	68.9	227.0	212.0	162.0	317.1	217.7	205.6	183.0	71.0
55	70.9	222.9	213.0	165.4	251.7	223.3	239.9	183.6	71.8
56	99.4	224.0	196.1	164.5	231.9	220.9	213.6	187.0	71.6

Time (mins)	Tc 15 (°C)	Tc 16 (°C)	Tc 17 (°C)	Tc 18 (°C)	Tc 19 (°C)	Tc 20 (°C)	Tc 21 (°C)	Tc 22 (°C)	Tc 23 (°C)
57	108.5	223.2	198.3	165.7	254.1	200.4	231.3	186.7	72.8
58	96.6	235.1	209.0	167.2	238.2	222.1	220.1	190.5	74.0
59	89.3	229.4	214.7	158.0	225.2	223.8	223.3	192.6	74.2
60	84.9	231.6	218.9	161.0	262.0	225.3	210.1	194.3	74.7
61	82.9	236.1	213.3	174.1	235.4	209.8	224.6	197.1	75.2
62	81.9	237.9	209.7	182.4	210.4	215.2	234.9	199.9	76.0
63	80.3	239.7	208.2	183.2	221.4	228.8	241.2	190.9	76.9
64	80.1	1267.6	202.3	242.2	223.3	228.0	268.3	214.7	77.1
65	79.7	1267.8	224.4	245.1	225.9	230.7	258.9	211.2	77.4
66	79.3	1268.1	225.5	247.4	227.8	217.5	239.8	207.8	77.6
67	79.4	1268.2	228.4	251.9	228.9	227.2	236.2	232.9	77.7
68	79.3	1268.3	190.8	267.4	229.1	255.0	194.6	179.0	78.0
69	79.3	1268.5	178.4	276.4	230.6	246.6	254.5	179.1	79.3
70	79.7	1268.8	198.1	283.8	232.3	254.9	250.9	179.3	79.3
71	79.1	1269.0	193.1	213.2	206.2	257.5	244.3	180.7	79.3
72	80.6	314.0	198.9	206.7	231.1	263.8	249.2	188.3	79.7
73	81.3	321.9	200.4	221.2	235.4	259.6	222.1	188.5	80.8
74	81.3	325.4	60.1	228.0	185.1	197.1	244.4	235.3	81.8
75	81.9	338.1	207.9	227.5	227.2	229.6	165.2	230.6	82.3
76	83.3	327.4	215.9	228.0	225.2	223.6	169.4	253.8	82.8
77	82.9	338.0	233.1	203.4	220.8	246.0	171.2	271.4	82.8
78	83.0	301.5	225.1	201.9	238.6	275.6	184.1	271.3	83.3
79	83.5	227.4	120.2	200.2	232.1	272.4	165.7	274.4	84.1
80	83.8	288.0	151.6	205.4	250.7	289.5	184.1	276.7	84.3

Time (mins)	Tc 15 (°C)	Tc 16 (°C)	Tc 17 (°C)	Tc 18 (°C)	Tc 19 (°C)	Tc 20 (°C)	Tc 21 (°C)	Tc 22 (°C)	Tc 23 (°C)
81	84.5	334.0	225.9	206.3	365.3	296.0	180.3	282.7	85.1
82	85.1	327.5	232.4	216.1	-260.6	298.7	195.4	216.6	85.6
83	85.9	332.6	236.1	209.3	367.2	306.6	184.2	213.3	86.4
84	86.1	326.7	233.9	209.4	-310.0	317.3	197.8	208.0	86.7
85	86.4	310.0	180.7	209.4	281.7	313.4	195.5	210.3	87.1
86	87.5	330.6	198.4	213.1	279.1	312.0	187.3	255.0	87.8
87	87.5	338.3	139.3	214.4	272.1	313.4	187.1	215.5	88.7
88	88.7	342.1	215.9	203.9	270.9	308.6	190.5	218.5	89.4
89	89.1	351.2	303.6	218.6	286.4	313.7	197.6	221.2	89.7
90	89.7	340.6	321.5	220.9	289.3	313.0	211.8	220.6	90.5
91	89.3	332.6	305.2	216.3	283.7	314.7	189.4	216.4	91.4
92	89.6	345.3	260.7	225.3	152.6	328.3	197.2	222.9	92.0
93	90.4	342.2	268.9	221.6	103.9	329.9	408.4	223.5	93.3
94	90.7	359.7	158.4	220.4	243.1	334.4	215.9	225.5	94.1
95	90.4	356.3	159.1	220.5	257.5	331.9	253.6	251.5	95.0
96	90.1	350.2	175.8	219.1	274.4	330.7	303.7	311.8	95.7
97	91.3	355.6	185.6	223.2	-1189.0	335.1	393.2	294.7	96.5
98	91.1	365.1	196.1	226.9	-404.8	337.4	401.3	298.6	97.7
99	92.1	361.5	204.7	235.0	-1060.4	331.5	482.6	263.7	98.4
100	92.5	351.4	204.3	234.9	571.2	316.7	322.8	266.8	99.1
101	92.1	247.5	211.6	222.5	1277.4	286.5	406.7	282.4	179.2
102	93.0	316.9	212.3	240.3	777.7	311.6	347.0	324.8	100.7
103	93.2	217.9	205.3	231.1	1198.6	277.6	360.2	333.4	198.7

Time (mins)	Tc 15 (°C)	Tc 16 (°C)	Tc 17 (°C)	Tc 18 (°C)	Tc 19 (°C)	Tc 20 (°C)	Tc 21 (°C)	Tc 22 (°C)	Tc 23 (°C)
104	92.9	219.0	202.6	236.5	1278.2	276.8	357.6	335.8	102.1
105	94.1	218.3	200.6	241.2	1278.4	269.6	386.9	346.1	103.0
106	93.8	218.7	203.9	235.8	1278.8	274.4	402.1	350.1	104.2
107	93.5	219.6	202.5	232.8	1278.9	291.7	363.5	355.3	105.0
108	93.8	247.8	208.9	231.8	1279.3	296.6	369.5	350.6	105.6
109	94.5	341.7	217.5	232.8	1279.5	359.7	436.4	352.3	105.9
110	95.3	225.5	226.6	235.7	1028.3	285.8	396.8	354.2	107.0
111	94.7	226.8	235.9	232.7	763.7	288.6	399.1	353.3	107.2
112	95.6	229.7	254.9	238.8	292.5	271.2	438.5	353.6	108.3
113	95.5	339.4	216.5	239.3	631.7	237.2	376.1	357.5	109.0
114	95.4	320.2	222.5	238.9	845.5	298.2	223.9	357.9	110.2
115	95.6	289.1	255.3	239.7	934.8	293.6	269.7	358.8	110.8
116	96.6	316.1	239.2	242.4	332.5	307.8	227.7	360.8	111.3
117	97.1	284.3	224.4	249.2	-44.2	260.5	153.6	371.0	161.0
118	99.1	314.5	238.5	243.3	1282.0	261.7	224.1	360.9	113.7
119	98.6	311.9	235.6	247.9	824.7	260.6	231.1	154.6	114.2
120	100.6	314.9	223.4	252.1	885.3	282.2	173.0	146.7	150.8
121	100.2	308.5	232.3	248.0	717.2	288.4	196.4	145.6	128.1
122	100.5	317.4	247.8	251.5	776.9	288.3	177.0	142.6	151.4



Individual temperatures recorded at the five average locations on the unexposed face

Time (mins)	Tc 24 (°C)	Tc 25 (°C)	Tc 26 (°C)	Tc 27 (°C)	Tc 28 (°C)
0	24.0	25.3	24.1	23.5	24.6
1	24.7	27.2	27.7	24.0	26.8
2	27.6	30.7	39.1	27.4	34.2
3	31.4	36.0	48.3	34.6	44.1
4	34.7	41.9	57.1	40.7	56.2
5	36.9	45.7	60.4	43.8	64.4
6	37.4	49.3	63.1	46.7	70.4
7	38.8	51.7	64.6	49.0	75.8
8	40.6	54.1	68.1	51.3	81.0
9	42.3	57.1	73.0	54.3	86.7
10	44.2	60.5	78.3	57.8	93.9
11	46.7	64.8	84.5	62.0	101.9

Time (mins)	Tc 24 (°C)	Tc 25 (°C)	Tc 26 (°C)	Tc 27 (°C)	Tc 28 (°C)
12	49.0	69.0	90.1	67.6	111.2
13	51.5	73.2	93.9	73.5	120.1
14	53.9	77.9	98.8	82.7	129.8
15	56.5	82.1	100.8	87.9	137.5
16	59.0	86.0	103.9	91.3	143.0
17	61.0	89.9	159.4	94.6	145.8
18	63.3	92.9	174.9	97.2	146.4
19	65.6	96.6	168.8	100.3	147.8
20	67.6	100.3	148.3	103.2	150.5
21	69.8	103.7	173.3	106.0	153.2
22	72.4	107.6	183.6	107.9	156.9
23	74.4	111.4	186.4	110.8	161.1
24	76.7	115.1	196.3	113.2	165.9
25	78.7	119.0	192.3	115.9	169.8
26	80.7	122.3	199.3	117.6	173.8
27	82.6	124.3	198.2	119.0	177.8
28	84.2	126.4	198.1	120.6	182.0
29	86.0	127.8	204.9	123.2	186.4
30	88.4	128.5	205.1	125.9	190.9
31	90.5	129.4	211.6	128.6	194.6
32	134.4	129.8	200.6	132.5	197.8
33	133.3	130.8	210.6	132.8	200.5
34	135.8	131.5	204.3	131.9	203.5
35	136.7	152.5	193.6	131.5	197.6
36	136.6	177.2	192.5	131.6	194.0

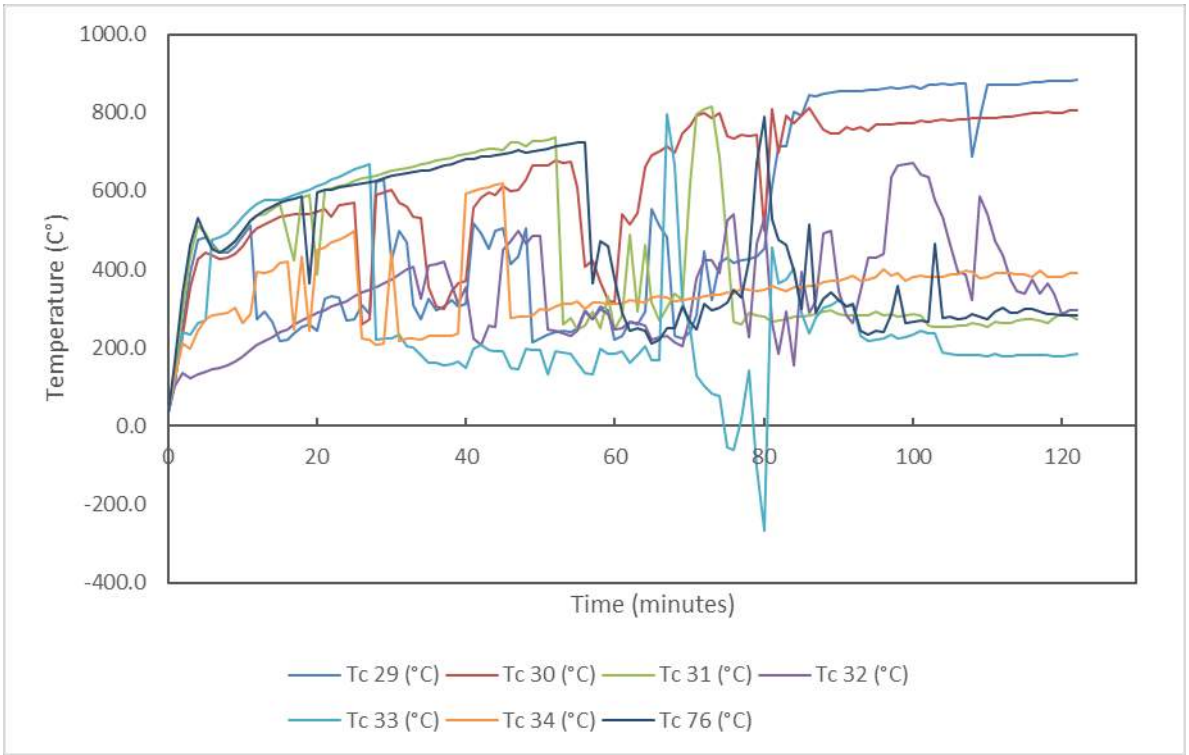
Time (mins)	Tc 24 (°C)	Tc 25 (°C)	Tc 26 (°C)	Tc 27 (°C)	Tc 28 (°C)
37	138.1	172.8	194.7	132.7	193.8
38	139.1	168.7	206.4	133.2	199.8
39	137.6	155.5	198.3	135.2	195.1
40	140.2	152.8	181.9	136.9	183.3
41	143.1	161.3	183.1	138.7	185.8
42	140.6	165.5	176.9	140.1	173.7
43	140.6	174.3	173.0	141.8	165.8
44	146.3	178.1	187.1	146.4	188.3
45	146.1	178.9	201.1	179.4	201.6
46	145.8	187.8	207.0	183.4	209.4
47	146.3	212.9	206.1	212.4	201.1
48	162.5	229.7	210.2	211.2	221.2
49	179.9	250.0	212.7	202.9	210.4
50	172.0	190.1	204.9	194.6	199.9
51	176.7	193.0	197.4	211.0	212.2
52	190.8	199.9	208.0	220.0	199.7
53	131.0	200.7	217.7	228.9	199.8
54	150.2	202.9	207.7	223.7	203.4
55	190.9	203.5	222.9	216.3	204.3
56	204.0	204.8	212.3	216.6	203.2
57	179.4	206.6	207.5	204.9	204.8
58	173.2	209.2	222.0	210.3	213.7
59	169.2	209.3	206.8	218.6	208.3
60	160.6	210.8	223.3	220.8	211.8
61	239.3	217.4	208.9	220.2	215.8

