Test report No. 19848A

Sponsor

UNILIN BVBA DIVISION PANELS
Ingelmunstersteenweg 229
8780-Oostrozebeke
BELGIUM

Construction product and trade names

Fibralux FR (former trade name Firax) ; Flameblock™

Nature of the test

Full-scale room test for surface products according to ISO 9705 – 1st edition 1993 and ISO 9705-1:2016

Summary of the results

$FIGRA_{RC}$ (kW/s)	0,99
THR_{RC} (MJ)	64,2
$SMOGRA_{RC}$ (m^2/s^2)	179,88
TSP_{RC} (m^2)	1215
Time to flash over (s)	705

PREPARED BY

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This report consists of 19 pages including 1 annex

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1. TEST MATERIAL

The firm UNILIN BVBA Division Panels, provided the laboratory with Fibromax FR MDF-boards on the 24th of July 2019, intended for a full-scale room test for surface products. The laboratory supervised with the specimen fabrication.

Sampling details:

Sampling by	:	Unilin division Panels, Koen Nel
Sampling date	:	14th of June 2019
Sample ID	:	4190429
Production place	:	Unilin division Panels, Vielsalm Rue de la Forêt, 6690 Vielsalm
Production line	:	MDF line
Production date	:	25th of April 2019
Identification within the quality system	:	PO 4144498

Description of the material:

This description is based on information given by the sponsor.

	Nominal value	Measured value
WALL COVERING		
Material	MDF panel, type MDF.LA (EN622-5)	
Trade names	Fibralux FR (former trade name Firax) ; FlameblockTM	
Manufacturer / Supplier	UNILIN BVBA Division Panels	
Colour	Brown-red	
Thickness (mm)	12,0	12,2
Density (kg/m³)	730	755
Flame retardants	Yes	(1)
Fixing method	Mechanically directly to the wall	
Type and amount of fixing	Chipboard screws #6x60mm 15 per panel Screw hole centres 50mm from side of panel Drawing see annex 1	
Reaction to fire according to EN 13501-1	B-s1, d0	

(1) Not verifiable

2. DESCRIPTION OF THE TEST METHOD

The fire test is carried out according to the ISO 9705:1993.
The ISO 9705:1993 prescribes the following procedure:

- ✓ -2 – 0 minutes: Start registering data from the test
- ✓ 0 – 10 minutes: heat output level of the burner: 100 kW
- ✓ 10 – 20 minutes: heat output level of the burner: 300 kW
- ✓ 20 minutes: extinction of the burner

3 TEST CONDITIONS

Test date: 01/07/2019
Ambient temperature: 22,5 °C
Ambient pressure: 101500 Pa
Humidity: 53%

4. CALIBRATION RESULTS

Latest calibration date : 01/04/2019
Calibration results : see annex 3

4 OBSERVATIONS AND MEASUREMENTS DURING THE TEST

4.1 visual observations

Time (min:sec)	Observation
-02:00	Start of data acquisition system
00:01	Ignition of the burner to the level of 100kW
02:55	Development of smoke
09:59	Burner level increased to 300 kW
12:10	Spread of flames across the ceiling and the walls, both occurred at the same moment (*)
12:15	Ceiling ignites
12:30	Wall covering ignites
13:00	Flash over, based on visual observations
13:37	First flames through the door opening
13:58	Mechanical failure of the test specimen: MDF-board which is part of the ceiling falls apart in back left corner
16:23	Flaming droplets
18:35	Test stop

(*) Concerning the walls, spread of flames is considered as the moment the flames spread in the area 0,5 m above floor level and at a distance of minimum 1,2m from the burner.

Time at which the sum of the Heat release rate from the ignition source and the product reaches 1 MW: 13:45**

(**) This time, is the moment in time defined as flash-over, according to ISO9705:1993 and 2016.

Pictures of the test: see annex 2

4.2 Volume flow and temperature in exhaust duct

Graphs see Annex 4

4.3 Rate of heat release and smoke production

FIGRA (kW/s)	0,99
HRR ignition source at time of flash-over (kW)	*300*
Flash-over (sec)	*705*
THR (MJ)	64,2
SMOGRA (m²/s²)	179,88
Maximum SPR (m²/s²)	15,60
TSP (m²)	1215

Calculations according to § 6.2 of the SP report 1998:11 "Results and Analysis from Fire Tests of Building Products in ISO 9705, the Room/Corner Test – The SBI Research Programme" by *B. Sundström, P. van Hees and P. Thureson.*

Graphs in support of the results: see Annex 5

5. REMARKS

The following deviation to the standard is made: None

The test results relate only to the behaviour of the test specimens of the material under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the material in use.

