

REPORT No. 080046-002-1-a

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PURPOSE	REACTION TO FIRE TEST REPORT ACCORDING TO EN 13823:2010+A1:2014 and EN ISO 11925-2:2010/AC:2011
TESTED SAMPLE	OPEN-CELL MELAMINE FOAM WITH WALL FABRIC REF.: "ISINAC de 4cm de espesor con autoadhesivo revestido en notejido negro A0"
RECEPTION DATE	15.04.2019
TEST DATES	29.04.2019 – 08.05.2019
ISSUE DATE	12.06.2019
TRANSLATION DATE	08.06.2022

Razón Social / FUNDACIÓN TECNALIA RESEARCH & INNOVATION Nº F-69 Registro de Fundaciones del Gobierno Vasco CIF G48875767

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Data marked with a (*) were provided by the customer.

SAMPLE CHARACTERISTICS

On 15 April 2019, FUNDACIÓN TECNALIA R&I received from the company ISINAC ACOUSTIC WORLD, S.L. open-cell melamine foam samples coated with black wall fabric with self-adhesive on the non-exposed side. Four (1500 x 1000 x 45) mm samples and four (1500 x 500 x 45) mm samples were received, referenced as:

“ISINAC de 4cm de espesor con autoadhesivo revestido en notejido negro A0”

The construction solution used in the tests as per EN 13823 and EN 11925-2 is made up of the following layers, with these characteristics (*):

- a) Material: 4 cm thick ISINAC with self-adhesive coated with A0 black non-woven fabric
- b) Thickness: 40 mm
- c) Density: 9 kg/m³
- d) Nominal dimensions: 610 x 610 mm
- e) Coating: Black wall fabric
 - a. Material: 230 g/m² polypropylene
- f) Unexposed side: adhesive

TEST REQUESTED

The test requested was **Reaction to fire tests for building products. Building products excluding floorings exposed to the thermal attack by a single burning item** according to standard EN 13823:2010+A1:2014.

The test requested was **Reaction to fire tests. Ignitability of products subjected to direct impingement of flame. Part 2: Single-flame source test** according to standard EN ISO 11925-2:2010/AC:2011.

The uncertainties related to the main test parameters are available to the customer upon request.

CONDITIONING

The test specimen was conditioned prior to testing under the specifications set out in the standard EN 13238:2010. **Reaction to fire tests for building products. Conditioning procedures and general rules for selection of substrates.**

The samples remained in a conditioning chamber at 23 ± 2 °C and $50\pm 5\%$ relative humidity, until constant weight was achieved.

The tests were carried out under the following temperature and humidity environmental conditions:

STANDARD		TEMPERATURE (°C)	HUMIDITY (%)
EN ISO 11925-2		21.0	50.0
EN 13823	SAMPLE 1	17.2	58.5
	SAMPLE 2	17.0	68.3
	SAMPLE 3	17.5	68.2

TERMS AND DEFINITIONS

This test allows for the heat contribution and the smoke production in the products subjected to the thermal attack of a propane gas burner to be evaluated.

These measurements are the basis to determine the following parameters:

FIGRA_{0.2 MJ (W/S)} AND FIGRA_{0.4 MJ (W/S)}

are defined as the maximum value of the quotient between the heat release rate of the sample and the instant in which it has started using a heat release threshold of 0.2 MJ and 0.4 MJ, respectively.

THR_{600 s (MJ)}

is defined as the total amount of heat released by the sample in the first 600 s from the start of exposure to the main burner.

TSP_{600 s (m²)}

is defined as the total amount of smoke released by the sample within the first 600 s since the start of exposure to the main burner.

SMOGRA

is defined as the smoke growth rate. The maximum value of the quotient of the smoke production rate by the sample and the moment in which it occurs.

LFS

is defined as the lateral flame spread through the wing of the sample.

DROP_{T≤10 s} AND DROP_{T>10 s}

are defined as the fall of flaming droplets/particles during the first 600 s of the testing period which remain burning, after falling, no more than 10 s and more than 10 s, respectively.

TESTS PERFORMED

a) SBI TEST ACCORDING TO EN 13823

The test performed was *Reaction to fire tests for building products. Building products excluding floorings exposed to the thermal attack by a single burning item* as per standard EN 13823.

A test sample consists of two vertical wings that form a right angle assembled on a sample holder cart which are exposed to a burner located in the lower section of the corner (the "main burner"). The flames are obtained by combustion of propane gas, injected through a sand bed with an output energy of (30.7 ± 2.0) kW.

