Test report ID 20341-1

Customer

Teknos Oy
Takkatie 3, 00370 Helsinki, Finland
Contact person: Mikko Hakala

Assignment

Measurlabs provided testing according to standard EN 13823:2020+A1:2022 as requested by the customer. Testing was made for samples of product: INFRALIT PE 8350. The testing was performed by an ISO/IEC 17025 accredited external service provider.

Product

The customer gave the following information about the product:

Product name: INFRALIT PE 8350
Manufacturer: Teknos Oy
Product description: Polyester powder coating on a metal substrate

- polyester powder coating with a thickness of 100 – 120 microns and a density in powder form of 1430 kg/m³

INFRALIT PE 8350 powder coating in black RAL 9005 colour. According to the customer this colour contains higher organic content than other colours of the product series and is considered the worst case colour tone in fire testing.

Sample(s)

Sampling was performed by the Teknos Oy at Rajamäki Plant, Perämatkuntie 12, Nurmijärvi, Finland on 26.05.2025. The powder coating sample was taken from the warehouse of ready production and painted on aluminium sheets specially made for testing.

Sample name	Performed measurements
INFRALIT PE 8350 • Tested colour: Black (RAL 9005) • Substrate: Aluminium sheet with a thickness of 1 mm and mass per area 2.7 kg/m²	EN 13823:2020+A1:2022

Samples received 09/06/2025 (dd/mm/yyyy)

Date of tests 17/07/2025

Results The results are presented in annex 1 (No.660-1/2025) of this report, and relate to the tested sample(s) only.

On Friday, 22 August 2025, issued by

Tatu Waltari
MSc
Senior Testing Expert

+358 50 394 8129
tatu.waltari@measurlabs.com

Measurlabs (Measur Oy)

Teollisuuskatu 33
00510 Helsinki
Finland

FOREST AND WOOD PRODUCTS
RESEARCH AND DEVELOPMENT INSTITUTE

„MEŽA UN KOKSNES PRODUKTU PĒTNIECĪBAS UN ATTĪSTĪBAS INSTITŪTS" SIA
VAT No. LV 43603022749
Dobeles iela 41, Jelgava, LV-3001, Latvia
Phone +371 63010605 * E-mail meka@e-koks.lv * Web www.e-koks.lv

EN ISO/IEC 17025
T-316

Test Report
No.660-1/2025

Forest and Wood Products Research and Development Institute
Testing Laboratory

Customer: Measur Oy.

Customer's address: Teollisuuskatu 33, 00510 Helsinki, Finland.
Reg. No. 2820461-1.

Manufacturer and owner of the test report: Teknos Oy.

Address: Takkatie 3, 00370 Helsinki, Finland.
Reg. No. 2203752-5.

Date of the order: 09.06.2025.
Testing was done according to contract No. 99-07/25 MU.

Test samples received: 16.06.2025.

Test performed at: SIA "Meža un koksnes produktu pētniecības un attīstības institūts" (Forest and Wood Products Research and Development Institute Ltd), "Pienavas katlu māja", Pienava, Džūkstes pagasts, Tukuma novads, LV-3147, Latvia ("Pienava heat plant", Pienava, Džūkste parish, Tukums region, LV-3147, Latvia).

Description of product (According to customer's information)

- Product name: INFRALIT PE 8350.
- Manufacturer: Teknos Oy.
- Materials used for manufacturing:
  - aluminium sheet as substrate with a thickness of 1 mm and mass per area 2.7 kg/m^2;
  - polyester powder coating with a thickness of 100 – 120 microns and a density in powder form of 1430 kg/m^3.
- Tested colour: black (RAL9005).

Sampling:
Sampling was done by Teknos Oy at Rajamäki Plant, Perämatkuntie 12, Nurmijärvi, Finland on 26.05.2025. The powder coating sample was taken from the warehouse of ready production and painted on aluminium sheets specially made for testing.

Application of product (according to customer's information):
The product is intended to be used as a protective coating on metallic substrates.

Specimen preparation for testing:
Specimens were prepared and delivered to the testing laboratory on 16.06.2025. by Measur Oy.

Substrates used:
An aluminium sheet substrate was used. Substrate complies with standard EN 13238:2010 requirements.

Conditioning of specimens:
Specimens were conditioned according to standard EN 13238:2010.
Conditioning method: constant mass.
Temperature: t = 23 ± 2 ºC.
Relative humidity: RH = 50 ± 5%.
Conditioning period: 21 days.

Test standard: EN 13823:2020+A1:2022.
Test date: 17.07.2025.

Test results:
Test results and test protocols are given in the annexes.

According to EN 13823:2020+A1:2022 test results relate to the behaviour of test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

Annexes:
Annex 1 (Test results, 3 pp.)
Annex 2 (SBI test protocol No. 660-1-1, 3 pp.)
Annex 3 (SBI test protocol No. 660-1-2, 3 pp.)
Annex 4 (SBI test protocol No. 660-1-3, 3 pp.)

Date of issue: 13.08.2025.

Prepared by  E.Bukšāns

(signature and name)

Reviewed by  K.Būmanis

(signature and name)

THIS DOCUMENT IS SIGNED BY SECURE ELECTRONIC SIGNATURE AND CONTAINS A TIME STAMP
(Signature validity can be checked: https://www.eparaksts.lv/en)

TEST RESULTS

Test specimens

- INFRALIT PE 8350.
- Measured thickness: 1 mm.
- Specimen identification in laboratory: 660-1-1 … 660-1-3.

Mounting:

Specimens were mounted in SBI trolley as free-standing construction in accordance with standard EN 13823:2020+A1:2022 paragraph 5.2.2 a. Specimens were mounted on a steel frame with screws without joints. Distance between screws – 300 mm (in vertical direction) and 200 mm (in horizontal direction). Specimens were mounted in SBI with 80 mm ventilated air gap between the product and the calcium silicate backing board (see Fig. 1). Calcium silicate backing board comply with standard EN 13238:2010 requirements.

Test result summary

All tests were done without technical failure. For statistical data analysis were selected coting all tested specimens (660-1-1 … 660-1-3). Test result summaries are shown in Table 1, and graphs are shown in the test protocols in Annexes 2 – 4.