6. GROUP ASSESSMENT

This report assesses the fire hazard properties assigned to the product **'Fibralux FR (former trade name Firax); Flameblock™'** in accordance with the NCC 2015 Building Code of Australia - Volume One and the New Zealand Building Code (NZBC) Clause C3.4(a) and defines the group number in accordance the procedures given in with the draft standard AS 5637.1:2015 (Determination of fire hazard properties - Part 1: Wall and ceiling linings.
The product **'Fibralux FR (former trade name Firax); Flameblock™'** in relation to its reaction to fire behavior for wall and ceiling linings is assessed as:

Flash over at 705s

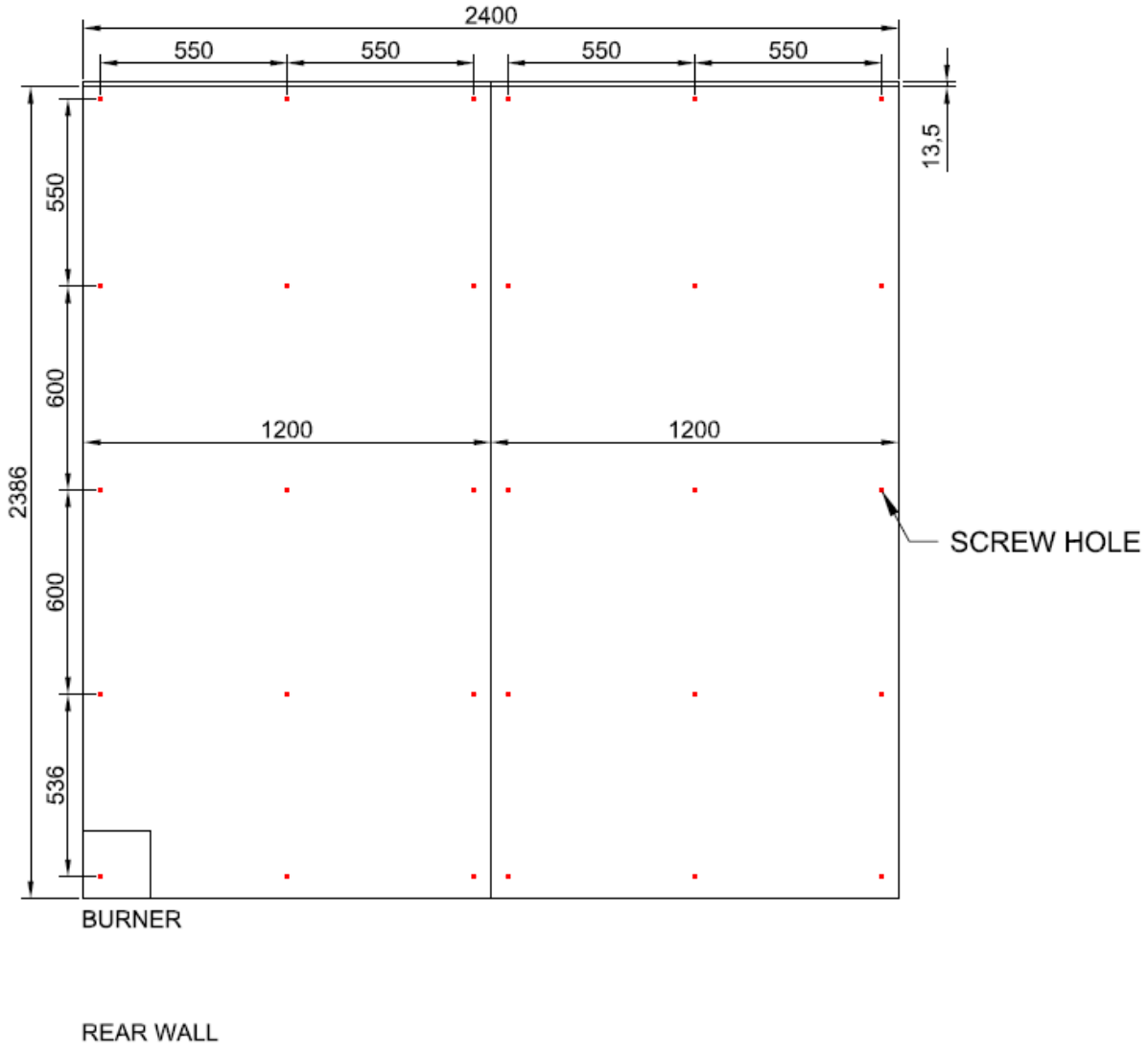
Australian Group Number according to AS 5637.1:2015

