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Laboratório de Fumo e Fogo

Reaction to Fire Tests

Test Report No. LFF.2019.135.02

SONAE – INDÚSTRIA DE REVESTIMENTOS, S.A.

U.PORTO

The presented results refer exclusively to tested specimens.
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0. DOCUMENT CONTROL AND IDENTIFICATION

0.1 DOCUMENT IDENTIFICATION

Project	---
Document Name	Test Report No. LFF.2019.135.02
Document File Name	---

0.2 VERSION CONTROL

Version	Edition	Revision	Date	Description	Approved by
1	1	0	2019-10-31	Original version	JMG

0.3 AUTHOR(S)

Name	Entity	Initials
José Mesquita Guimarães - Technical Director of the Laboratory	INEGI	JMG

0.4 REVISER(S)

Name	Entity	Initials
Anabela Martins - Laboratory Technician	INEGI	AM

0.5 LABORATORY TECHNICIANS(S)

Name	Entity	Initials
Bruno Nogueira - Laboratory Technician	INEGI	BN

0.6 DISTRIBUTION LIST

Name	Entity	Initials
Laboratório de Fumo e Fogo	INEGI	LFF
---	SONAE, S.A.	---

0.7 IDENTIFICATION

Cliente Sonae – Indústria de Revestimentos, S.A.

Address: Lugar do Espido – Via Norte
4470-177

Request: Tests according to EN 13823:2010 A1 November 2014

Request Reference: PE30190597

Request Date: 2019-07-05

Material Reference: Surforma HPL AC5 (0.8 – 1.2mm)

Reception Date: 2019-07-23

Test Date: 2019-07-31; 2019-08-01

Report Date: 2019-10-31

INDEX

1. INTRODUCTION

This report refers to exploratory fire reaction tests and the potential classification of materials with the reference "Surforma HPL AC5 (0.8 – 1.2mm)".

2. METHODOLOGY

Test	Test procedure
Reaction to fire tests for building products. Building products exposed to the thermal attack by a single burning item.	EN 13823:2010 A1 november 2014

3. SPECIMENS

3.1 Dimension and conditioning

The specimens were prepared by the client, having the following dimensions and masses:

Reference	Length (mm)	Width (mm)	Thickness (mm)	Mass (g)
LFF.2019.135.01	1499	1001	0.8	1721
LFF.2019.135.02	1502	497	0.8	887
LFF.2019.135.03	1501	1001	0.8	1812
LFF.2019.135.04	1502	500	0.8	882

Prior to testing, the specimens were conditioned for a period of 170 hours at 23 ± 2 °C and 50 ± 5 % relative humidity, having met the constant mass criterion.

3.2 Mounting of specimens

Specimens were tested free standing according (according to 5.2.2.a of the norm EN 13823).

4. RESULTS

Specimens	LFF.2019.135.01 and LFF.2019.135.02	LFF.2019.135.03 and LFF.2019.135.04
FIGRA $_{0,2\ MJ}$ (W/s)	1152.3	1769.7
FIGRA $_{0,4\ MJ}$ (W/s)	1152.3	1769.7
THR $_{600\ s}$ (MJ)	8.0	9.9
LFS (m)	No	No
FIRE BEHAVIOUR	E	E
SMOGRA (m^2/s^2) (*)	22.8	26.7
TSP $_{600s}$ (m^2) (*)	43.8	22.3
SMOKE PRODUCTION	s1	s1
FLAMING DROPLETS/PARTICLES	No	No
FLAMING DROPLETS	d0	d0

FIGRA: Fire growth rate THR: Total heat release LFS: Lateral flame spread (*): With smoke correction
SMOGRA: Smoke growth rate TSP: Total smoke production TNR: Threshold not reached

"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."

5. LIMITATIONS

All the information on this document regarding the product description has been supplied by the sponsor at no responsibility by INEGI's laboratory.

This document does not represent any type of approval or certification of the product.

This classification document is valid for 5 (five) years.

Porto, October 31, 2019

[Assinatura Qualificada] José Carlos dos Santos de Mesquita Guimarães

Assinado de forma digital por [Assinatura Qualificada] José Carlos dos Santos de Mesquita Guimarães
Dados: 2019.11.04 14:14:23 Z

José Mesquita Guimarães

Laboratory Technical Director

ANNEX I

Photographs

Figure 1 – View of mounting.

Figure 2 – SBI test.

Figure 3 – Test pieces at the end of the test.