Table 1

Specimen No.	660-1-1	660-1-2	660-1-3	Average	Standard deviation	Standard error
General information						
Test start, min:s	0:00	0:00	0:00			
Auxiliary burner ignited, min:s	2:00	2:00	2:00			
Main burner ignited, min:s	5:03	5:03	5:03			
Main burner stopped, min:s	26:00	26:00	26:00			
Observations						
Ignition of specimen	6:30	7:00	6:50			
Burning droplets, particles, <10s; min:s	no	no	no			
Burning droplets, particles, >10s; min:s	no	no	no			
Lateral flame spread, LFS; min:s	no	no	no			
Falling specimen parts, min:s	no	no	no			
Fire performance						
$FIGRA_{0,2MJ}$, W/s	50.6	Threshold not reached	48.7	**50**	1.3	0.8
$FIGRA_{0,4MJ}$, W/s	27.0		28.1	**28**	0.8	0.4
THR_{600s}, MJ	0.9	0.8	0.8	**0.8**	0.1	0.0
SMOGRA, m^2/s^2	Threshold not reached			**Threshold not reached**	-	-
TSP_{600s}, m^2	14.8	14.6	14.5	**15**	0.2	0.1

Test parameter explanation:

Specimen	Specimen consisting of two wings (short wing – 495 × 1500 mm and long wing 1000 × 1500 mm) mounted perpendicular each to other.
Test start	Start of data collection
Ignition of the specimen	Ignition of specimen long wing initiated by main burner
Flaming particles and droplets	Specimen particles which have fall down on trolley at distance more than 300 mm distance from specimen corner and continue burning. It should be observed if flaming time is less or more than 10 s.
Lateral flame spread on the long wing LFS 1000 mm	Lateral flame spread is recorded when sustained flames reach's the far edge of specimen at height between 500 to 1000 mm.
HRR, kW	Heat release rate of material between ignition of main burner and end of the test, burner heat output excluded, as a 60 s running average value.
SPR, m^2/s^2	Smoke production rate of material between ignition of the main burner and end of test burner smoke production output excluded, as 60 s running average value.
$FIGRA_{0,2MJ}$, W/s	Fire growth rate is maximum of the quotient of heat release rate from the specimen and time of its occurrence using a THR-threshold of 0.2 MJ.
$FIGRA_{0,4MJ}$, W/s	Fire growth rate is maximum of the quotient of heat release rate from the specimen and time of its occurrence using a THR-threshold of 0.4 MJ.
THR_{600s}, MJ	Total heat release of the sample in first 600 s of exposure to the main (primary) burner flames.
SMOGRA, m^2/s^2	Maximum of the quotient of smoke production rate from the specimen and the time of its occurrence.
TSP_{600s}, m^2	Total smoke production from the specimen in the first 600 s of exposure to the main (primary) burner flames.

Observations during the test

There was no flaming droplets observed during all tests. There was no lateral flame spread or specimen collapses during the test. Specimen after test shown in Figure 2. – 3.

Deviations from standard

No.

Photos:

Fig. 1 Specimen mounting in SBI.

Fig. 2 Specimens (No 660-1-1 and 660-1-2) after the test.

Fig. 3 Specimen (No 660-1-3) after the test.

SBI Test Report

Laboratory name	MeKA Testing laboratory
Operator	Elvis Skavronskis
Test filename	C:\SBICALC\Data\660\660-1-1.CSV
Smoke baseline filename	C:\SBICALC\SMOKE\25071701.CSV
Report identification	660-1-1-2025
Product identification	INFRALIT PE 8350

Test

Standard used	EN 13823:2020
Date of test	17/07/2025
Date of report	17/07/2025
E'	17.2 MJ/m³

Apparatus specifications

kt	0.79
kp	1.24
Duct diameter	0.315 m
O2 calibration delay time	8 s
CO2 calibration delay time	10 s

Pre-test conditions

Baseline duct temperature	297.59 K
Ambient temperature	296.38 K
Ambient pressure	102.017 kPa
Relative humidity	59%

Test baseline conditions

Baseline ambient oxygen	20.576%
Baseline oxygen	20.949%
Baseline carbon dioxide	0.0448%
Baseline smoke	99.98%

Specimen conditioning

Method	Fixed period
Time interval	504 hours
Mass 1	g
Mass 2	g
Temperature	23°C
RH	50%

Smoke baseline test results

Main burner SPR	0.046 m²/s
Main burner SPR std. dev.	0.007 m²/s

Specimen information

Thickness	1 mm
Density	
Surface mass/area	
Specimen number	1
Date of arrival	16/06/2025
Mounting method	5.2.2a) in EN 13823
Joints	none
Fixed to substrate?	Yes
Fixing method	screw
Substrate	calcium silicate backingboard
Manufacturer	
Sponsor	Measur Oy

Test validity criteria

Test drifts

	Initial	Final	Change
Oxygen	20.949%	20.964%	0.015%
CO2	0.045%	0.048%	0.003%
Smoke	99.98%	99.79%	0.002

Exposure time 1251 s

Synchronisation details

Duct temp. dropped by 2.5 K from baseline of 323.61 K at 306 s
Oxygen rose by 0.05% from baseline of 20.660% at 306 s
CO2 dropped by 0.02% from baseline of 0.207% at 306 s

Burner details

Auxiliary Burner HRR	28.959 kW
Auxiliary Burner HRR std. dev.	0.488 kW
Burner CO2/O2 ratio	0.559

Other checks

Minimum duct flow	0.500 m³/s
Maximum duct flow	0.579 m³/s
No T/C failure	

Classification results

FIGRA(0.2)	50.6 W/s at 417 s
FIGRA(0.4)	27.0 W/s at 450 s
THR(600)	0.9 MJ
SMOGRA	threshold not reached
TSP(600)	14.8 m²

Classification observations

LFS to edge?	No
FDP flaming <= 10s?	No
FDP flaming > 10s?	No

Potential classification

Class	A2/B
Smoke production	s1
Flaming droplets/particles	d0

Recorded events Surface flashes? No; Falling specimen parts? No; Smoke not entering hood? No
Mutual fixing of backing board failed? No; Distortion/collapse of specimen? No

