

## Reaction to fire testing of Porocom<sup>®</sup> Panels Single Burning Item test according to EN 13823:2010

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## 1. PRODUCT IDENTIFICATION

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Porocom® Panels, further referred to as 'the product'.

## 2. ABSTRACT

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Determination of the reaction to fire properties of the product, when exposed to the thermal attack by a **Single Burning Item** according to EN 13823:2010, with the objective to obtain the reaction to fire classification according to EN 13501-1:2007+A1:2009.

## 3. DETAILS OF THE PRODUCT TESTED

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### 3.1. INTENDED APPLICATION

The product will be used as a ceiling and wall covering.

### 3.2. MANUFACTURER/IMPORTER

Porocom  
Frekehof 74  
NL-2263 KA Leidschendam  
The Netherlands

## 4. PRODUCT DESCRIPTION

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According to the sponsor the product is from inside out composed of:

- Rockwool 504 insulation, with a thickness of 40 mm and a density of approx. 140 kg/m<sup>3</sup>;
- Steel mesh, with a thread thickness of 1.5 mm, with gaps of 10 x 10 mm;
- Blown clay granules, type LIAPOR 8/16 mm, with a total thickness of approx. 25 mm and a density of approx. 350 kg/m<sup>3</sup>, beaded in an epoxy based binder of approx. 1.5 kg/m<sup>2</sup>;
- Coated with fire retardant coating type Hensotherm, approx. 800 gr/m<sup>2</sup>.

The product has a total thickness of 65 mm and a mass per unit area of approx. 14 kg/m<sup>2</sup>.

## 5. DETAILS OF THE EXAMINATION

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### 5.1. SAMPLES

Sampling procedure	The specimens were prepared and submitted by the sponsor.
Age	At the time of receipt: no information received.
Date of receipt	The first specimen on the 24 <sup>th</sup> of January, the second and third specimen on the 8 <sup>th</sup> of March 2013.

## 5.2. SPECIMENS

Substrate used	Calcium silicate board - 12 mm, non-combustible (class A1/A2 according to EN 13238:2010).
Specimen preparation	The long specimen wing was not provided with a vertical joint at a distance of 200 mm from the inner corner and a horizontal joint at a distance of 500 mm from the bottom. See photographs of the SBI test at the end of the report.

## 5.3. CONDITIONING

Prior to the examinations, the specimens were conditioned over a period of min. two weeks at a temperature of  $(23 \pm 2)$  °C and a relative humidity of  $(50 \pm 5)$  % according to § 4.1 of EN 13238.

## 5.4. EXAMINATION

Method of mounting and fixing	The panels were positioned without an air gap to the backing board.
Exposed surface	The inside of the product was exposed by flames during testing.
Deviations from the test method	None
Harmonised Product Standard	At the time of examination of the product, the sponsor was not aware of a related existing Harmonised Product Standard.
Assessment	In accordance with the Note in §A.6.1.2 of EN 13823 a smoke correction of the measured Total Smoke Production (TSP) of the product is conducted. An additional SBI test was performed to measure the TSP of the SBI system itself. The result is used to correct the average TSP of the SBI tests performed on the product by deducting the smoke production of the system. The corrected value will be used as the classification parameter for the TSP.
Number of tests	A total of three Single Burning Item tests were carried out, all in accordance with EN 13823.
Date of examination:	The first test on the 7 <sup>th</sup> of February and the second and third test on the 25 <sup>th</sup> of March.

The results are given in Table 1.

Table 1: Single Burning Item classification parameter results

Test number	1	2	3	Classification parameter	4
Test parameter					
Sample variant	Porocom® Panels				TSP Correction
FIGRA <sub>0.2 MJ</sub> [W/s]	34	59	51	<b>48</b>	0
FIGRA <sub>0.4 MJ</sub> [W/s]	34	48	39	<b>40</b>	0
THR <sub>600s</sub> [MJ]	4.0	5.1	4.1	<b>4.4</b>	0
LFS {Yes, No}	No	No	No	<b>No</b>	No
SMOGRA [m <sup>2</sup> /s <sup>2</sup> ]	5.4	8.6	2.9	<b>5.6</b>	0.0
TSP <sub>600s</sub> [m <sup>2</sup> ]	58	70	52	(60-22) <b>38</b>	22
Flaming droplets/particles Flaming ≤ 10 s {Yes, No}	No	No	No	<b>No</b>	No
Flaming > 10 s {Yes, No}	No	No	No	<b>No</b>	No

FIGRA Fire growth rate: Maximum of the quotient of heat release rate from the specimen and the time of its occurrence using a THR-threshold of 0.2 MJ or 0.4 MJ.