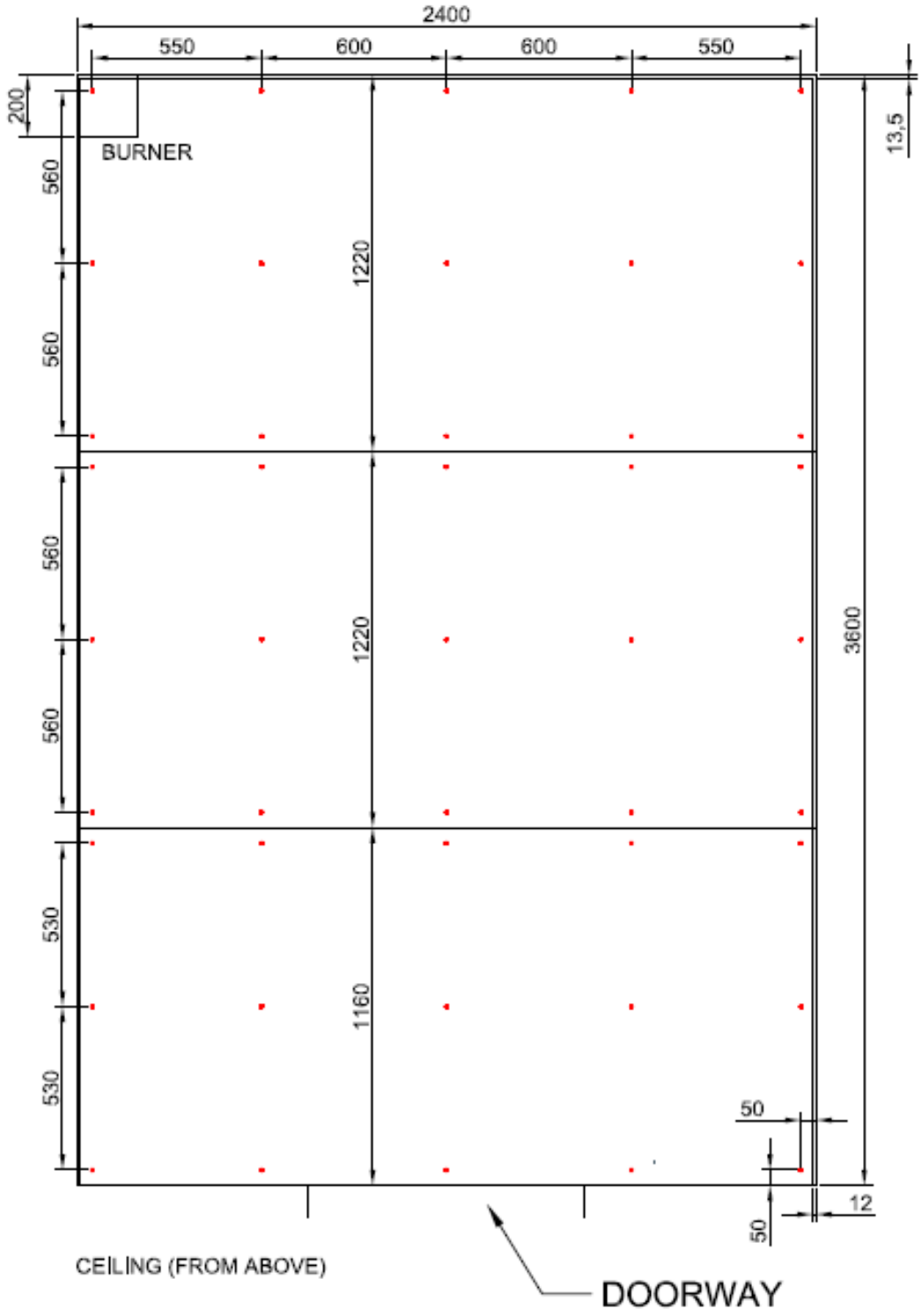
Fire behavior Group number
2

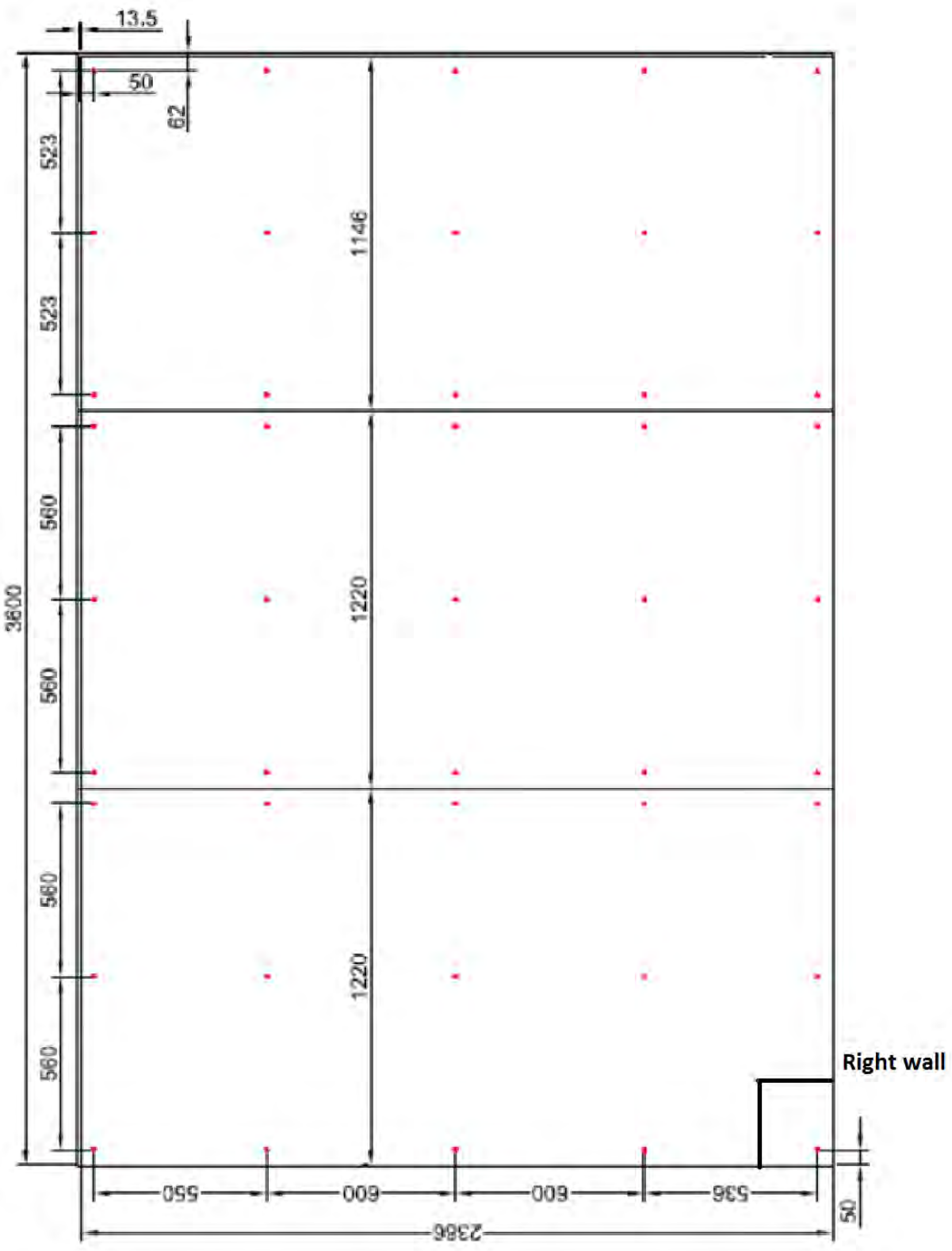
Criteria Australian Group Numbers according to AS 5637.1:2015, based on AS ISO 9705:2003 (identical to ISO 9705:1993)