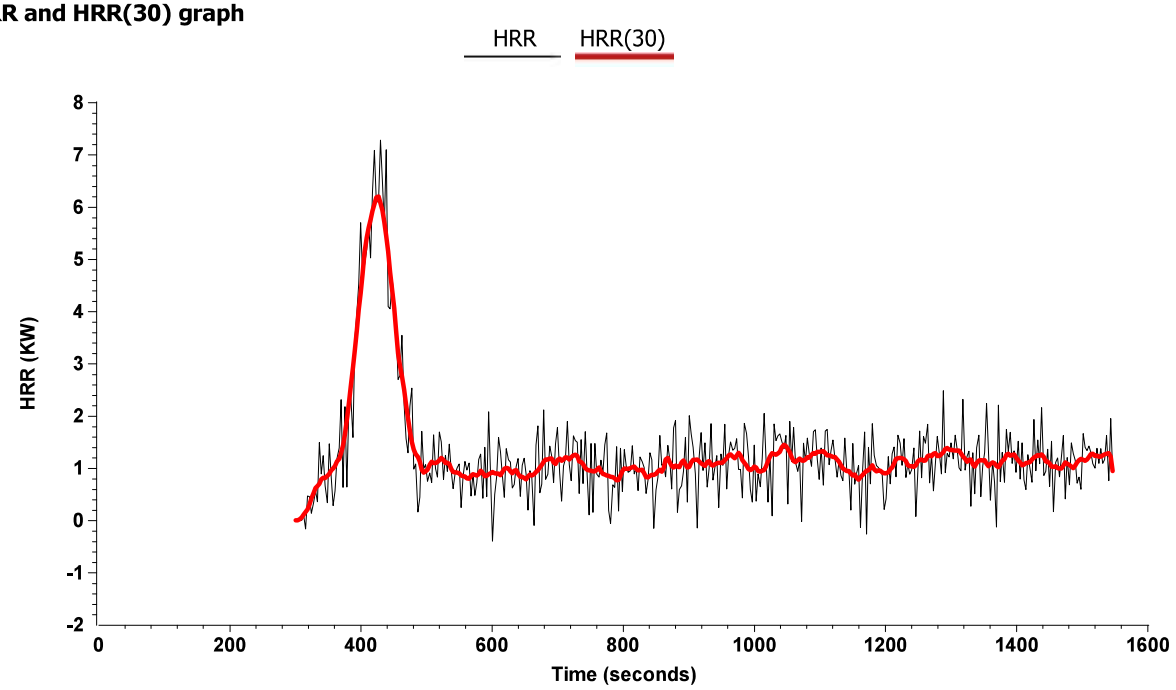
Pre-test comments INFRALIT PE 8350 powder coating in black RAL 9005 colour. This colour contains more combustible material than other colours and is therefore considered the worst case in any fire safety test

After-test comments

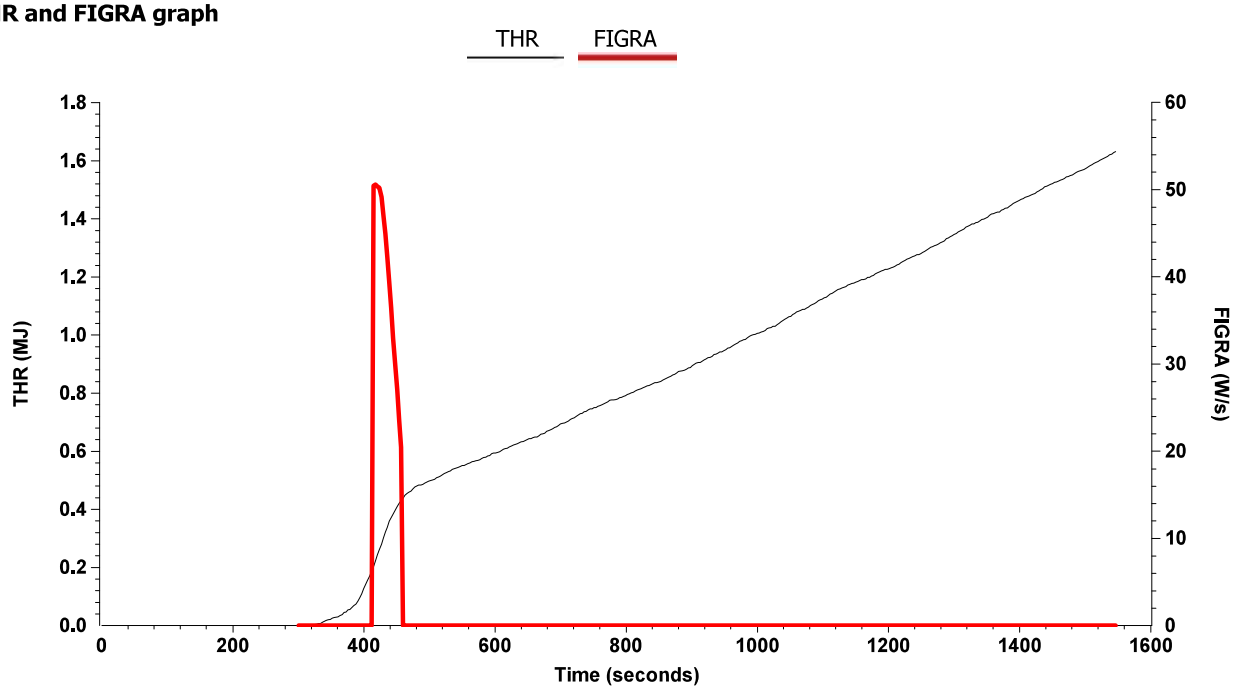
SBI Test Report

Laboratory name	MeKA Testing laboratory
Operator	Elvis Skavronskis
Test filename	C:\SBICALC\Data\660\660-1-1.CSV
Smoke baseline filename	C:\SBICALC\SMOKE\25071701.CSV
Report identification	660-1-1-2025
Product identification	INFRALIT PE 8350