The performance of the sample is evaluated during a 21-minute period. The performance parameters are the heat release, smoke production, lateral spread and falling of flaming droplets or particles.

The measurements are obtained every 3 seconds to calculate the volume flow rate, the heat release rate (HRR) and the smoke production rate (SPR).

DETAILS OF THE SUBSTRATE USED AND THE FIXING METHOD

The samples were placed in compliance with Clauses 5.2 and 5.3 of standard EN 13823 regarding sample assembly with a T angle to ensure that the line of the corner formed by the panels did not widen during the test.

Each wing was supported on a calcium silicate substratum, simulating the walls as specified in the EN 13823 standard. A 10 mm-thick calcium silicate panel with a density of 870 kg/m^3 and a reaction to fire classification of A2-s1, d0 were used.

The test was carried out without air chamber.

b) IGNITABILITY TEST ACCORDING TO EN ISO 11925-2

The test requested was **Reaction to fire tests. Ignitability of products subjected to direct impingement of flame. Part 2: Single-flame source test** according to standard EN ISO 11925-2.

The (250 x 90 x 45) mm samples used in this test are placed on a stainless steel U-shaped double frame hung vertically so that the bottom side of the sample is directly exposed to the flame along its central line and edges.

16 mm burner spacers are used to expose the edge of the sample to the flame and 5 mm burner spacers are used to expose its surface.

The flame height must be 20 mm.

- The exposure to flame takes place on the surface during 30 seconds, on the central line at 40 mm from the lower edge.
 - a) The flame is applied on the surface of the panel (surface)
 - b) The flame is applied on the centre lower edge of the panel (edge)

RESULTS OBTAINED

RESULTS OF THE EN 13823 TEST

TEST SPECIMEN	THR ₆₀₀ (MJ)	FIGRA _{0,2 MJ} (W/s)	FIGRA _{0,4 MJ} (W/s)	TSP _{600 S} (m ²)	SMOGRA (m ² /s ²)	LFS	DROP T≤10 s	DROP t>10 s
1	2.89	52.55	45.32	136.74	55.15	< edge	No	No
2	3.42	61.14	61.14	170.39	45.47	< edge	No	No
3	2.81	63.89	39.95	159.28	47.47	< edge	No	No
Mean	3.04	59.19	48.80	155.47	49.36	< edge	No	No

OBSERVATIONS:

Vertical propagation was observed in the test specimens during the first minute. In the second minute and in all three test specimens, the material is consumed at the junction of the samples and gaps appear.

In addition, the following data was registered:

Maximum carbonised distance at a height of 500 mm and 1000 mm from the lower edge:

Test specimen 1 (mm): —

Test specimen 2 (mm): —

Test specimen 3 (mm): —

NOTE: "The test results correspond to the performance of test samples of a product, under the specific test conditions. They do not intend to constitute the only potential fire risk assessment criterion that could result in the use of the product".

The Annexes include the graphs corresponding to the heat release and smoke production rates.

RESULTS OF THE ISO 11925-2 TEST

A.- SURFACE

TEST SPECIMEN		Sample ignition	Flame spread to 150 mm (Fs)	Period in which Fs is reached	Filter paper ignition
Longitudinal	1	No	No	—	No
	2	No	No	—	No
	3	No	No	—	No