Time (mins)	Tc 24 (°C)	Tc 25 (°C)	Tc 26 (°C)	Tc 27 (°C)	Tc 28 (°C)
62	242.6	219.9	211.3	215.8	217.6
63	245.5	220.0	220.3	224.8	215.2
64	161.4	229.8	218.6	217.8	216.3
65	174.6	234.6	221.0	244.7	217.6
66	172.3	238.3	215.6	239.7	215.1
67	227.5	251.7	222.8	252.4	217.7
68	202.8	251.9	220.0	256.6	215.9
69	207.0	227.3	213.3	217.2	223.3
70	207.7	242.6	213.1	213.6	222.8
71	206.1	250.7	213.8	208.7	225.7
72	213.0	243.3	226.7	212.2	227.1
73	216.4	242.4	229.1	214.9	238.1
74	219.2	246.2	231.3	218.2	329.6
75	225.9	246.7	217.1	253.7	307.0
76	227.3	247.9	220.2	249.0	316.4
77	222.8	252.1	236.0	248.5	298.0
78	224.7	253.4	253.6	248.2	282.5
79	227.4	254.4	264.9	251.7	292.5
80	231.4	260.7	258.6	256.8	289.4
81	230.1	262.1	267.1	259.0	290.1
82	231.4	267.9	263.7	254.3	291.2
83	232.2	270.5	281.4	245.6	295.5
84	233.5	269.3	284.8	240.4	295.7
85	230.8	267.0	290.7	243.3	306.0
86	210.3	275.0	282.5	250.2	310.8

Time (mins)	Tc 24 (°C)	Tc 25 (°C)	Tc 26 (°C)	Tc 27 (°C)	Tc 28 (°C)
87	212.4	280.4	287.7	259.5	310.3
88	210.9	286.4	306.3	283.4	324.0
89	246.6	288.8	278.4	292.5	321.6
90	245.2	293.4	309.0	296.5	335.9
91	243.5	288.8	311.2	259.3	327.0
92	242.3	298.8	300.2	254.0	312.4
93	247.0	299.8	331.3	265.8	317.7
94	248.2	300.0	299.5	269.9	311.8
95	249.1	299.8	303.2	264.0	311.7
96	251.9	304.2	306.4	265.8	312.3
97	254.4	315.3	307.1	270.2	311.5
98	258.6	314.1	310.2	264.6	313.9
99	260.5	334.7	310.7	279.3	312.0
100	262.6	324.2	305.7	287.8	305.2
101	265.7	325.2	319.6	308.5	315.6
102	268.8	338.8	319.7	303.5	313.9
103	268.3	322.8	321.3	291.6	316.5
104	270.1	339.0	323.5	283.8	314.7
105	272.4	367.5	329.3	281.2	314.3
106	277.5	353.3	331.4	285.4	318.7
107	286.9	358.6	353.4	285.2	323.3
108	296.9	353.7	340.7	297.2	321.7
109	288.3	347.4	325.3	307.7	322.3
110	286.0	345.2	338.0	310.5	320.0
111	289.2	337.1	334.8	302.2	317.9

Time (mins)	Tc 24 (°C)	Tc 25 (°C)	Tc 26 (°C)	Tc 27 (°C)	Tc 28 (°C)
112	285.4	227.3	336.5	303.3	318.1
113	285.5	340.2	331.2	294.1	316.1
114	285.0	219.2	334.0	294.8	311.5
115	285.6	246.9	349.8	311.8	308.9
116	287.9	247.4	342.0	324.4	311.6
117	287.4	350.9	336.7	316.4	340.7
118	286.0	353.7	342.2	319.9	315.9
119	286.7	353.4	341.9	304.4	314.4
120	287.5	261.9	340.3	312.0	331.8
121	286.7	302.1	345.5	309.6	324.8
122	288.0	246.5	343.8	312.7	335.7

Graph showing individual temperatures recorded at the Panel A location



Individual temperatures recorded at the Panel A locations

Time (mins)	Tc 29 (°C)	Tc 30 (°C)	Tc 31 (°C)	Tc 32 (°C)	Tc 33 (°C)	Tc 34 (°C)	Tc 76 (°C)
0	37.8	35.9	37.0	38.3	36.8	39.2	36.7
1	112.4	116.0	144.4	102.7	119.0	125.3	164.8
2	248.8	231.2	294.5	134.8	240.7	211.2	337.1
3	389.7	354.2	434.1	122.4	231.8	198.1	461.8
4	476.0	426.4	509.6	132.8	263.7	241.6	531.9
5	482.2	442.8	490.7	138.8	269.5	271.3	485.2
6	465.9	436.5	457.9	145.3	476.7	281.2	450.9
7	441.8	426.4	444.0	148.4	483.4	284.7	442.0
8	441.9	429.0	453.1	153.6	492.5	287.7	455.8
9	457.5	439.1	472.3	165.0	510.5	302.4	473.1
10	483.7	460.2	496.0	178.4	533.9	262.7	498.5

Time (mins)	Tc 29 (°C)	Tc 30 (°C)	Tc 31 (°C)	Tc 32 (°C)	Tc 33 (°C)	Tc 34 (°C)	Tc 76 (°C)
11	511.6	487.5	523.1	193.9	555.0	286.0	525.2
12	271.1	503.9	537.6	206.5	567.5	393.8	538.2
13	292.5	514.1	542.1	215.8	575.1	388.6	549.1
14	267.1	524.8	554.5	225.9	575.2	396.7	560.4
15	217.0	533.7	567.4	238.9	576.3	417.7	570.7
16	219.5	538.6	484.0	247.5	581.9	420.5	577.7
17	237.0	542.2	422.0	258.1	589.2	245.5	580.9
18	253.6	539.9	584.4	268.5	596.6	432.6	588.0
19	261.0	542.1	589.5	278.7	603.6	242.0	362.9
20	243.6	548.2	386.3	288.2	611.1	449.3	597.5
21	326.0	554.1	602.0	295.8	620.4	456.0	601.6
22	331.0	534.2	606.9	303.7	628.4	467.9	603.8
23	328.1	563.2	611.5	311.3	636.9	475.8	608.8
24	269.4	567.8	617.0	318.3	646.3	484.0	612.2
25	272.0	570.0	625.2	332.5	654.3	496.9	616.8
26	309.5	257.9	630.7	341.7	662.2	222.9	620.0
27	286.5	271.4	634.1	348.6	669.6	221.4	622.6
28	621.7	589.6	639.0	354.7	220.4	207.5	626.8
29	627.4	595.8	645.4	362.9	224.7	211.0	632.1
30	423.9	602.4	650.4	372.3	225.0	441.9	637.9
31	498.8	568.9	654.6	386.9	234.2	217.4	642.1
32	468.7	561.3	659.3	399.2	202.9	222.7	644.7
33	308.9	532.9	663.2	408.1	199.3	224.2	648.3
34	273.7	530.2	667.8	325.3	182.3	220.8	650.9

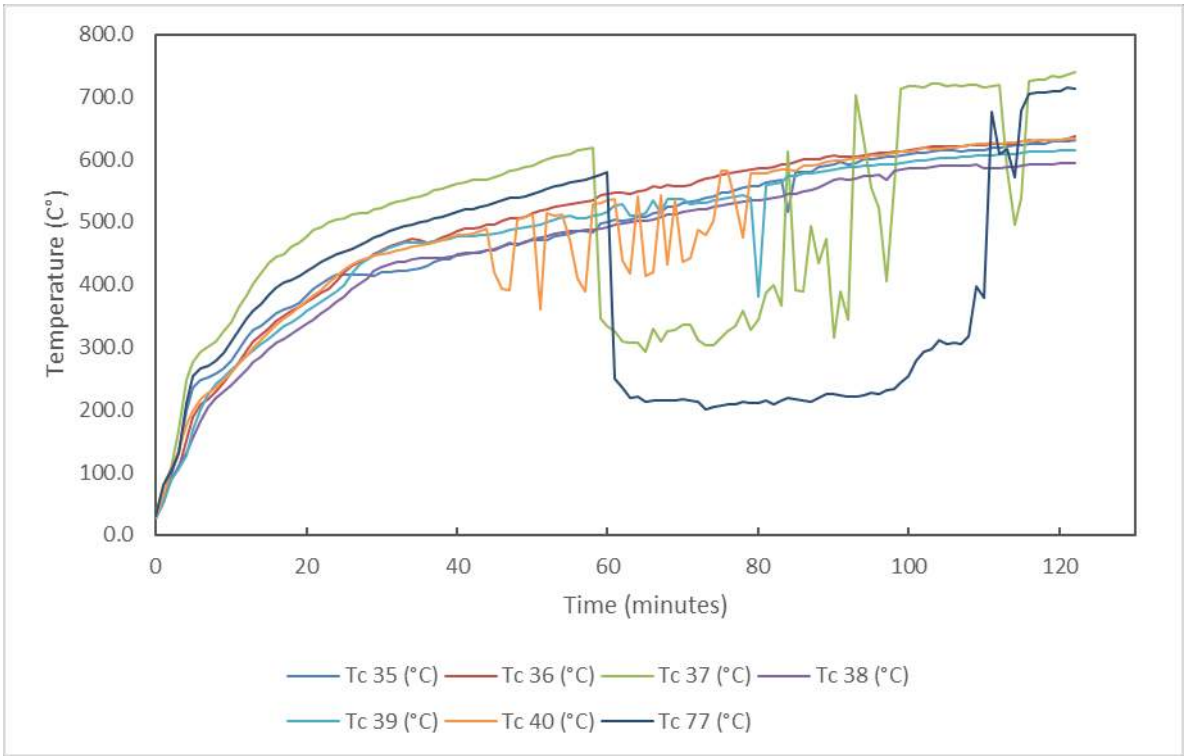
Time (mins)	Tc 29 (°C)	Tc 30 (°C)	Tc 31 (°C)	Tc 32 (°C)	Tc 33 (°C)	Tc 34 (°C)	Tc 76 (°C)
35	326.3	355.4	672.2	408.9	162.5	230.3	653.4
36	293.9	306.7	677.2	414.1	161.4	228.9	658.1
37	306.2	299.0	682.8	420.7	153.4	229.3	663.7
38	321.2	345.3	685.2	360.4	156.6	230.8	667.5
39	306.3	365.6	690.5	310.6	164.1	237.3	674.0
40	311.8	370.5	694.1	352.8	147.1	592.5	679.8
41	517.3	558.5	698.2	223.9	197.9	599.9	681.7
42	491.3	582.8	704.5	206.0	206.7	606.2	686.7
43	453.4	596.4	707.2	256.2	193.1	611.0	689.3
44	498.7	588.6	707.4	254.1	191.9	615.6	691.0
45	504.7	613.1	705.4	448.1	190.9	619.3	695.3
46	414.6	600.9	722.6	471.2	149.2	275.4	699.3
47	433.4	604.3	722.8	498.0	146.0	280.2	703.3
48	503.8	629.7	715.1	464.1	198.4	280.1	698.4
49	214.4	663.9	726.3	486.4	193.1	281.8	701.3
50	224.1	665.0	727.2	485.8	193.3	299.3	704.3
51	231.9	663.4	730.2	246.5	130.9	295.1	708.2
52	239.7	677.7	736.2	243.3	190.4	303.7	714.4
53	241.7	670.0	260.6	235.7	187.1	310.9	717.1
54	239.1	674.0	275.1	231.5	185.8	312.0	720.1
55	249.9	609.8	246.6	244.3	160.7	318.9	723.5
56	294.1	405.6	255.2	291.0	134.0	297.2	724.5
57	271.8	424.1	293.7	274.1	132.3	316.2	364.4
58	304.2	365.7	249.3	300.1	198.5	314.4	471.7

Time (mins)	Tc 29 (°C)	Tc 30 (°C)	Tc 31 (°C)	Tc 32 (°C)	Tc 33 (°C)	Tc 34 (°C)	Tc 76 (°C)
59	294.6	321.8	330.7	286.1	183.1	313.2	460.5
60	219.5	313.4	247.7	246.8	182.7	310.5	375.8
61	231.0	539.6	282.8	250.1	191.4	312.4	288.4
62	265.7	515.9	487.1	264.8	160.5	321.5	242.8
63	259.7	542.6	291.5	263.2	181.7	318.8	248.2
64	293.4	661.3	462.6	256.6	203.0	314.1	243.7
65	554.0	690.0	315.6	220.7	166.7	326.6	209.3
66	510.1	701.1	270.8	225.4	168.9	331.4	221.4
67	481.3	713.2	301.9	229.2	794.3	327.0	249.4
68	228.6	699.1	339.1	214.9	663.7	317.1	250.4
69	224.5	748.0	322.9	202.8	318.2	320.3	304.2
70	240.9	767.8	615.6	277.6	248.2	324.3	265.8
71	281.0	791.8	797.0	376.7	127.6	323.3	247.1
72	446.1	797.5	807.3	421.7	102.4	330.7	311.1
73	322.4	787.1	814.1	423.1	83.2	336.0	295.3
74	416.6	797.5	684.1	391.6	74.7	334.3	302.3
75	430.6	739.1	463.1	525.0	-53.4	342.0	313.9
76	416.8	732.7	267.4	542.3	-62.2	337.6	348.2
77	421.4	742.6	260.2	346.2	16.9	349.9	326.7
78	424.7	740.4	288.5	226.7	141.0	348.4	421.9
79	432.1	744.7	283.1	466.6	-105.6	343.5	671.2
80	453.1	497.9	278.7	532.1	-266.3	346.8	788.2
81	611.9	807.3	265.5	263.4	455.0	356.6	526.2
82	715.5	697.3	269.5	185.8	363.4	351.3	476.4