ANNEX II

SBI Reports

SBI Test Report

Laboratory name	INEGI - LFF
Operator	Bruno Nogueira
Filename	C:\SBICALC\DATA\19070008.RW1
Report identification	LFF.2019.135
Product identification	SURFORMA HPL AC 5 (0.8 - 1.2 mm)

Test

Standard used	EN 13823:2010
Date of test	31/07/2019
Date of report	31/07/2019
E'	17.2 MJ/m³

Apparatus specifications

kt	0.823
kp	1.08
Duct diameter	0.315 m
O2 calibration delay time	10 s
CO2 calibration delay time	12 s

Pre-test conditions

Baseline duct temperature	295.23 K
Ambient temperature	294.07 K
Ambient pressure	99.81 kPa
Relative humidity	49%

Baseline conditions

Baseline ambient oxygen	20.676%
Baseline oxygen	20.950%
Baseline carbon dioxide	0.0801%
Baseline smoke	100.08%

Specimen conditioning

Method	Constant mass
Time interval	202 hours
Mass 1	2603 g
Mass 2	2608 g
Temperature	23°C
RH	50%

Specimen information

Thickness	0.8 mm
Density	1448.8 kg/m³
Surface mass/area	1.15 kg/m²
Specimen number	
Date of arrival	23/07/2019
Mounting method	5.2.2a) in EN 13823:2002
Joints	none
Fixed to substrate?	No
Fixing method	N/A
Substrate	none
Manufacturer	SONAE INDÚSTRIA DE REVESTIMENTOS, SA
Sponsor	SONAE INDÚSTRIA DE REVESTIMENTOS, SA

Test validity criteria

Test drifts

	Initial	Final	Change
Oxygen	20.950%	20.943%	0.007%
CO2	0.080%	0.083%	0.003%
Smoke	100.08%	100.15%	0.001

Exposure time 894 s

Synchronisation details

Duct temp. dropped by 2.5 K from baseline of 320.40 K at 303 s
Oxygen rose by 0.05% from baseline of 20.645% at 303 s
CO2 dropped by 0.02% from baseline of 0.329% at 303 s

Burner details

Burner HRR	26.546 kW
Burner HRR std. dev.	0.583 kW
Burner CO2/O2 ratio	0.815
Burner SPR	0.023 m²/s
Burner SPR std. dev.	0.006 m²/s
Burner response time	9 s

Other checks

Minimum duct flow	0.416 m³/s
Maximum duct flow	0.544 m³/s

No T/C failure

Classification results

FIGRA(0.2)	1152.3 W/s at 375 s
FIGRA(0.4)	1152.3 W/s at 375 s
THR(600)	8.0 MJ
SMOGRA	22.8 m²/s² at 384 s
TSP(600)	43.8 m²