B-EDGE

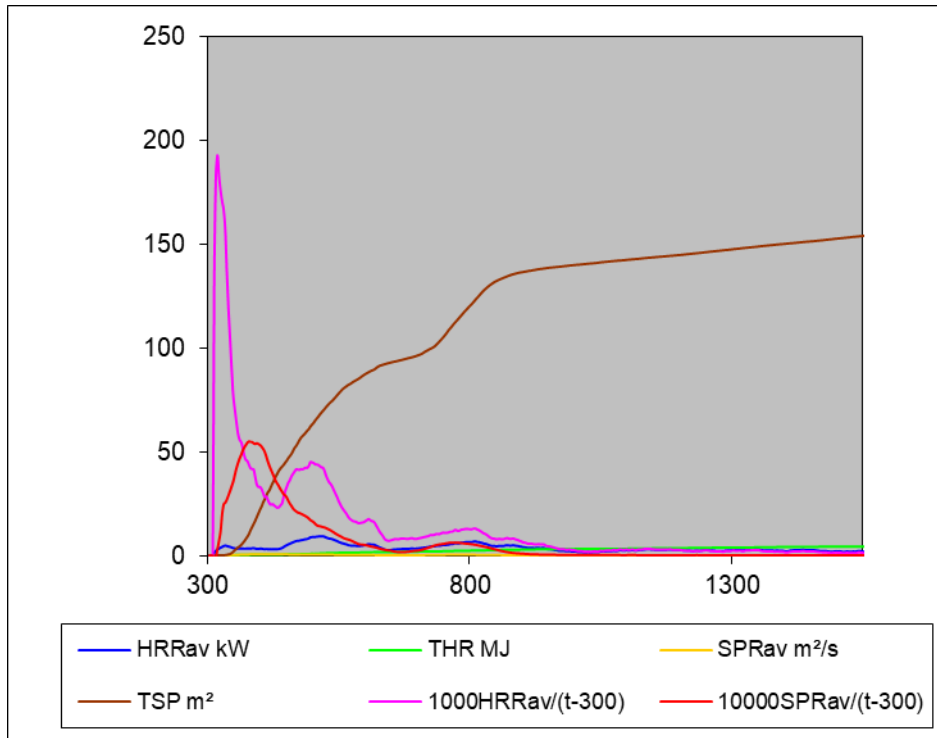
TEST SPECIMEN		Sample ignition	Flame spread to 150 mm (Fs)	Period in which Fs is reached	Filter paper ignition
Longitudinal	1	No	No	—	No
	2	No	No	—	No
	3	No	No	—	No