Time (mins)	Tc 29 (°C)	Tc 30 (°C)	Tc 31 (°C)	Tc 32 (°C)	Tc 33 (°C)	Tc 34 (°C)	Tc 76 (°C)
83	715.5	791.4	272.6	291.7	375.0	343.3	461.8
84	801.9	771.5	279.6	154.9	402.4	353.1	395.9
85	791.7	790.9	278.3	393.2	289.9	352.7	299.3
86	844.5	813.0	283.0	288.0	236.4	356.3	516.0
87	842.5	784.4	284.2	319.7	275.3	357.2	288.5
88	848.0	757.5	291.4	491.2	301.3	368.6	325.4
89	852.4	745.8	294.1	497.5	306.9	370.1	340.4
90	853.1	747.0	285.1	345.7	321.5	372.0	320.6
91	853.2	763.8	280.8	281.0	306.7	376.9	306.5
92	853.4	755.6	283.7	263.0	308.5	384.9	310.6
93	854.7	764.3	283.7	342.8	230.1	371.4	242.2
94	857.0	753.2	282.5	429.2	216.1	373.9	232.8
95	857.5	769.8	291.2	430.5	221.5	380.5	241.6
96	861.1	769.3	283.0	439.4	224.5	400.6	238.5
97	863.8	769.8	284.2	635.5	233.8	382.8	285.9
98	862.6	771.6	279.5	663.7	221.8	390.9	357.0
99	865.1	773.8	281.6	668.6	228.0	372.1	261.3
100	866.1	774.2	286.2	670.5	234.2	382.1	265.4
101	860.9	778.6	283.5	643.1	242.2	383.2	269.3
102	871.6	775.7	255.1	635.7	235.6	381.7	266.8
103	869.9	780.4	252.6	578.1	237.0	381.8	465.9
104	873.1	781.2	253.0	535.0	188.4	380.1	275.3
105	869.5	779.4	254.5	461.7	183.1	388.0	277.8
106	873.7	782.6	254.8	392.5	180.0	385.6	271.7

Time (mins)	Tc 29 (°C)	Tc 30 (°C)	Tc 31 (°C)	Tc 32 (°C)	Tc 33 (°C)	Tc 34 (°C)	Tc 76 (°C)
107	875.3	783.4	257.7	387.5	180.9	397.4	277.2
108	687.0	784.8	262.9	320.5	181.1	392.4	284.9
109	787.6	784.7	257.9	588.1	180.1	377.8	279.4
110	869.6	785.9	253.1	540.8	178.3	379.4	272.6
111	869.4	786.6	265.2	471.0	183.8	388.6	291.9
112	870.2	790.5	262.1	437.1	177.7	389.8	302.7
113	870.0	789.4	264.2	372.9	179.2	390.8	287.3
114	870.2	793.3	270.6	344.4	179.4	388.0	288.2
115	875.1	796.0	270.9	336.5	181.0	387.3	297.3
116	876.2	798.1	271.9	374.7	182.2	379.6	298.7
117	878.9	800.4	267.7	337.6	179.8	396.4	290.8
118	879.9	800.7	262.3	364.0	182.3	380.4	284.4
119	880.2	800.0	277.1	338.1	178.2	380.6	286.9
120	880.8	800.5	288.7	286.7	177.9	379.4	282.0
121	882.2	804.2	282.3	294.3	180.8	390.4	282.8
122	883.9	804.7	273.9	295.7	183.5	389.2	281.3

Graph showing individual temperatures recorded at the Panel Aa location



Individual temperatures recorded at the Panel Aa location

Time (mins)	Tc 35 (°C)	Tc 36 (°C)	Tc 37 (°C)	Tc 38 (°C)	Tc 39 (°C)	Tc 40 (°C)	Tc 77 (°C)
0	29.0	26.9	29.9	27.9	26.8	27.9	29.7
1	60.9	56.8	79.8	55.0	50.0	63.6	79.1
2	96.4	89.6	106.5	88.3	88.2	103.8	102.5
3	132.5	106.3	167.2	110.3	105.1	134.0	130.6
4	197.8	151.7	247.1	131.0	127.1	174.9	209.7
5	235.8	189.0	276.7	155.8	167.3	198.5	253.8
6	247.7	208.4	291.8	182.6	201.0	216.1	265.8
7	251.4	216.8	299.9	204.5	224.8	227.1	269.2
8	257.4	229.5	309.9	219.6	241.1	236.0	277.9
9	266.3	243.5	324.6	229.9	252.6	247.0	291.0
10	278.0	259.9	338.9	240.3	263.7	259.7	308.1
11	295.9	277.2	364.3	252.2	275.1	273.8	327.4

Time (mins)	Tc 35 (°C)	Tc 36 (°C)	Tc 37 (°C)	Tc 38 (°C)	Tc 39 (°C)	Tc 40 (°C)	Tc 77 (°C)
12	314.3	295.0	383.0	264.1	285.5	286.6	346.2
13	326.8	309.8	401.3	275.9	295.3	299.4	357.8
14	332.9	319.9	418.1	285.3	304.4	311.7	368.6
15	343.0	329.7	433.8	296.5	313.9	324.0	382.2
16	353.9	342.0	443.4	307.0	323.7	334.8	394.8
17	359.6	351.0	448.9	314.1	332.8	345.6	402.9
18	364.2	358.4	460.1	321.8	340.8	354.7	407.9
19	370.9	365.1	466.6	328.6	348.7	364.6	413.2
20	383.4	372.1	478.0	336.7	357.3	374.3	421.2
21	392.2	377.9	486.7	344.3	364.9	382.3	428.9
22	401.8	386.6	491.5	353.2	372.6	391.2	437.0
23	409.3	394.1	499.5	362.9	379.8	403.0	441.9
24	414.8	406.0	503.9	372.5	389.5	414.6	448.7
25	415.4	420.0	506.5	381.0	400.0	424.7	451.7
26	415.2	429.2	511.2	392.8	418.4	433.1	457.6
27	415.9	437.1	514.1	400.9	432.0	439.0	463.7
28	414.7	441.1	514.8	409.3	441.0	443.1	468.9
29	414.6	447.5	520.0	422.2	446.9	445.9	474.7
30	419.0	455.5	522.8	427.7	453.1	448.0	479.8
31	420.7	460.5	529.1	432.8	459.6	451.4	485.2
32	422.4	464.7	532.8	436.0	463.5	454.7	489.5
33	421.2	469.1	534.3	436.8	467.3	457.1	492.6
34	423.2	474.0	537.8	439.8	467.9	460.1	496.4
35	426.5	472.0	541.6	441.6	467.6	462.0	499.1

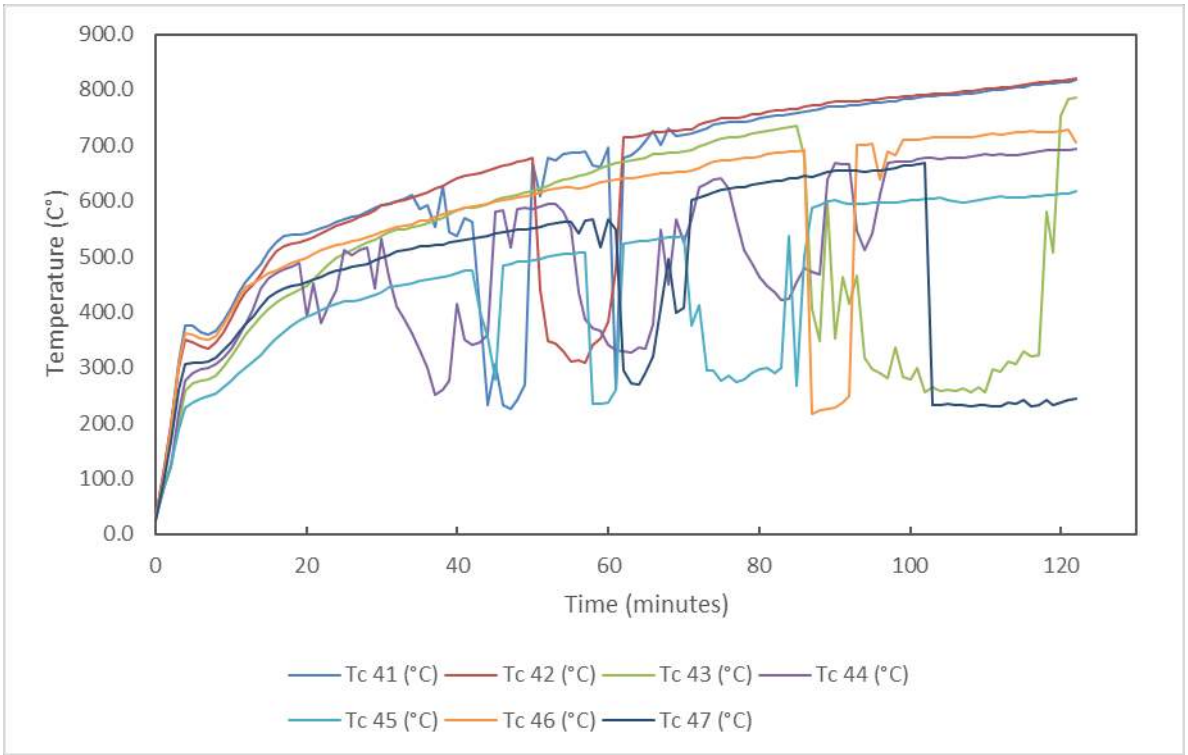
Time (mins)	Tc 35 (°C)	Tc 36 (°C)	Tc 37 (°C)	Tc 38 (°C)	Tc 39 (°C)	Tc 40 (°C)	Tc 77 (°C)
36	430.8	467.7	545.8	441.8	467.7	464.4	501.9
37	436.2	469.2	551.9	441.9	468.8	467.6	506.5
38	440.6	474.9	553.7	441.7	471.2	470.5	507.7
39	441.3	479.2	556.8	443.6	473.6	474.5	512.2
40	449.2	485.0	560.8	446.6	477.4	478.5	515.9
41	450.1	489.1	563.7	449.1	477.5	478.9	520.6
42	450.8	490.4	567.0	450.5	477.8	481.8	521.0
43	450.3	492.5	567.1	452.1	478.5	485.0	523.4
44	454.5	495.0	568.0	454.5	479.7	489.2	525.7
45	454.5	496.2	570.8	455.8	480.8	420.5	530.0
46	460.7	501.1	575.1	460.0	484.3	392.5	534.1
47	466.3	505.8	581.7	464.0	487.8	391.8	537.7
48	461.9	506.4	582.8	465.4	489.7	504.8	539.0
49	468.0	508.5	587.9	467.7	491.4	507.7	541.0
50	471.5	513.5	590.7	473.2	493.7	511.0	545.3
51	471.2	517.2	595.5	475.0	495.5	359.8	549.0
52	471.5	520.5	599.4	476.8	499.9	514.8	552.7
53	476.7	523.7	604.8	480.5	504.6	509.1	556.7
54	480.1	526.4	607.3	483.2	507.5	512.4	560.1
55	481.8	528.4	608.7	486.2	510.1	471.1	562.7
56	486.0	531.2	615.1	484.8	505.1	409.7	565.5
57	485.8	533.2	615.9	486.4	505.7	388.8	568.4
58	484.3	535.1	618.5	488.3	509.1	528.5	571.8
59	497.4	542.1	345.8	489.8	512.6	531.4	576.6

Time (mins)	Tc 35 (°C)	Tc 36 (°C)	Tc 37 (°C)	Tc 38 (°C)	Tc 39 (°C)	Tc 40 (°C)	Tc 77 (°C)
60	500.7	545.5	333.0	492.4	515.5	533.6	579.2
61	503.4	547.6	326.2	496.5	526.1	536.6	250.3
62	502.1	546.1	310.0	498.6	527.9	437.2	234.4
63	503.6	545.8	307.0	500.4	509.5	417.7	219.5
64	507.9	547.9	306.7	501.3	510.1	539.8	220.0
65	507.7	550.5	292.8	502.0	513.2	413.3	212.1
66	513.4	556.5	329.5	504.7	534.5	420.5	215.7
67	515.9	554.8	308.2	507.1	514.3	543.3	215.5
68	523.7	558.4	325.5	511.0	536.7	431.4	214.3
69	523.9	556.5	326.9	512.1	537.6	534.6	214.2
70	530.1	557.7	335.8	515.1	536.9	436.2	217.0
71	533.0	558.8	336.3	517.2	529.3	442.2	213.9
72	535.5	565.6	311.6	520.3	529.9	488.3	212.0
73	537.8	568.5	303.2	521.2	531.3	479.4	199.5
74	541.2	572.1	303.7	523.9	535.0	502.1	203.9
75	546.1	574.9	315.1	526.8	536.2	582.6	207.4
76	547.8	577.5	325.9	528.5	538.1	582.1	209.6
77	550.5	579.0	333.5	529.6	540.9	532.6	208.3
78	555.3	581.6	357.4	532.3	542.0	475.7	213.3
79	557.4	583.1	327.0	533.7	538.5	576.7	211.7
80	558.1	584.9	344.9	535.5	380.4	578.4	210.5
81	562.6	586.6	387.4	537.6	558.6	578.1	213.8
82	565.4	588.1	400.2	539.3	560.5	581.6	208.9
83	567.7	591.0	366.8	540.4	562.7	583.9	215.5

Time (mins)	Tc 35 (°C)	Tc 36 (°C)	Tc 37 (°C)	Tc 38 (°C)	Tc 39 (°C)	Tc 40 (°C)	Tc 77 (°C)
84	516.7	592.3	612.1	544.2	572.8	583.6	218.0
85	579.3	595.5	391.4	545.3	573.4	581.8	217.8
86	580.1	599.8	388.8	549.2	577.3	588.9	215.0
87	580.5	600.1	493.8	550.9	577.7	589.1	212.3
88	588.3	601.1	433.6	554.4	579.0	593.0	219.2
89	589.1	605.0	472.7	561.2	582.4	596.8	225.0
90	592.8	605.3	315.6	566.5	584.0	598.8	224.4
91	595.2	605.0	389.9	569.4	586.4	599.0	222.5
92	592.5	604.3	343.8	568.0	587.1	601.2	220.3
93	594.4	605.1	702.6	568.9	588.1	603.1	221.4
94	600.6	605.9	632.8	573.9	589.2	603.0	222.5
95	599.8	608.4	555.4	573.9	589.5	605.4	227.3
96	602.3	610.8	523.2	575.3	591.7	607.3	225.9
97	605.2	611.3	405.2	568.3	592.9	609.2	232.0
98	603.3	611.8	559.4	581.2	592.9	610.0	232.9
99	605.7	612.6	712.3	582.8	593.7	612.0	244.2
100	609.3	615.0	716.2	585.0	596.1	612.4	253.0
101	610.3	617.1	717.8	586.5	597.7	614.8	278.1
102	609.5	618.8	714.3	586.2	599.1	618.6	292.1
103	612.3	620.2	720.6	588.5	600.1	616.8	296.3
104	614.1	621.4	720.7	589.7	601.8	617.6	310.4
105	613.8	621.2	717.8	590.3	602.6	618.2	305.3
106	614.9	620.7	719.8	590.9	603.2	619.2	306.1
107	613.2	621.2	716.4	590.3	603.5	620.9	304.4

