DECOR SYSTEMS

CONTOURS OF COUNTRY

The below Fire Certificates refer to DecorZen.
The Contours of Country designs are profiles from the DecorZen range.

The Contours of Country range is comprised of the same materials that were used in the DecorZen fire tests and are designs within the DecorZen range.

For fire certification of the Contours of Country range, please refer to the equivalent DecorZen certificates below. Group 1 for Smartlook finish, and Group 2 for Tasmanian Oak Veneer. If group 3 is required, the range is comprised of Group 3 or higher materials as a standard.

CONTENTS

CERTIFICATE

Engineering Evaluation Certificate

IGNL-3083-06-01 I01R00

TESTED 28 October 2019
ISSUED 26 November 2019
EXPIRY 25 November 2024

Décor Zen

AS ISO 9705-2003: FIRE TESTS – FULL-SCALE ROOM TEST FOR SURFACE PRODUCTS

PRESENTED TO

Décor Systems
6 Millennium Ct,
Silverwater NSW 2128

ENGINEERING BODY

Ignis Labs Pty Ltd
ABN 36 620 256 617
3 Cooper Place
Queanbeyan NSW 2620

Sample Identification

DÉCOR ZEN

Product Description

The sponsor described the tested specimen as perforated MDF acoustic panel with a fiberglass cloth back.

The test specimens have –

(a). Nominal wall thickness: 12.34 mm
(b). Nominal rib thickness: 0.0 mm
(c). Nominal total thickness: 12.34 mm
(d). Colours: Light brown

Test Procedure

Full-scale room test of the specimen system was carried out in accordance with AS ISO 9705-2003: Fire tests – Full-scale room test for surface products.

Observations

The specimen did not reach flashover during the test period of 20 min.

Test Results

The following sample classifications were obtained:

Group Number: Group 1
(In accordance with Specification A2.4 of the Building Code of Australia.)

Smoke growth rate index: 90.95 (m^2/s^2 x 1000)
(Refer to Specification C1.10 section 4(c) of the Building Code of Australia.)

Notes

1. The results of this fire test may be used to directly assess fire hazard, but it should be recognised that a single test method will not provide a full assessment of fire hazard under all fire conditions.
2. As per Section 9 (m) of AS 5637.1:2015, the determination of the group number was based on the AS ISO 9705-2003 test, and the installed specimen systems covered three walls and the ceiling.

IGNIS SOLUTIONS PTY LTD
ENGINEERING EVALUATION
Certificate
ABN 24 160 047 125

Benjamin Hughes-Brown
FIEAust CPEng NER
Chartered Professional Engineer
CPEng, NER (Fire Safety / Mech) 2590091, RPEQ11498, BPB-C10-1875, EF-39394,
TDJ-CC6504 MFireSafety (UWS), BEng (UTS), GradDipBushFire (UWS), DipEngPrac (UTS), DipEng (CIT)

CERTIFICATE

Material Fire Test Result Summary

IGNL-5185-06C I01 R01

DATE OF TEST 30.08.2021
ISSUE DATE 08.09.2021
EXPIRY DATE 07.09.2026

DecorZen

SPONSOR
Decor System Australia Pty Ltd
6 Millennium Court
Silverwater NSW 2128

TEST BODY
Ignis Labs Pty Ltd
ABN 36 620 256 617
3 Cooper Place
Queanbeyan NSW 2620
Australia
www.ignislabs.com.au
(02) 6111 2909
Test body is the test location

Introduction

Ignis Labs undertook a test of the DecorZen Tasmanian Oak Natural timber veneer of Decor Systems Australia Pty Ltd. The testing was undertaken in accordance with AS ISO 9705:2003_R2016. The group number was determined in accordance with AS 5637.1:2015. It is important to note that this is not a AS 5637.1:2015 report and should not be used as evidence of suitability for regulatory purposes.

Product Description

The tested system included a ceiling and wall specimen with the installation of the DecorZen panels. As described by the sponsor, the product is a DecorZen Tasmanian Oak Natural timber veneer on fire rated MDF substrate with DecorSorb Acoustic textile to rear of panel. The tested specimen is a round-hole perforated timber panel with the nominal hole diameter of 8mm at 25mm centre to centre spacing. The nominal thickness of veneer is 12mm (13.18mm as measured) and nominal thickness of MDF substrate is 0.11mm as measured. The distance between the hole edges is 16.75mm (measured). The distance from the edge to the first hole is 90mm as measured. The nominal size of each panel is 1190mm × 1190mm.

The specimen shall be installed following manufacturer's installation guide.

AS 5637.1 Group Number: 2 | $SMOGRA_{RC}$: 48.61 (m^2s^{-2} x 1000)

Test Method

The test specimen was tested in accordance with AS ISO 9705:2003_R2016 Fire tests – Full-scale room test for surface products with the exception that heat flux at the floor was not measured.

Reference Documents

This certificate is based on the following documents:

- Ignis Labs Test Report IGNL-5185-06R I01R01 dated 08 September 2021.

IGNIS LABS PTY LTD ignis labs MATERIAL FIRE TESTING Certificate ABN 36 620 256 617

Benjamin Hughes-Brown | FIEAust CPEng NER APEC Engineer IntPE(Aus)
Chartered Professional Engineer
CPEng, NER (Fire Safety / Mech) 2590091, RPEQ11498, BDC-1875, PE0001872
MFireSafety (UWS), BEng (UTS), GradDipBushFire (UWS), DipEngPrac (UTS), DipEng (CIT)

Version: IGNL-QF-031-Issue 03 Revision 01

warringtonfire
Proud to be part of element

Reaction to fire test report

Test standard: AS ISO 9705:2003 (R2016)

Test sponsor: Decor Systems Australia Pty Ltd

Product: DecorZen – FR MDF, AP250S profile, 8 mm perforation, Tasmanian Oak veneer

Job number: RTF210373

Test date: 5 November 2021 Revision: R1.0

Warringtonfire: accredited for compliance with ISO/IEC 17025 – Testing

ilac-MRA NATA Accreditation No. 3277

Quality management

Revision	Date	Information about the report			
R1.0	22 November 2021	Description	Initial issue.		
			Prepared by	Reviewed by	Authorised by
		Name	Muntaqim Pereira	Tanmay Bhat	Tanmay Bhat
		Signature			

Executive summary

This report documents the findings of the reaction to fire test of a wall and ceiling lining performed on 5 November 2021 in accordance with AS ISO 9705:2003 (R2016) and AS 5637.1:2015.

Warringtonfire performed the test at the request of Decor Systems Australia Pty Ltd.

The test specimen consisted of DecorZen panels that were screw fixed to the internal plasterboard lining of the test room. The fire test room was lined by 22 panels of various sizes. A full description of the specimen is provided in Appendix A and Section 2.

A summary of the results is provided in Table 1 and Table 2.