Classification observations

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

Potential classification

Class	E
Smoke production	s1
Flaming droplets/particles	d0

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

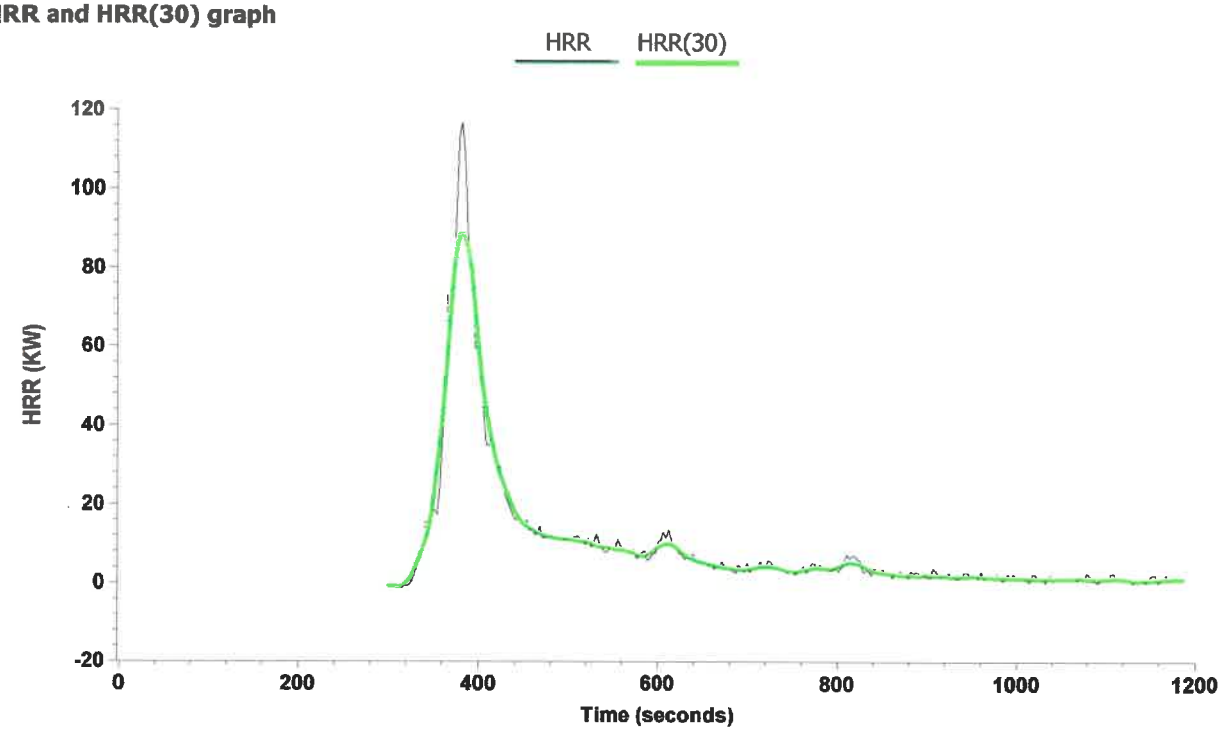
Pre-test comments

After-test comments Aos 330 s, Formação de bolhas gasosas na superfície do provete, até cerca de 30 cm do canto, a toda a altura do rpovete. Sucessivo rebentamento das bolhas. Aos 370 s, Destruição do provete no canto, a toda a altura e até 25 cm na horizontal. Algumas partículas incandescentes flutuam, extinguindo-se em alguns segundos, antes de atingirem a base.

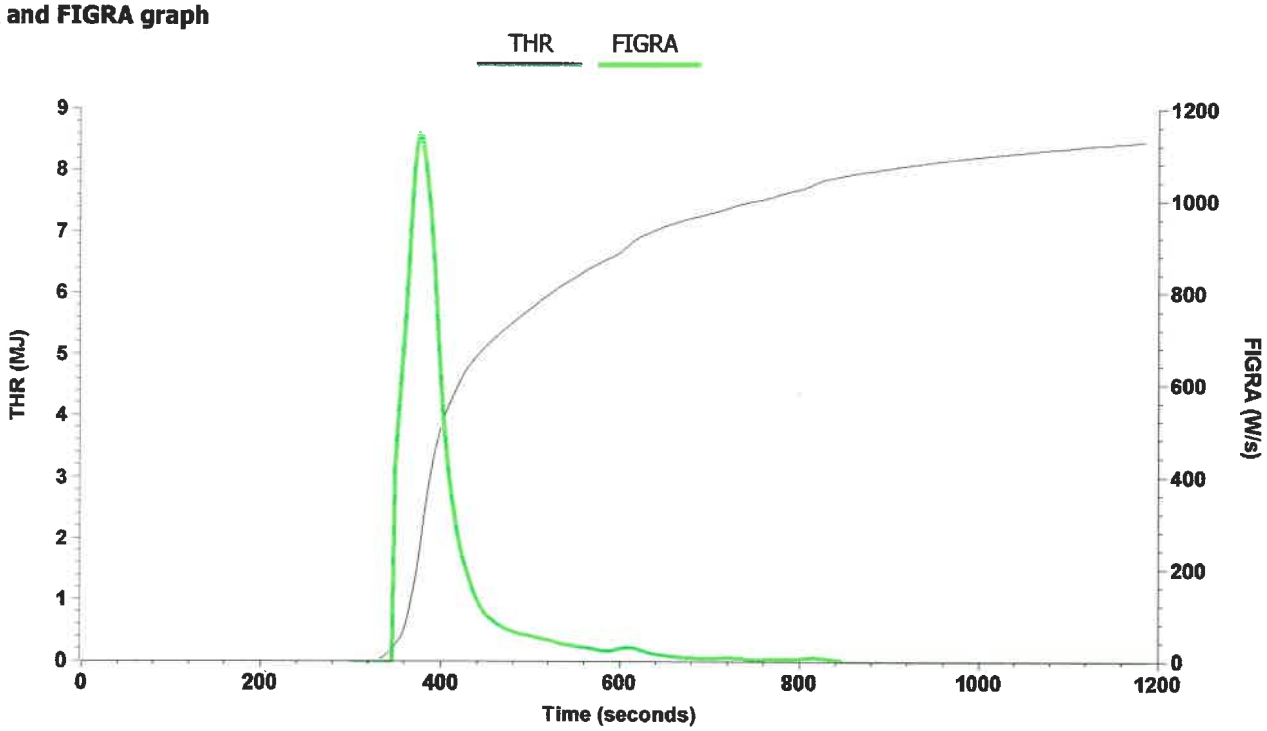
SBI Test Report

Laboratory name	INEGI - LFF
Operator	Bruno Nogueira
Filename	C:\SBICALC\DATA\19070008.RW1
Report identification	LFF.2019.135
Product identification	SURFORMA HPL AC 5 (0.8 - 1.2 mm)

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.