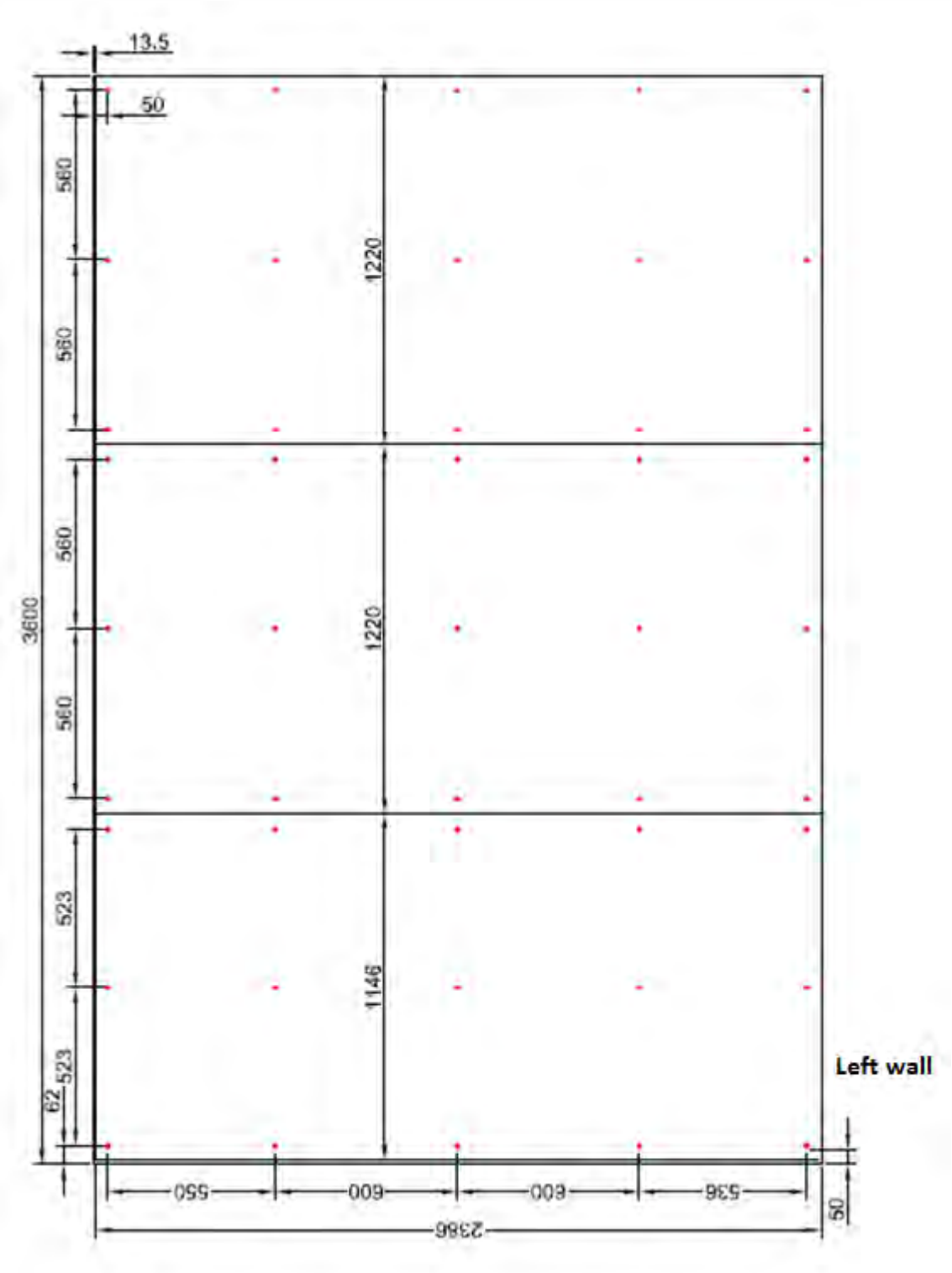
Group 1	does not reach flashover when exposed to 100kW for 600s followed by exposure to 300 kW for 600s.
Group 2	reaches flashover following exposure to 300kW within 600s after not reaching flashover when exposed to 100kW for 600s.
Group 3	reaches flashover in more than 120s but within 600s when exposed to 100kW.
Group 4	reaches flashover within 120s when exposed to 100kW.