Table 1 Classification for AS ISO 9705:2003 (R2016) and AS 5637.1:2015

Criteria	Results
Group number	2
$SMOGRA_{RC}$ (in $m^2/s^2 \times 1000$)	2.7

Table 2 Classification for AS ISO 9705:2003 (R2016) and C/VM2 – Verification Method: Framework for Fire Safety Design

Criteria	Results
Group number	2 – S
Average smoke production rate (0 to 10 minutes) (in m^2/s)	0.4

Contents

1. Introduction

This report documents the findings of the reaction to fire test of a wall and ceiling lining performed on 5 November 2021 in accordance with AS ISO 9705:2003 (R2016) and AS 5637.1:2015.

Warringtonfire performed the test at the request of the test sponsor listed in Table 3.

Table 3 Test sponsor details

Test sponsor	Address
Decor Systems Australia Pty Ltd	6 Millennium Court Silverwater NSW 2128 Australia

2. Test specimen

2.1 Schedule of components

Table 4 describes the test specimen and lists the schedule of components. These were provided by the test sponsor and surveyed by Warringtonfire.

All measurements were done by Warringtonfire – unless indicated otherwise.

Detailed drawings of the test specimen are provided in Appendix A.

Table 4 Schedule of components

Item	Description	
Lining		
1.	Product name	DecorZen – FR MDF, AP250S profile, 8 mm perforation, Tasmanian Oak veneer
	Material	The panels consisted of a 12 mm fire retardant (FR) medium density fibreboard (MDF) core bonded to a 1 mm Tasmanian Oak veneer on the fire exposed side using crosslink polyvinyl acetate (PVA) adhesive. The Unexposed face of the MDF was bonded to the DécorSorb IAB, a 0.2 mm thick non-woven acoustic sheet, using Ethylene-Vinyl Acetate (EVA) adhesive. The panels had 8 mm perforations and 25 mm centres, which started at an offset of 95 mm from the edge of each panel.
	Measured uncut sheet size	1200 mm x 1200 mm x 13 mm
	Mass per unit area	9.8 kg/m^2
	Colour	FR MDF Core – Light brown Front veneer – Brown Acoustic sheet – Black
	Jointing method	Panels were butt-joined.
Fixings		
2.	Item name	8G x 65 mm fine thread plasterboard screw – Galvanised steel
Installation method		
The panels were screw fixed at 12 fixing points per panel, as per detailed in the drawing, to the internal plasterboard lining of the fire test room using item 2. The wall panels were installed first, followed by the ceiling panels.		

2.2 Installation details

The test assembly consisted of a fire test room whose ceiling and three walls were lined with the sample material being tested, leaving the wall with the doorway opening unlined. The fire test room had studwork walls and ceiling lined with particleboard and two layers of 16 mm thick fire-grade plasterboard on the internal side. When unlined with the sample material, the internal dimensions of the fire test room were 3600 mm long × 2400 mm wide × 2400 mm high. The short wall opposite the ignition source had a centrally located doorway opening which was 800 mm wide × 2000 mm high.

Table 5 lists the installation details for the test specimen.

Table 5 Installation details

Item	Detail
Material delivery date	27 October 2021
Start date of construction	5 November 2021
Completion date of construction	5 November 2021
Room lining installed by	Representatives of Warringtonfire

3. Test procedure

Table 6 details the test procedure for this reaction to fire test.

Table 6 Test procedure

Item	Detail	
Statement of compliance	The test was performed in accordance with the requirements of AS ISO 9705:2003 (R2016) to determine the group number that may be assigned to the material using the classification schemes given in AS 5637.1:2015 and C/VM2 – Verification Method: Framework for Fire Safety Design.	
Variations	Smoke obscuration measurements were made using a helium-neon laser smoke photometer, as outlined in Annex H of ISO 9705-1:2016.	
Pre-test conditioning	The specimens were conditioned at 23 °C and 50% relative humidity until mass equilibrium, as defined in AS ISO 9705:2003 (R2016), was reached. The system was subjected to ambient laboratory temperatures and conditions between construction and testing.	
Sampling / specimen selection	The laboratory was not involved in sampling or selecting the test specimen for the reaction to fire test. The results obtained during the test only apply to the test samples as received and tested by Warringtonfire.	
Ambient laboratory temperature	Start of the test	27 °C
	Minimum temperature	27 °C
	Maximum temperature	28 °C
Initial ambient temperature of the fire test room	25 °C	
Initial horizontal wind speed	0.2 - 0.3 m/s (measured at a horizontal distance of 1000mm away from the door opening before the test)	
Test duration	630 seconds at which a heat release rate of 1 MW was recorded.	
Instrumentation and equipment	The instrumentation was provided in accordance with AS ISO 9705:2003 (R2016) as follows: • The fire test room had galvanised studwork walls on three sides and ceiling, where each was lined with two layers of 16 mm fire-grade plasterboard supported by 18 mm thick particleboard on the external side. The floor was 18 mm thick cement sheeting. Without the specimen lining, the room had internal dimensions of 3600 mm long × 2400 mm wide × 2400 mm high with a doorway 800 mm wide × 2000 mm high centrally located in one of the shorter walls. • The ignition source was a propane gas fuelled box burner, with specifications in accordance with those given in Annex A of AS ISO 9705:2003 (R2016). The burner was placed on the floor in the corner of the room, opposite the doorway, so that two of the side walls of the burner were as close as possible to the specimen material. The gas flow during the test was controlled to provide an amount of gas equivalent to 100 kW of power during the first ten minutes of heat exposure and 300 kW of power during the second ten minutes of heat exposure. • The heat-flux emanating from the fire generated in the room was measured by a Schmidt-Boelter type heat-flux gauge, placed on the floor in the middle of the room. • The products of combustion were collected in an exhaust hood next to the doorway and outside the room. The hood was connected to an exhaust duct 400 mm in diameter, which had instruments inside to measure the conditions and properties of the combustion products during the test.	

Item	Detail
	• The volume flow rate was determined using a bidirectional pressure probe attached to a differential pressure transducer together with Type K MIMS thermocouple positioned near the probe. • The temperature of the exhaust stream near the light beam was measured using a Type K MIMS thermocouple. • An exhaust sampling probe sampled the combustion products which were then analysed by a Servomex 4100 gas purity analyser. The oxygen concentration during the test was determined by paramagnetic oxygen analyser, and the carbon monoxide and carbon dioxide concentrations were determined using infrared sensor equipment, also within the Servomex 4100 gas purity analyser. • The horizontal wind speed was measured by a Testo 425 anemometer at 1000 mm forward from the centre line of the doorway.
System performance	A calibration test was carried out before testing the product. The gas burner was placed centrally and 1 m below the exhaust hood by subjecting it to a stepwise change in heat release shown in Table 7 followed by a further 2 minutes of data collection. After that time the test was stopped. Data from instruments was collected and analysed every 3 seconds. At steady state conditions, the difference between the mean rate of heat release over 1 minute calculated from the measured oxygen consumption and that calculated from the metered gas output did not exceed ± 5% for each level of heat output – and therefore complied with the requirements of Section 10.1 of AS ISO 9705:2003 (R2016). The system response time was determined by calculating the average time taken for the measured rate of heat release to be within 10% of the final measured rate of heat release. System response data is listed in Table 7 and the system response has been calculated to be 11 s, which is within the 20 s limit required to comply with AS ISO 9705:2003 (R2016).