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Filename	C:\SBICALC\DATA\19070008.RW1
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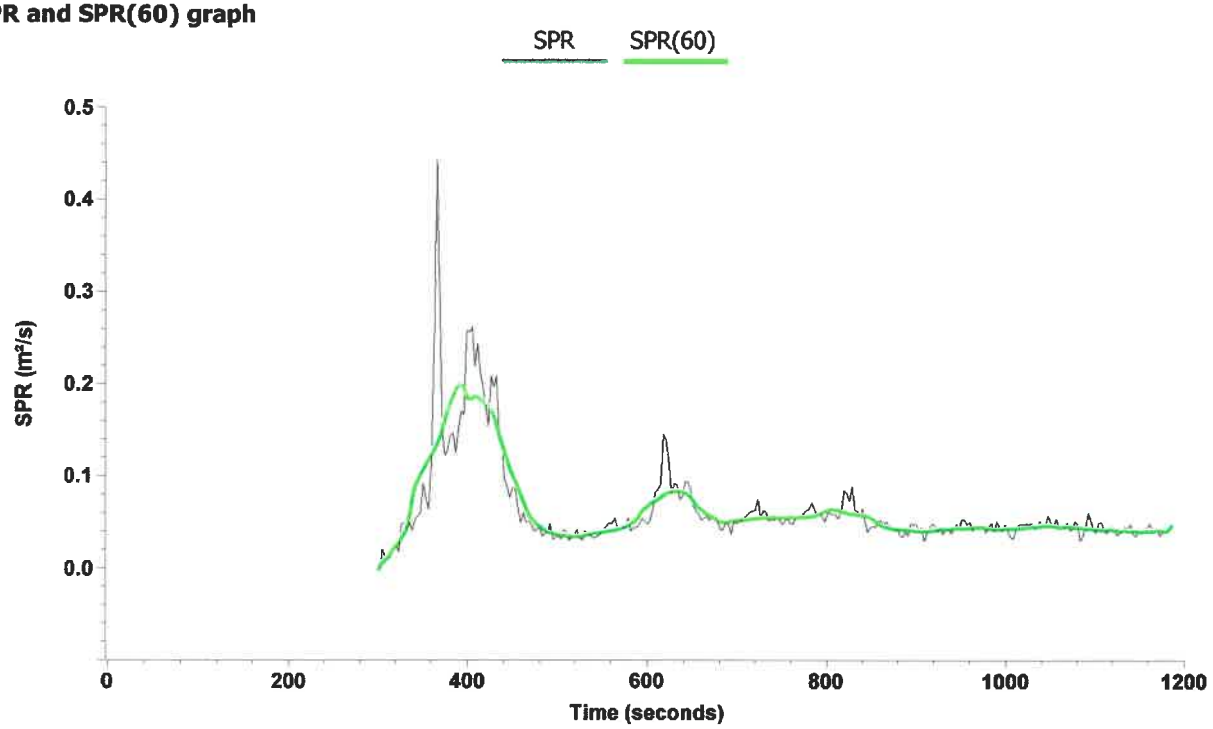
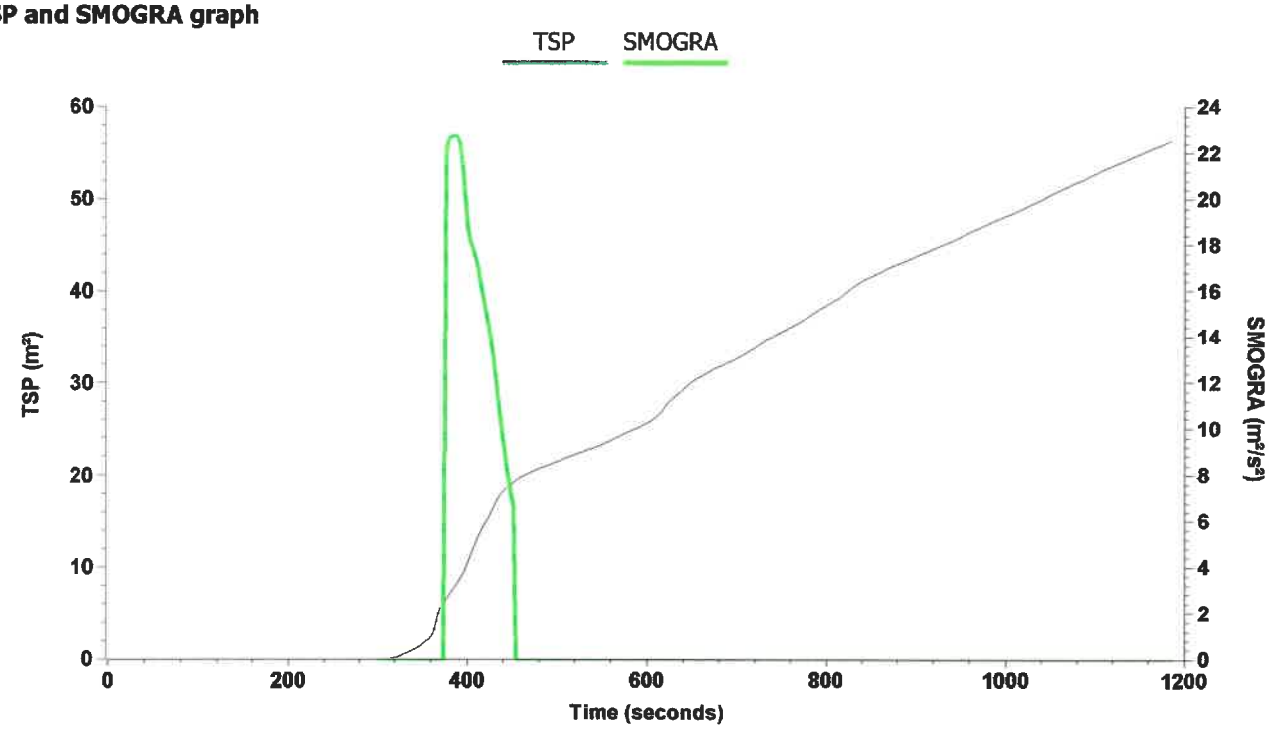
Product identification	SURFORMA HPL AC 5 (0.8 - 1.2 mm)