HRR and HRR(30) graph



THR and FIGRA graph

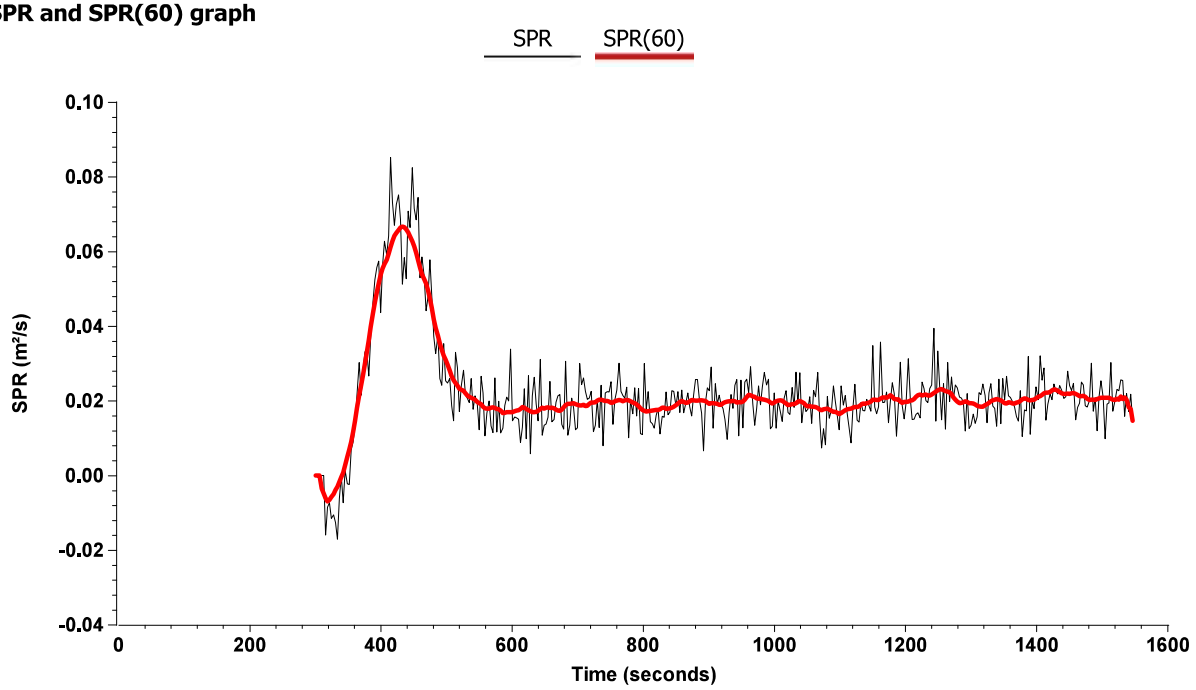


The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

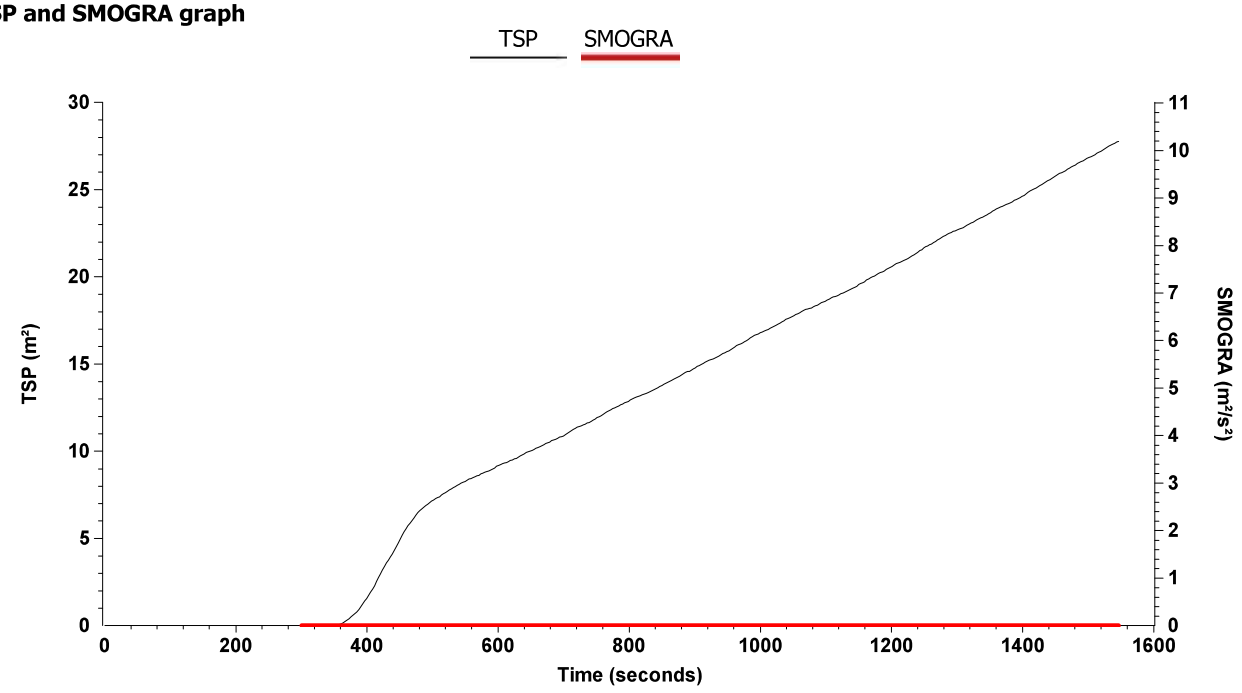
SBI Test Report

Laboratory name	MeKA Testing laboratory
Operator	Elvis Skavronskis
Test filename	C:\SBICALC\Data\660\660-1-1.CSV
Smoke baseline filename	C:\SBICALC\SMOKE\25071701.CSV
Report identification	660-1-1-2025
Product identification	INFRALIT PE 8350

SPR and SPR(60) graph



TSP and SMOGRA graph



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

SBI Test Report

Laboratory name	MeKA Testing laboratory
Operator	Elvis Skavronskis
Test filename	C:\SBICALC\Data\660\660-1-2.CSV
Smoke baseline filename	C:\SBICALC\SMOKE\25071701.CSV
Report identification	660-1-2-2025
Product identification	INFRALIT PE 8350

Test

Standard used	EN 13823:2020
Date of test	17/07/2025
Date of report	17/07/2025
E'	17.2 MJ/m³

Apparatus specifications

kt	0.79
kp	1.24
Duct diameter	0.315 m
O2 calibration delay time	8 s
CO2 calibration delay time	10 s

Pre-test conditions

Baseline duct temperature	297.51 K
Ambient temperature	296.66 K
Ambient pressure	102.052 kPa
Relative humidity	59%

Test baseline conditions

Baseline ambient oxygen	20.578%
Baseline oxygen	20.950%
Baseline carbon dioxide	0.0462%
Baseline smoke	99.97%

Specimen conditioning

Method	Fixed period
Time interval	504 hours
Mass 1	0 g
Mass 2	0 g
Temperature	23°C
RH	50%

Smoke baseline test results

Main burner SPR	0.046 m²/s
Main burner SPR std. dev.	0.007 m²/s

Specimen information

Thickness	1 mm
Density	
Surface mass/area	
Specimen number	2
Date of arrival	16/06/2025
Mounting method	5.2.2a) in EN 13823
Joints	none
Fixed to substrate?	Yes
Fixing method	screw
Substrate	calcium silicate backingboard
Manufacturer	
Sponsor	Measur Oy

Test validity criteria

Test drifts

	Initial	Final	Change
Oxygen	20.950%	20.961%	0.012%
CO2	0.046%	0.049%	0.003%
Smoke	99.97%	99.82%	0.001

Exposure time 1254 s

Synchronisation details

Duct temp. dropped by 2.5 K from baseline of 323.28 K at 303 s
Oxygen rose by 0.05% from baseline of 20.656% at 303 s
CO2 dropped by 0.02% from baseline of 0.209% at 306 s

Burner details

Auxiliary Burner HRR	29.506 kW
Auxiliary Burner HRR std. dev.	0.535 kW
Burner CO2/O2 ratio	0.555

Other checks

Minimum duct flow	0.511 m³/s
Maximum duct flow	0.589 m³/s
No T/C failure	

Classification results

FIGRA(0.2)	threshold not reached
FIGRA(0.4)	threshold not reached
THR(600)	0.8 MJ
SMOGRA	threshold not reached
TSP(600)	14.6 m²

