

INSTITUTO DE CIÊNCIA E INOVAÇÃO EM ENGENHARIA MECÂNICA E ENGENHARIA INDUSTRIAL

## Laboratório de Fumo e Fogo

FIRE REACTION TESTS

SONAE – INDÚSTRIA DE REVESTIMENTOS, S.A.

TEST REPORT Nr LFF.2019.048.02



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## 0 Document Control and Identification

### 0.1 Document Identification

Project	---
Document Name	Test Report Nr LFF.2019.048.02
Document File Name	---

### 0.2 Version Control

Version	Edition	Revision	Date	Description	Approved by
1	1	0	2019-04-10	Original version	JMG

### 0.3 Author(s)

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Name	Initials
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### 0.6 Distribution list

Name	Initials	Entity
Laboratório de Fumo e Fogo	LFF	INEGI
---	---	Sonae – Indústria de Revestimentos, S.A.



## 0.7 Identification

**Client:** Sonae – Indústria de Revestimentos, S.A.

**Address:** Lugar do Espido – Via Norte  
4470-177 Maia

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

**Request Reference:** PE30190306

**Request Date:** 2019-03-22

**Material Reference:** Surforma HPL HGF Kraft Fire Retardant (0.8 – 1.2 mm)

**Reception Date:** 2019-03-15

**Test Date:** 2019-03-25 and 2019-03-27

**Report Date:** 2019-04-10



## 1 - Introduction

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

## 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:

Reference	Length (mm)	Width (mm)	Thickness (mm)	Mass (g)
LFF.2019.048.01	1502	1001	0.8	1510
LFF.2019.048.02	1502	500	0.8	840

Prior to testing, the specimens were conditioned for a period of 240 hours at  $23 \pm 2$  °C and  $50 \pm 5$  % relative humidity, having met the constant mass criterion.

### 3.2 – Mounting of specimen

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

## 4 - Results

Specimens	LFF.2019.048.01 and LFF.2019.048.02
FIGRA <sub>0,2 MJ</sub> (W/s)	109.9
FIGRA <sub>0,4 MJ</sub> (W/s)	109.7
THR <sub>600 s</sub> (MJ)	2.4
LFS (m)	No
FIRE BEHAVIOUR	A2/B
SMOGRA (m <sup>2</sup> /s <sup>2</sup> ) (*)	13.4
TSP <sub>600s</sub> (m <sup>2</sup> ) (*)	27.4
SMOKE PRODUCTION	s1
FLAMING DROPLETS/PARTICLES	No
FLAMING DROPLETS	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

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

This document is valid for 5 (five) years.

Porto, April 10, 2019

  
  
LFF - Laboratório de Fumo e Fogo  
José Mesquita Guimarães  
Laboratory Technical Director

## **ANNEX 1**

### **Photographs**



Figure 1 – View of mounting.



Figure 2 – SBI test .



**ANNEX 2**  
**SBI Test Report**

## SBI Test Report

Laboratory name INEGI - LFF  
 Operator Bruno Hogueira  
 Filename C:\SBICALC\DATA\19030010 RW1  
 Report identification LFF.10\9.048  
 Product identification SURFORMA KRAFT FIRE RETARDANT

Test	Pre-test conditions	Specimen conditioning
Standard used EN 13823:2010	Baseline duct temperature 294.13 K	Method Constant mass
Date of test 27/03/2019	Ambient temperature 293.24 K	Time interval 288 hours
Date of report 27/03/2019	Ambient pressure 101.154 kPa	Mass 1 2350 g
E' 17.2 MJ/m <sup>2</sup>	Relative humidity 46%	Mass 2 2350 g
Apparatus specifications	Baseline conditions	Temperature 23°C
kt 0.023	Baseline ambient oxygen 20.713%	RH 50%
kp 1.08	Baseline oxygen 20.951%	
Duct diameter 0.315 m	Baseline carbon dioxide 0.0911%	
O2 calibration delay time 11 s	Baseline smoke 100.09%	
CO2 calibration delay time 13 s		

Specimen information	
Thickness 0.8 mm	Mounting method S.2.2a) in EN 13823:2002
Density 1306 kg/m <sup>3</sup>	Joints none
Surface mass/area 2.08 kg/m <sup>2</sup>	Fitted to substrate? No
Specimen number 1	Fixing method N/A
Date of arrival 15/03/2019	Substrate none
	Manufacturer SONAE INDÚSTRIA DE REVESTIMENTOS SA
	Sponsor SONAE INDÚSTRIA DE REVESTIMENTOS SA

### Test validity criteria

#### Test drifts

	Initial	Final	Change
Oxygen	20.951%	20.929%	0.022%
CO2	0.091%	0.103%	0.012%
Smoke	100.09%	99.42%	0.607