THR<sub>600s</sub> Total heat release from the specimen during the first 600s of exposure to the main burner flames.

LFS Lateral flame spread over the long specimen wing.

SMOGRA Smoke growth rate: Maximum of the quotient of smoke production rate from the specimen and the time of its occurrence.

TSP<sub>600s</sub> Total smoke production from the specimen during the first 600s of exposure to the main burner flames.

Observations of physical behaviour of the test specimen: None

## 6. CONCLUSIONS

A formal classification is to be assessed in accordance with EN 13501-1, "Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests".

Graphs of Rate of Heat Release ( $HRR_{av}(t)$ ), Rate of Smoke Production ( $SPR_{av}(t)$ ), Total Heat release ( $THR(t)$ ), Total Smoke Production ( $TSP(t)$ ),  $FIGRA_{0.2 MJ}$ ,  $FIGRA_{0.4 MJ}$  and  $SMOGRA$ , are presented hereafter followed by some photographs of the test setup and test results.

**Remarks:**

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.

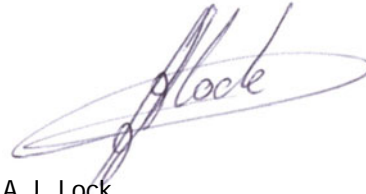
Regarding the estimated precision of the test method, the following information is given in Annex B of EN 13823.

Table B.2 – Average relative standard deviations

	$FIGRA_{0.2 MJ}$	$FIGRA_{0.4 MJ}$	$THR_{600 s}$	$SMOGRA$	$TSP_{600 s}$
Average ( $s_r / m$ )	14 %	15 %	11 %	15 %	18 %
Average ( $s_R / m$ )	23 %	25 %	21 %	40 %	44 %



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## APPENDIX: CHARTS

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Chart 1	Rate of Heat Release ( $HRR_{av}(t)$ ) [kW]
Chart 2	Rate of Smoke Production ( $SPR_{av}(t)$ ) [ $m^2/s$ ]
Chart 3	Total Heat release ( $THR(t)$ ) [MJ]
Chart 4	Total Smoke Production ( $TSP(t)$ ) [ $m^2$ ]
Chart 5	$FIGRA_{0.2 MJ}$ [W/s]
Chart 6	$FIGRA_{0.4 MJ}$ [W/s]
Chart 7	SMOGRA [ $m^2/s^2$ ]