Classification observations

LFS to edge?	No
FDP flaming <= 10s?	No
FDP flaming > 10s?	No

Potential classification

Class	A2/B
Smoke production	s1
Flaming droplets/particles	d0

Recorded events Surface flashes? No; Falling specimen parts? No; Smoke not entering hood? No
Mutual fixing of backing board failed? No; Distortion/collapse of specimen? No

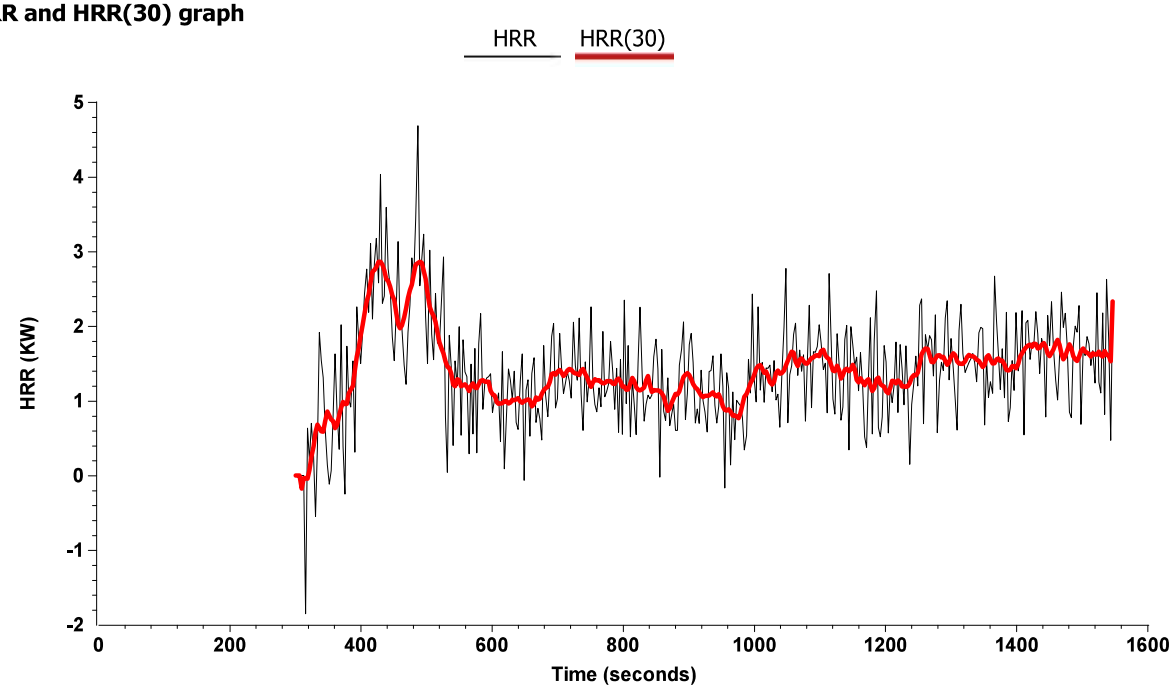
Pre-test comments INFRALIT PE 8350 powder coating in black RAL 9005 colour. This colour contains more combustible material than other colours and is therefore considered the worst case in any fire safety test

After-test comments

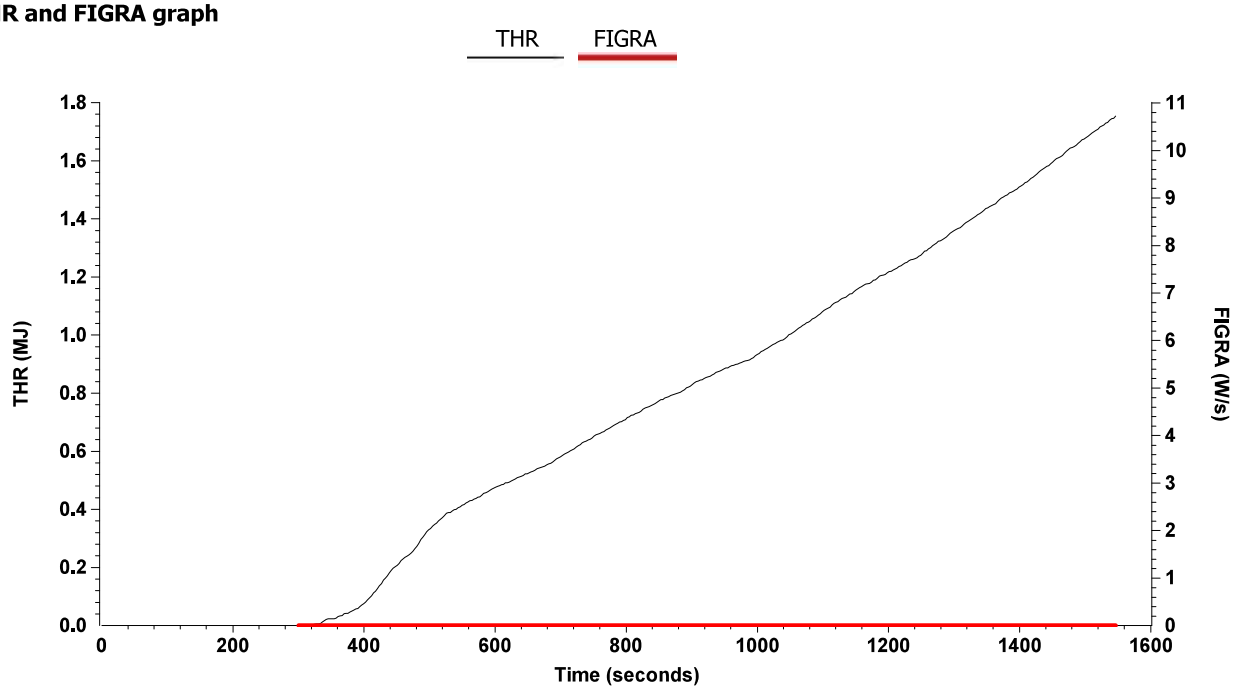
SBI Test Report

Laboratory name	MeKA Testing laboratory
Operator	Elvis Skavronskis
Test filename	C:\SBICALC\Data\660\660-1-2.CSV
Smoke baseline filename	C:\SBICALC\SMOKE\25071701.CSV
Report identification	660-1-2-2025
Product identification	INFRALIT PE 8350