Time (mins)	Tc 35 (°C)	Tc 36 (°C)	Tc 37 (°C)	Tc 38 (°C)	Tc 39 (°C)	Tc 40 (°C)	Tc 77 (°C)
108	614.9	622.3	718.2	590.4	604.7	623.4	317.2
109	614.8	622.7	719.3	591.9	606.1	625.3	396.7
110	614.1	621.8	715.9	586.6	606.8	625.8	377.9
111	617.8	625.4	716.3	586.7	607.1	626.3	675.9
112	618.3	624.2	718.4	586.3	607.5	625.4	608.8
113	621.2	625.1	584.4	587.6	607.5	626.1	615.9
114	622.4	625.3	495.5	588.0	608.8	627.1	572.1
115	623.7	628.0	538.5	589.1	610.0	629.6	678.6
116	625.1	630.0	725.3	591.9	611.8	629.3	704.1
117	624.3	629.2	728.1	591.1	612.0	630.3	706.9
118	625.7	630.1	727.4	591.7	611.8	631.3	707.2
119	627.9	631.8	733.0	592.3	613.3	630.3	708.9
120	628.3	631.2	731.9	593.8	613.8	631.1	709.1
121	629.8	633.6	735.2	594.9	614.0	632.4	714.5
122	631.0	636.7	738.9	594.7	614.9	632.1	713.9

Graph showing individual temperatures recorded at the Panel Bb location



Individual temperatures recorded at the Panel Bb location

Time (mins)	Tc 41 (°C)	Tc 42 (°C)	Tc 43 (°C)	Tc 44 (°C)	Tc 45 (°C)	Tc 46 (°C)	Tc 47 (°C)
0	32.0	30.5	27.8	30.0	27.8	26.8	25.1
1	106.6	109.5	82.5	80.9	79.8	101.8	91.5
2	195.1	197.7	121.0	123.8	125.6	190.1	167.0
3	310.4	298.5	198.5	217.6	189.3	305.5	260.8
4	375.4	349.4	256.8	277.2	227.4	361.3	307.0
5	375.5	346.0	271.5	290.6	237.7	358.7	308.2
6	364.5	338.9	275.5	296.6	244.1	353.1	308.7
7	358.5	334.9	278.2	299.3	247.7	349.1	310.0
8	366.2	344.5	285.3	305.6	253.2	357.8	317.0
9	384.9	364.7	300.5	318.1	264.2	378.3	330.7
10	408.0	388.3	319.9	335.0	276.1	401.2	344.4

Time (mins)	Tc 41 (°C)	Tc 42 (°C)	Tc 43 (°C)	Tc 44 (°C)	Tc 45 (°C)	Tc 46 (°C)	Tc 47 (°C)
11	436.4	416.2	341.3	355.9	289.7	425.3	362.7
12	454.2	434.8	359.6	377.9	300.1	443.6	378.2
13	469.1	449.9	374.7	406.5	309.8	452.3	392.1
14	485.8	468.5	390.7	442.8	322.4	461.7	410.6
15	508.6	491.0	406.5	461.0	337.4	469.3	425.9
16	526.0	508.1	417.0	469.9	351.7	474.6	436.3
17	536.5	518.0	425.8	477.7	364.7	481.0	443.1
18	538.1	523.5	432.6	481.8	375.6	488.1	447.3
19	539.0	526.0	439.6	487.3	384.4	492.9	449.5
20	542.2	529.3	447.8	391.9	391.6	497.1	453.8
21	546.9	534.7	459.5	450.7	396.8	504.1	458.6
22	550.0	540.9	472.3	381.1	403.4	510.8	463.5
23	555.2	548.2	485.5	413.2	409.7	516.9	469.2
24	561.4	555.1	496.7	440.3	414.1	521.2	474.5
25	566.2	560.0	504.8	511.1	418.1	522.7	476.7
26	570.7	565.6	511.5	502.5	419.7	526.5	481.1
27	574.8	570.3	519.2	510.8	422.1	530.6	483.1
28	580.5	575.0	524.4	516.8	425.5	533.6	487.1
29	586.5	583.4	530.4	443.4	430.3	540.1	492.8
30	592.0	591.1	537.0	533.1	435.6	544.9	498.2
31	594.9	595.4	542.9	463.4	444.2	548.8	502.9
32	599.8	598.7	547.2	409.1	447.7	553.7	508.2
33	604.8	601.7	548.3	387.1	449.9	555.9	510.7
34	610.0	607.1	552.0	361.3	452.0	558.4	514.5

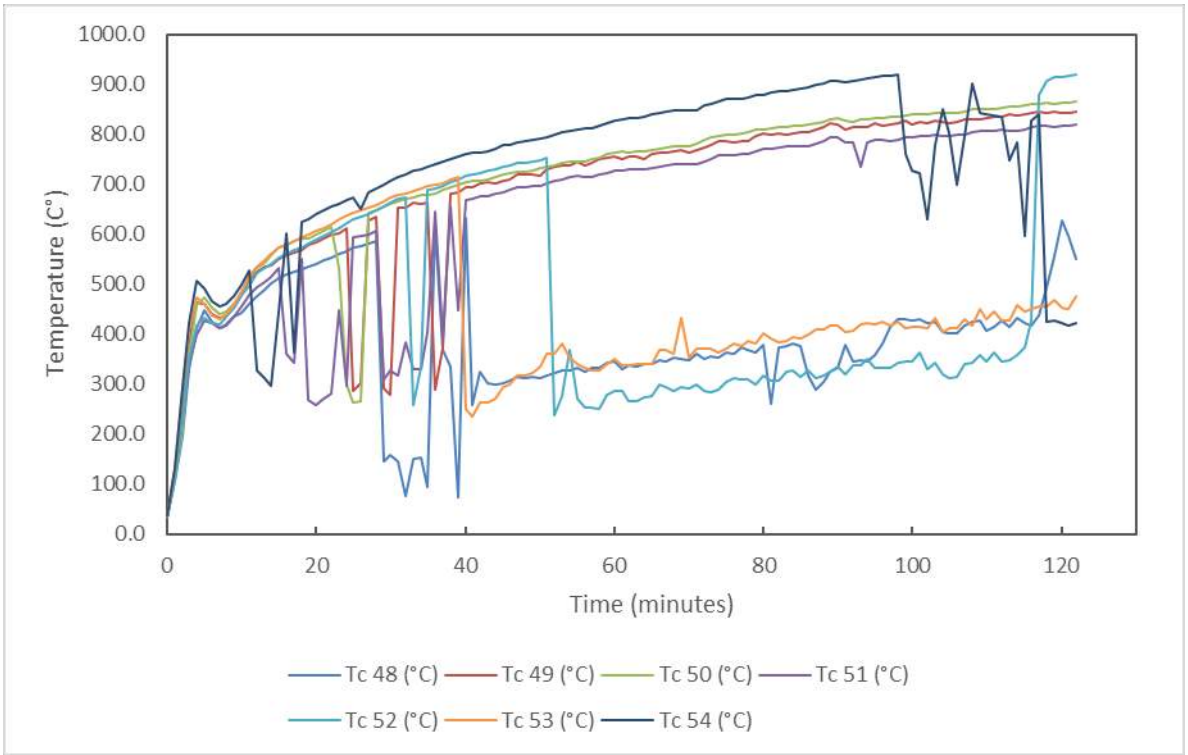
Time (mins)	Tc 41 (°C)	Tc 42 (°C)	Tc 43 (°C)	Tc 44 (°C)	Tc 45 (°C)	Tc 46 (°C)	Tc 47 (°C)
35	585.9	611.0	554.8	332.4	456.2	564.0	517.4
36	592.8	614.8	560.4	299.3	457.9	564.9	519.2
37	552.0	621.4	564.2	250.1	461.4	570.3	519.8
38	626.9	626.8	569.8	261.1	462.4	576.1	521.3
39	543.3	634.0	576.2	275.7	465.8	580.6	525.4
40	537.6	640.0	583.3	414.3	469.3	583.8	527.4
41	568.2	645.0	586.9	349.5	474.3	587.6	530.1
42	562.6	647.3	588.2	341.8	475.6	589.7	532.1
43	402.7	650.5	590.1	346.4	400.1	591.3	534.8
44	233.3	653.9	595.6	359.7	354.6	594.9	536.8
45	306.2	659.5	600.5	581.6	277.6	598.7	541.2
46	231.5	664.4	606.9	583.2	483.5	600.4	544.3
47	226.5	666.8	609.3	515.3	487.2	603.2	546.3
48	241.9	669.6	611.7	586.2	489.8	605.3	547.6
49	270.1	672.7	614.1	587.3	491.2	607.6	548.2
50	667.9	677.1	617.6	586.4	493.2	610.9	549.8
51	608.1	440.3	622.5	589.7	496.4	614.4	551.9
52	677.1	348.1	627.0	595.5	500.1	619.0	556.5
53	673.3	342.2	633.0	595.5	503.2	622.0	559.4
54	685.3	329.5	637.9	580.2	505.4	624.8	562.0
55	685.8	310.2	641.5	550.0	504.9	624.4	561.8
56	687.3	313.7	644.2	435.9	506.3	622.2	540.9
57	688.9	309.5	647.5	386.9	506.9	624.5	563.7
58	663.1	340.1	651.6	370.3	233.7	629.3	567.2

Time (mins)	Tc 41 (°C)	Tc 42 (°C)	Tc 43 (°C)	Tc 44 (°C)	Tc 45 (°C)	Tc 46 (°C)	Tc 47 (°C)
59	660.9	352.8	658.7	365.0	233.8	632.7	516.2
60	695.6	381.9	663.3	340.2	235.8	635.9	567.6
61	262.7	477.8	669.1	331.6	259.3	638.1	548.8
62	677.9	713.8	669.8	328.6	523.0	639.7	294.5
63	682.1	715.5	671.8	327.5	524.4	641.1	271.7
64	694.7	717.1	674.4	337.0	526.7	642.7	269.5
65	707.5	719.4	678.1	333.7	527.4	645.9	289.5
66	724.9	723.1	683.8	377.3	530.0	648.0	320.8
67	700.1	724.6	685.5	549.2	532.1	649.4	406.7
68	729.7	725.3	687.6	450.0	534.8	650.9	494.3
69	717.4	726.7	687.3	565.9	534.2	651.5	397.4
70	719.4	727.7	688.8	525.8	537.3	651.9	407.0
71	720.6	729.0	690.8	566.1	375.5	654.4	600.3
72	726.8	736.4	698.1	625.2	413.2	659.3	605.9
73	731.6	742.6	703.6	631.1	293.7	665.1	611.3
74	736.6	745.2	707.8	637.7	294.4	670.0	616.1
75	739.4	748.0	711.6	640.3	275.4	672.9	619.4
76	741.0	749.8	713.8	621.6	284.7	672.7	621.3
77	741.8	749.9	715.0	563.8	274.7	674.4	623.7
78	742.2	752.1	717.0	510.6	279.3	676.4	625.6
79	744.2	755.3	720.2	489.1	291.0	678.1	628.7
80	750.1	757.1	724.3	463.9	296.1	680.5	631.5
81	751.0	760.0	726.4	446.6	300.4	683.7	634.1
82	752.9	762.4	728.9	434.5	288.9	685.9	636.2

Time (mins)	Tc 41 (°C)	Tc 42 (°C)	Tc 43 (°C)	Tc 44 (°C)	Tc 45 (°C)	Tc 46 (°C)	Tc 47 (°C)
83	754.4	762.8	731.1	420.5	298.8	685.7	637.0
84	756.1	764.7	732.8	424.4	537.9	688.4	639.7
85	759.0	766.2	734.4	453.9	266.5	689.7	641.3
86	761.6	769.2	679.1	479.1	501.1	691.4	644.5
87	763.7	771.2	406.4	471.3	587.7	217.0	643.4
88	765.2	773.1	348.2	466.5	592.8	223.0	647.9
89	770.1	776.8	598.8	638.4	598.9	225.6	653.3
90	770.5	778.6	351.5	668.5	601.1	227.8	655.4
91	770.9	778.0	463.5	665.0	597.2	237.7	654.4
92	771.3	778.1	413.5	664.9	595.1	248.6	654.1
93	772.6	779.6	465.8	545.1	594.7	700.1	654.4
94	774.6	781.1	316.9	510.9	595.3	700.8	652.9
95	775.8	782.2	296.6	542.3	597.4	702.0	654.5
96	776.0	783.0	289.7	610.1	596.8	638.0	655.1
97	778.9	785.3	281.1	667.7	597.6	687.9	657.0
98	778.9	785.8	335.0	669.7	597.8	683.0	659.3
99	782.5	787.1	282.1	671.4	599.1	709.4	663.9
100	783.2	788.0	278.2	671.3	600.3	710.2	664.3
101	785.3	789.7	300.4	674.8	601.4	710.9	666.8
102	787.1	791.3	255.4	676.5	603.0	712.6	668.7
103	788.9	793.1	264.5	677.0	604.0	713.5	232.1
104	789.8	793.7	258.4	675.9	605.0	713.7	232.1
105	789.5	793.6	260.4	676.5	602.4	713.8	233.8
106	790.6	794.8	257.5	677.0	598.9	714.0	232.1

Time (mins)	Tc 41 (°C)	Tc 42 (°C)	Tc 43 (°C)	Tc 44 (°C)	Tc 45 (°C)	Tc 46 (°C)	Tc 47 (°C)
107	792.2	796.8	261.6	677.3	597.8	715.4	233.5
108	793.2	798.6	255.6	679.6	600.0	714.6	231.1
109	795.8	800.8	263.5	682.1	601.2	717.2	232.1
110	797.7	802.2	254.8	683.7	603.5	719.6	231.5
111	799.9	802.9	297.4	683.2	605.2	720.7	230.6
112	800.2	803.9	293.0	684.8	607.3	719.5	230.8
113	802.3	804.9	311.0	682.5	605.4	722.0	236.1
114	804.0	806.0	306.4	683.1	605.2	722.9	233.7
115	804.8	808.9	329.4	685.1	606.6	724.0	240.8
116	808.7	811.5	319.6	687.2	608.8	725.1	230.7
117	809.7	813.5	322.2	688.8	608.9	724.4	232.9
118	810.7	814.5	581.4	691.3	610.6	723.8	242.2
119	811.7	814.9	506.1	690.4	610.0	724.3	233.2
120	813.1	816.4	754.7	690.3	613.5	725.6	236.5
121	814.6	817.4	782.6	691.2	613.2	728.1	241.2
122	818.1	820.7	786.6	692.8	617.8	705.8	244.2