Annex 1: Mounting and fixing details




2400
550
600
600
550
200
BURNER
13,5
560
560
1220
560
560
1220
3600
530
530
1160
50
50
12
CEILING (FROM ABOVE)
DOORWAY


13.5
50
62
523
523
1146
560
560
1220
3600
560
560
1220
Right wall
550
600
600
536
50
2386


13.5
50
560
560
560
560
560
523
523
62
3600
1220
1220
1146
Left wall
550
600
600
536
2386
50

Annex 2 Photos of the specimen

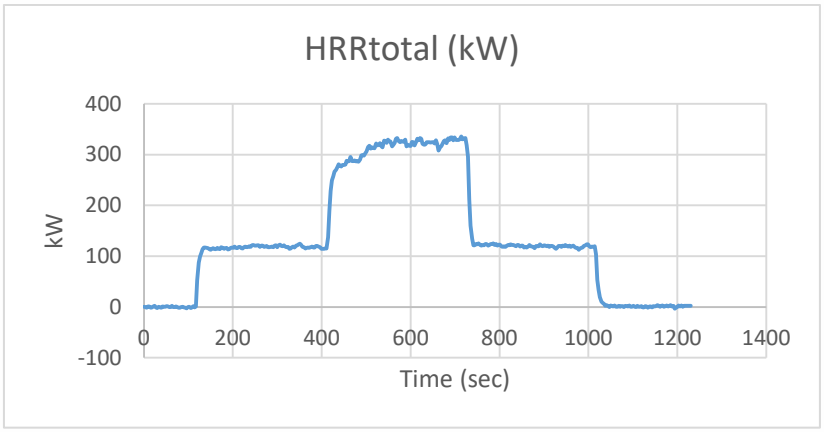
Build-up before the test:

During the test:

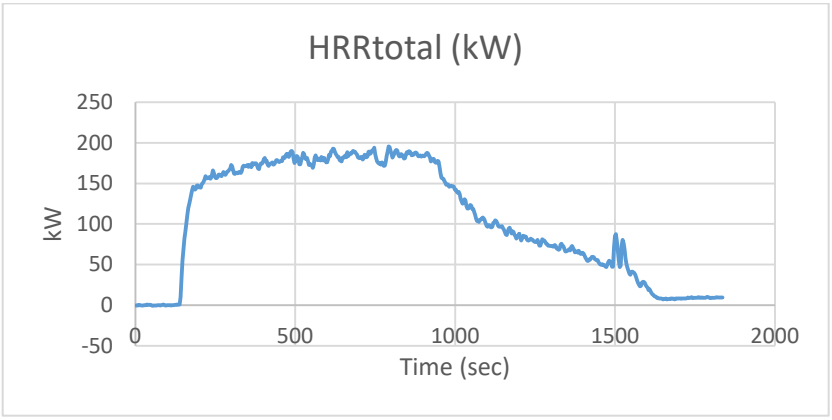
After the test:

Annex 3: Calibration results

Step calibration

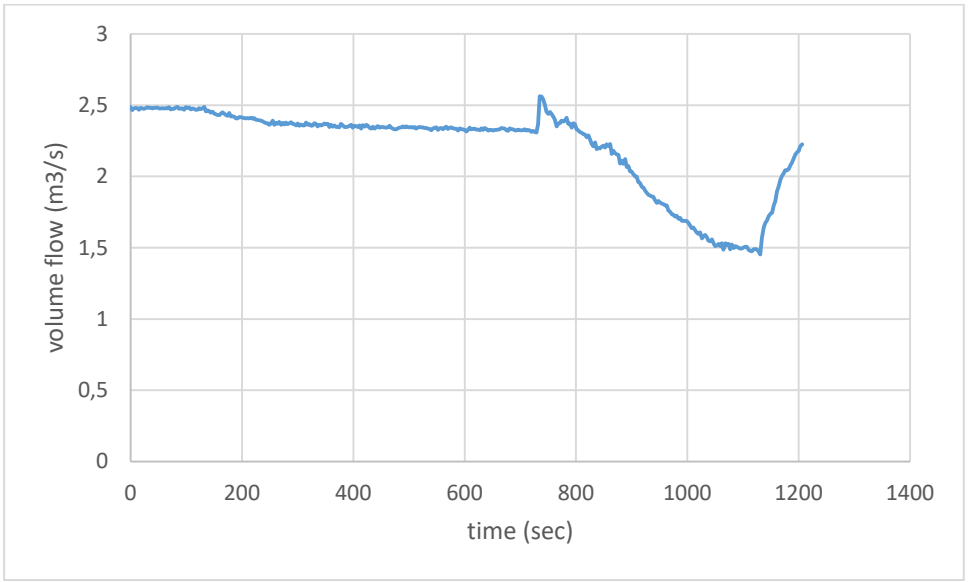


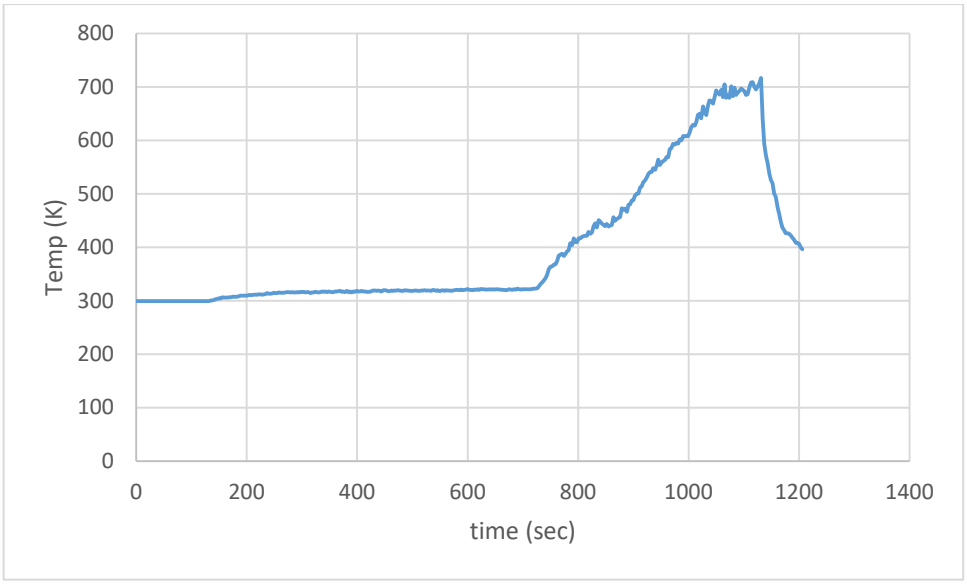
Methanol calibration



Annex 4

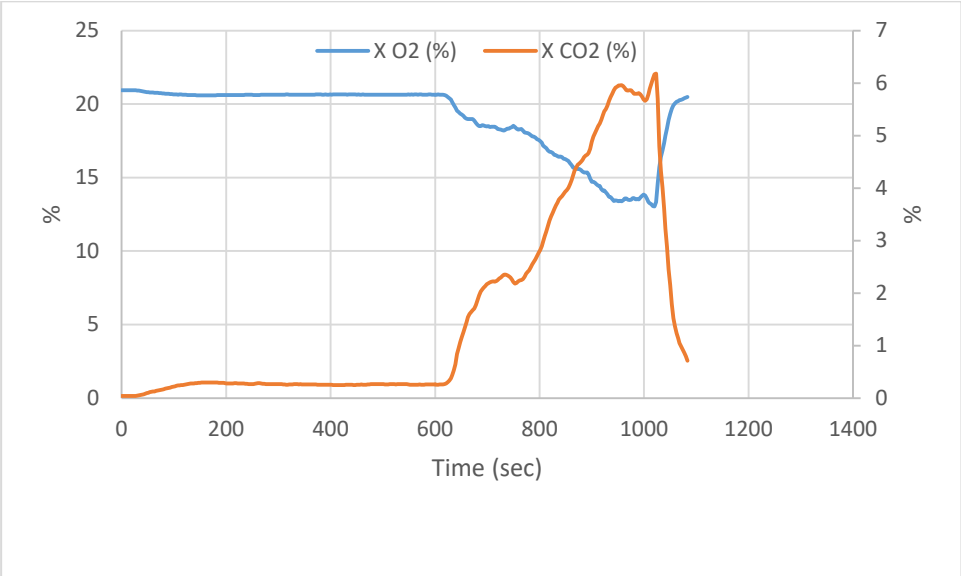
Volume flow (m^3/s^2) and temperature (°K) in exhaust duct