HRR and HRR(30) graph



THR and FIGRA graph

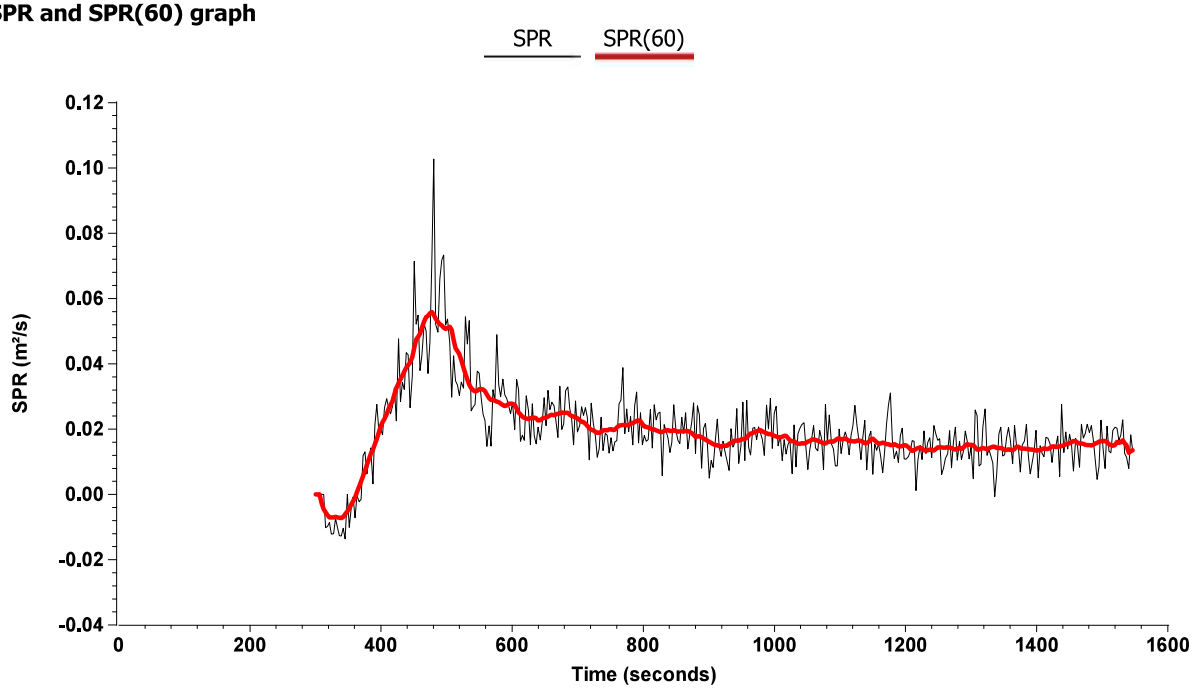


The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

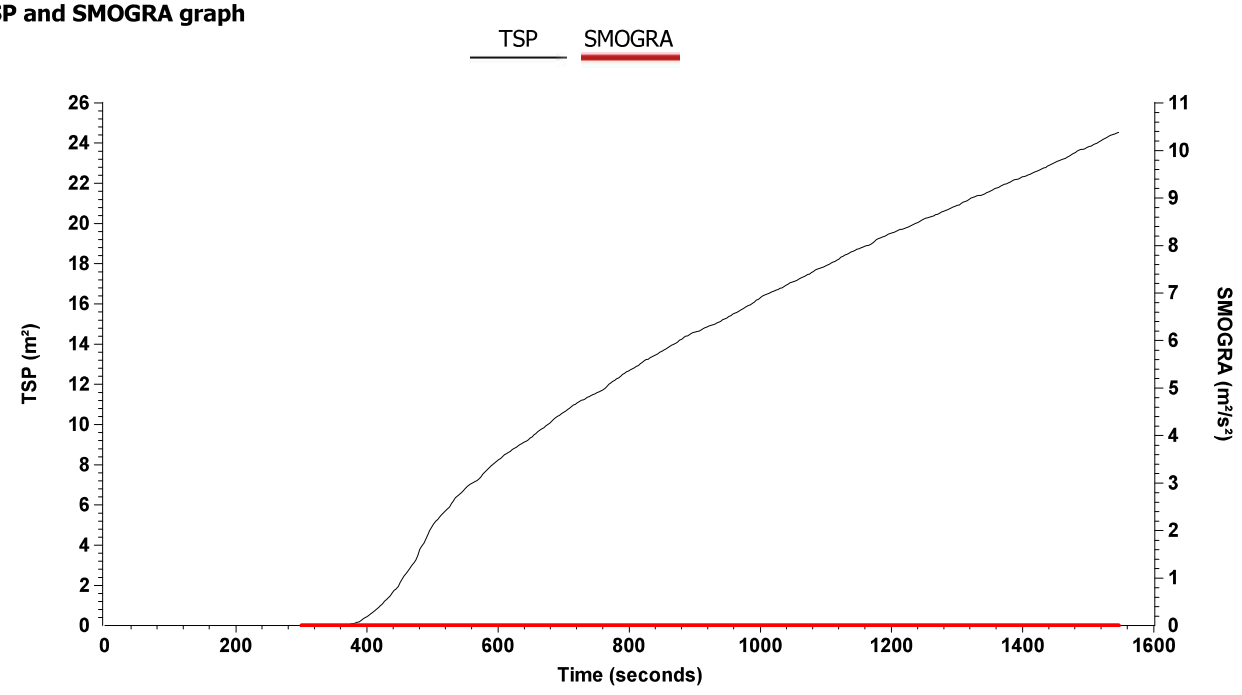
SBI Test Report

Laboratory name	MeKA Testing laboratory
Operator	Elvis Skavronskis
Test filename	C:\SBICALC\Data\660\660-1-2.CSV
Smoke baseline filename	C:\SBICALC\SMOKE\25071701.CSV
Report identification	660-1-2-2025
Product identification	INFRALIT PE 8350

SPR and SPR(60) graph



TSP and SMOGRA graph



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

SBI Test Report

Laboratory name	MeKA Testing laboratory
Operator	Elvis Skavronskis
Test filename	C:\SBICALC\Data\660\660-1-3.CSV
Smoke baseline filename	C:\SBICALC\SMOKE\25071701.CSV
Report identification	660-1-3-2025
Product identification	INFRALIT PE 8350

Test

Standard used	EN 13823:2020
Date of test	17/07/2025
Date of report	17/07/2025
E'	17.2 MJ/m³

Apparatus specifications

kt	0.79
kp	1.24
Duct diameter	0.315 m
O2 calibration delay time	8 s
CO2 calibration delay time	10 s

Pre-test conditions

Baseline duct temperature	298.30 K
Ambient temperature	296.24 K
Ambient pressure	102.095 kPa
Relative humidity	59%

Test baseline conditions

Baseline ambient oxygen	20.562%
Baseline oxygen	20.951%
Baseline carbon dioxide	0.0486%
Baseline smoke	99.98%

Specimen conditioning

Method	Fixed period
Time interval	504 hours
Mass 1	0 g
Mass 2	0 g
Temperature	23°C
RH	50%

Smoke baseline test results

Main burner SPR	0.046 m²/s
Main burner SPR std. dev.	0.007 m²/s

Specimen information

Thickness	1 mm
Density	
Surface mass/area	
Specimen number	3
Date of arrival	16/06/2025
Mounting method	5.2.2a) in EN 13823
Joints	none
Fixed to substrate?	Yes
Fixing method	screw
Substrate	calcium silicate backingboard
Manufacturer	
Sponsor	Measur Oy