Graph showing individual temperatures recorded at the Panel B location



Individual temperatures recorded at the Panel B location

Time (mins)	Tc 48 (°C)	Tc 49 (°C)	Tc 50 (°C)	Tc 51 (°C)	Tc 52 (°C)	Tc 53 (°C)	Tc 54 (°C)
0	35.8	35.5	33.9	33.5	35.4	36.8	37.7
1	107.7	121.7	109.3	118.5	109.0	132.9	131.7
2	196.2	250.5	209.8	234.4	234.3	290.5	295.1
3	330.8	382.8	361.9	337.4	350.9	408.4	421.7
4	412.7	464.2	458.2	400.4	416.3	472.9	507.6
5	447.2	459.7	474.2	428.0	431.2	459.8	492.2
6	424.4	439.8	453.7	421.0	421.6	438.4	465.5
7	412.0	431.3	439.2	412.3	420.3	430.4	455.4
8	417.8	438.6	444.2	420.4	433.8	438.9	460.9
9	434.1	452.9	460.4	435.5	454.1	458.4	477.1

Time (mins)	Tc 48 (°C)	Tc 49 (°C)	Tc 50 (°C)	Tc 51 (°C)	Tc 52 (°C)	Tc 53 (°C)	Tc 54 (°C)
10	442.1	478.9	484.7	455.7	479.1	485.0	499.7
11	459.7	509.3	512.8	479.4	497.0	516.3	526.5
12	476.1	524.8	532.2	494.1	522.2	535.7	327.4
13	488.5	535.4	543.4	503.0	533.3	548.9	312.9
14	501.1	538.3	557.6	514.7	540.8	561.5	296.7
15	512.8	551.1	572.2	532.1	552.5	573.3	445.8
16	520.5	558.5	579.4	360.7	559.7	578.0	601.7
17	525.1	562.0	585.7	342.6	567.1	587.2	363.6
18	530.1	569.0	591.7	550.4	574.6	594.4	623.6
19	535.6	577.5	592.6	267.4	580.9	598.8	630.9
20	541.0	583.3	599.3	258.7	588.8	606.7	640.8
21	547.9	590.4	607.1	272.2	596.9	612.8	648.8
22	553.1	598.0	615.3	282.2	604.6	618.5	654.6
23	559.4	601.5	532.2	446.9	612.7	628.9	661.6
24	566.1	612.4	300.1	295.9	621.5	636.5	668.5
25	573.3	286.4	263.2	593.1	630.0	643.4	673.5
26	577.1	300.9	267.0	597.0	634.7	647.1	650.1
27	580.1	627.2	642.7	600.1	640.3	653.2	684.1
28	586.3	635.5	647.9	605.7	648.7	657.5	691.3
29	146.7	290.6	654.2	310.3	654.4	665.0	699.0
30	159.5	278.4	660.1	328.1	662.3	672.6	706.9
31	146.2	652.4	666.0	316.3	669.8	677.4	714.4
32	75.5	652.9	670.9	382.8	674.4	681.0	720.7
33	150.6	662.2	673.8	329.8	257.2	686.4	727.2

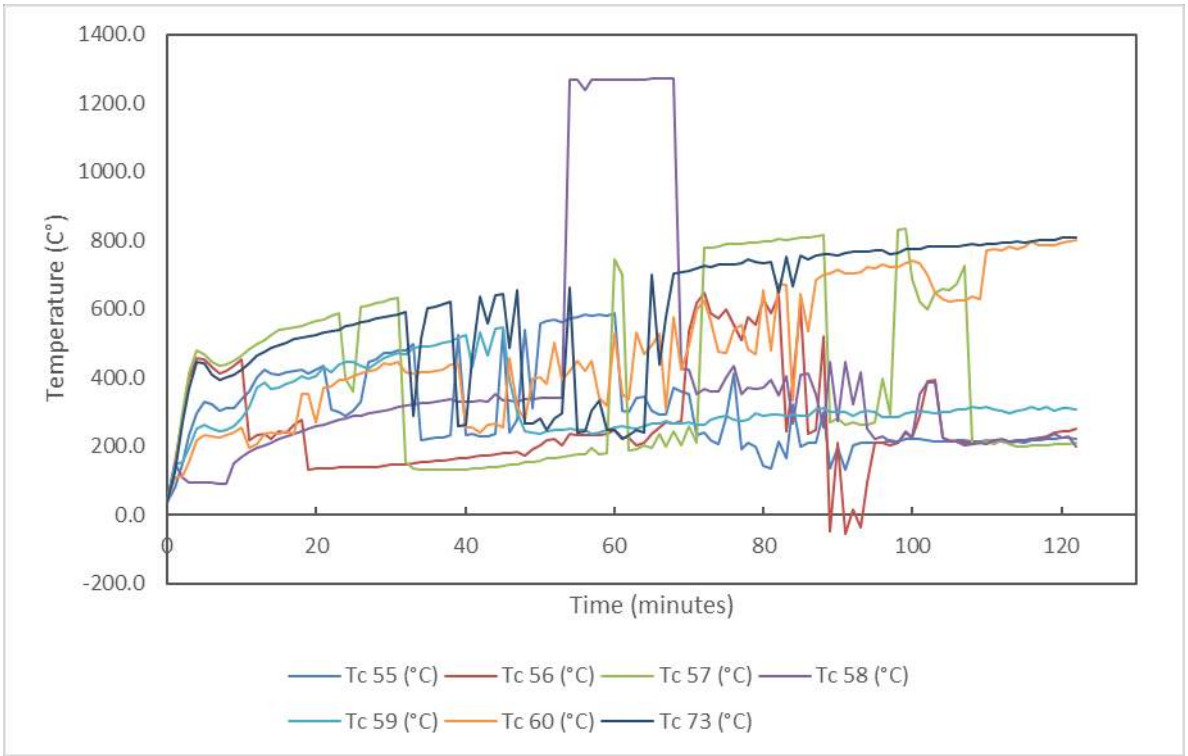
Time (mins)	Tc 48 (°C)	Tc 49 (°C)	Tc 50 (°C)	Tc 51 (°C)	Tc 52 (°C)	Tc 53 (°C)	Tc 54 (°C)
34	153.2	661.8	678.3	330.6	336.1	691.3	730.6
35	95.0	662.8	679.6	403.3	688.6	695.3	734.4
36	616.3	288.7	681.9	646.3	691.6	697.9	739.1
37	367.9	373.8	687.8	392.6	696.8	702.7	744.4
38	335.7	679.8	693.7	656.1	704.0	708.1	750.0
39	72.4	684.7	699.5	448.8	710.2	713.6	754.7
40	632.8	694.7	704.3	668.2	716.0	251.6	759.8
41	257.1	694.5	705.8	671.5	719.5	236.3	761.8
42	324.5	702.2	706.7	676.2	722.5	264.0	763.8
43	302.7	703.7	708.9	676.8	726.1	263.1	766.2
44	299.1	702.8	714.1	680.1	729.1	270.8	771.8
45	300.8	707.3	720.0	683.9	733.6	293.5	777.8
46	307.3	710.0	721.1	687.5	736.9	300.3	779.6
47	313.3	718.3	723.6	694.0	741.8	317.1	784.1
48	311.4	718.8	725.6	695.0	743.3	317.6	787.0
49	314.5	719.1	727.9	695.5	746.0	321.4	789.3
50	310.9	717.0	731.9	695.8	747.0	335.1	790.0
51	315.9	729.2	735.3	701.9	752.1	360.0	794.4
52	321.2	735.1	738.1	707.3	237.3	361.5	799.7
53	326.8	736.6	743.1	709.7	276.0	382.1	804.9
54	328.2	738.4	744.3	713.3	368.9	353.3	806.8
55	332.5	744.4	744.7	716.9	271.1	341.0	808.8
56	324.4	738.2	746.2	714.3	253.4	331.9	810.5
57	331.6	741.3	749.2	713.8	254.0	328.6	812.5

Time (mins)	Tc 48 (°C)	Tc 49 (°C)	Tc 50 (°C)	Tc 51 (°C)	Tc 52 (°C)	Tc 53 (°C)	Tc 54 (°C)
58	332.7	749.1	754.0	718.9	251.0	327.7	817.8
59	342.8	752.1	759.2	722.8	277.6	340.2	822.0
60	345.3	755.1	762.1	728.1	286.6	349.9	826.8
61	330.0	750.8	765.0	727.3	286.1	337.4	830.5
62	336.9	756.3	763.5	730.3	266.3	336.4	832.3
63	336.2	756.2	765.0	729.7	266.8	339.0	833.1
64	339.4	751.3	765.6	728.6	274.1	341.1	834.4
65	340.7	761.2	769.1	732.6	276.8	340.8	839.0
66	347.7	763.1	771.2	735.2	298.1	369.1	842.9
67	346.0	763.3	774.0	737.9	294.7	367.4	844.6
68	353.2	765.1	776.7	740.5	287.3	361.5	846.5
69	349.9	767.1	775.6	739.8	294.6	433.6	846.4
70	348.9	762.4	776.7	739.3	292.6	352.9	847.3
71	359.4	769.3	780.8	740.1	298.7	371.8	848.6
72	350.7	774.3	789.6	744.8	287.1	369.8	856.6
73	354.8	778.7	793.6	751.2	283.3	371.3	861.5
74	352.6	787.1	796.9	756.8	288.4	363.0	866.8
75	363.6	786.8	799.5	758.5	304.1	370.1	870.5
76	360.5	784.1	800.0	758.4	310.8	381.8	870.5
77	372.8	787.1	802.1	759.5	309.8	374.9	871.1
78	369.3	785.9	804.6	760.2	310.6	385.5	874.1
79	362.8	795.2	808.1	765.5	298.2	380.3	879.0
80	377.5	801.5	809.6	770.8	317.5	400.9	879.2
81	260.1	798.8	812.6	771.5	307.3	392.5	884.1

Time (mins)	Tc 48 (°C)	Tc 49 (°C)	Tc 50 (°C)	Tc 51 (°C)	Tc 52 (°C)	Tc 53 (°C)	Tc 54 (°C)
82	372.7	801.7	814.5	774.2	306.3	383.5	886.2
83	377.3	797.7	815.4	774.9	325.0	385.7	885.7
84	380.5	801.9	815.7	774.9	327.0	393.4	887.6
85	374.9	804.1	816.5	775.5	314.9	390.4	890.5
86	315.9	804.1	819.1	777.0	327.9	399.9	894.1
87	288.5	809.4	821.7	782.0	311.2	410.5	897.9
88	303.4	815.5	825.2	787.0	317.8	408.5	901.1
89	324.7	822.3	829.7	793.5	323.6	417.0	906.9
90	331.5	820.3	831.2	794.2	336.2	417.5	907.8
91	378.3	809.4	826.4	784.3	320.3	403.0	904.6
92	344.9	813.4	825.8	783.9	338.3	407.9	907.3
93	348.2	815.6	828.8	736.1	338.1	418.7	908.6
94	344.3	813.8	829.2	783.0	349.9	421.5	912.1
95	358.6	821.5	832.4	788.0	332.6	418.9	913.6
96	382.1	816.1	832.8	787.4	331.5	425.7	917.6
97	414.9	818.6	833.9	784.9	331.4	417.2	918.0
98	431.2	822.4	834.0	789.3	341.8	424.6	920.3
99	429.1	826.0	837.8	793.5	344.3	412.5	760.6
100	426.4	820.4	839.9	793.6	345.1	415.7	726.7
101	429.5	824.4	840.2	796.5	362.1	415.4	722.8
102	421.4	821.8	840.2	796.7	329.3	412.9	630.0
103	423.7	827.3	841.7	798.1	343.3	431.2	777.7
104	403.6	823.6	842.5	797.4	320.2	403.2	849.9
105	402.1	823.1	842.1	797.0	312.5	410.9	801.3

Time (mins)	Tc 48 (°C)	Tc 49 (°C)	Tc 50 (°C)	Tc 51 (°C)	Tc 52 (°C)	Tc 53 (°C)	Tc 54 (°C)
106	401.7	823.6	843.3	797.8	314.6	411.7	699.4
107	417.7	828.9	846.2	800.0	340.2	429.4	796.4
108	426.0	829.9	849.1	803.9	342.9	416.9	902.4
109	428.3	830.6	850.6	805.5	359.2	451.0	841.8
110	406.7	831.5	851.0	807.9	344.7	430.4	840.0
111	415.1	836.0	851.4	807.7	363.9	446.4	836.2
112	426.7	835.5	852.0	808.6	344.6	427.9	833.9
113	414.9	839.1	854.2	806.4	346.9	426.1	747.9
114	432.7	836.4	854.8	807.3	358.4	458.5	784.1
115	422.7	839.9	858.1	810.4	374.1	444.4	595.4
116	417.0	842.3	860.8	815.0	427.2	451.3	828.2
117	438.7	845.7	861.1	816.1	879.4	454.3	840.8
118	495.2	842.9	863.2	817.5	906.3	456.2	425.0
119	555.7	844.3	861.3	813.4	913.3	468.7	428.2
120	627.3	841.9	861.8	817.0	914.2	453.2	422.9
121	595.9	843.4	862.2	816.8	916.7	449.8	418.0
122	550.0	845.8	864.4	820.0	920.3	475.8	423.4

Graph showing individual temperatures recorded at the Panel C location



Individual temperatures recorded at the Panel C location

Time (mins)	Tc 55 (°C)	Tc 56 (°C)	Tc 57 (°C)	Tc 58 (°C)	Tc 59 (°C)	Tc 60 (°C)	Tc 73 (°C)
0	36.0	39.2	38.3	38.9	40.2	39.5	36.1
1	77.8	149.2	134.1	150.9	145.6	110.3	124.2
2	150.6	288.8	300.6	110.5	154.2	112.1	269.1
3	233.4	398.5	410.9	92.2	196.5	154.6	365.2
4	297.2	455.9	479.3	95.7	251.2	218.1	444.4
5	329.4	451.8	466.5	94.7	260.7	233.7	442.0
6	320.2	431.2	444.1	93.2	251.2	228.4	406.2
7	303.9	411.9	434.9	91.1	243.6	225.1	393.8
8	309.9	418.1	437.9	91.2	249.0	231.2	400.0
9	308.9	435.0	450.8	150.7	259.5	240.0	409.3
10	335.3	453.5	464.2	170.2	281.5	253.8	424.4