Table 7 Response time measurements during the step calibration process

Time interval (s)	Target heat output (kW)	Heat output (kW)	Heat measured (kW)	Time (s)	Variance (%)	Response time (s)
0 to 120	0	0	0	0	0	0
120 to 420	100	100	105	129	5.0	9
420 to 720	300	300	291	429	-2.9	9
720 to 1020	100	100	105	732	4.5	12

4. Test measurements, performance criteria and test results

4.1 Test measurements

The measurements taken for the heat flux, volume flow rate, heat release rate and light obscuration – along with the production rates of carbon monoxide and carbon dioxide – are included in Appendix C.

Table 10 in Appendix B includes observations of any significant behaviour of the specimen and details of the occurrence of the various performance criteria specified in AS ISO 9705:2003 (R2016).

Photographs of the specimen are included in Appendix D.

4.2 Performance criteria and test results

Australia

AS 5637.1:2015 allows the classification of materials by group number – this indicates the amount of time taken for the material being tested to reach flashover under AS ISO 9705:2003 (R2016) test conditions. AS 5637.1:2015 defines flashover to be a heat release rate of 1 MW, so materials are classified, in accordance with AS 5637.1:2015, by the time taken for the heat release rate to reach 1 MW.

The group classifications are:

- Group 1 – Materials classified as Group 1 do not reach flashover after ten minutes exposure to a heat source delivering 100 kW immediately followed by a further ten minutes exposure to 300 kW.
- Group 2 – Materials classified as Group 2 reach flashover after ten minutes of exposure to a 100 kW heat source.
- Group 3 – Materials classified as Group 3 reach flashover after two minutes, but before ten minutes of exposure to a 100 kW heat source.
- Group 4 – Materials classified as Group 4 reach flashover before two minutes of exposure to a 100 kW heat source.

The material subjected to this AS ISO 9705:2003 (R2016) test achieved a heat release rate of 1 MW after 600 seconds exposure to a 100 kW heat source, immediately followed by a further 30 seconds exposure to a 300 kW heat source. Therefore, the system has achieved a classification of Group 2.

The maximum average rate of smoke growth for this material occurred at 600 seconds into the test and was found to be 1.6 m^2/s. Therefore, the $SMOGRA_{RC}$ (in $m^2/s^2 \times 1000$) value for the material is 2.7.

Table 8 Classification for AS ISO 9705:2003 (R2016) and AS 5637.1:2015

Criteria	Results
Group number	2
$SMOGRA_{RC}$ (in $m^2/s^2 \times 1000$)	2.7

New Zealand

AS ISO 9705:2003 (R2016) states that it is identical to and has been reproduced from ISO 9705:1993, so the data obtained from the test referenced in this report may be used where data obtained from ISO 9705:1993 is required.

The New Zealand Ministry of Business, Innovation and Employment's verification method – C/VM2 – Verification Method: Framework for Fire Safety Design – provides guidelines on establishing group numbers for lining materials. The scheme allows the classification of materials by group number, which indicates the amount of time taken for the material being tested to reach flashover under ISO 9705:1993 test conditions. It defines flashover to be a heat release rate of 1 MW so materials are classified – in accordance with appendix A of C/VM2 – by the time taken for the heat release rate as measured during the ISO 9705:1993 test – to reach 1 MW.

The group classifications for New Zealand are:

- Group 1 – Materials classified as Group 1 do not reach flashover after ten minutes exposure to a heat source delivering 100 kW immediately followed by a further ten minutes exposure to 300 kW.
- Group 1 – S – Materials classified as Group 1-S do not reach flashover after ten minutes exposure to a heat source delivering 100 kW immediately followed by a further ten minutes exposure to 300 kW. In addition, the average smoke production rate for the period between 0 and 20 minutes of the test period does not exceed 5.0 m2/s.
- Group 2 – Materials classified as Group 2 reach flashover after ten minutes of exposure to a 100 kW heat source.
- Group 2 – S – Materials classified as Group 2-S do not reach flashover after ten minutes exposure to a heat source delivering 100 kW. In addition, the average smoke production rate for the period between 0 and 10 minutes of the test period does not exceed 5.0 m2s-1.
- Group 3 – Materials classified as Group 3 reach flashover after two minutes, but before ten minutes of exposure to a 100 kW heat source.
- Group 4 – Materials classified as Group 4 reach flashover before two minutes of exposure to a 100 kW heat source.

The material subjected to this AS ISO 9705:2003 (R2016) test achieved a heat release rate of 1 MW after 600 seconds of exposure to 100 kW, followed by 30 seconds of exposure to 300 kW. Between 0 and 10 minutes of the test period, the average smoke production rate was 0.4 m^2/s. Therefore, the C/VM2 – Verification Method: Framework for Fire Safety Design – classifies this material as Group 2 – S.

Table 9 Classification for AS ISO 9705:2003 (R2016) and C/VM2 – Verification Method: Framework for Fire Safety Design

Criteria	Results
Group number	2 – S
Average smoke production rate (0 to 10 minutes) (in m^2/s)	0.4

5. Application of test results

5.1 Test limitations

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

These results only relate to the behaviour of the specimen of the element of construction under the particular conditions of the test. They are not intended to be the sole criteria for assessing the potential fire performance of the element in use, and they do not necessarily reflect the actual behaviour in fires.

5.2 Variations from the tested specimen

This report details methods of construction, the test conditions and the results obtained when the specific element of construction described here was tested following the procedure outlined in AS ISO 9705:2003 (R2016). Any significant variation with respect to size, construction details, loads, stresses, edge or end conditions is not addressed by this report.

It is recommended that any proposed variation to the tested configuration should be referred to the test sponsor. They should then obtain appropriate documentary evidence of compliance from Warringtonfire or another accredited testing authority.

5.3 Uncertainty of measurements

Because of the nature of reaction to fire testing and the consequent difficulty in quantifying the uncertainty of measurements obtained from a reaction to fire test, it is not possible to provide a stated degree of accuracy of result.

Appendix A Drawings of test assembly

The drawings of the test assembly were provided by the test sponsor. All measurements – unless indicated – are in millimetres.