Test validity criteria

Test drifts

	Initial	Final	Change
Oxygen	20.951%	20.960%	0.009%
CO2	0.049%	0.050%	0.002%
Smoke	99.98%	99.86%	0.001

Exposure time 1254 s

Synchronisation details

Duct temp. dropped by 2.5 K from baseline of 324.17 K at 303 s
Oxygen rose by 0.05% from baseline of 20.662% at 303 s
CO2 dropped by 0.02% from baseline of 0.210% at 306 s

Burner details

Auxiliary Burner HRR	28.985 kW
Auxiliary Burner HRR std. dev.	0.469 kW
Burner CO2/O2 ratio	0.559

Other checks

Minimum duct flow	0.507 m³/s
Maximum duct flow	0.597 m³/s
No T/C failure	

Classification results

FIGRA(0.2)	48.7 W/s at 438 s
FIGRA(0.4)	28.1 W/s at 465 s
THR(600)	0.8 MJ
SMOGRA	threshold not reached
TSP(600)	14.5 m²

Classification observations

LFS to edge?	No
FDP flaming <= 10s?	No
FDP flaming > 10s?	No

Potential classification

Class	A2/B
Smoke production	s1
Flaming droplets/particles	d0

Recorded events Surface flashes? No; Falling specimen parts? No; Smoke not entering hood? No
Mutual fixing of backing board failed? No; Distortion/collapse of specimen? No

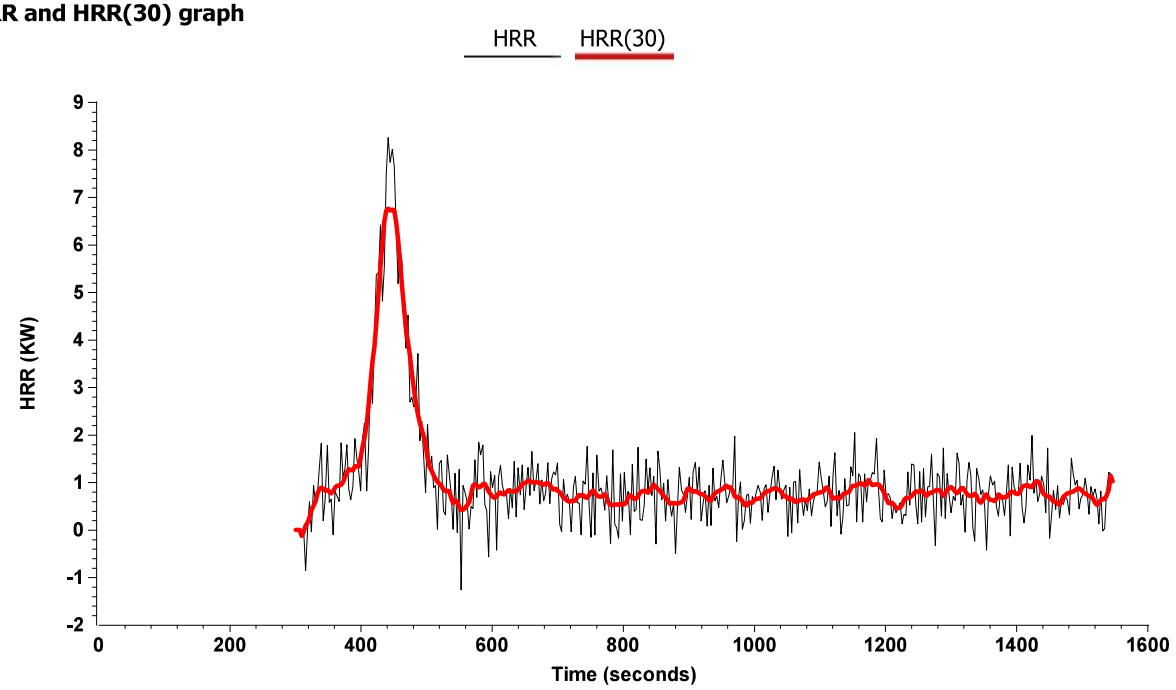
Pre-test comments INFRALIT PE 8350 powder coating in black RAL 9005 colour. This colour contains more combustible material than other colours and is therefore considered the worst case in any fire safety test

After-test comments

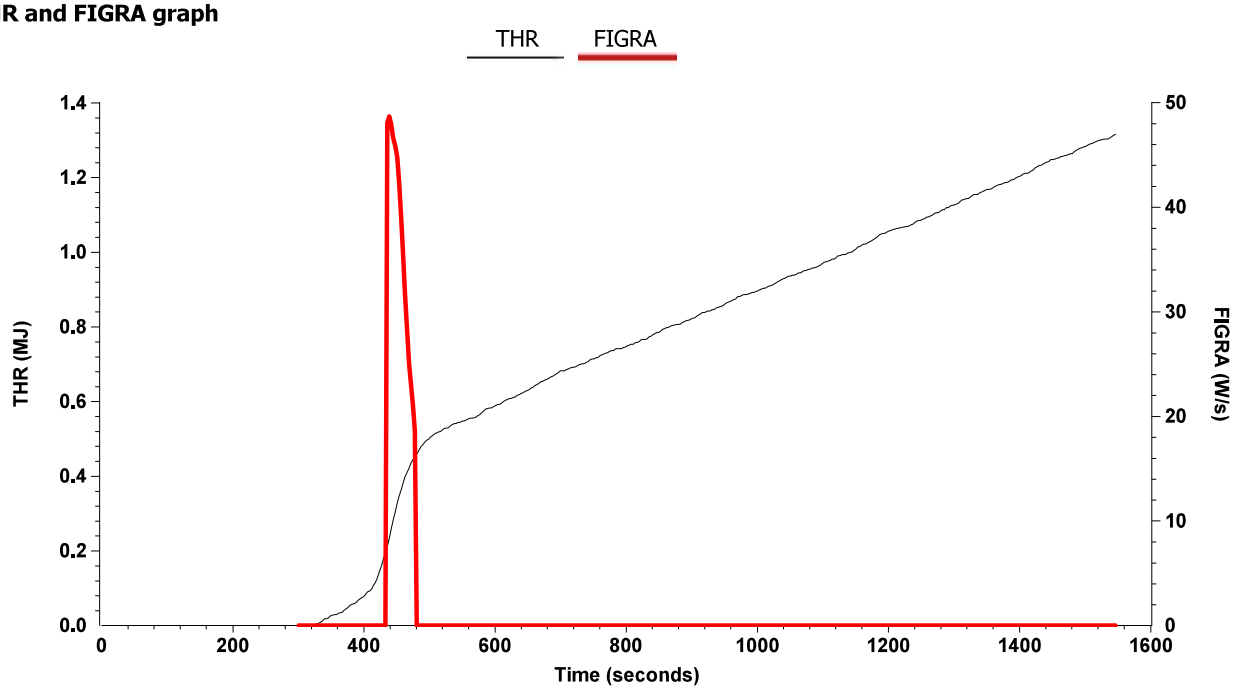
SBI Test Report

Laboratory name	MeKA Testing laboratory
Operator	Elvis Skavronskis
Test filename	C:\SBICALC\Data\660\660-1-3.CSV
Smoke baseline filename	C:\SBICALC\SMOKE\25071701.CSV
Report identification	660-1-3-2025
Product identification	INFRALIT PE 8350