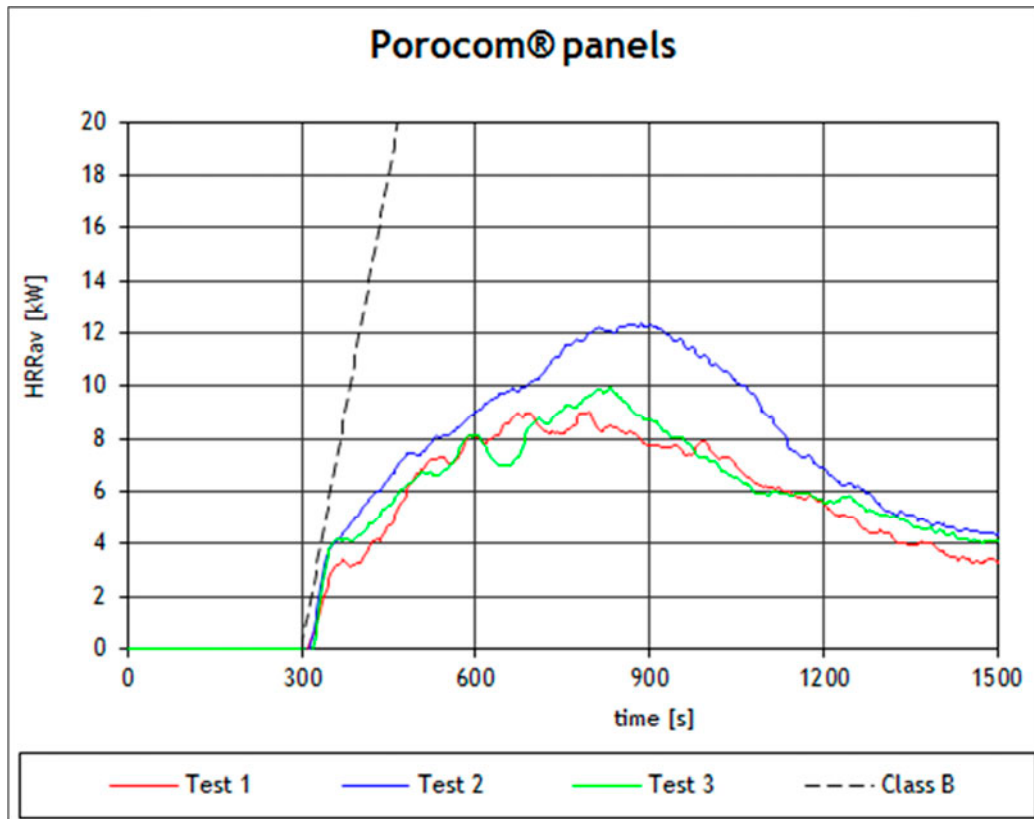


Chart 1: Rate of Heat Release ( $HRR_{av}(t)$ ) [kW]

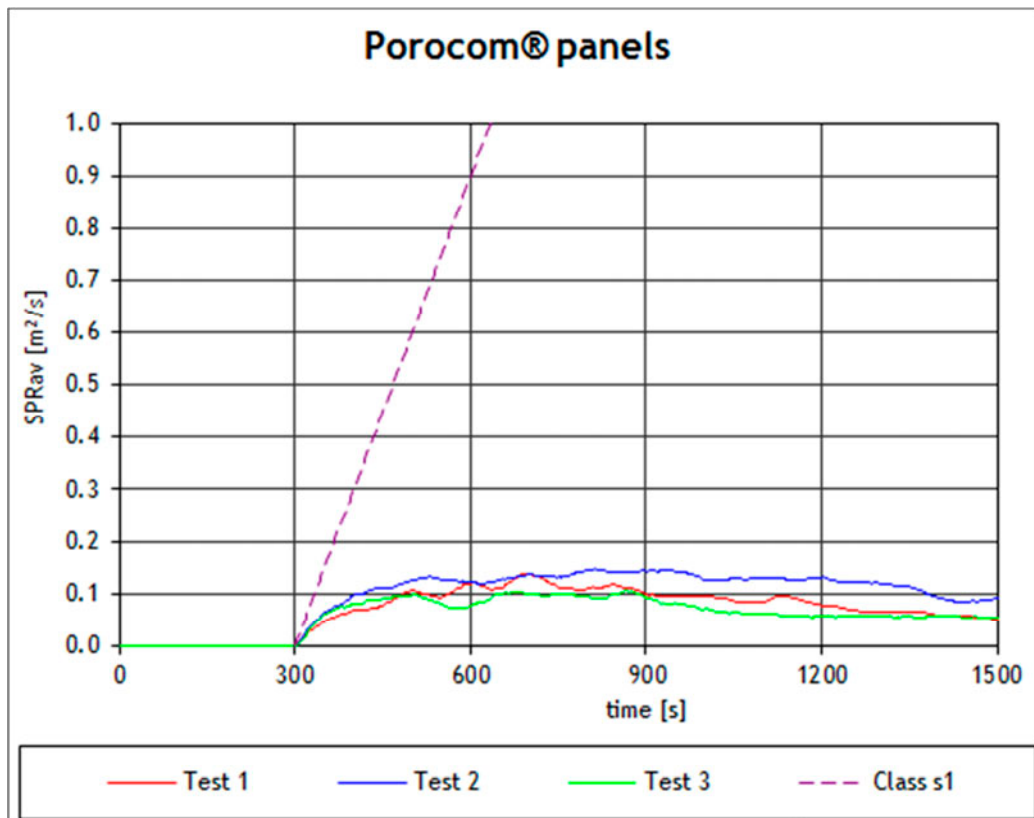


Chart 2: Rate of Smoke Production ( $SPR_{av}(t)$ ) [ $m^2/s$ ]