Time (mins)	Tc 55 (°C)	Tc 56 (°C)	Tc 57 (°C)	Tc 58 (°C)	Tc 59 (°C)	Tc 60 (°C)	Tc 73 (°C)
11	358.7	216.2	482.6	184.2	312.8	193.4	443.3
12	398.8	231.6	497.5	193.0	371.6	206.6	463.9
13	424.7	236.2	509.2	201.6	385.0	236.8	476.8
14	413.2	222.3	524.0	210.6	365.1	241.5	486.3
15	408.5	243.2	537.2	220.7	372.1	236.2	493.9
16	415.4	239.5	541.2	228.7	382.4	244.2	503.1
17	419.3	263.0	546.7	236.6	388.8	236.6	512.7
18	423.6	276.9	550.7	243.2	404.7	351.0	517.5
19	413.2	132.5	559.1	249.8	398.5	352.5	520.5
20	422.2	134.4	566.2	257.2	405.3	268.6	524.2
21	435.6	134.6	570.4	262.4	430.1	368.9	530.0
22	306.5	135.9	578.6	270.6	416.1	375.9	533.7
23	299.1	137.5	585.6	277.4	436.8	391.8	540.4
24	289.7	138.0	398.3	281.6	443.4	392.2	548.5
25	304.7	138.1	357.7	288.3	444.8	404.6	555.4
26	329.5	138.3	605.0	289.3	434.8	412.0	561.8
27	444.8	139.5	609.2	295.3	425.8	419.8	563.6
28	454.6	140.5	615.7	299.9	442.5	424.7	570.8
29	470.8	142.2	620.8	302.3	456.1	440.4	575.8
30	472.4	144.6	627.6	307.3	465.6	438.4	581.1
31	478.0	146.8	631.0	314.8	473.2	444.8	585.3
32	479.8	146.7	152.7	317.6	467.2	414.8	590.1
33	495.9	149.9	134.2	321.9	486.6	411.7	288.0
34	216.5	152.3	132.4	326.1	490.8	415.3	513.7

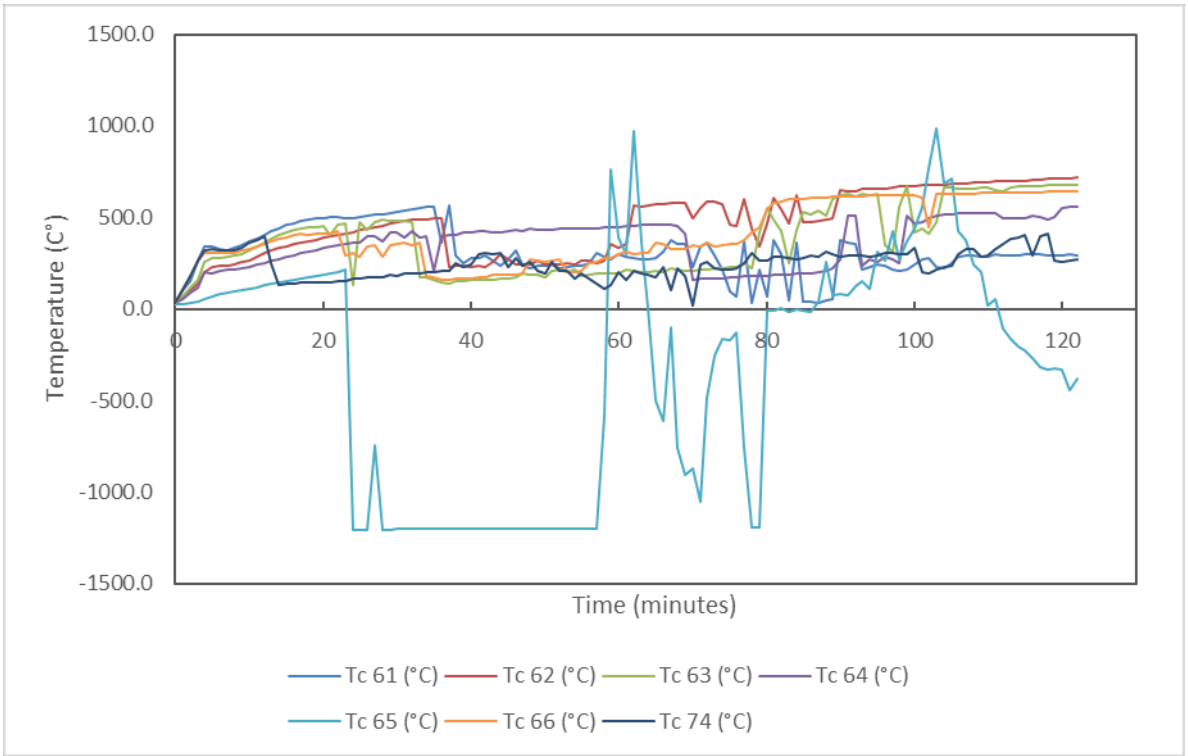
Time (mins)	Tc 55 (°C)	Tc 56 (°C)	Tc 57 (°C)	Tc 58 (°C)	Tc 59 (°C)	Tc 60 (°C)	Tc 73 (°C)
35	220.2	154.4	132.0	325.8	489.9	416.2	603.4
36	224.6	156.3	131.7	327.7	493.9	417.7	607.1
37	225.2	158.7	131.5	331.8	499.9	421.5	613.8
38	232.9	160.6	131.6	336.4	505.3	436.0	620.8
39	524.3	163.3	132.1	327.9	516.3	440.9	258.6
40	232.0	165.5	132.7	329.7	522.7	255.3	260.8
41	235.4	168.0	134.0	329.4	429.0	253.0	464.7
42	228.6	171.8	135.2	332.1	530.3	241.2	637.3
43	228.5	173.6	137.0	329.8	465.4	262.4	555.9
44	235.8	174.8	138.9	350.6	543.0	266.0	639.4
45	539.2	179.2	143.1	333.8	545.0	253.5	644.2
46	238.3	178.7	148.1	334.0	391.9	455.5	486.8
47	275.5	182.5	147.1	328.3	298.2	315.4	653.4
48	538.9	174.0	152.1	335.5	243.7	278.3	266.5
49	312.5	192.7	155.2	338.1	240.6	396.4	266.2
50	558.8	203.9	158.8	339.0	236.0	402.0	282.4
51	566.6	218.6	165.6	341.9	242.3	380.5	247.2
52	569.1	220.2	165.0	342.3	246.4	500.6	281.1
53	559.5	203.4	170.0	339.4	247.8	394.1	293.9
54	572.5	235.7	172.6	1267.5	252.2	419.3	661.9
55	574.3	234.1	175.7	1267.6	247.2	448.8	239.4
56	583.8	232.2	174.8	1238.0	245.7	420.5	244.7
57	579.6	234.0	195.4	1268.1	236.6	448.3	304.2
58	583.6	232.0	177.3	1268.2	240.8	340.0	331.4

Time (mins)	Tc 55 (°C)	Tc 56 (°C)	Tc 57 (°C)	Tc 58 (°C)	Tc 59 (°C)	Tc 60 (°C)	Tc 73 (°C)
59	578.1	235.1	181.4	1268.4	246.8	318.3	247.2
60	588.7	246.2	745.8	1268.7	254.3	527.7	245.5
61	305.1	225.3	699.4	1268.9	259.6	352.0	219.2
62	300.1	224.9	188.0	1268.9	256.5	335.2	231.3
63	342.0	203.6	190.9	1269.1	250.9	530.2	249.0
64	345.6	209.4	203.7	1269.3	258.9	469.1	239.3
65	302.9	236.9	194.5	1269.5	265.8	495.7	699.8
66	291.8	253.3	235.0	1269.8	264.1	528.8	436.3
67	293.2	269.1	198.5	1269.9	273.5	305.5	577.9
68	372.2	264.7	242.7	1270.0	267.1	576.2	702.4
69	358.5	273.0	203.1	426.3	264.3	422.4	708.2
70	350.0	534.1	259.7	422.6	270.7	492.7	710.7
71	231.4	616.5	209.3	353.4	261.9	600.0	717.3
72	238.1	646.5	776.4	365.8	263.9	625.8	726.9
73	217.5	585.6	779.5	360.2	275.4	564.2	722.3
74	206.0	573.1	782.8	357.7	286.1	475.6	728.0
75	283.4	596.7	787.3	399.9	286.6	471.8	729.9
76	411.5	552.4	787.9	432.3	277.5	540.3	730.2
77	190.8	509.6	787.6	353.3	272.9	552.8	732.5
78	210.5	576.9	792.4	369.1	276.7	480.9	743.7
79	199.5	554.9	792.4	365.1	296.1	469.1	737.8
80	141.4	629.3	795.7	371.4	289.1	654.5	734.6
81	133.8	586.7	798.2	393.9	290.9	478.5	738.1
82	212.2	639.1	803.2	349.0	293.8	672.6	645.3

Time (mins)	Tc 55 (°C)	Tc 56 (°C)	Tc 57 (°C)	Tc 58 (°C)	Tc 59 (°C)	Tc 60 (°C)	Tc 73 (°C)
83	166.7	244.3	801.4	404.0	287.8	668.3	750.5
84	321.9	386.2	803.0	264.3	291.8	331.9	666.5
85	197.4	610.1	806.6	409.6	288.7	645.1	756.2
86	209.8	237.8	807.8	411.3	290.0	535.7	745.5
87	210.3	246.5	809.8	350.1	305.9	682.6	757.1
88	297.7	518.5	813.5	255.0	309.0	699.8	758.8
89	136.6	-48.1	268.1	445.0	300.4	704.2	757.8
90	193.0	210.0	279.8	274.0	301.0	714.6	755.0
91	132.8	-53.8	261.1	446.3	299.2	702.0	764.4
92	202.4	16.2	270.1	323.8	288.5	702.6	764.8
93	208.7	-37.4	263.8	414.7	299.9	705.4	765.0
94	210.1	95.4	262.8	250.0	302.4	721.2	764.8
95	208.0	208.7	269.4	220.1	298.3	717.3	769.3
96	211.7	210.6	396.0	229.6	283.4	729.2	770.0
97	216.6	202.3	290.2	212.6	286.4	721.8	760.0
98	212.5	209.1	830.5	211.3	283.1	720.1	762.3
99	219.6	238.2	832.9	243.4	296.4	734.4	773.9
100	221.8	222.9	688.8	225.0	300.6	739.7	774.4
101	219.5	289.1	621.0	352.9	302.2	733.1	774.5
102	217.9	389.8	598.1	383.6	301.2	701.2	780.2
103	215.3	393.5	645.3	384.1	295.6	648.2	780.1
104	215.0	224.2	657.8	225.4	298.6	629.7	781.8
105	213.9	217.9	653.3	215.1	300.5	622.5	781.5
106	216.8	213.4	671.9	214.6	306.1	623.7	783.0

Time (mins)	Tc 55 (°C)	Tc 56 (°C)	Tc 57 (°C)	Tc 58 (°C)	Tc 59 (°C)	Tc 60 (°C)	Tc 73 (°C)
107	215.7	211.3	726.5	204.1	306.1	625.9	784.8
108	214.4	210.9	205.3	204.9	314.5	634.7	787.5
109	214.9	211.3	208.6	210.3	310.2	629.2	787.1
110	215.9	211.8	213.0	205.8	313.3	769.5	788.9
111	214.3	216.3	206.9	216.9	307.8	772.5	789.7
112	213.5	216.8	217.3	219.3	304.3	771.3	791.8
113	211.3	215.2	205.2	215.2	297.0	781.7	794.4
114	212.4	217.6	199.0	218.0	302.7	772.9	795.3
115	211.6	218.7	200.3	216.8	308.1	782.0	794.6
116	215.5	222.2	201.3	220.7	314.6	796.4	798.2
117	216.2	224.2	203.6	222.1	305.8	786.4	801.2
118	219.8	229.9	203.7	225.5	312.9	785.0	802.1
119	221.0	238.0	205.5	235.3	301.4	787.1	802.1
120	222.9	242.8	207.0	226.1	311.3	793.4	806.4
121	223.1	242.4	206.5	227.9	309.3	795.7	807.1
122	221.9	249.6	209.7	199.0	306.8	800.0	807.6

Graph showing individual temperatures recorded at the Panel Cc location



Individual temperatures recorded at the Panel Cc location

Time (mins)	Tc 61 (°C)	Tc 62 (°C)	Tc 63 (°C)	Tc 64 (°C)	Tc 65 (°C)	Tc 66 (°C)	Tc 74 (°C)
0	33.3	28.9	31.5	30.0	23.6	25.6	32.2
1	102.1	64.1	70.0	52.1	25.2	106.2	104.7
2	148.9	101.2	115.1	91.4	31.9	178.6	177.0
3	264.5	136.2	155.3	113.6	42.1	262.6	263.4
4	337.3	201.8	253.1	203.7	56.4	304.8	321.5
5	338.5	226.6	279.1	194.3	69.4	306.5	329.5
6	327.4	232.9	280.9	207.2	80.0	302.8	319.3
7	323.0	235.6	284.1	212.1	88.2	304.0	316.2
8	331.5	242.0	289.2	216.8	95.4	308.8	321.6
9	346.5	253.5	300.3	223.0	102.8	317.3	336.4
10	365.9	266.8	317.3	231.1	110.8	329.2	358.7