#### Burner details

Burner HRR	27.867 kW
Burner HRR std. dev.	0.471 kW
Burner CO2/O2 ratio	0.802
Burner SPR	0.024 m <sup>2</sup> /s
Burner SPR std. dev.	0.004 m <sup>2</sup> /s
Burner response time	9 s

Exposure time 1254 s

#### Synchronisation details

Duct temp. dropped by 2.5 K from baseline of 319.72 K at 303 s  
 Oxygen rose by 0.05% from baseline of 20.640% at 300 s  
 CO2 dropped by 0.02% from baseline of 0.340% at 303 s

#### Other checks

Minimum duct flow	0.478 m <sup>3</sup> /s
Maximum duct flow	0.558 m <sup>3</sup> /s
No T/C failure	

### Classification results

FIGRA(0.2)	109.9 W/s at 390 s
FIGRA(0.4)	109.7 W/s at 393 s
THR(600)	2.4 MJ
SMOGRA	13.4 m <sup>2</sup> /s <sup>2</sup> at 381 s
TSP(600)	27.4 m <sup>2</sup>

### 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

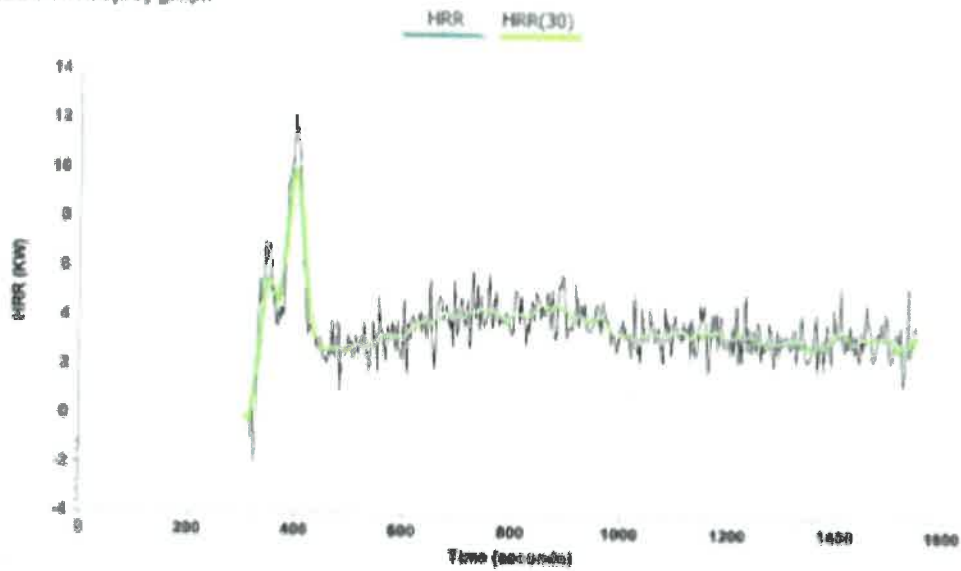
### After-test comments

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.

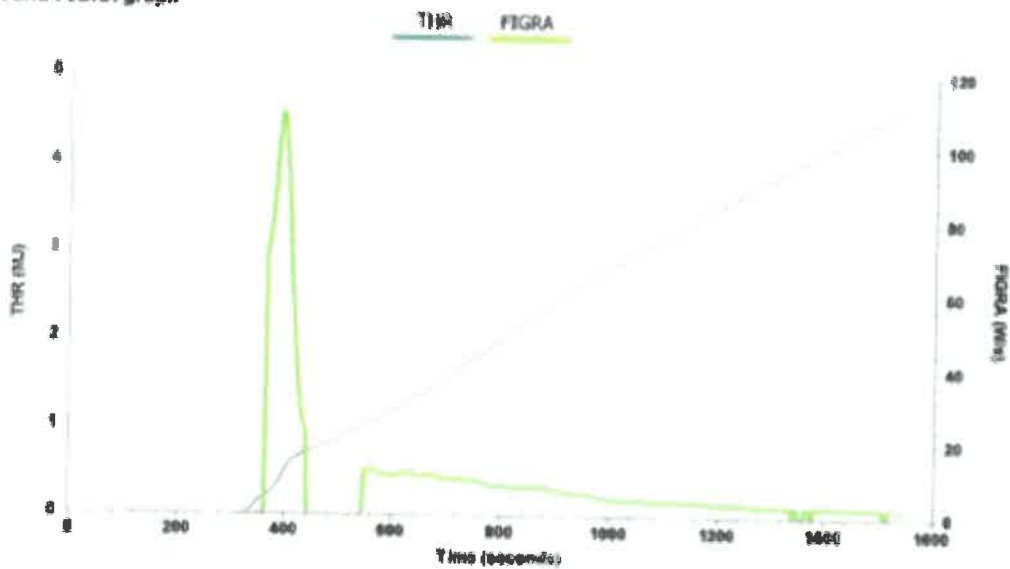
## SBI Test Report

Laboratory name INEGI - LFF  
Operator Bruno Nogueira  
Filename C:\SBI\CALC\DATA\19030010.RW1  
Report identification LFF.10\9.048  
Product identification SURFORMA KRAFT FIRE RETARDANT