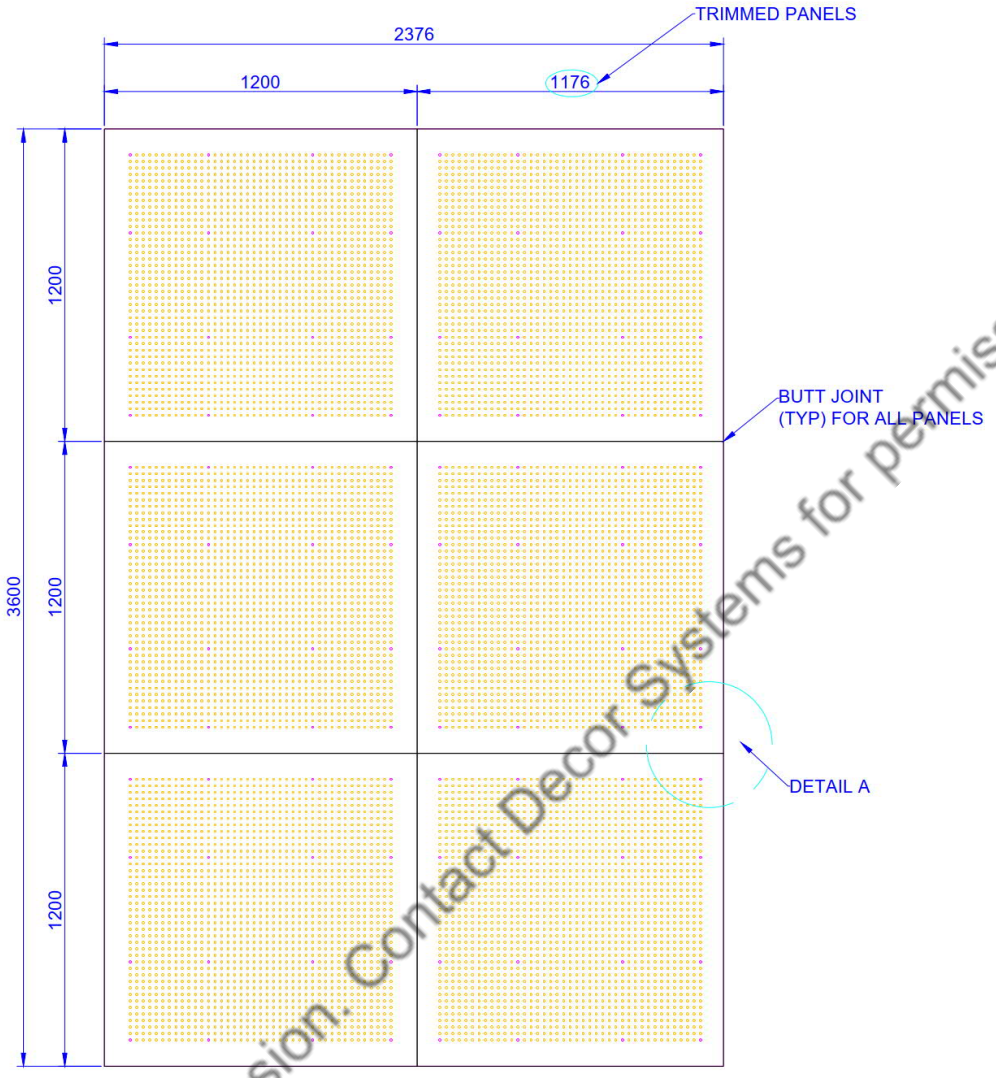

Figure 1 Ceiling panel layout

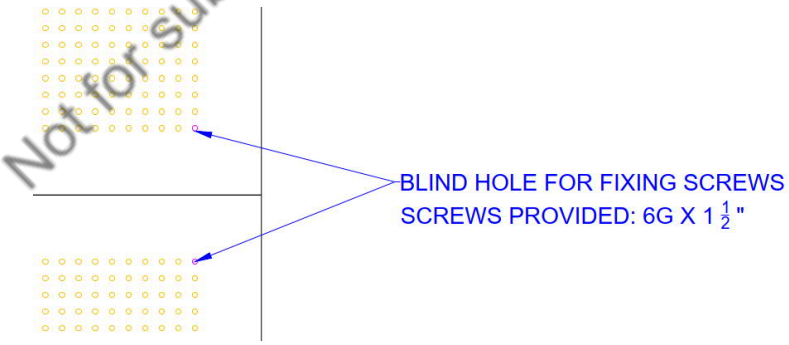

Figure 2 Detail A – panel fixing points

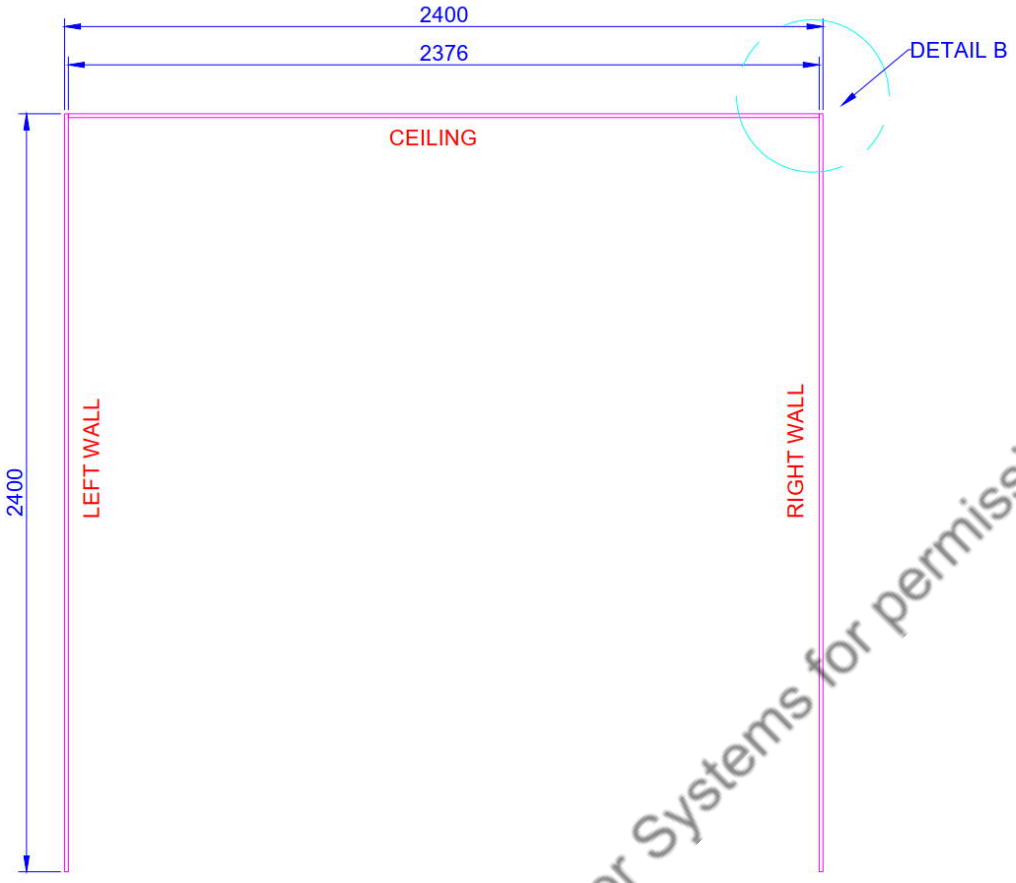

Figure 3 Front view – Ceiling and wall panel layout

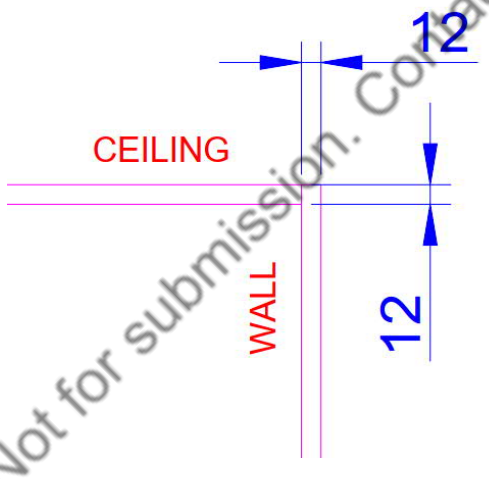

Figure 4 Detail B – Ceiling to wall corner join