SPR and SPR(60) graph



TSP and SMOGRA graph



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Operator	Bruno Nogueira
Filename	C:\SBICALC\DATA\19080001.RW1
Report identification	LFF.2019.135
Product identification	SURFORMA HPL AC 5 (0.8 - 1.2 mm)

Test

Standard used	EN 13823:2010
Date of test	01/08/2019
Date of report	01/08/2019
E'	17.2 MJ/m³

Apparatus specifications

kt	0.823
kp	1.08
Duct diameter	0.315 m
O2 calibration delay time	10 s
CO2 calibration delay time	12 s

Pre-test conditions

Baseline duct temperature	295.02 K
Ambient temperature	295.25 K
Ambient pressure	99.84 kPa
Relative humidity	51%

Baseline conditions

Baseline ambient oxygen	20.660%
Baseline oxygen	20.942%
Baseline carbon dioxide	0.0819%
Baseline smoke	100.02%

Specimen conditioning

Method	Constant mass
Time interval	202 hours
Mass 1	2694 g
Mass 2	2691 g
Temperature	23°C
RH	50%

Specimen information

Thickness	0.8 mm
Density	1495 kg/m³
Surface mass/area	1.19 kg/m²
Specimen number	2
Date of arrival	23/07/2019
Mounting method	5.2.2a) in EN 13823:2002
Joints	none
Fixed to substrate?	No
Fixing method	N/A
Substrate	none
Manufacturer	SONAE INDÚSTRIA DE REVESTIMENTOS, SA
Sponsor	SONAE INDÚSTRIA DE REVESTIMENTOS, SA

Test validity criteria

Test drifts

	Initial	Final	Change
Oxygen	20.942%	20.868%	0.074%
CO2	0.082%	0.082%	0.000%
Smoke	100.02%	100.32%	0.003

Exposure time 1254 s

Synchronisation details

Duct temp. dropped by 2.5 K from baseline of 320.06 K at 303 s
Oxygen rose by 0.05% from baseline of 20.622% at 306 s
CO2 dropped by 0.02% from baseline of 0.331% at 303 s

