

Exposure to external fire to Roofing membrane + BarrierSheet on PIR according to CEN/TS 1187:2012; Test 1: Method with burning brands

Report no.	2025-Efectis-R000982
Sponsor	AllShield Coatings B.V. Hoogeveeneweg 29 2913 LV NIEUWERKERK AAN DEN IJSSEL THE NETHERLANDS
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Project number	ENL-25-000713
Date of issue	July 2025
Number of pages	13

1. PRODUCT IDENTIFICATION

Roofing membrane + BarrierSheet on PIR, further referred to as 'the product'.

2. ABSTRACT

Determination of the reaction to fire by exposure to external fire to roofs according to CEN/TS 1187:2012; Test 1: Method with burning brands, with the objective to obtain the reaction to fire classification according to EN 13501-5:2016.

3. DETAILS OF THE PRODUCT TESTED

3.1 INTENDED APPLICATION

The product will be used as a roof covering.

3.2 MANUFACTURER

AllShield Coatings B.V.
Hoogeveeneweg 29
2913 LV NIEUWERKERK AAN DEN IJSSEL
THE NETHERLANDS

3.3 PRODUCT DESCRIPTION

According to the sponsor the product is composed of:

- Rhenofol CV, Polyester reinforced PVC roof sheet. Thickness: 1.5 mm.
- AllShield BarrierSheet. Thickness: 2.5 mm, and mass per unit area: $3.0 \text{ kg/m}^2 \pm 10\%$.
- InSuRoof PIR. Thickness: 140 mm, density: approx. 32 kg/m^3 and mass per unit area: approx. 4.48 kg/m^2 .
- AllShield BarrierSheet. Thickness: 2.5 mm, and mass per unit area: $3.0 \text{ kg/m}^2 \pm 10\%$.
- PE foil. Colour blue. Thickness: 0.125 mm.
- Steel deck: Thickness: 0,4 mm (Any external finish layer must be inorganic or have a PCS $\leq 4.0 \text{ MJ/m}^2$ or a mass $\leq 200 \text{ g/m}^2$).

4. DETAILS OF THE EXAMINATION

4.1 SAMPLES

Sampling procedure	Samples were selected by the sponsor and verified by Efectis Netherlands. See appendix "Sample preparation".
Specimen preparation	The specimens were prepared by the sponsor under supervision of Efectis.
Actions taken by the sponsor/ to prevent flames passing the edges	Non taken
Age	1 week
Date of receipt	July 3, 2025

4.2 SPECIMEN DESCRIPTION

Steel deck (all specimens)

Corrugations 90° to the roof pitch

Specimen 1

Single central joint in the top layer parallel to the roof pitch

Single joint in the AllShield BarrierSheet under the first layer at 90° to the roof pitch, 750 mm under the top edge.

Single central joint in the AllShield BarrierSheet under the isolation layer parallel to the roof pitch

Specimen 2

Single joint in the top layer at 90° to the roof pitch, 100 mm above the lower edge of the basket.

A single central joint in the insulation, parallel to the roof pitch

Single joint in the AllShield BarrierSheet under the first layer at 90° to the roof pitch, 750 mm under the top edge.

Single central joint in the AllShield BarrierSheet under the isolation layer parallel to the roof pitch

Specimen 3

No joint in the top layer

A single central joint in AllShield BarrierSheet under the top layer, parallel to the roof pitch

Single joint in the AllShield BarrierSheet under the insulation layer at 90° to the roof pitch, 750 mm under the top edge.

Specimen 4

No joint in the top layer

A single central joint in AllShield BarrierSheet under the insulation layer, parallel to the roof pitch

Single joint in the AllShield BarrierSheet under the top layer at 90° to the roof pitch, 750 mm under the top edge.

The specimens 1 to 4 are prepared in accordance with paragraph 4.4.3.1 "Specimen types" of CEN/TS 1187.

4.3 TEST CONDITIONS

Test method

Test 1: method with burning brands

Roof pitch

15°

Ambient temperature at start

approx. 23°C

4.4 EXAMINATION

Number of tests	A total of four tests were carried out according to CEN/TS 1187.
Deviations from the test method	None
Date of examination	July 3, 2025
Location of examination	Efectis Nederland BV, Bleiswijk, The Netherlands
Performed by	KSB and HPS

The results are given in appendix 'Test results', Table 1.