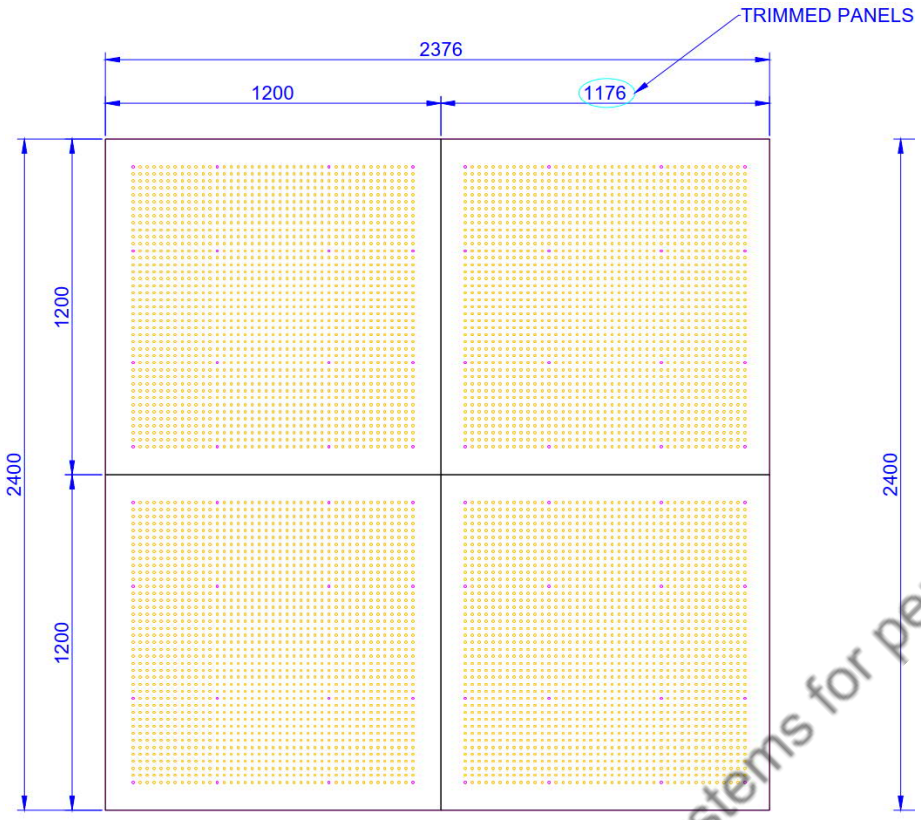

Figure 5 Back wall panel layout

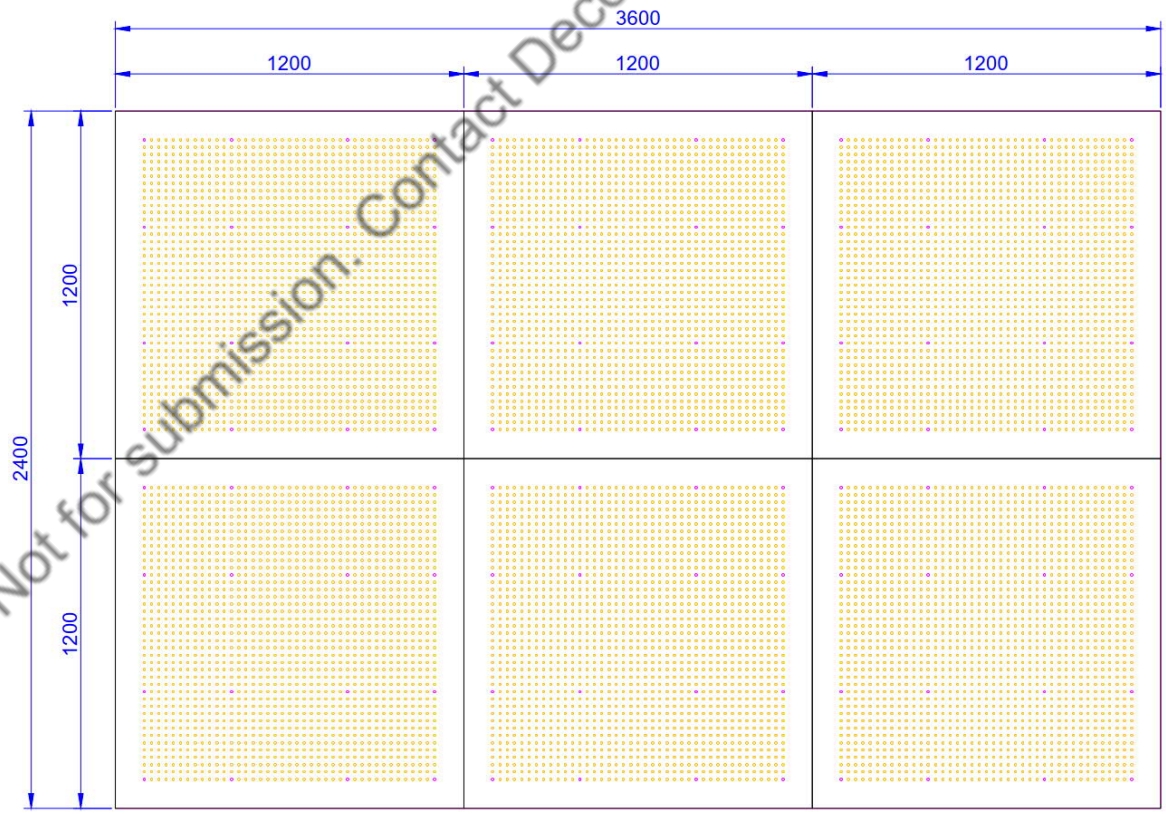

Figure 6 Right wall panel layout

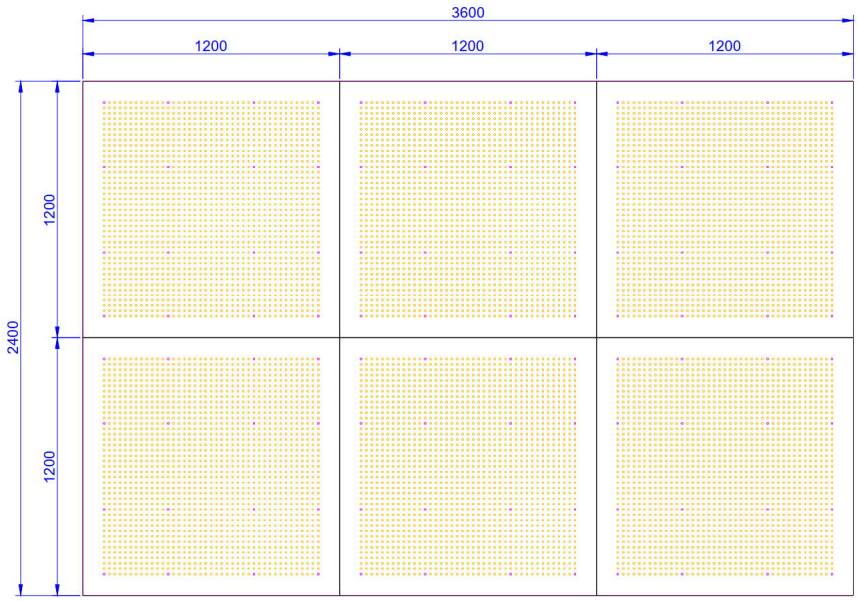

Figure 7 Left wall panel layout

Appendix B Test observations

Table 10 shows the observations of any significant behaviour of the specimen during the test.