HRR and HRR(30) graph



THR and FIGRA graph

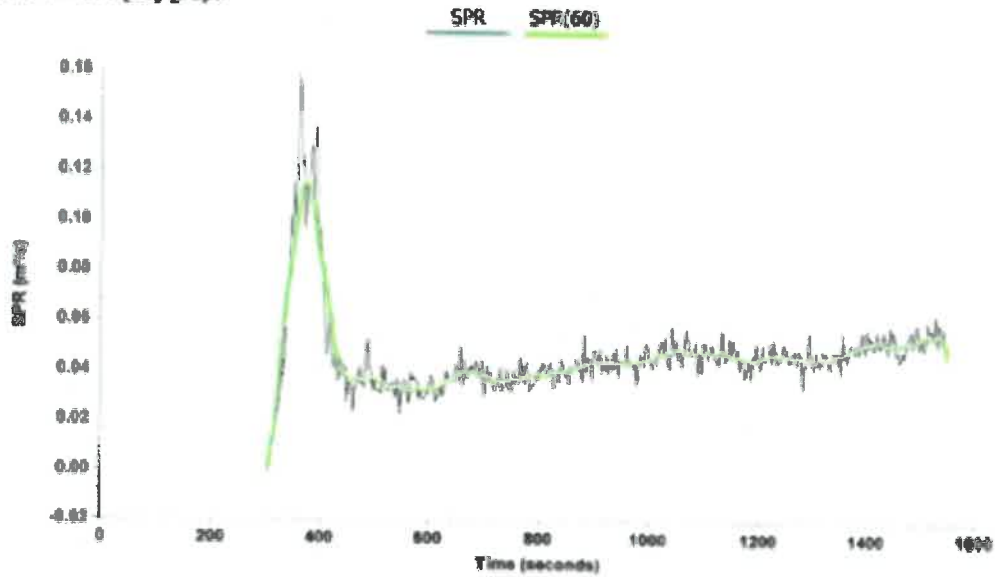


The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

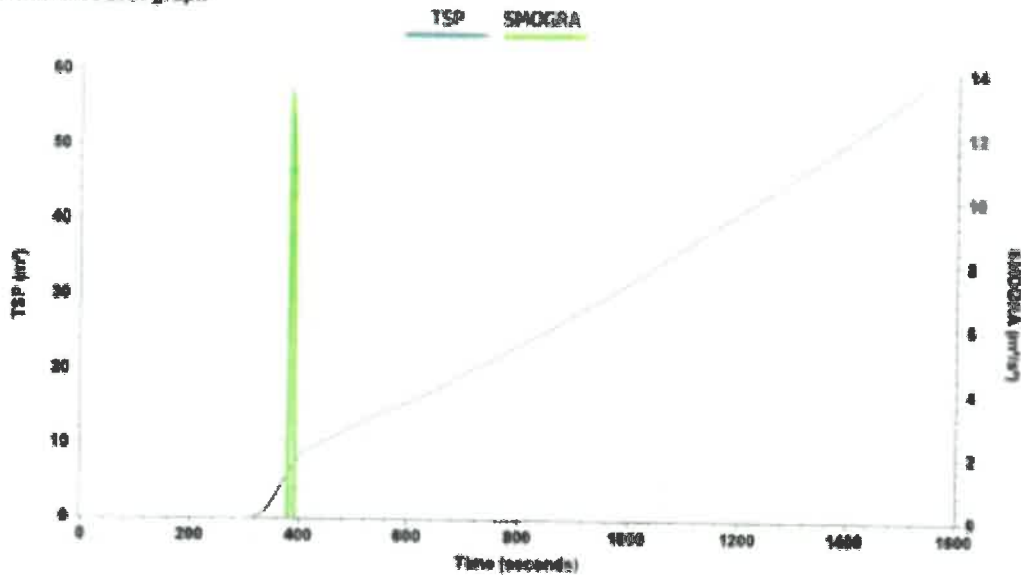
## SBI Test Report

Laboratory name: INEGI - LFF  
Operator: Bruno Nogueira  
Filename: C:\SBI\CALC\DATA\19030010.RW1  
Report identification: LFF.1019.048  
Product identification: SURFORMA KRAFT FIRE RETARDANT

### SPR and SPR(60) graph



### TSP and SMOGRA graph






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