Time (mins)	Tc 61 (°C)	Tc 62 (°C)	Tc 63 (°C)	Tc 64 (°C)	Tc 65 (°C)	Tc 66 (°C)	Tc 74 (°C)
11	385.3	283.2	339.5	241.7	119.4	342.8	376.1
12	405.7	303.6	362.3	252.9	129.2	356.0	398.5
13	421.8	317.4	382.9	262.9	138.1	366.3	250.0
14	438.0	330.4	403.9	272.0	144.7	379.6	131.3
15	456.9	343.0	420.9	282.0	151.2	390.6	135.6
16	469.0	351.8	432.9	293.9	158.6	400.2	137.8
17	479.4	362.8	437.8	305.3	165.9	411.0	140.9
18	484.5	370.3	443.0	313.5	171.5	401.1	141.3
19	491.8	378.8	446.6	323.0	178.5	408.2	143.1
20	494.6	387.5	451.4	332.7	187.2	411.3	145.8
21	499.4	393.8	406.8	341.3	194.8	411.5	147.7
22	501.9	403.5	457.1	349.7	203.7	427.9	151.4
23	497.4	411.8	463.4	355.9	211.0	289.9	153.8
24	497.5	420.4	133.1	360.4	-1205.2	309.0	162.6
25	503.4	429.9	475.7	363.6	-1205.1	281.4	166.6
26	508.5	438.5	434.8	396.1	-1205.0	342.0	169.2
27	512.7	447.4	474.5	399.3	-743.6	348.8	173.0
28	518.1	455.6	487.8	371.3	-1204.8	282.2	175.9
29	525.5	464.4	479.5	415.8	-1204.7	346.8	184.1
30	530.0	471.7	483.3	417.6	-1204.5	353.3	179.9
31	536.6	478.8	480.4	388.0	-1204.4	364.0	190.3
32	544.5	485.2	476.4	425.9	-1204.2	350.5	190.2
33	550.9	487.4	170.0	387.6	-1204.1	359.5	193.7
34	556.3	489.7	171.2	394.9	-1204.0	178.5	198.4

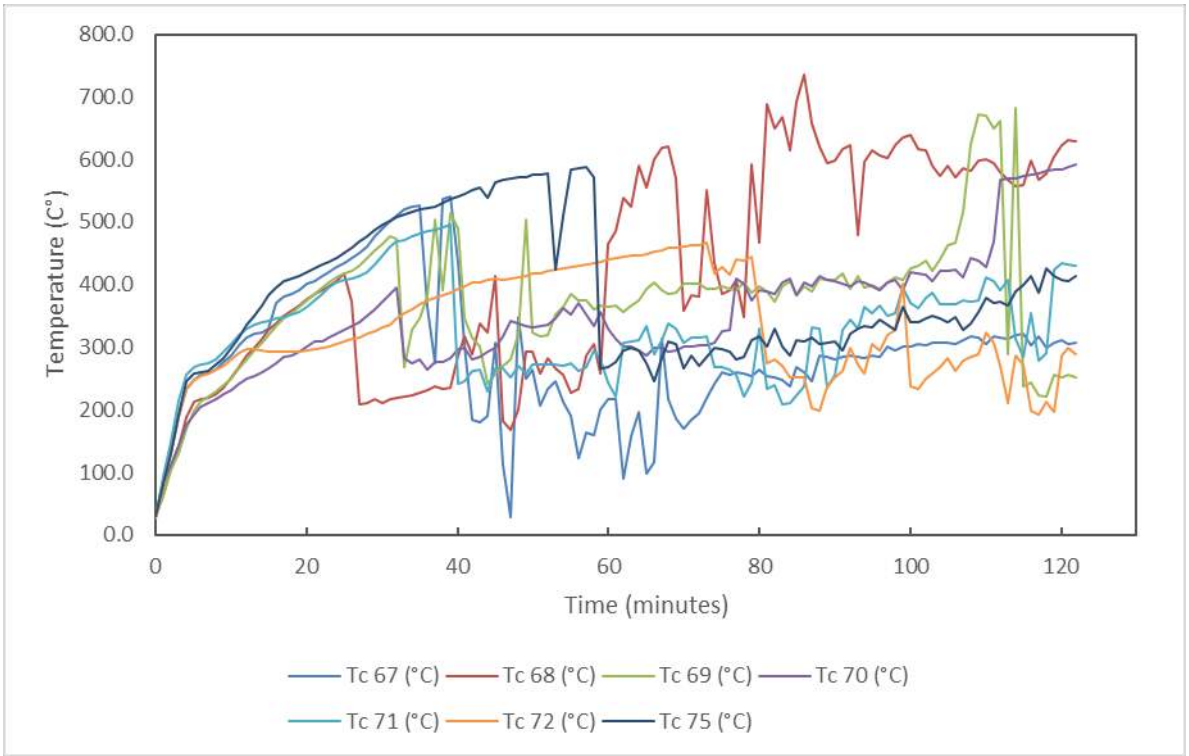
Time (mins)	Tc 61 (°C)	Tc 62 (°C)	Tc 63 (°C)	Tc 64 (°C)	Tc 65 (°C)	Tc 66 (°C)	Tc 74 (°C)
35	558.5	492.9	155.5	208.6	-1203.8	171.9	199.6
36	360.4	493.9	141.1	398.3	-1203.7	158.9	206.5
37	566.2	225.6	139.8	400.9	-1203.5	160.5	206.0
38	291.5	235.0	150.5	405.2	-1203.4	162.4	252.5
39	251.3	232.2	152.7	414.2	-1203.3	166.8	231.6
40	275.0	227.4	155.9	414.1	-1203.2	168.1	242.6
41	279.9	233.6	157.2	423.6	-1203.0	175.9	300.6
42	293.6	228.1	159.2	421.4	-1202.9	171.4	304.7
43	261.6	254.4	160.7	419.6	-1202.8	185.8	300.1
44	236.8	299.4	162.8	420.5	-1202.7	187.7	304.8
45	272.7	273.0	165.4	426.0	-1202.6	183.1	226.4
46	318.4	241.5	168.9	428.4	-1202.3	187.7	277.2
47	245.4	241.0	190.4	426.0	-1202.2	193.2	238.3
48	219.4	242.6	188.2	437.8	-1202.1	272.0	254.7
49	238.6	263.5	183.7	432.8	-1202.1	266.0	204.0
50	234.8	244.9	175.5	433.3	-1201.9	256.3	195.0
51	242.9	244.9	205.5	435.2	-1201.8	265.3	259.1
52	222.5	242.6	213.7	435.4	-1201.7	269.5	208.5
53	226.1	251.0	202.3	435.7	-1201.5	200.1	206.8
54	234.6	240.9	211.6	437.2	-1201.4	202.8	167.9
55	238.2	264.1	181.1	439.2	-1201.2	204.2	191.9
56	247.6	262.2	189.5	441.1	-1201.1	249.9	162.7
57	308.6	252.9	194.2	441.6	-1201.0	253.0	136.0
58	285.7	261.8	191.2	444.9	-585.6	277.3	108.8

Time (mins)	Tc 61 (°C)	Tc 62 (°C)	Tc 63 (°C)	Tc 64 (°C)	Tc 65 (°C)	Tc 66 (°C)	Tc 74 (°C)
59	272.0	357.5	193.8	446.6	762.6	276.6	130.9
60	297.7	332.2	195.7	448.4	387.0	300.3	199.0
61	283.9	355.1	214.1	450.5	299.2	311.5	158.9
62	274.8	566.8	210.8	455.1	970.3	298.2	209.8
63	273.3	560.6	203.1	456.8	364.7	306.8	193.4
64	268.5	564.7	200.1	457.1	6.5	303.9	186.5
65	275.4	569.2	204.3	459.2	-501.1	359.6	175.0
66	309.5	575.2	203.2	459.7	-613.1	357.3	229.5
67	378.5	581.1	224.8	462.6	-98.3	329.0	98.8
68	354.8	578.8	216.2	451.4	-760.7	329.9	221.5
69	356.3	578.1	208.6	408.4	-905.1	327.9	176.1
70	229.2	493.2	210.5	161.8	-872.8	345.5	17.0
71	338.7	551.3	211.5	163.2	-1057.3	342.8	241.2
72	363.2	586.6	217.1	164.1	-487.8	361.6	259.0
73	293.0	587.2	218.9	166.6	-254.7	339.0	220.0
74	211.9	568.6	223.5	167.5	-166.2	348.3	217.6
75	93.0	463.0	230.7	170.5	-172.5	357.5	213.2
76	66.5	452.9	226.3	172.1	-129.1	355.3	223.2
77	368.8	602.4	249.2	180.0	-761.3	373.1	250.9
78	35.0	438.4	223.4	176.1	-1197.6	417.8	304.9
79	212.5	340.1	416.6	178.1	-1197.4	449.1	265.1
80	68.8	466.2	552.1	180.6	-9.6	541.2	261.9
81	372.5	608.3	489.7	183.5	-9.2	575.5	286.1
82	299.6	546.0	424.1	185.2	2.3	588.4	282.3

Time (mins)	Tc 61 (°C)	Tc 62 (°C)	Tc 63 (°C)	Tc 64 (°C)	Tc 65 (°C)	Tc 66 (°C)	Tc 74 (°C)
83	44.0	463.4	249.9	186.3	-15.2	599.7	276.5
84	359.9	617.7	429.6	190.3	-4.1	600.4	272.9
85	40.5	471.3	533.2	192.7	-7.0	602.1	280.7
86	37.5	473.3	514.5	196.7	-16.1	604.5	291.5
87	34.5	477.5	535.0	203.6	39.6	608.8	286.9
88	46.9	484.7	510.8	206.1	253.9	605.7	309.4
89	51.7	493.4	599.5	220.2	73.9	611.1	301.2
90	373.6	650.1	623.8	269.1	82.5	612.2	286.4
91	358.8	640.1	630.0	510.2	73.8	610.9	289.4
92	354.6	640.0	612.9	511.2	120.3	614.3	292.1
93	211.2	654.8	629.3	234.5	148.3	616.1	288.0
94	226.4	656.3	624.1	271.8	112.7	619.3	287.0
95	240.7	656.5	626.8	257.7	316.0	621.3	294.4
96	234.8	657.6	350.4	284.4	262.3	621.4	302.3
97	214.7	664.0	316.0	272.5	423.1	622.4	307.0
98	210.2	667.2	555.0	249.5	269.9	622.6	298.5
99	217.5	669.9	667.6	511.3	369.8	623.3	298.1
100	242.0	671.9	419.8	466.8	435.7	621.7	334.7
101	268.1	673.4	439.4	473.0	561.3	608.3	202.0
102	274.1	678.4	409.6	495.7	766.8	448.2	190.1
103	227.4	679.9	475.0	511.2	986.9	625.5	211.9
104	222.0	680.1	664.6	515.5	682.3	625.3	226.2
105	251.3	681.9	661.1	518.5	708.6	629.3	238.2
106	285.7	683.9	656.0	520.9	425.3	628.9	295.4

Time (mins)	Tc 61 (°C)	Tc 62 (°C)	Tc 63 (°C)	Tc 64 (°C)	Tc 65 (°C)	Tc 66 (°C)	Tc 74 (°C)
107	291.6	685.2	657.4	522.5	379.1	629.6	324.7
108	293.1	688.7	659.3	523.1	243.2	630.2	329.1
109	286.3	690.0	660.9	522.7	199.5	632.4	287.9
110	284.7	692.6	661.9	523.9	-	634.3	289.9
111	295.1	695.3	652.1	522.7	-	632.7	327.0
112	288.2	696.4	644.5	491.9	-	631.4	354.2
113	292.2	698.3	664.5	492.1	-	632.4	384.2
114	294.6	699.8	667.2	493.5	-	631.6	387.1
115	297.0	701.3	669.0	493.6	-	632.9	401.6
116	298.6	705.9	671.5	506.5	-	634.6	293.0
117	298.0	708.2	672.4	505.1	-	636.3	397.6
118	292.0	710.0	674.9	485.8	-	639.0	409.8
119	293.5	710.3	673.6	498.9	-	638.6	263.8
120	295.0	711.9	675.7	552.4	-	639.5	255.6
121	297.0	714.4	677.9	555.1	-	639.5	261.3
122	294.9	718.0	678.6	556.8	-	640.8	272.0

Graph showing individual temperatures recorded at the Panel D location



Individual temperatures recorded at the Panel D location

Time (mins)	Tc 67 (°C)	Tc 68 (°C)	Tc 69 (°C)	Tc 70 (°C)	Tc 71 (°C)	Tc 72 (°C)	Tc 75 (°C)
0	30.9	30.1	31.1	28.8	28.1	26.1	31.0
1	87.9	63.1	63.6	82.7	93.7	78.6	81.0
2	133.3	108.7	104.3	112.1	149.4	129.7	130.8
3	189.6	141.7	130.4	143.6	215.3	187.3	191.3
4	232.8	187.4	169.2	175.9	256.4	232.3	244.5
5	247.8	212.3	197.4	192.7	267.7	247.5	257.9
6	254.9	216.1	212.9	204.1	271.4	253.2	259.5
7	257.8	219.2	220.8	210.3	273.7	257.1	262.4
8	264.7	225.2	228.5	217.3	280.5	263.8	271.4
9	275.5	236.0	238.3	224.7	291.8	270.9	282.8
10	286.6	250.9	249.9	231.7	304.2	279.6	297.9

Time (mins)	Tc 67 (°C)	Tc 68 (°C)	Tc 69 (°C)	Tc 70 (°C)	Tc 71 (°C)	Tc 72 (°C)	Tc 75 (°C)
11	302.4	268.8	265.4	240.5	318.5	290.4	316.0
12	314.8	287.1	279.9	248.8	330.0	296.8	334.7
13	320.7	299.2	294.3	254.6	334.9	295.8	349.3
14	323.5	314.1	306.6	259.6	339.2	294.1	366.9
15	329.3	327.7	320.1	266.8	341.9	291.8	382.9
16	371.2	338.8	333.6	274.4	346.4	293.1	395.3
17	380.8	349.1	345.1	284.4	349.0	292.8	406.1
18	385.9	357.8	354.1	287.4	351.6	291.7	410.1
19	391.6	366.2	364.3	292.7	357.1	292.3	414.1
20	400.8	376.4	375.5	301.0	364.9	294.0	419.2
21	405.9	385.8	385.2	308.6	374.6	296.2	425.8
22	413.0	391.4	395.9	309.3	384.1	298.0	431.2
23	418.9	397.6	402.6	314.4	395.6	301.8	436.7
24	428.6	404.9	412.1	322.0	402.7	305.1	442.7
25	433.9	418.0	416.8	327.0	406.5	309.8	450.5
26	442.0	373.2	422.8	333.3	409.1	312.8	458.8
27	450.8	209.4	430.1	340.4	413.5	315.7	468.6
28	461.5	210.2	442.0	349.2	420.4	320.4	477.7
29	477.4	217.5	454.6	360.2	431.2	325.1	487.4
30	490.2	211.3	465.6	372.7	447.4	331.0	496.3
31	502.2	217.7	476.2	384.6	459.8	336.6	501.6
32	510.7	218.7	473.3	395.3	468.4	345.4	507.5
33	520.0	221.0	268.4	283.4	471.7	353.6	511.6
34	524.1	222.6	326.7	273.8	476.4	360.5	516.2