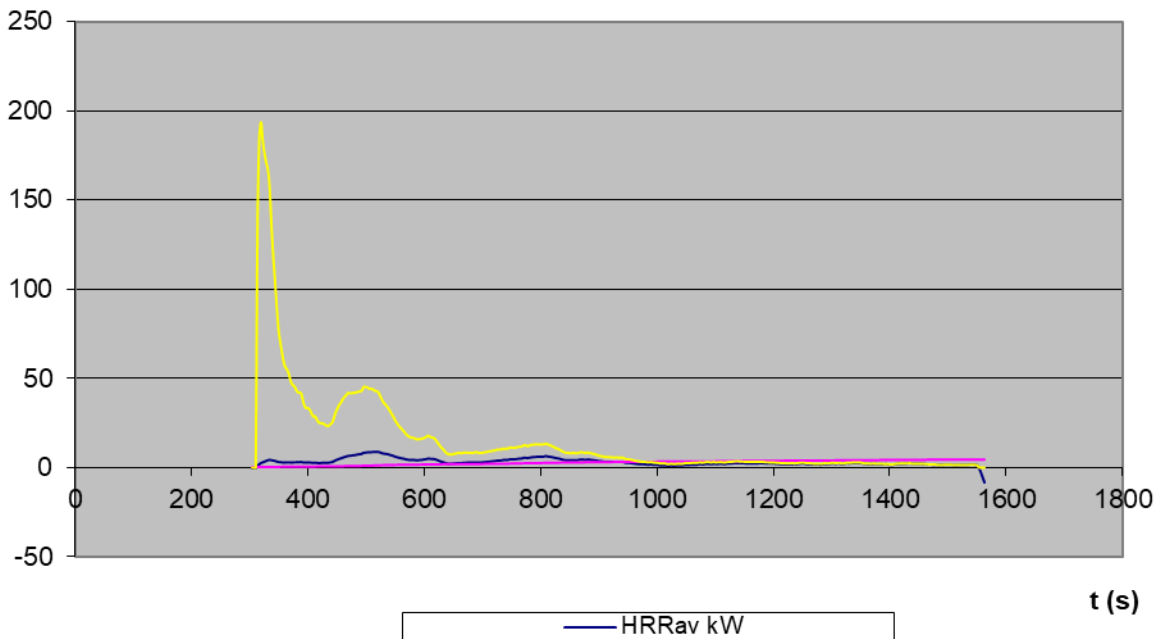
ANNEXES



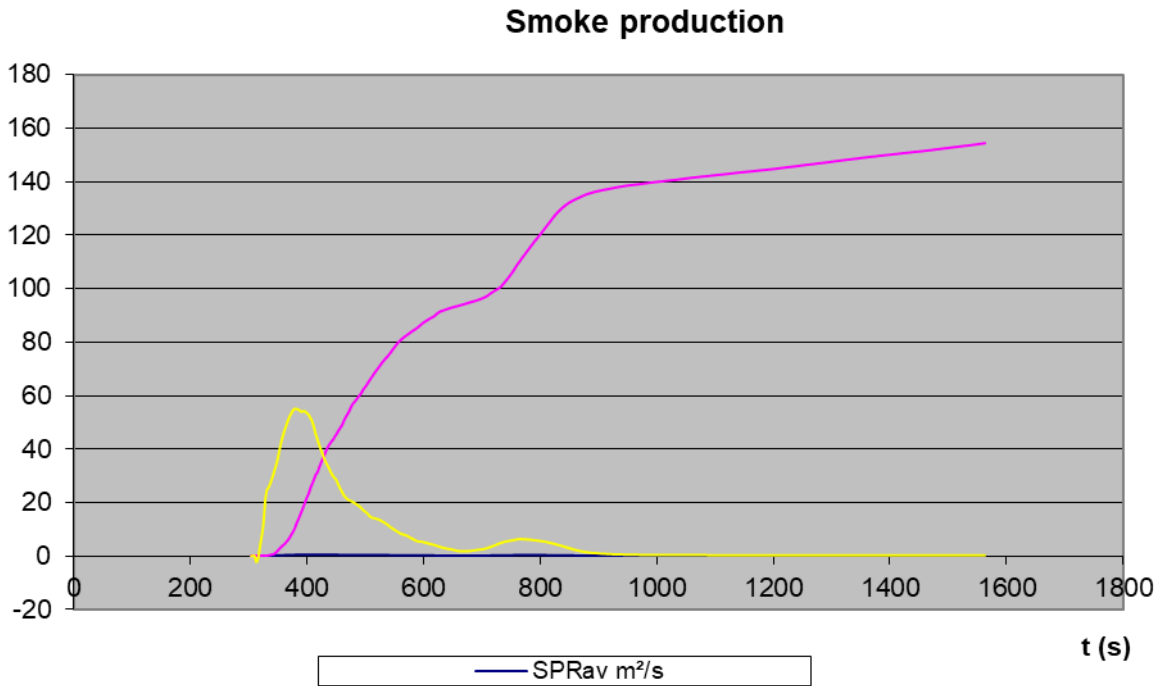
Sample No. 1: Heat release rates



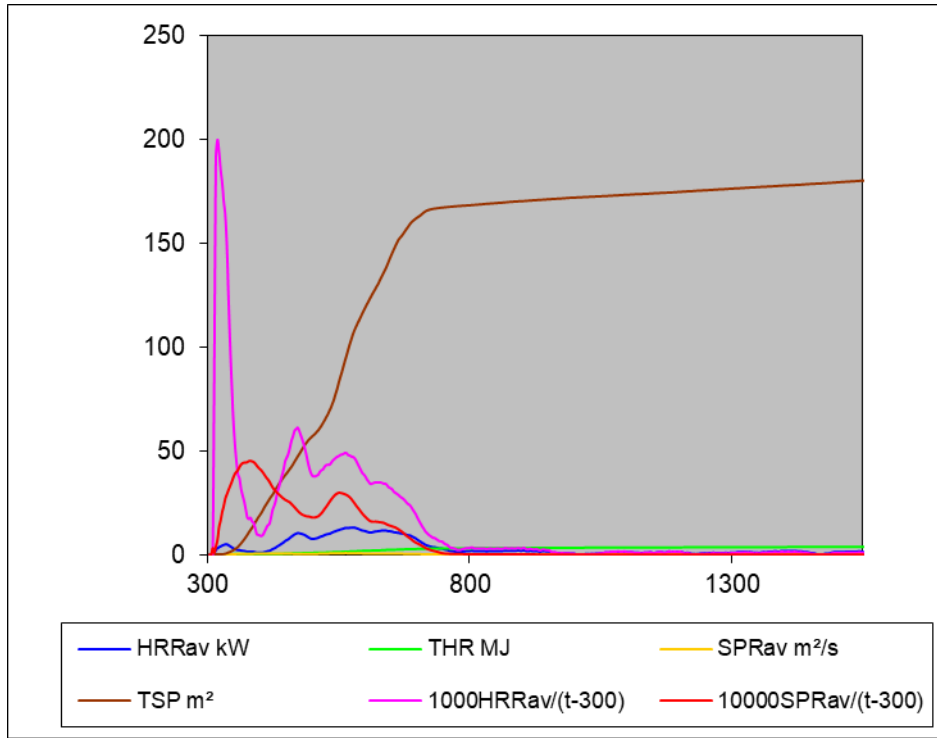
Heat release



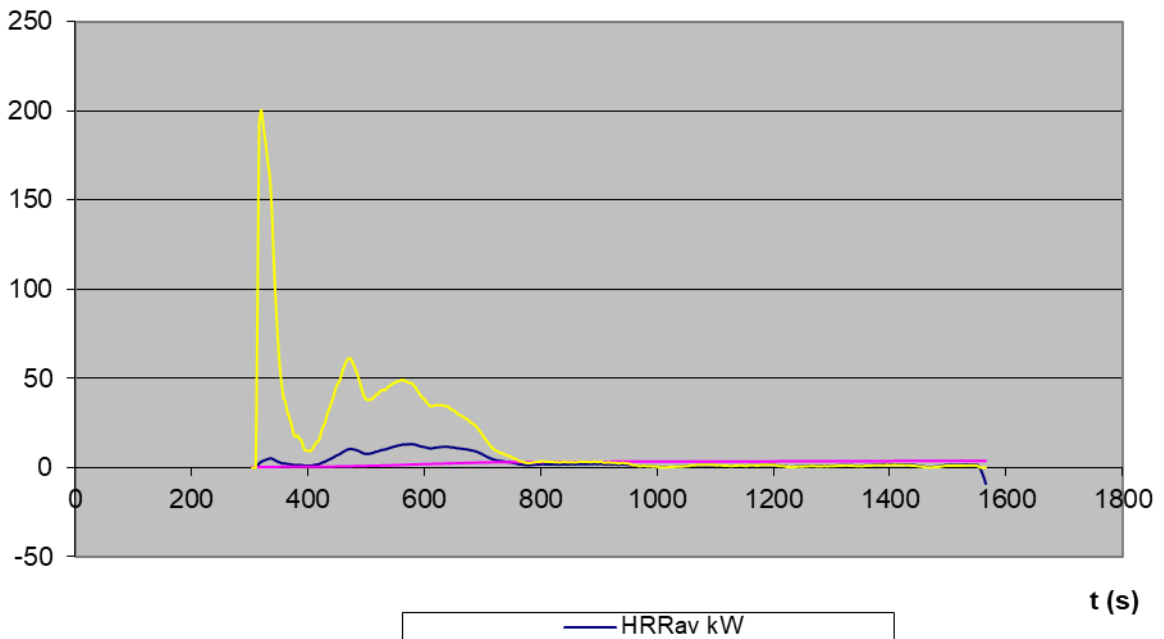
Sample No. 1: Smoke release rates