Burner details

Burner HRR	28.461 kW
Burner HRR std. dev.	0.989 kW
Burner CO2/O2 ratio	0.781
Burner SPR	0.025 m²/s
Burner SPR std. dev.	0.005 m²/s
Burner response time	3 s

Other checks

Minimum duct flow	0.394 m³/s
Maximum duct flow	0.545 m³/s

No T/C failure

Classification results

FIGRA(0.2)	1769.7 W/s at 363 s
FIGRA(0.4)	1769.7 W/s at 363 s
THR(600)	9.9 MJ
SMOGRA	26.7 m²/s² at 366 s
TSP(600)	22.3 m²

Classification observations

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

Potential classification

Class	E
Smoke production	s1
Flaming droplets/particles	d0

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

Pre-test comments

After-test comments Aos 325 s, formação de bolhas gasosas na superfície do provete, até cerca de 30cm do canto, a toda a altura do provete.Sucessivo rebentamento de bolhas.Aos 365 s, destruição do provete no canto, a toda a a altura e até 30cm na horizontal.Partículas incandescentes flutuam, extinguindo-se antes de atingirem a base.

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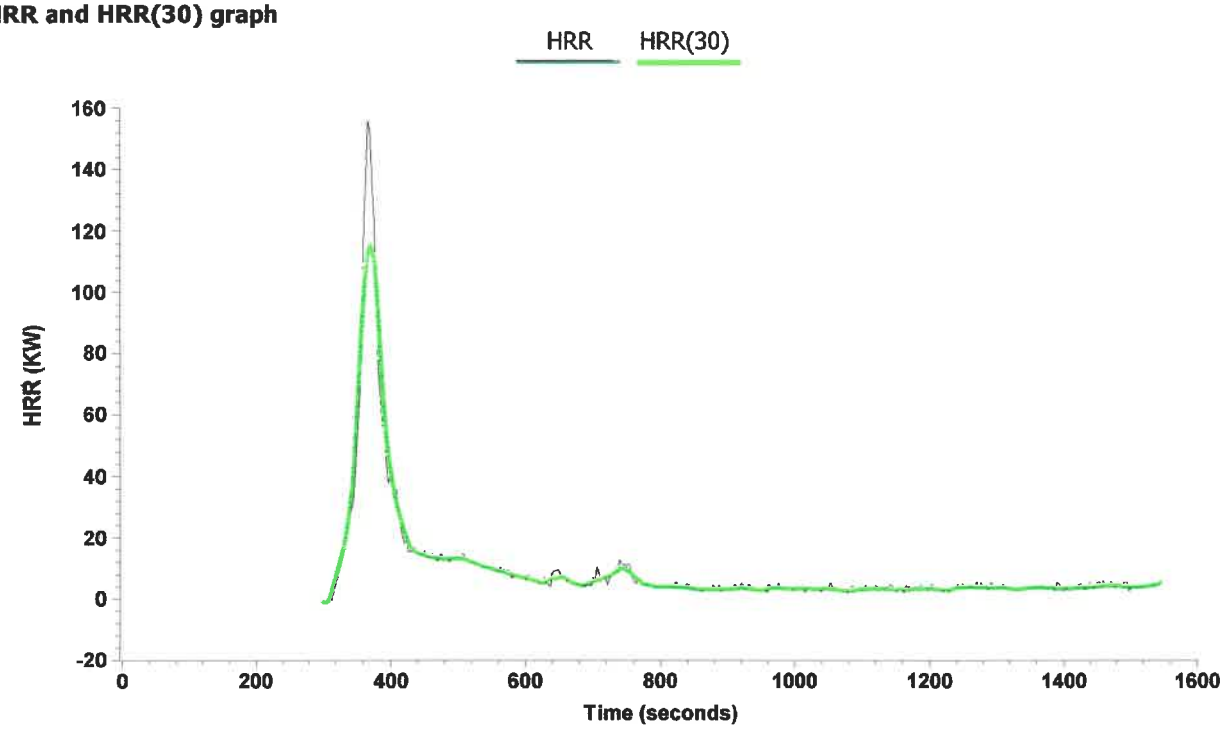
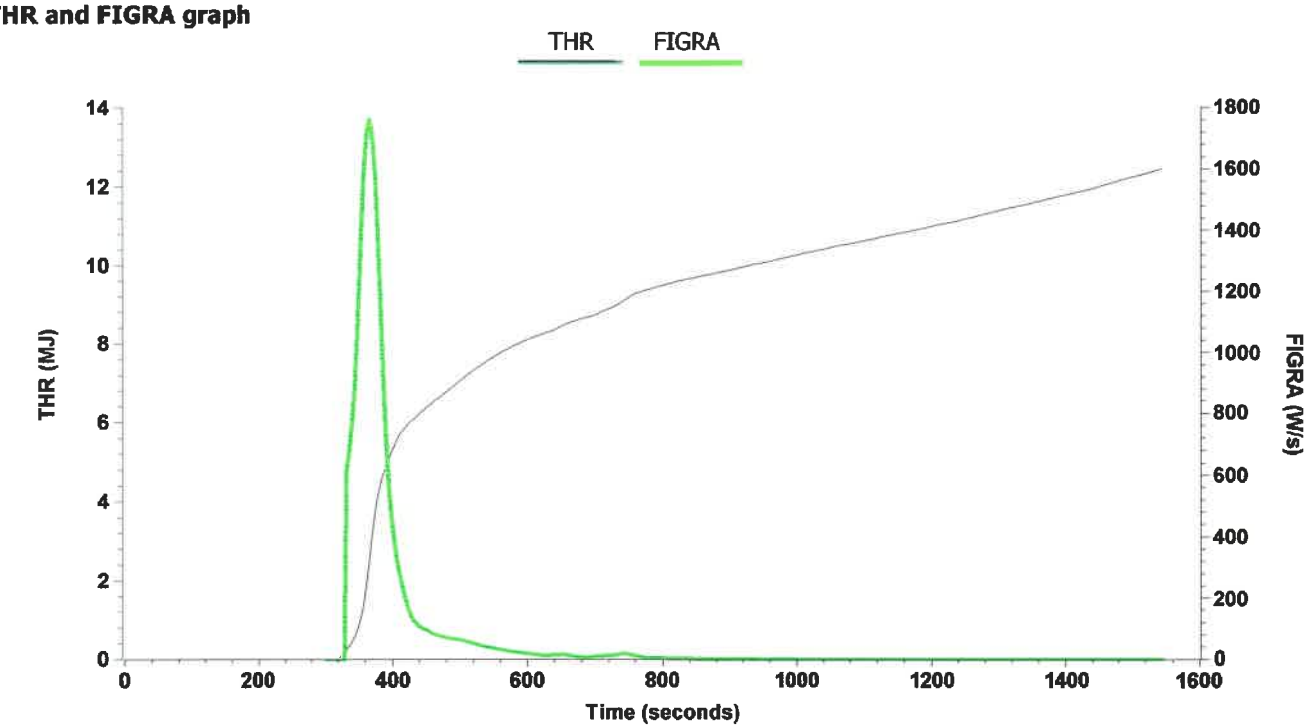