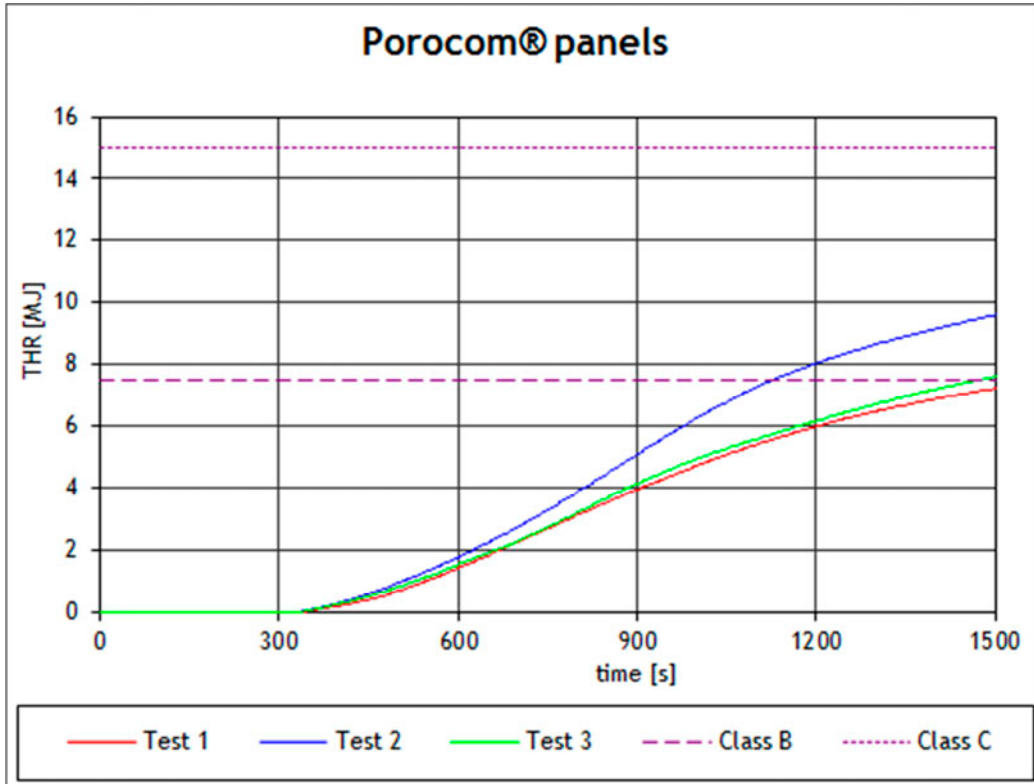


Chart 3: Total Heat release (THR(t)) [MJ]