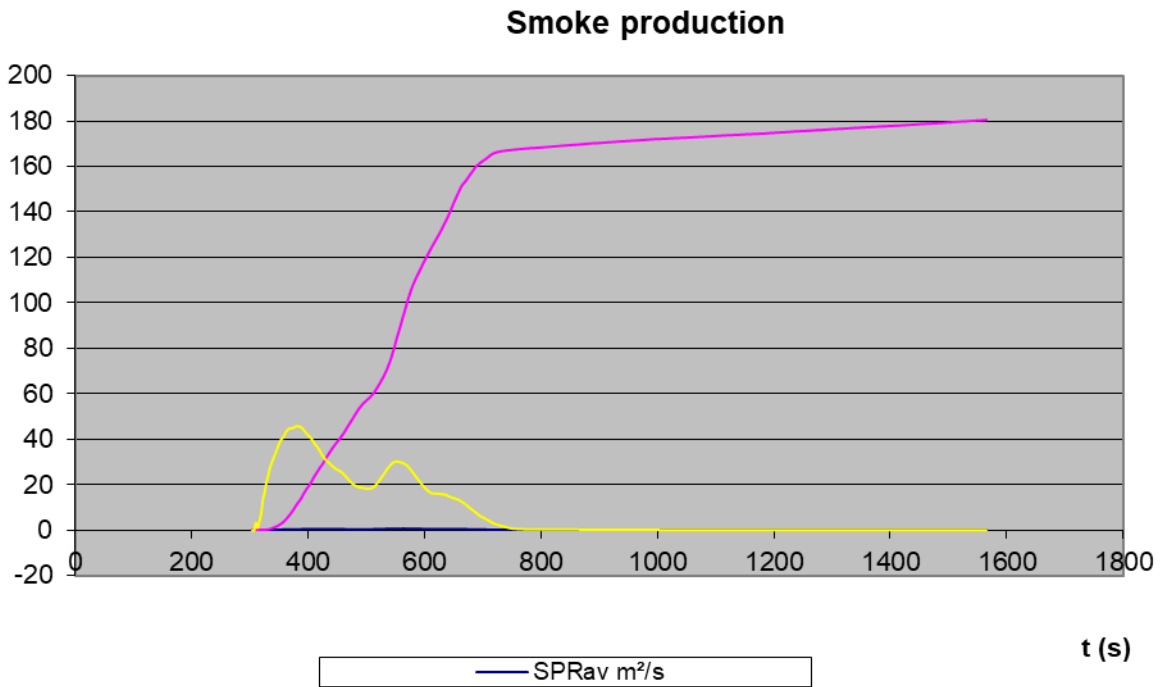
Sample No. 2: Heat release rates



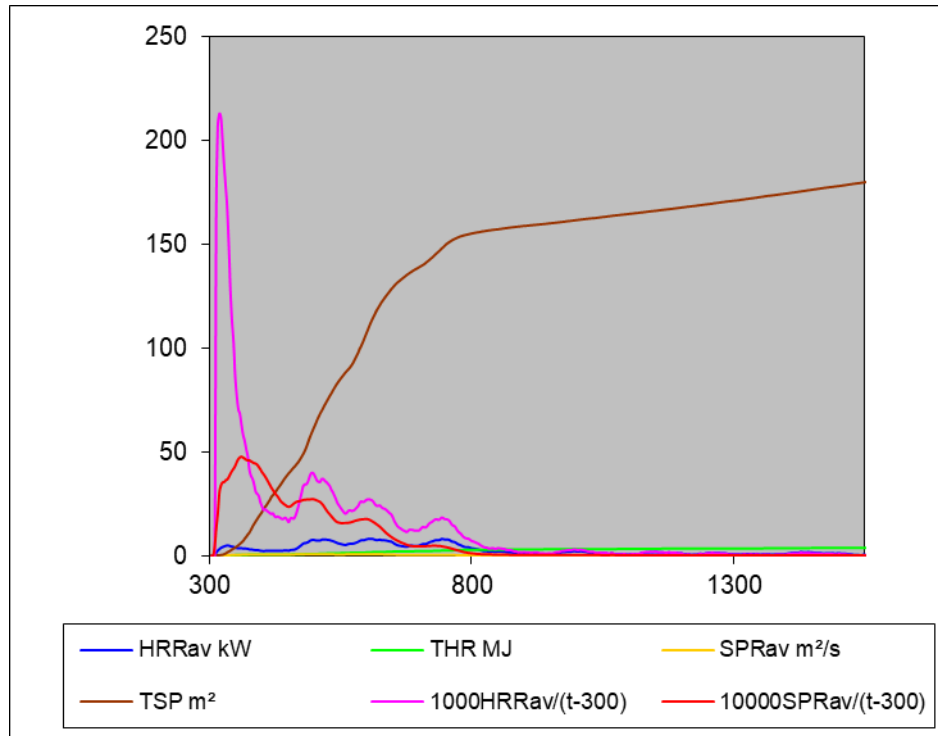
Heat release



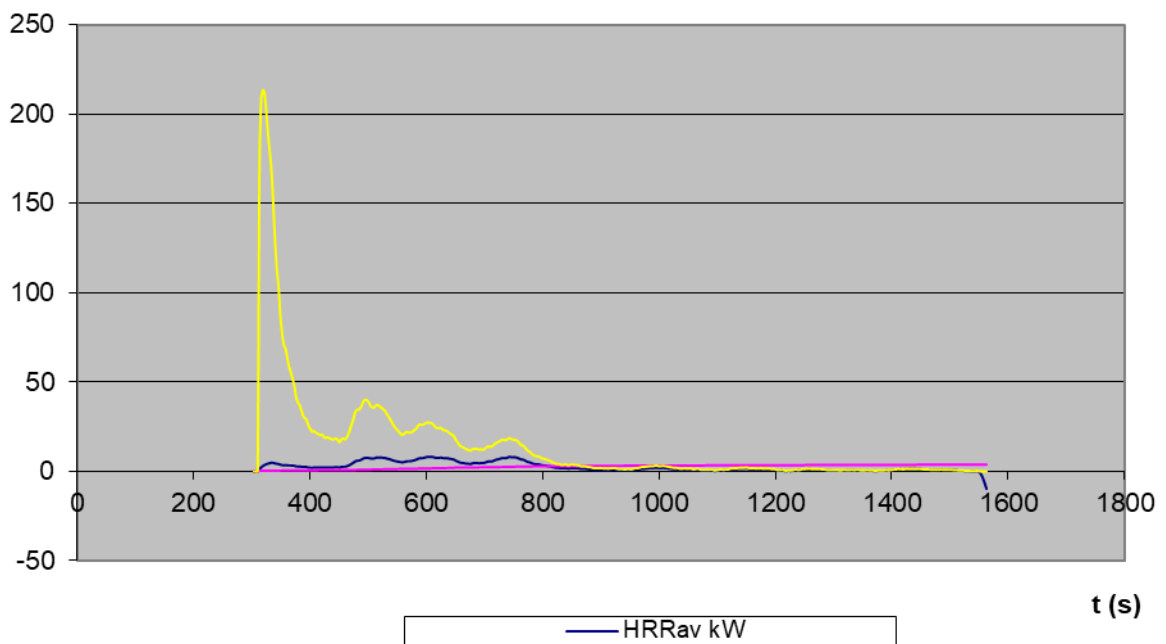
Sample No. 2: Smoke release rates



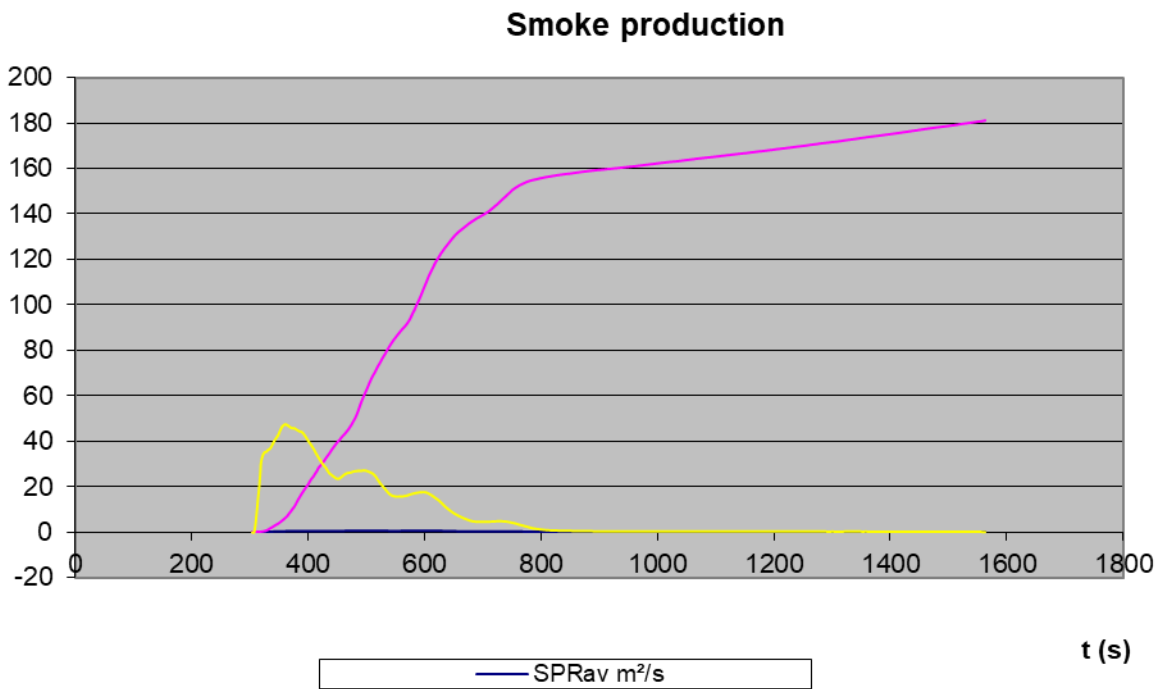
Sample No. 3: Heat release rates