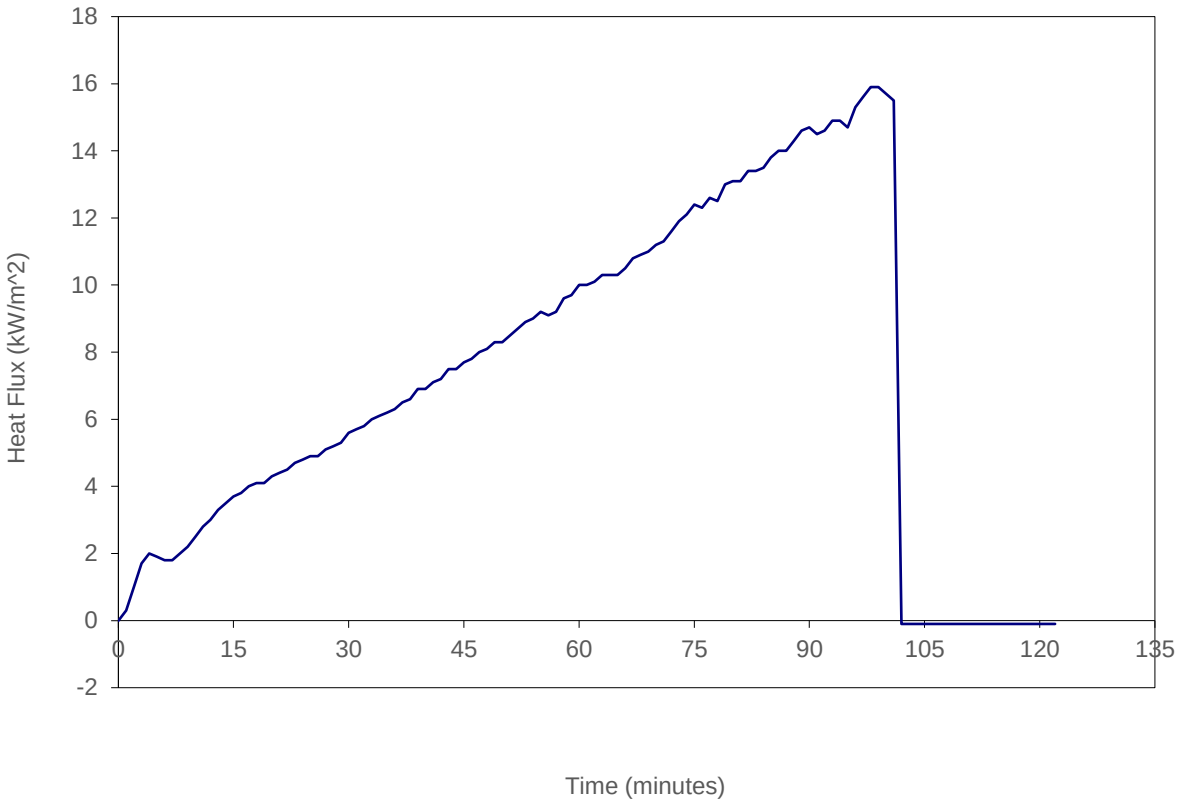
Time (mins)	Tc 67 (°C)	Tc 68 (°C)	Tc 69 (°C)	Tc 70 (°C)	Tc 71 (°C)	Tc 72 (°C)	Tc 75 (°C)
35	526.5	226.9	345.8	280.4	481.4	367.7	519.2
36	364.8	231.8	381.5	264.1	484.9	374.6	522.5
37	273.3	236.7	503.1	277.2	486.8	379.1	525.2
38	537.5	234.2	391.3	275.4	491.0	382.5	530.7
39	540.1	235.7	514.4	283.3	496.6	387.0	536.9
40	434.2	287.4	488.9	297.6	241.4	393.0	540.4
41	302.3	317.4	346.9	298.1	245.8	398.1	545.1
42	183.9	289.2	314.2	281.0	261.9	403.4	550.8
43	179.5	338.1	301.4	285.4	263.1	404.1	554.1
44	189.5	322.8	242.3	292.0	229.1	406.7	538.4
45	306.4	412.9	258.8	298.8	265.7	408.8	563.1
46	113.0	180.9	270.9	316.6	266.8	407.0	567.6
47	27.2	166.7	279.7	341.2	252.1	410.0	570.2
48	347.9	201.4	322.3	337.5	269.6	410.9	572.4
49	249.5	292.9	504.5	333.1	257.1	413.4	571.7
50	263.4	292.6	323.7	332.3	272.0	416.8	574.6
51	206.4	258.6	316.7	334.4	271.2	418.4	576.2
52	233.8	281.5	318.7	336.7	272.9	421.4	578.4
53	245.6	265.7	351.5	345.7	272.9	424.3	423.2
54	212.2	255.3	365.3	363.3	269.2	426.8	509.3
55	189.3	227.5	385.0	352.2	273.2	428.5	583.5
56	121.8	233.7	375.5	371.4	262.3	430.1	585.7
57	163.1	287.1	375.7	352.0	267.3	432.8	587.7
58	158.5	305.5	360.4	333.1	294.7	434.0	571.6

Time (mins)	Tc 67 (°C)	Tc 68 (°C)	Tc 69 (°C)	Tc 70 (°C)	Tc 71 (°C)	Tc 72 (°C)	Tc 75 (°C)
59	200.4	257.9	365.7	357.0	279.7	436.8	266.9
60	215.8	464.1	363.6	330.1	244.4	440.0	268.7
61	216.9	486.2	367.3	312.4	220.4	442.0	276.0
62	89.4	538.2	355.6	299.9	307.3	443.5	294.6
63	157.6	524.3	366.6	301.2	309.9	446.5	298.4
64	197.2	589.9	375.4	295.0	311.6	447.2	294.9
65	98.7	555.4	392.4	287.3	334.3	449.4	274.4
66	115.5	600.3	403.4	298.8	288.7	452.1	245.5
67	314.1	618.7	391.0	298.4	310.5	455.0	282.0
68	216.7	621.1	385.4	292.3	337.6	458.3	308.2
69	186.2	570.2	386.7	294.9	329.7	458.8	305.0
70	169.1	357.6	400.4	301.8	306.4	460.5	265.0
71	183.7	383.1	401.4	300.4	315.5	462.1	286.1
72	194.3	381.5	402.1	303.7	314.6	463.6	270.2
73	219.4	550.6	394.1	302.2	317.9	466.3	284.9
74	240.7	434.8	392.6	307.4	267.1	418.1	298.8
75	259.7	385.8	397.6	324.5	268.8	428.6	296.0
76	256.0	390.5	394.1	327.5	264.2	415.6	291.8
77	260.4	408.4	392.0	410.1	256.4	439.4	280.8
78	258.6	349.0	403.0	401.0	221.6	438.6	284.2
79	254.2	592.7	387.2	373.8	244.2	445.3	310.5
80	264.5	467.1	397.3	391.8	329.8	361.1	316.8
81	252.9	688.7	389.0	389.3	232.3	274.2	301.7
82	251.0	650.1	372.4	385.1	239.7	279.4	328.6

Time (mins)	Tc 67 (°C)	Tc 68 (°C)	Tc 69 (°C)	Tc 70 (°C)	Tc 71 (°C)	Tc 72 (°C)	Tc 75 (°C)
83	247.3	667.0	396.5	403.6	207.9	270.7	301.7
84	236.9	615.1	404.4	409.5	209.7	251.8	286.6
85	268.8	692.8	383.0	382.0	223.3	251.4	310.3
86	259.0	735.9	396.3	404.1	236.7	252.5	309.1
87	245.2	657.0	389.0	397.1	332.5	201.7	315.7
88	287.3	619.7	410.1	414.2	329.3	198.0	305.3
89	284.8	595.0	407.3	407.0	235.6	237.1	306.4
90	280.9	599.0	407.1	406.2	255.6	252.2	308.1
91	284.6	616.4	418.2	401.9	328.1	261.3	293.7
92	285.8	622.1	392.8	398.0	344.8	298.9	321.0
93	284.3	479.3	413.1	406.3	329.0	272.6	329.6
94	282.6	596.5	395.5	403.6	364.1	256.9	332.7
95	287.4	614.4	398.7	397.5	354.4	305.1	331.3
96	285.2	606.6	393.1	391.2	366.3	295.1	343.9
97	299.9	601.6	404.1	403.4	349.9	319.4	335.4
98	294.3	622.3	412.5	407.5	354.3	327.1	328.0
99	300.0	635.8	406.7	390.1	395.2	400.8	364.7
100	300.5	638.6	426.8	420.1	369.7	237.1	338.8
101	305.3	616.3	430.9	418.0	363.2	232.5	338.8
102	303.4	614.5	437.5	415.8	378.7	250.6	345.0
103	306.9	589.3	421.1	406.1	387.1	258.4	349.1
104	307.0	573.3	440.5	422.7	368.6	268.4	346.1
105	306.5	589.2	463.6	422.1	369.3	283.3	339.6
106	305.2	572.2	466.6	423.8	369.5	261.7	347.8

Time (mins)	Tc 67 (°C)	Tc 68 (°C)	Tc 69 (°C)	Tc 70 (°C)	Tc 71 (°C)	Tc 72 (°C)	Tc 75 (°C)
107	310.9	586.2	516.8	410.7	375.6	277.5	326.7
108	316.3	581.8	625.3	441.9	372.0	285.4	337.6
109	315.5	597.9	672.9	438.9	374.7	289.5	356.7
110	305.7	600.7	669.9	427.7	410.9	322.9	378.6
111	317.4	593.4	648.8	469.6	406.2	306.5	370.3
112	315.2	579.8	661.6	568.0	390.6	270.7	372.4
113	312.6	567.7	289.3	569.3	406.8	210.8	367.2
114	318.8	556.4	681.8	570.0	313.0	286.7	388.0
115	321.1	558.8	237.1	573.0	284.6	271.9	398.3
116	303.7	598.4	243.1	575.8	353.3	197.7	413.0
117	317.6	566.4	223.3	577.5	278.1	193.0	387.3
118	299.5	577.8	219.9	580.9	291.3	212.0	426.2
119	308.0	604.5	255.6	583.0	424.7	197.3	412.9
120	310.9	622.1	252.0	584.2	434.1	287.1	407.6
121	304.2	630.9	255.5	587.0	431.2	298.5	405.1
122	307.5	629.0	251.2	591.1	431.0	288.1	414.1

Graph showing recorded radiation intensity from the specimen



Recorded radiation intensity from the specimen

Time (min)	Heat flux (kW/m²)
0	0
1	0.3
2	1
3	1.7
4	2
5	1.9
6	1.8
7	1.8
8	2
9	2.2
10	2.5
11	2.8
12	3
13	3.3
14	3.5
15	3.7
16	3.8
17	4

Time (min)	Heat flux (kW/m²)
18	4.1
19	4.1
20	4.3
21	4.4
22	4.5
23	4.7
24	4.8
25	4.9
26	4.9
27	5.1
28	5.2
29	5.3
30	5.6
31	5.7
32	5.8
33	6
34	6.1
35	6.2

Time (min)	Heat flux (kW/m²)
36	6.3
37	6.5
38	6.6
39	6.9
40	6.9
41	7.1
42	7.2
43	7.5
44	7.5
45	7.7
46	7.8
47	8
48	8.1
49	8.3
50	8.3
51	8.5
52	8.7
53	8.9

Time (min)	Heat flux (kW/m^2)
54	9
55	9.2
56	9.1
57	9.2
58	9.6
59	9.7
60	10
61	10
62	10.1
63	10.3
64	10.3
65	10.3
66	10.5
67	10.8
68	10.9
69	11
70	11.2
71	11.3
72	11.6
73	11.9
74	12.1
75	12.4
76	12.3

Time (min)	Heat flux (kW/m^2)
77	12.6
78	12.5
79	13
80	13.1
81	13.1
82	13.4
83	13.4
84	13.5
85	13.8
86	14
87	14
88	14.3
89	14.6
90	14.7
91	14.5
92	14.6
93	14.9
94	14.9
95	14.7
96	15.3
97	15.6
98	15.9
99	15.9

Time (min)	Heat flux (kW/m^2)
100	15.7
101	15.5
102	*
103	*
104	*
105	*
106	*
107	*
108	*
109	*
110	*
111	*
112	*
113	*
114	*
115	*
116	*
117	*
118	*
119	*
120	*
121	*
122	*

Note * - Data has been removed due to equipment malfunction

On-going Implications

Limitations

This report details the method of construction, the test conditions and the results obtained when the specific element of construction described herein was tested following the procedure outlined in BS EN 1364-1:2015, BS EN 1363-1:2020, and where appropriate BS EN 1363-2:1999. Any significant deviation with respect to size, construction details, loads, stresses and edge or end conditions other than those allowed under the field of direct application in the relevant test method is not covered by this report.

The results only relate to the behaviour of the element of construction under the particular conditions of test; they are not intended to be the sole criteria for assessing the potential fire performance of the element in use nor do they reflect the actual behaviour in fires.

The specification and interpretation of fire test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over 5 years old should be considered by the user. Warringtonfire will be able to offer, on behalf of the test sponsor, a review of the procedures adopted for a particular test to ensure that they are consistent with current practices, and if required may endorse the test 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.

EGOLF

Certain aspects of some fire test specifications are open to different interpretations. EGOLF have identified a number of such areas and have agreed Resolutions which define common agreement of interpretations between fire test laboratories which are members of the Groups. Where such Resolutions are applicable to this test they have been followed.

Field of Direct Application

BS EN 1363-1:2020, Fire resistance tests - Part 1: General requirements, states within Section 12.1, Clause v) that “The field of direct application of the results taken from the appropriate standard (or the test method) for the specimen being evaluated, either in the form of the full text from the appropriate standard or only those clauses which are relevant for the specimen tested” shall be included within the test report. The full text of the field of direct application for the results of the specimen being evaluated herein, can be found within the appropriate test standard, which is referenced on the front cover of this report.