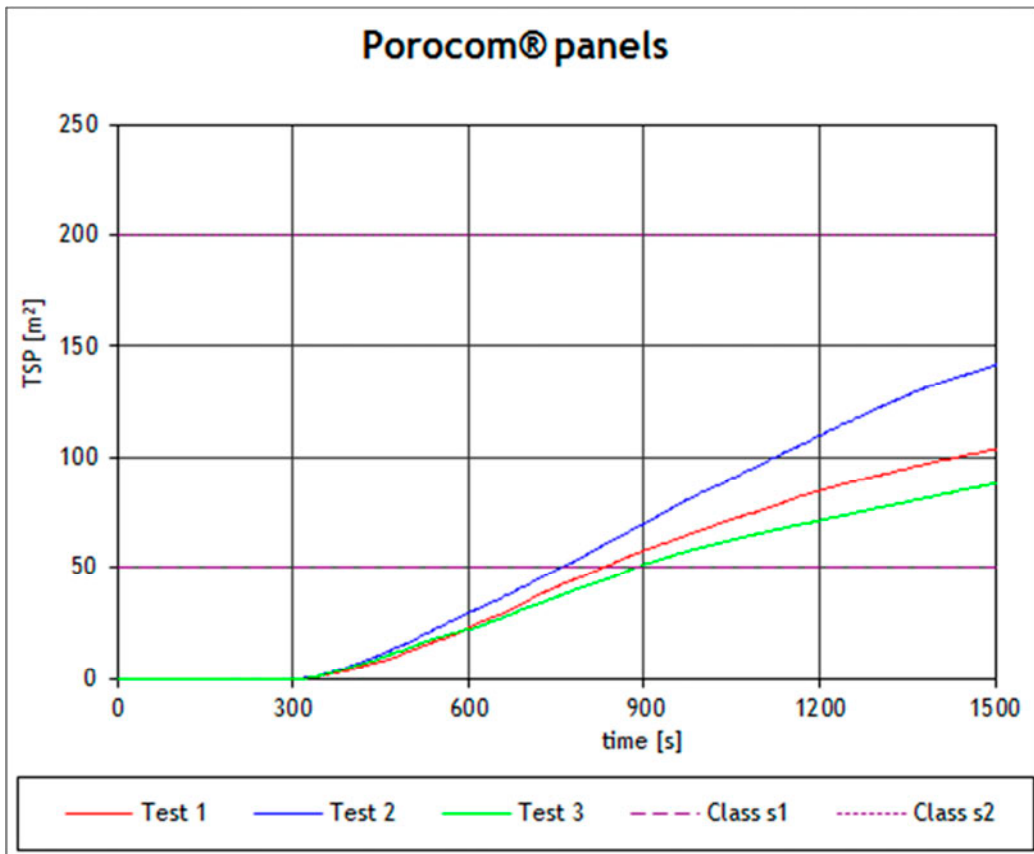


Chart 4: Total Smoke Production (TSP(t)) [m<sup>2</sup>]