Table 10 Test observations

Time		Observation
Min	Sec	
-2	00	The reaction to fire test was started.
0	00	With an output set to 100 kW, the burner was ignited.
0	29	The wall panels next to the burner corner started to discolour.
0	50	The ceiling panel above the burner started to discolour.
1	20	Debris started to fall from the ceiling panel above the burner.
1	28	The wall panel next to the burner started to eject debris.
3	09	The panel face at the top corner above the burner had fully delaminated.
8	55	The face of the wall panels next to the burner had fully delaminated.
10	00	The burner output was increased to 300 kW.
10	17	A thick layer of smoke started to build up inside the room.
10	**30**	**A 1 MW heat release rate was recorded, and the reaction to fire test was ended.**

Comment

- Minimal to no smoke and flame spread was observed during the first 10 minutes.

Appendix C Test data

C.1 Heat flux

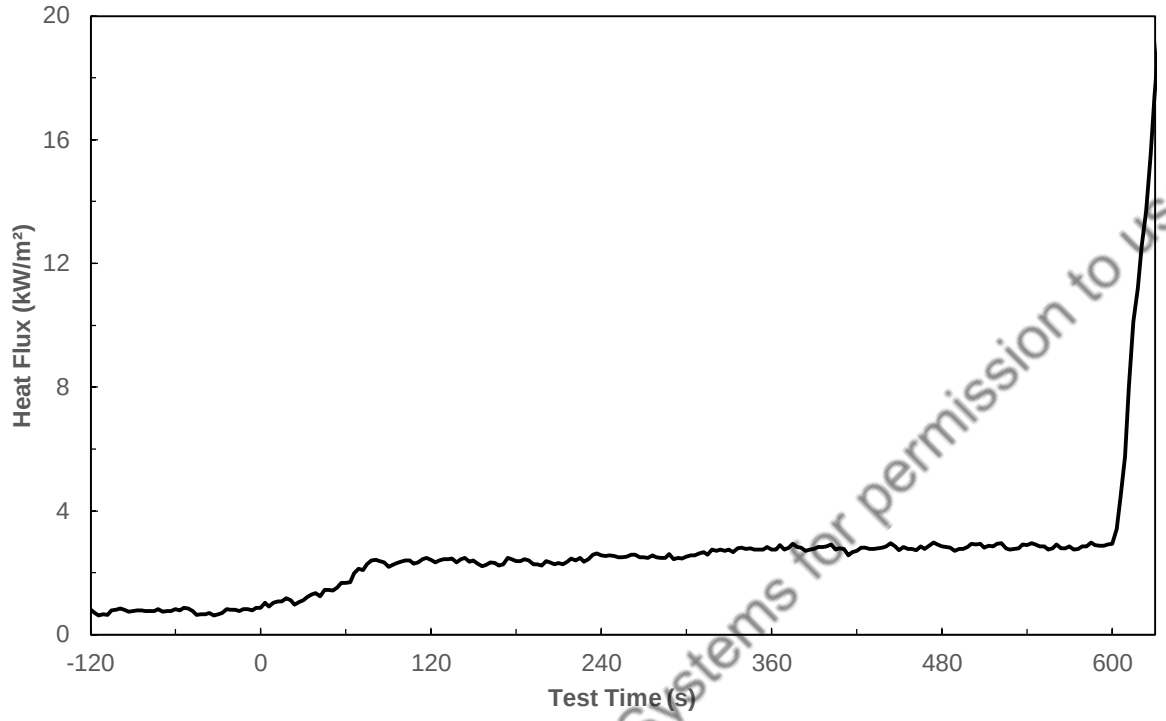

Figure 8 Heat flux vs time

C.2 Volume flow

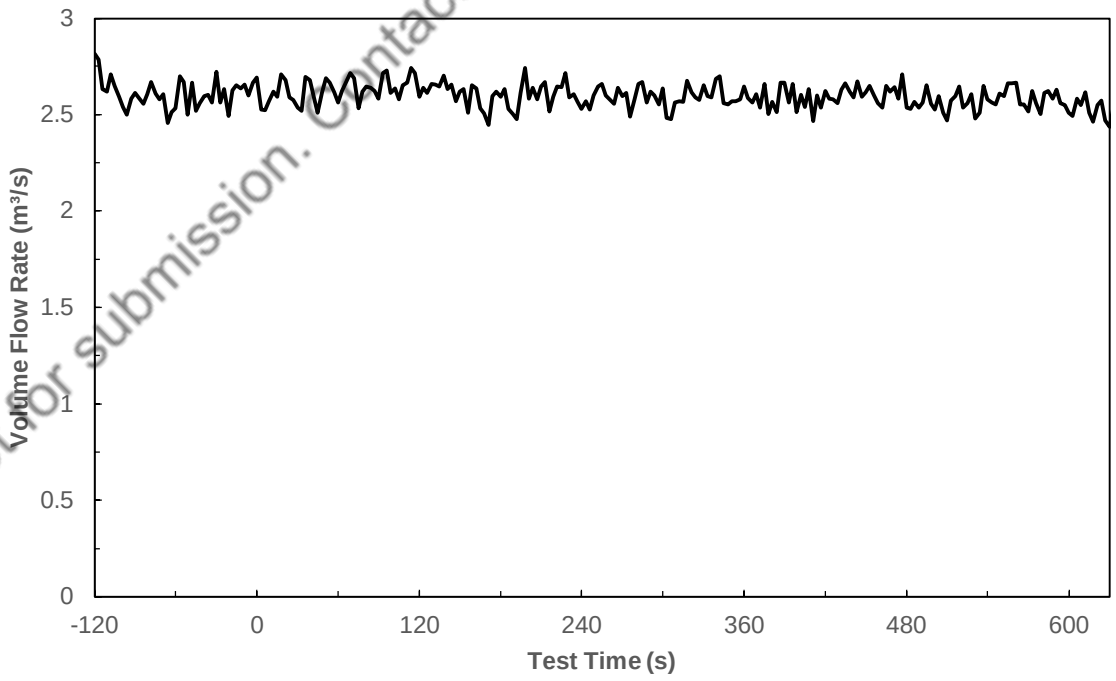

Figure 9 Volume flow rate in duct vs time

C.3 Heat release rate

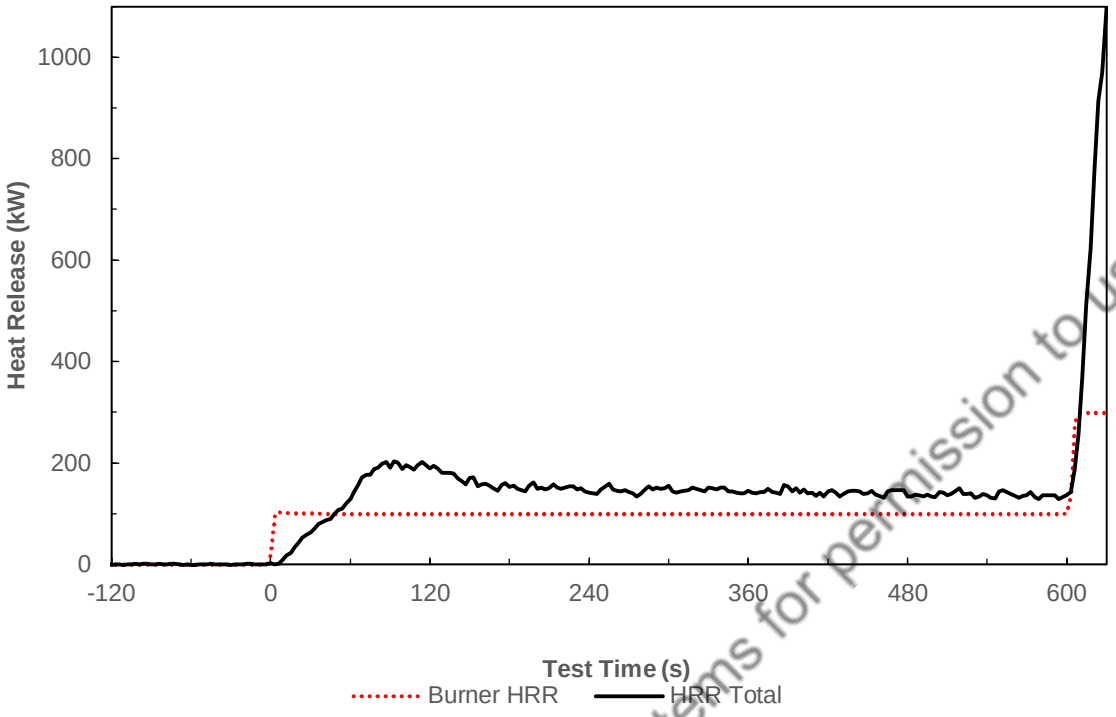

Figure 10 Heat release rate (HRR) of specimen and burner vs time

C.4 Carbon monoxide production

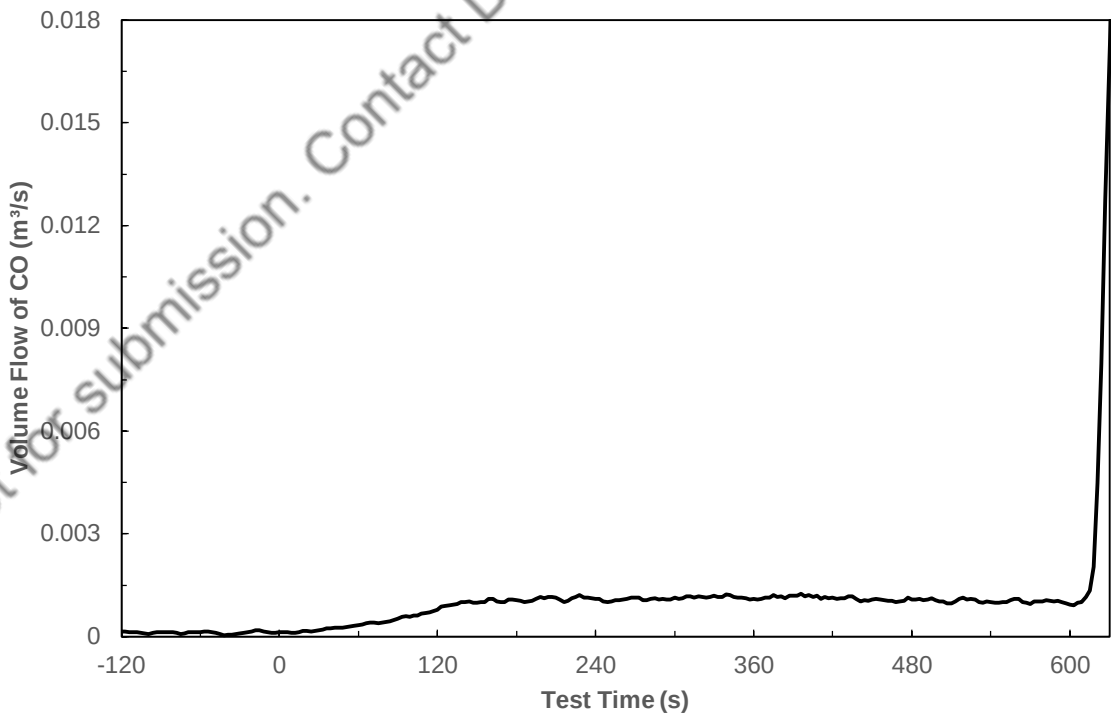

Figure 11 Production of carbon monoxide vs time, at reference temperature and pressure

C.5 Carbon dioxide production

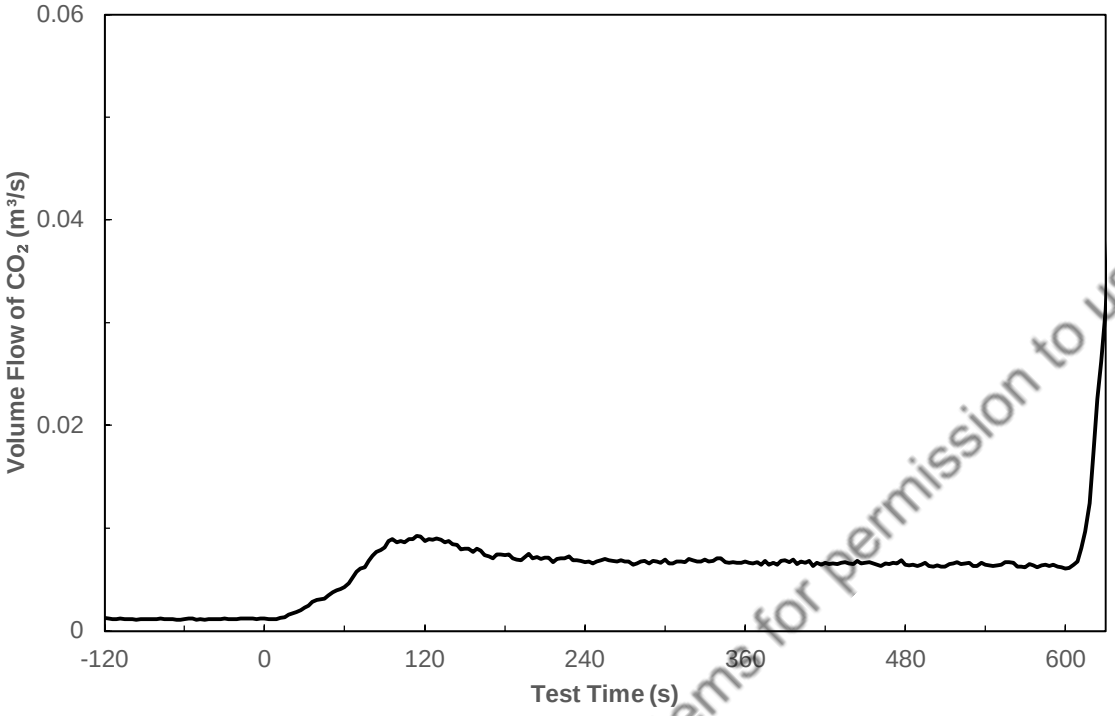

Figure 12 Production of carbon dioxide vs time, at reference temperature and pressure