Appendix 'Photographs' shows for each specimen tested representative photographs.

5. CONCLUSIONS

A formal classification is to be assessed in accordance with EN 13501-5, "Fire classification of construction products and building elements – Part 5: Classification using data from external fire exposure to roof tests".

Remark:

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.



Signed by: Suzanne VAN HERP

Project Leader Reaction to Fire



Signed by: Job ONDERWATER

Project Leader Reaction to Fire



Signed by: Bauke KNOTTNERUS

Manager Reaction to Fire

APPENDIX: TEST RESULTS

Table 1: External fire exposure to roof classification parameter results

Parameter	15°	Test result				Classification parameter
		1	2	3	4	
Flame spread:	[m:s]					
- Internal, upwards						
- 100 mm		-	-	-	-	
- 300 mm		-	-	-	-	
- 500 mm		-	-	-	-	
- 700 mm		-	-	-	-	Not Reached
- External, upwards	[m:s]					
- 100 mm		-	-	-	-	
- 300 mm		-	-	-	-	
- 500 mm		-	-	-	-	
- 700 mm		-	-	-	-	Not Reached
- Internal, downwards	[m:s]					
- 100 mm		-	-	-	-	
- 300 mm		-	-	-	-	
- 500 mm		-	-	-	-	
- 600 mm		-	-	-	-	Not Reached
- External, downwards	[m:s]					
- 100 mm		-	-	-	-	
- 300 mm		-	-	-	-	
- 500 mm		-	-	-	-	
- 600 mm		-	-	-	-	Not Reached
Maximum burned length: 80 cm						
- Internal:						Not Reached
- Upwards	[cm]	-	-	-	-	
- Downwards	[cm]	-	-	-	-	
- External:						Not Reached
- Upwards	[cm]	2	-	-	-	
- Downwards	[cm]	6	2	-	-	
Lateral flame spread to edges	(Y/N)	N	N	N	N	Not Reached
Burning droplets/debris falling from exposed side	(Y/N)	N	N	N	N	Compliant
Burning/glowing particles Penetrating the roof	(Y/N)	N	N	N	N	Compliant
Size of through openings:	[mm ²]					
- one single opening	< 25 mm ²	-	-	-	-	Compliant
- sum of all openings	< 4500 mm ²	-	-	-	-	Compliant
Time of extinguishing of flames	[m:s]					
Time of termination of tests	[m:s]					

In the table – means not reached

Observations of physical behaviour of the test specimen: None.

APPENDIX: PHOTOGRAPHS

Specimen 1: Roof panel with a centre joint parallel to the pitch



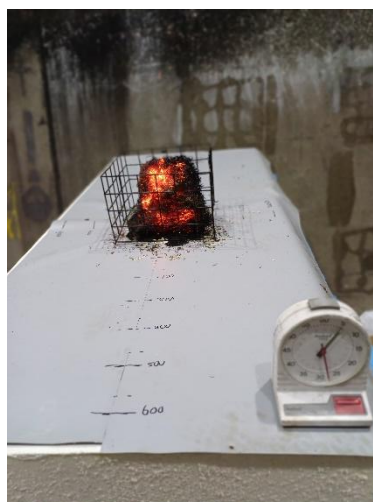
Picture 1 specimen 1 prior to testing



Picture 2 specimen 1 during test (1 min)



Picture 3 Specimen 1 during test (3 min)



Picture 4 Specimen 1 during test (5 min)

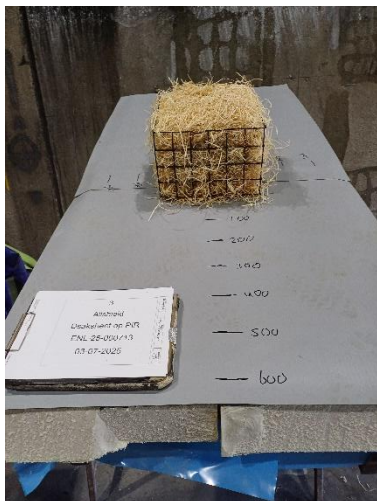


Picture 1 Specimen 1 during test (12 min)