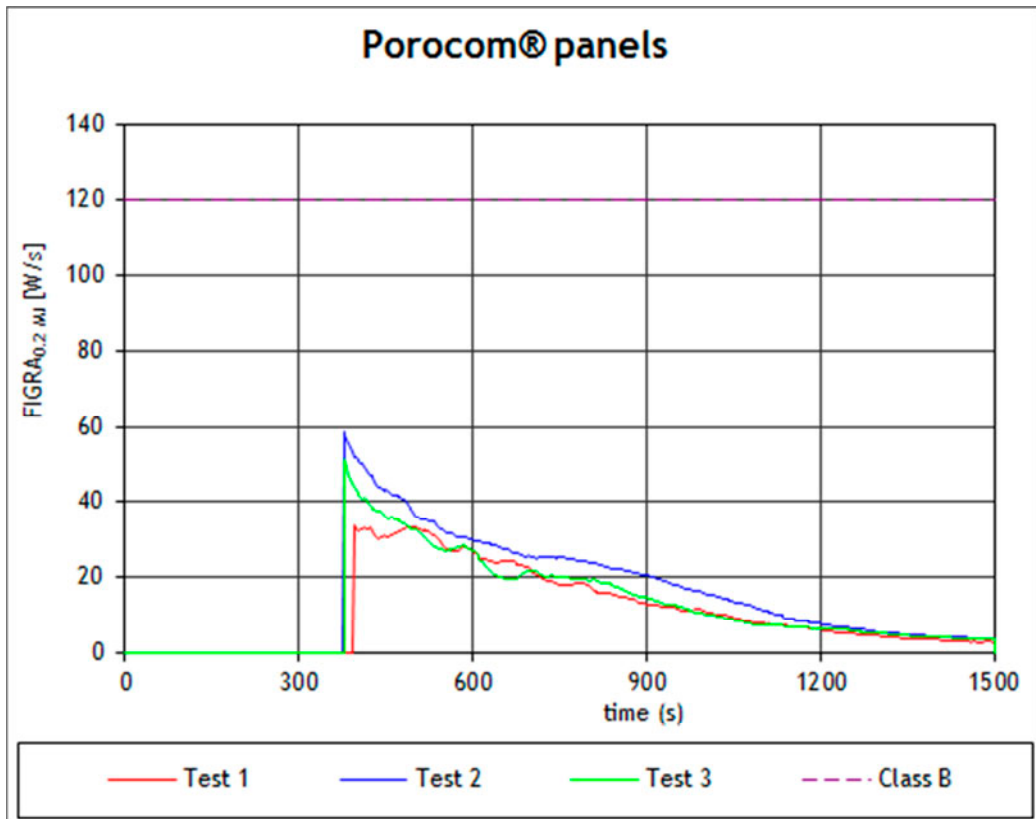


Chart 5:  $FIGRA_{0.2 MJ} [W/s]$

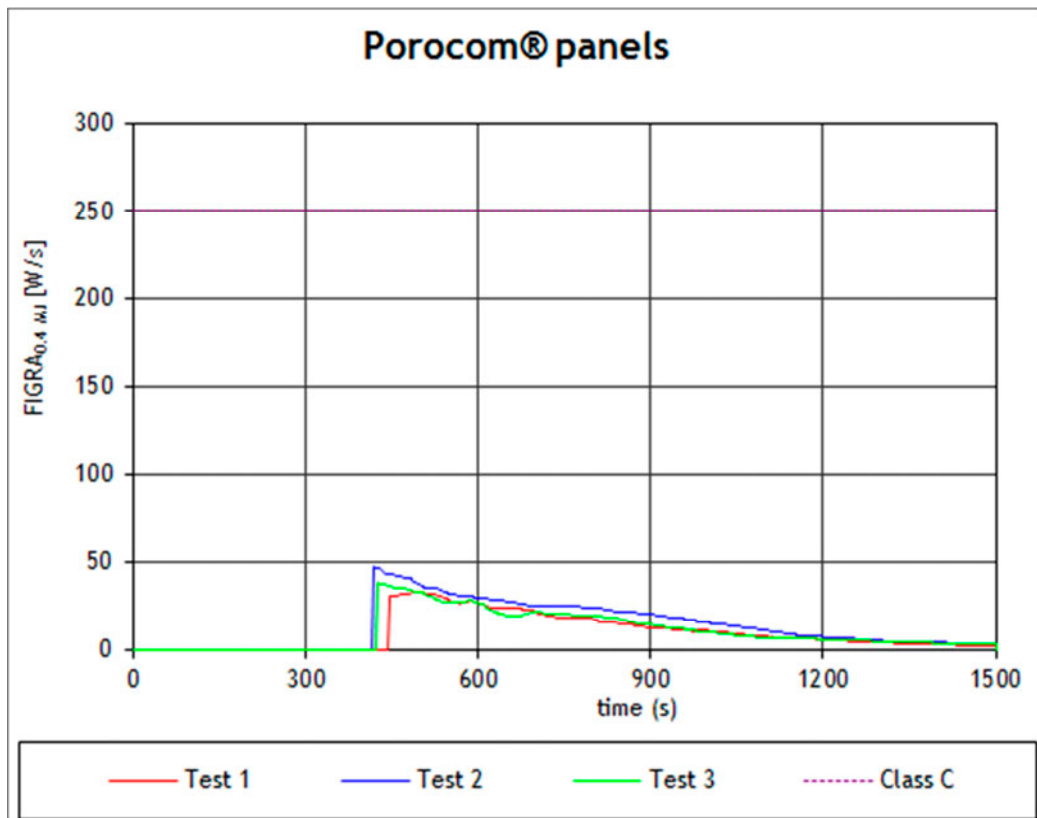


Chart 6:  $FIGRA_{0.4 MJ} [W/s]$

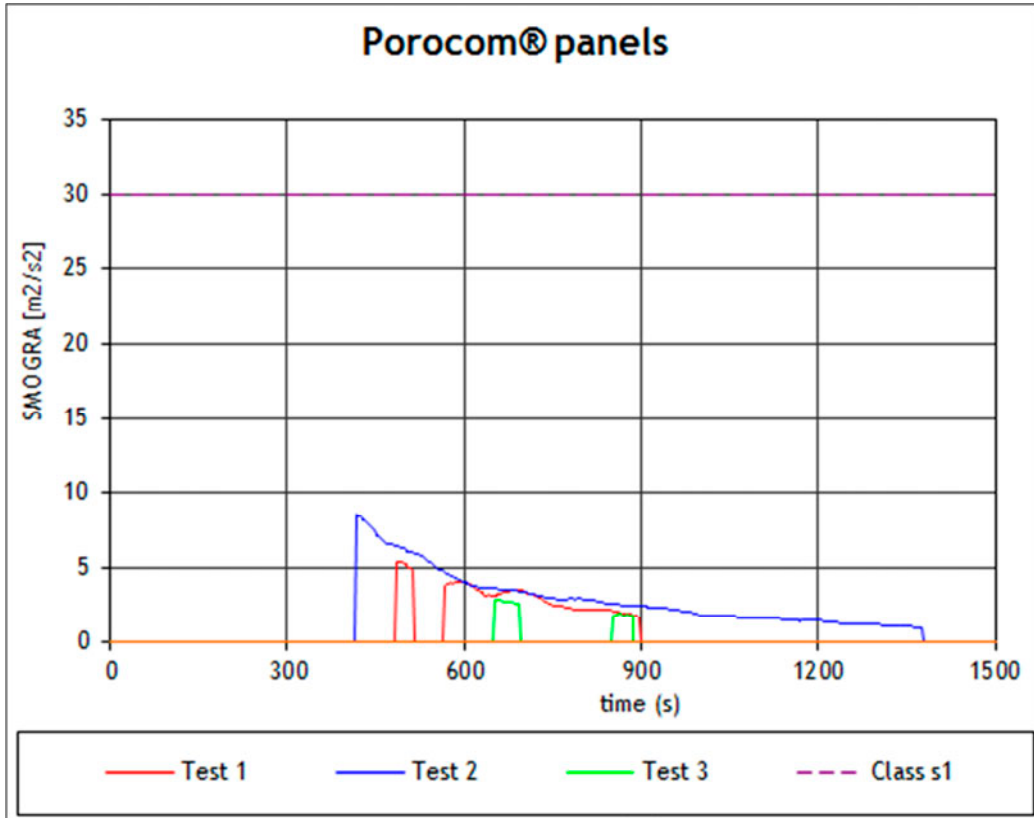


Chart 7: SMOGRA [m<sup>2</sup>/s<sup>2</sup>]