HRR and HRR(30) graph



THR and FIGRA graph

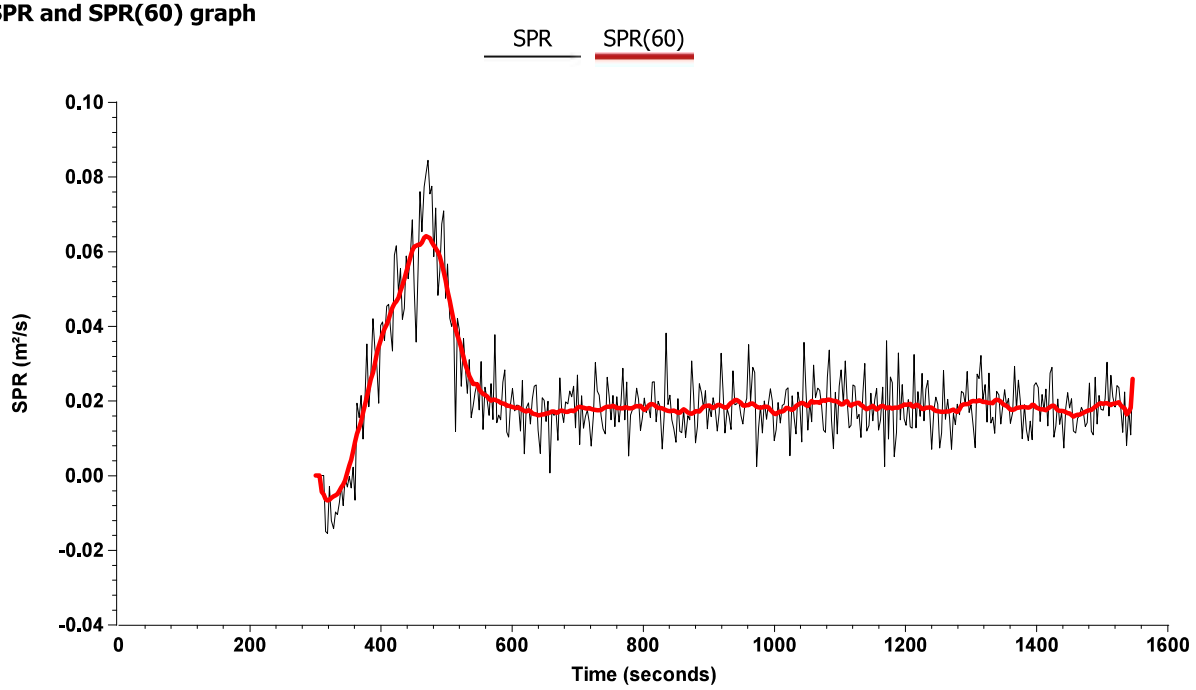


The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

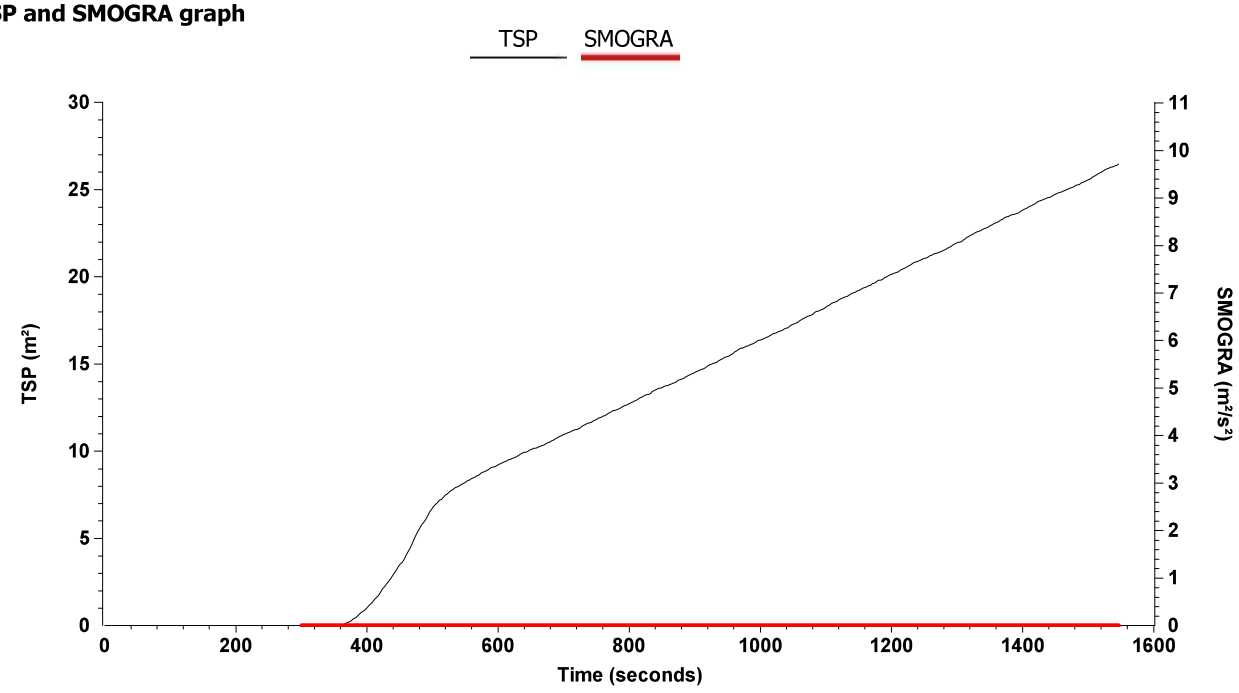
SBI Test Report

Laboratory name	MeKA Testing laboratory
Operator	Elvis Skavronskis
Test filename	C:\SBICALC\Data\660\660-1-3.CSV
Smoke baseline filename	C:\SBICALC\SMOKE\25071701.CSV
Report identification	660-1-3-2025
Product identification	INFRALIT PE 8350

SPR and SPR(60) graph



TSP and SMOGRA graph



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