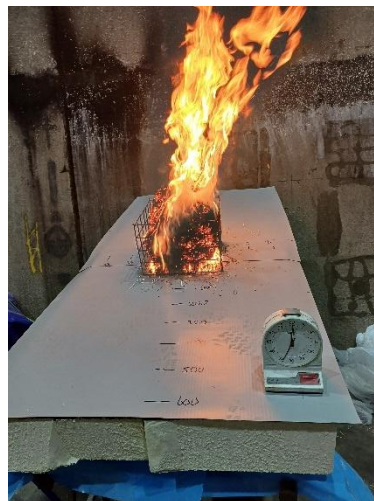


Picture 2 Specimen 1 after test

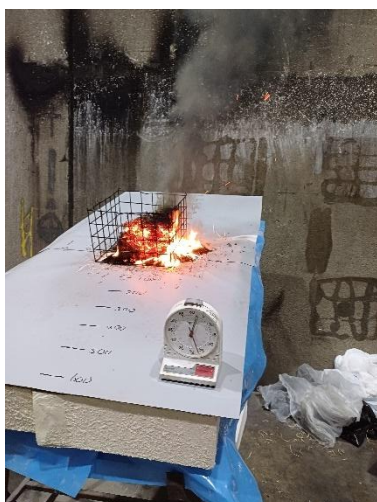
Specimen 2: Roof panel with a centre joint parallel to the pitch



Picture 7 specimen 2 prior to testing



Picture 8 specimen 2 during test (1 min)



Picture 9 Specimen 2 during test (3 min)



Picture 10 Specimen 2 during test (5 min)



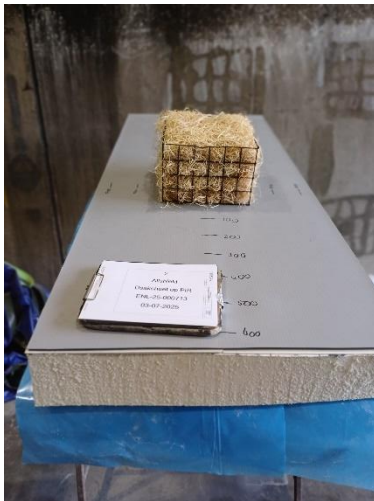
Picture 11 Specimen 2 during test (9 min)