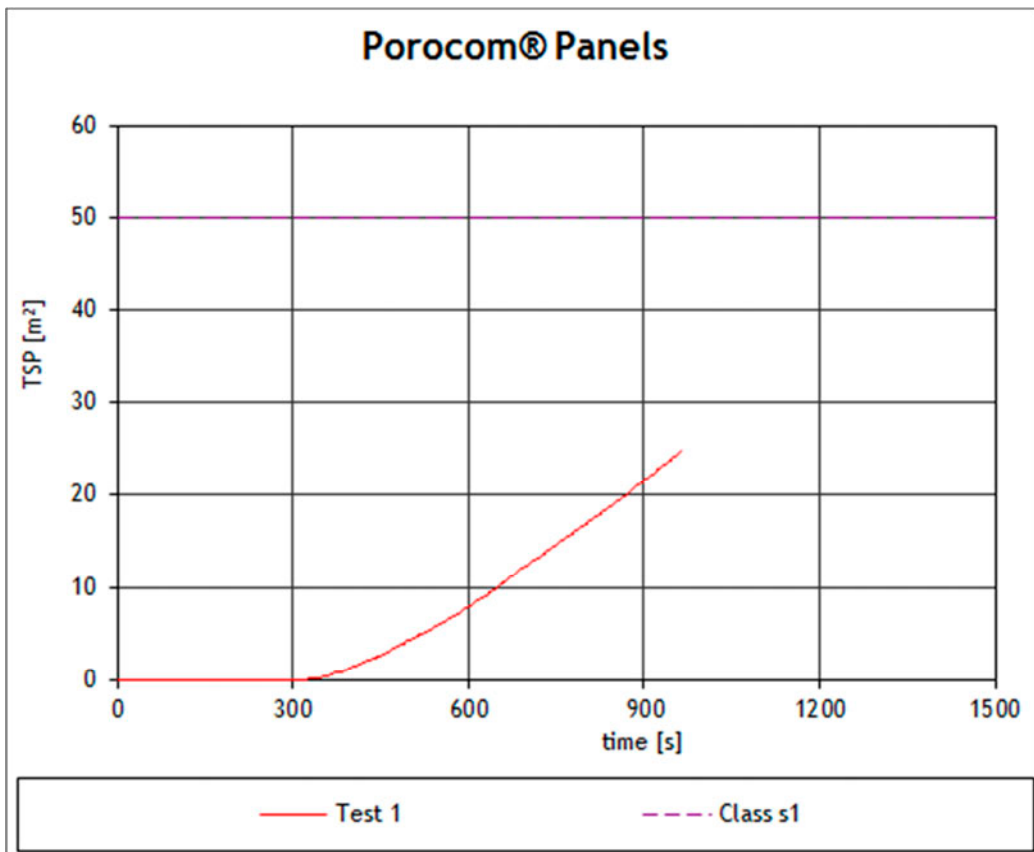


Chart 8: Total Smoke Production correction

**APPENDIX: PHOTOGRAPHS**



Photo1: Specimen Porocom® Panels prior to testing



Photo 2: Specimen Porocom® Panels after testing