Heat release



Sample No. 3: Smoke release rates



SAMPLE PHOTOGRAPHS



**Appearance of the sample before the SBI test (short wing and long wing)
as per EN 13823**



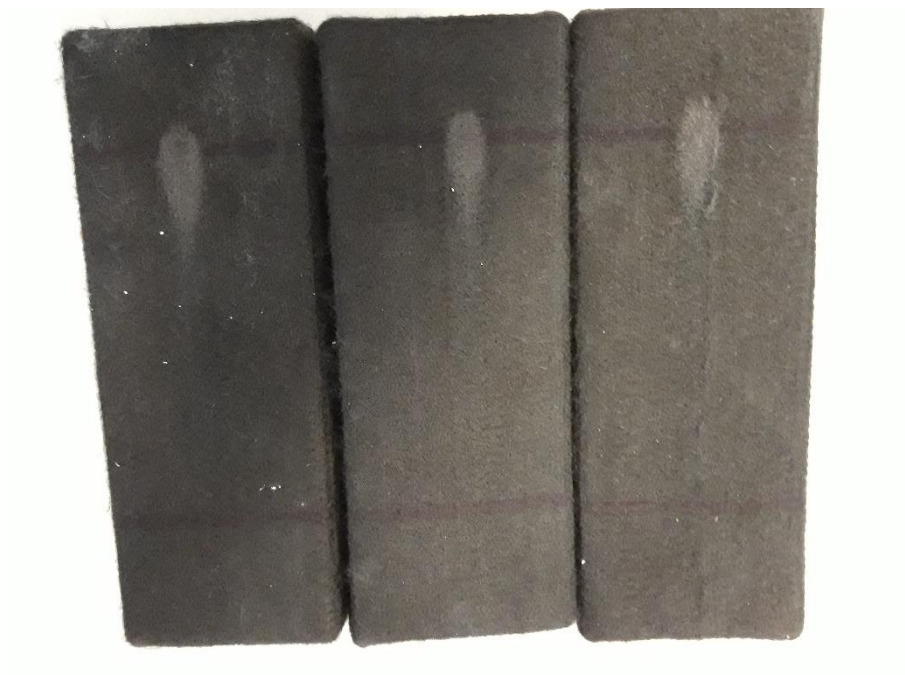
**Appearance of the sample during the SBI test
as per EN 13823**