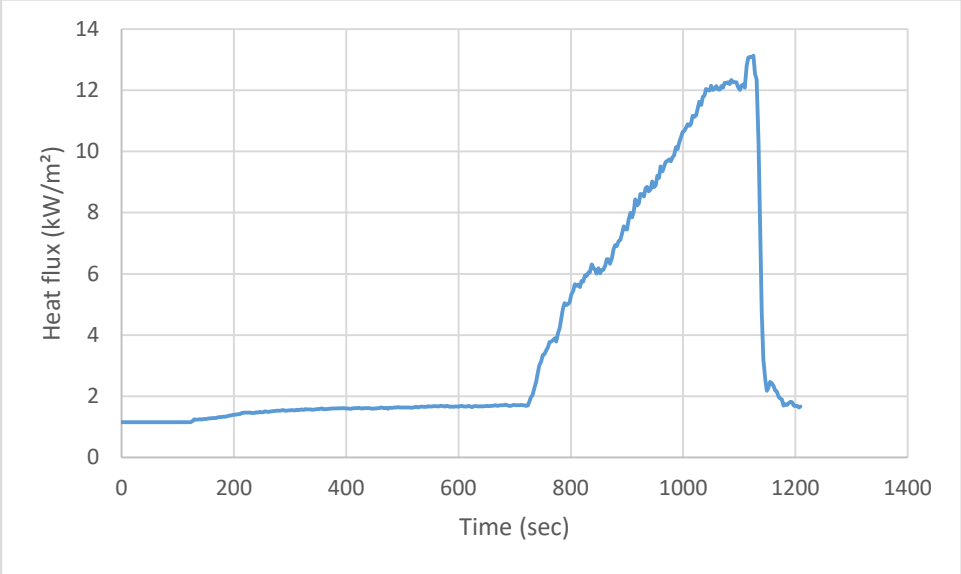


Annex 5: Test results

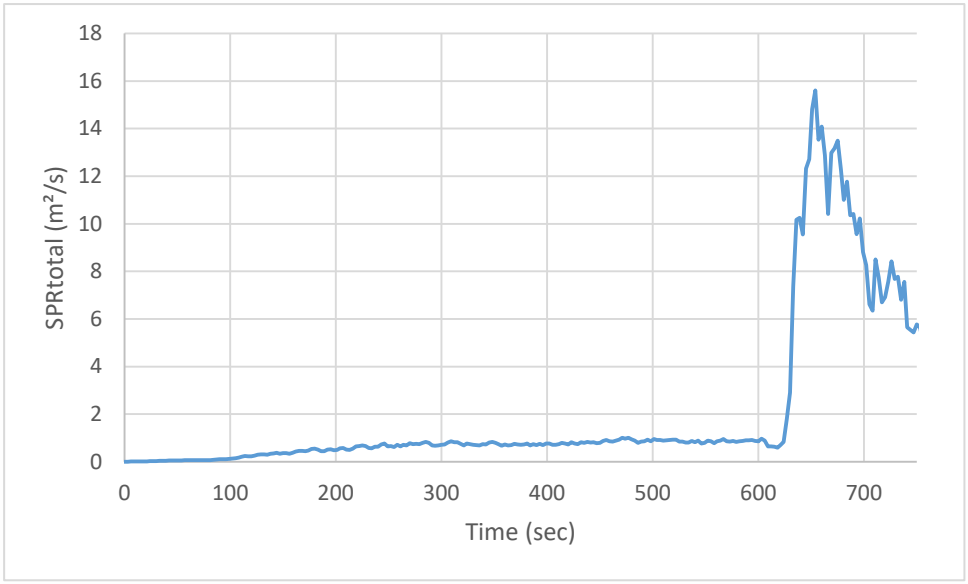
5.1 Gas concentrations in function of time



5.2 Heat flux at floor level

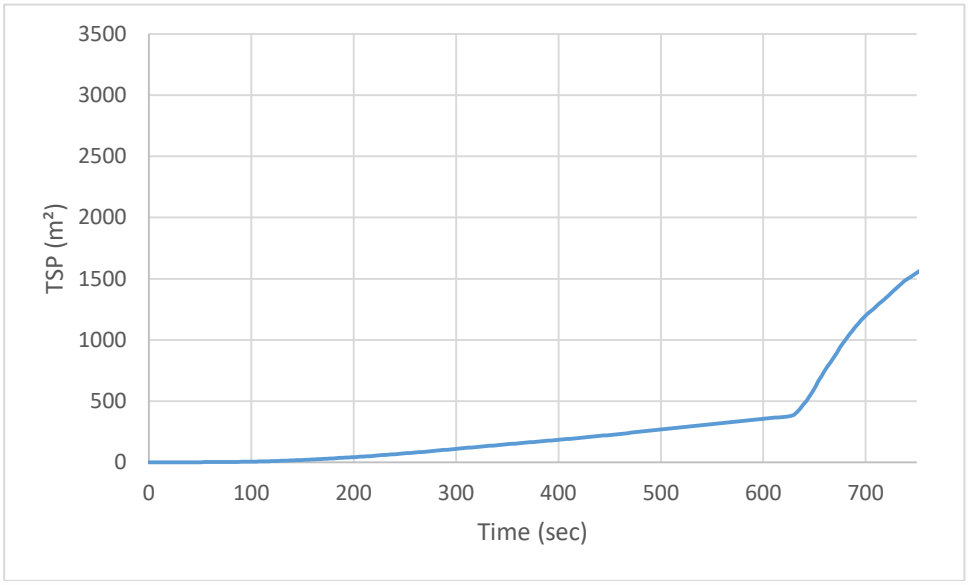


5.2 Time/smoke production rate at actual duct flow temperature in function of time:



5.4 Total smoke production

TSP(t) = ∑ SPR(t)*3s total smoke production during the time interval 0->t with t being the time at flash-over or the end of the test.