THR and FIGRA graph



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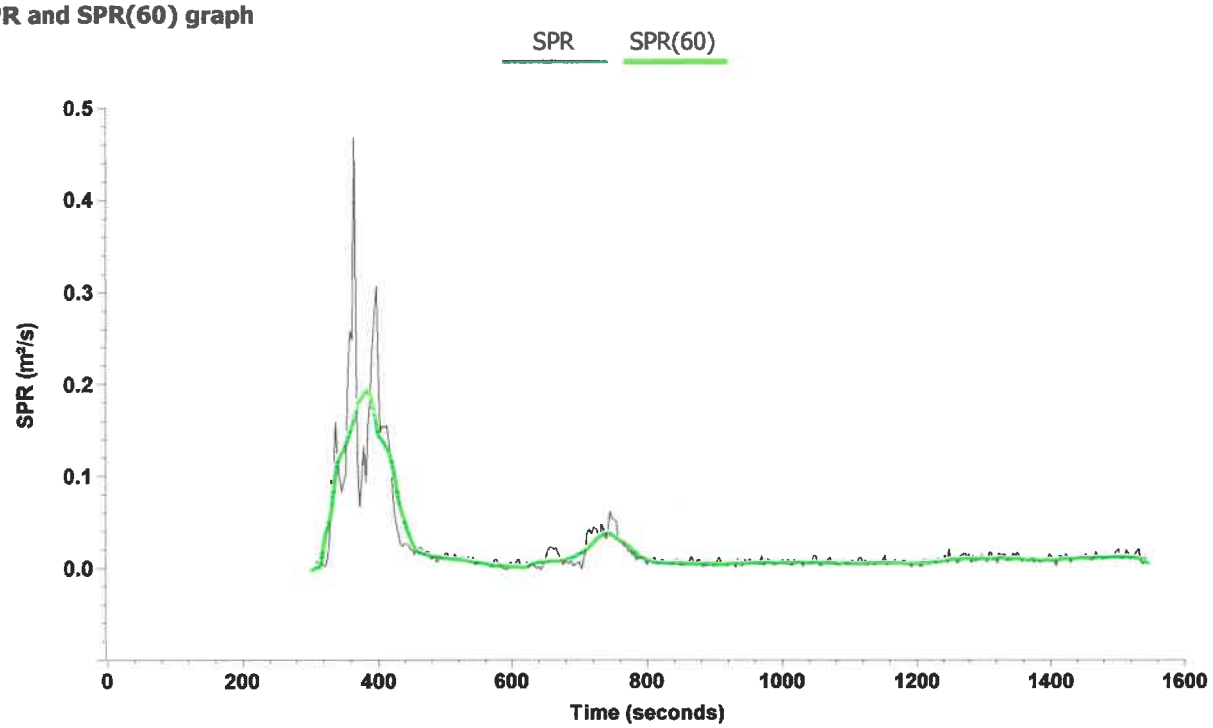
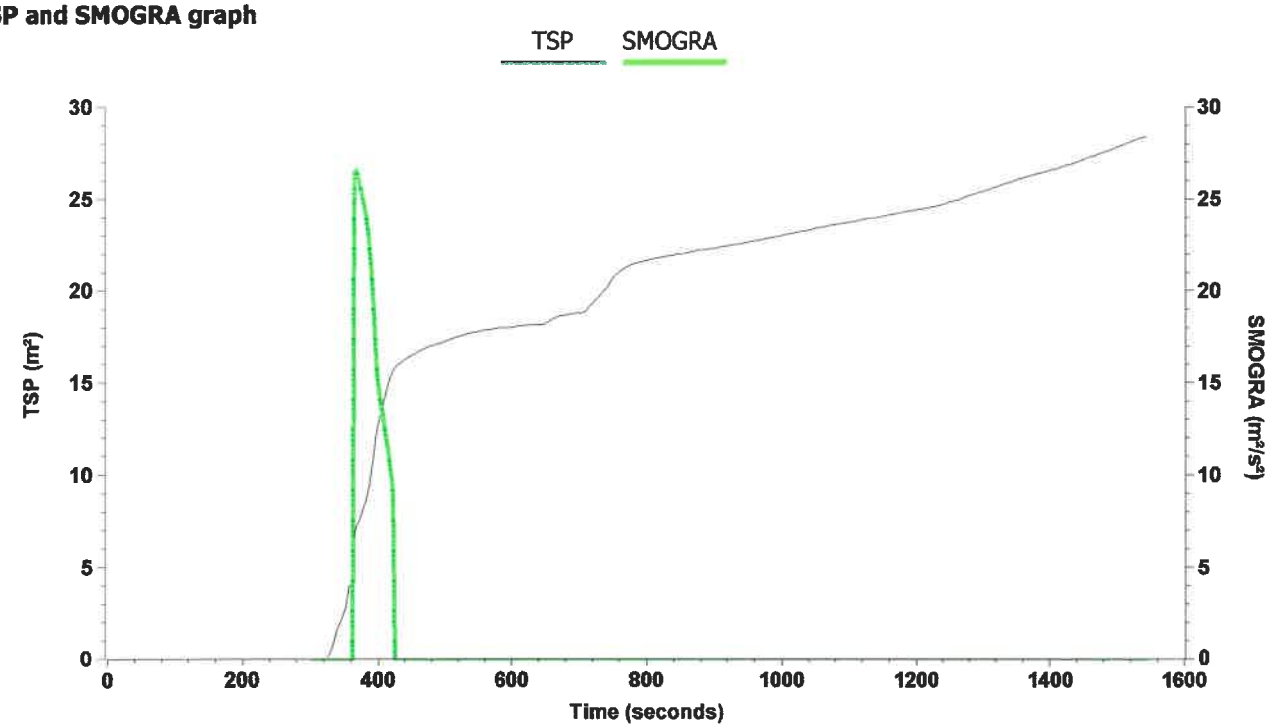
SPR and SPR(60) graph



TSP and SMOGRA graph



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Campus da FEUP | Rua Dr. Roberto Frias, 400 | 4200-465 Porto | PORTUGAL
T. +351 22 957 87 10 | F. +351 22 953 73 52 | inegi@inegi.up.pt

www.inegi.up.pt