**Appearance of the sample after the SBI test
as per EN 13823**



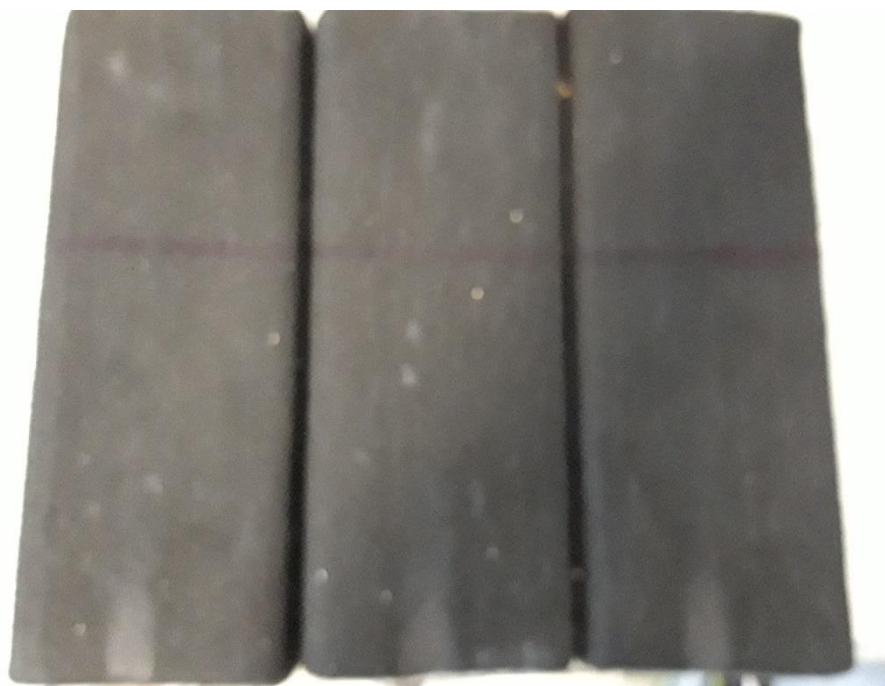
Appearance of the sample before the ignitability test according to EN ISO 11925-2 (application on surface)



Appearance of the sample after the ignitability test according to EN ISO 11925-2 (application on surface)



Appearance of the sample before the ignitability test according to EN ISO 11925-2 (application on edge)



Appearance of the sample after the ignitability test according to EN ISO 11925-2 (applic