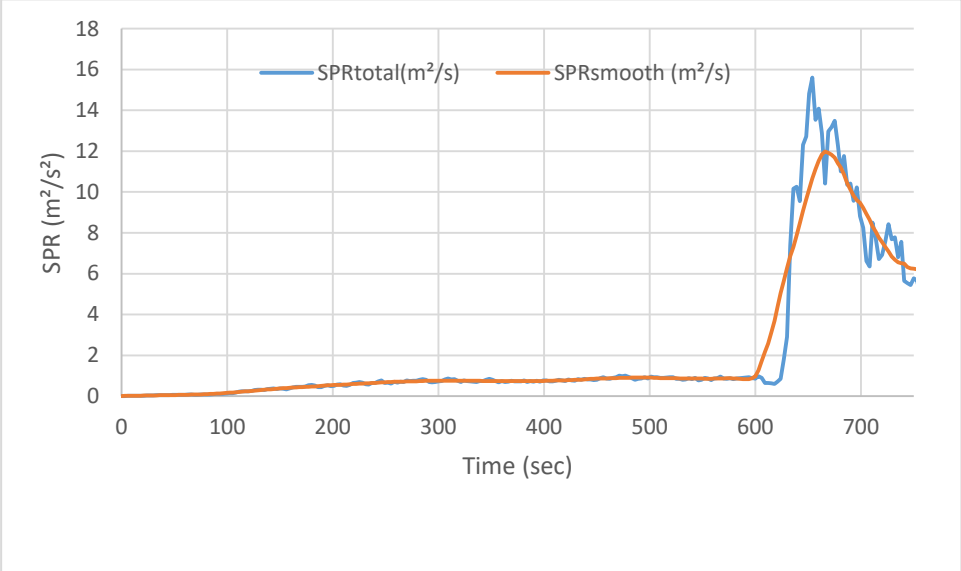
5.5 SMOGRA

SMOGRA = 10.000 * PeakSPR$_{smooth}$/t , where

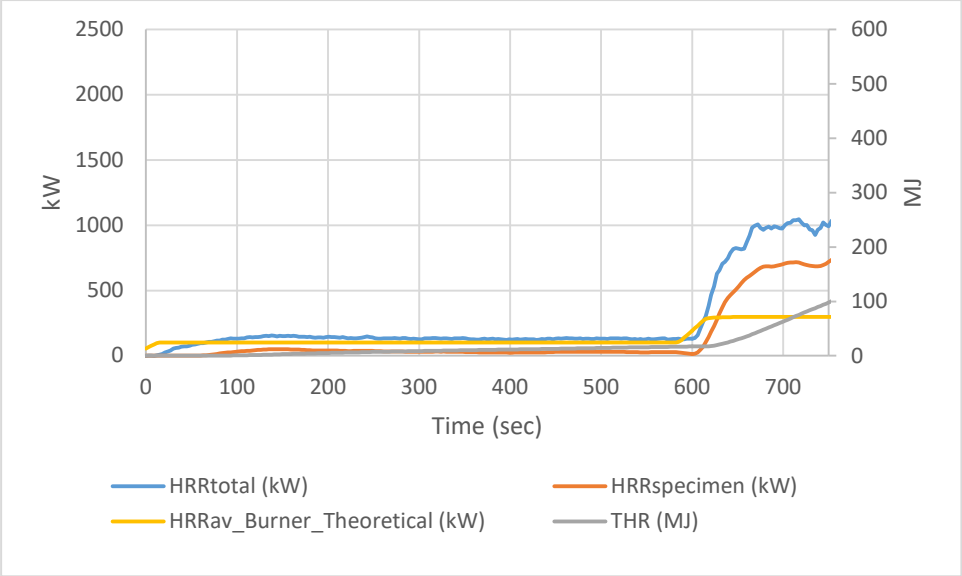
$$SPRsmooth(t) = \frac{\mathrm{SPR(t - 30\,s) + SPR(t - 27\,s) + \ldots + SPR(t + 27\,s) + SPR(t + 30\,s)}}{t}$$

Peak value: at 11,98 m²/s
Correlates with a peak after 789 seconds
SMOGRA = 10.000 * (11,98 m²/s) / 666 s = 179,88 m²/s²

Time (sec)	SPRsmooth (m²/s)
657	11,11
660	11,52
663	11,84
666	11,98
669	11,91
672	11,82
675	11,68



5.6 Heat release



5.7 FIGRA

FIGRA = $PeakHRR_{product}/t$, where $PeakHRR_{product}$ is the maximum HRR(kW)
Flash over occurred after the 10 minute mark, during the time the HRR of the ignition source was at a level of 300kW.