C.6 Smoke production rate

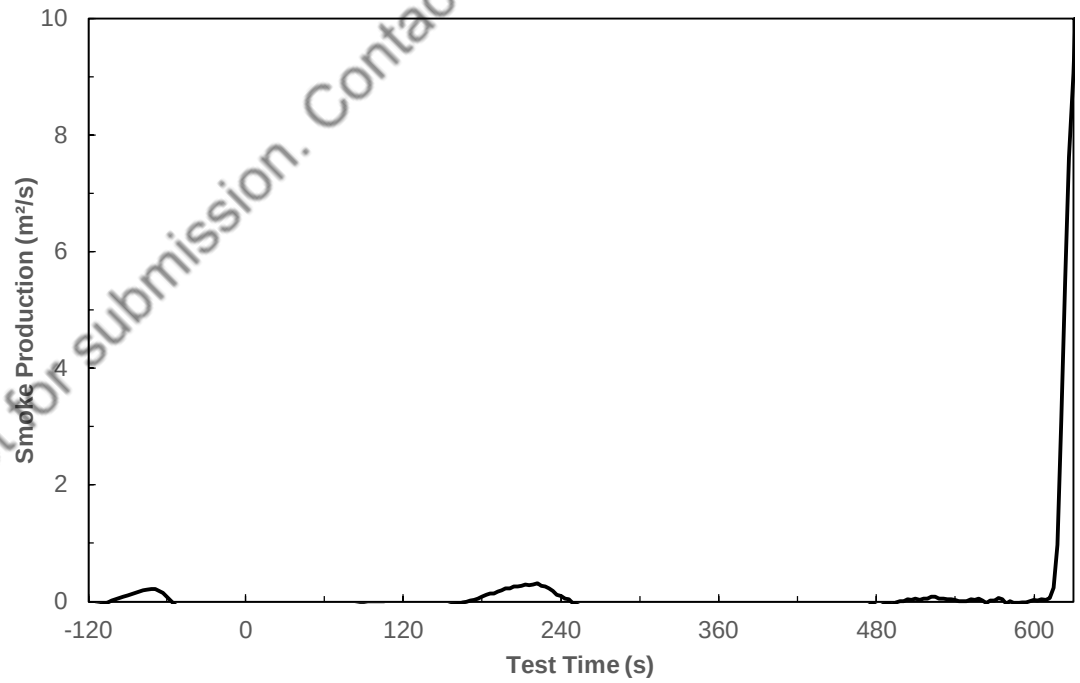

Figure 13 Production of light obscuring smoke vs time, at reference temperature and pressure

C.7 Temperature at different heights

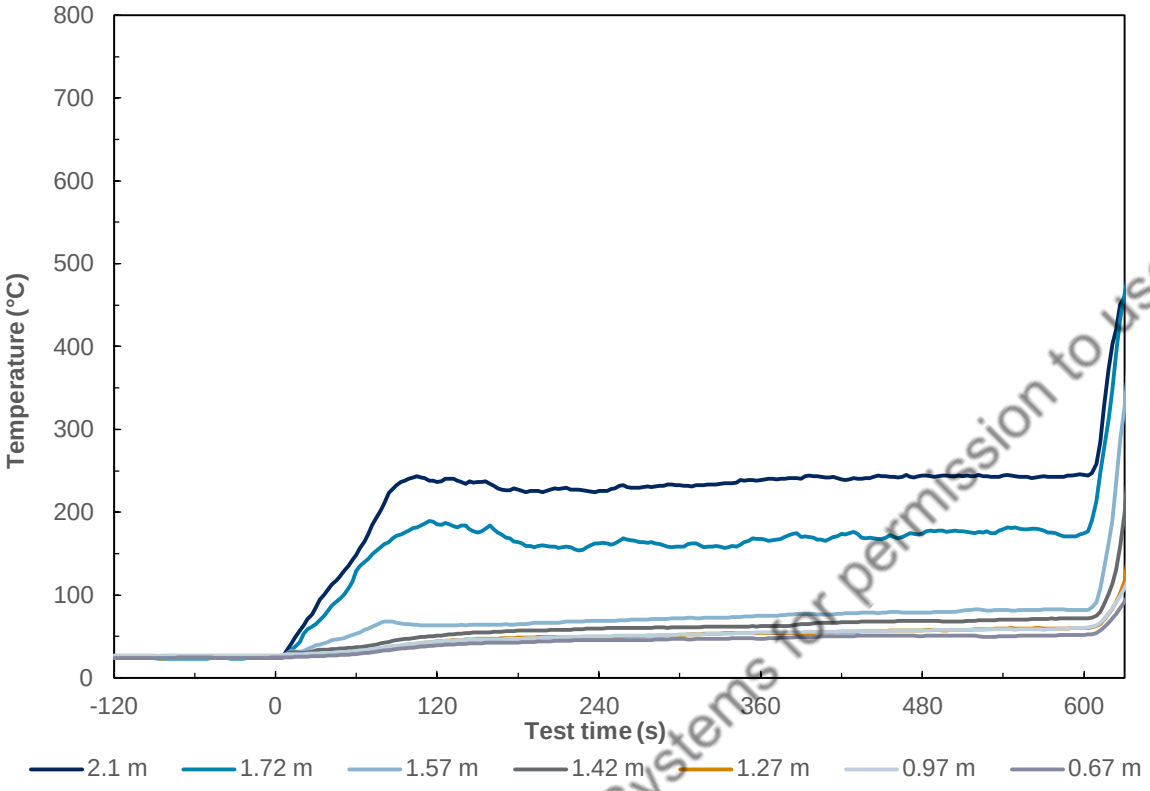

Figure 14 Temperature at the measured heights (from the floor) in the corner opposite to the burner vs time

Appendix D Photographs

Figure 15 The specimen before the reaction to fire test

Figure 16 The specimen 11 seconds after burner ignition with the burner output of 100 kW

Figure 17 The specimen 1 minute 39 seconds after burner ignition with the burner output of 100 kW

Figure 18 The specimen 3 minutes 8 seconds after burner ignition with the burner output of 100 kW

Figure 19 The specimen 7 minutes 25 seconds after burner ignition with the burner output of 100 kW

Figure 20 The specimen 9 minutes 56 seconds after burner ignition with the burner output of 100 kW

Figure 21 The specimen after flashover (43 seconds after burner output was increased to 300 kW)

Figure 22 The specimen after the reaction to fire test

warringtonfire

Proud to be part of element

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