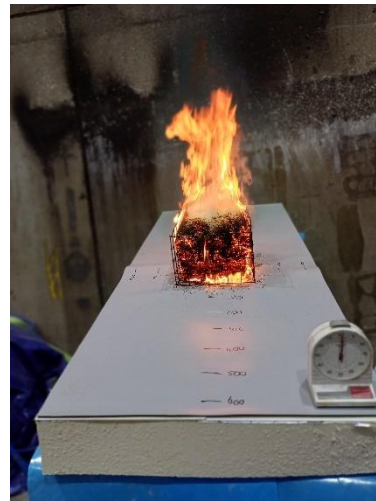
Picture 12 Specimen 2 after test

*test number in picture 6 should be 2 instead of 3

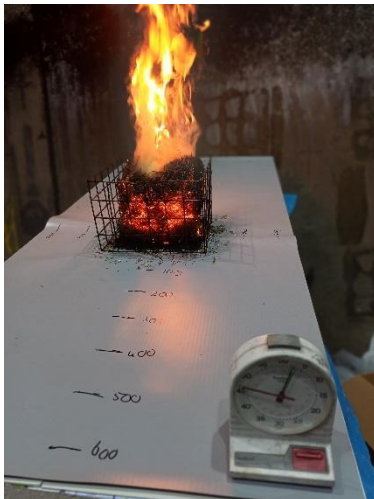
Specimen 3: Roof panel without joints



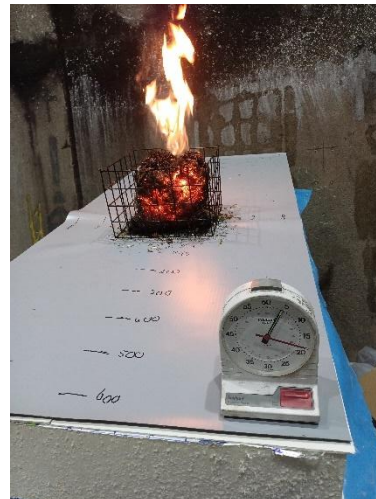
Picture 13 specimen 3 prior to testing



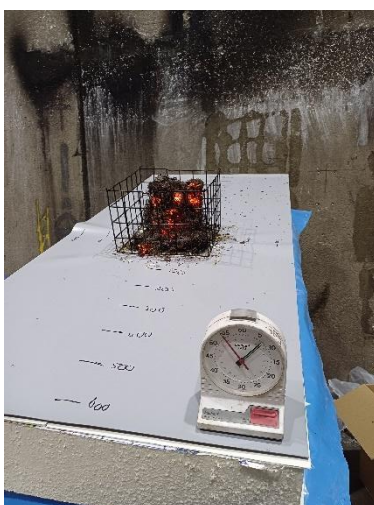
Picture 14 specimen 3 during test (1 min)



Picture 15 specimen 3 during test (3 min)



Picture 16 specimen 3 during test (5 min)



Picture 17 specimen 3 during test (7 min)



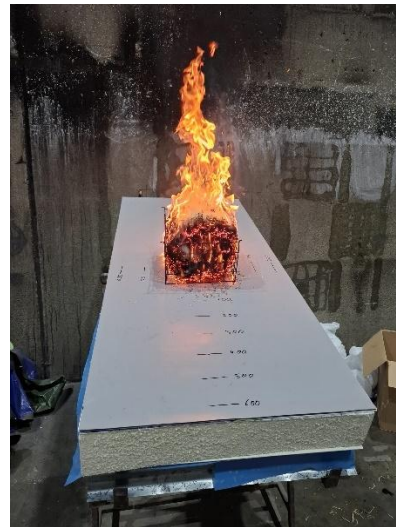
Picture 18 Specimen 2 after test

*test number in picture 13 should be 3 instead of 2

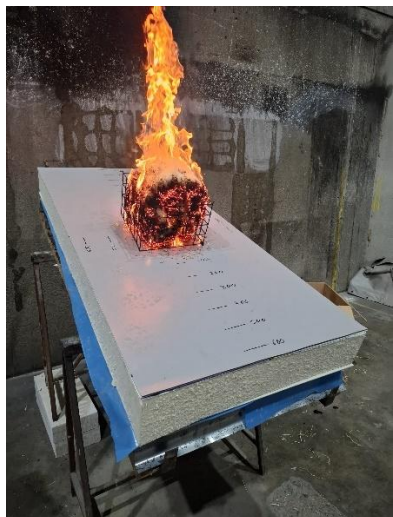
Specimen 4: Roof panel without joints



Picture 19 specimen 4 prior to testing



Picture 20 specimen during test (1min)



Picture 21 specimen during test (3 min)



Picture 22 specimen during test (6 min)



Picture 23 specimen during test (8 min)



Picture 24 Specimen 4 after test

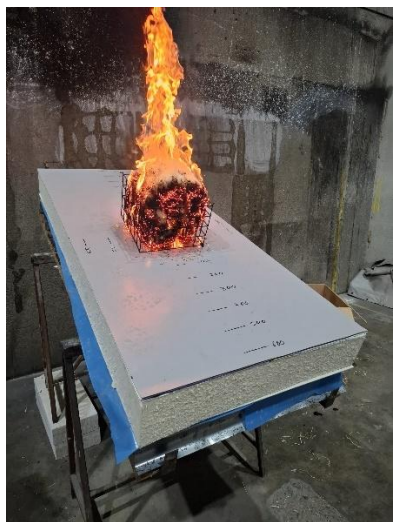
Specimen 4: Roof panel without joints



Picture 25 specimen 4 prior to testing



Picture 26 specimen during test (1min)



Picture 27 specimen during test (3 min)



Picture 28 specimen during test (6 min)



Picture 29 specimen during test (8 min)



Picture 30 Specimen 4 after test

BarrierSheet



Picture 31 BarrierSheet after testing



Picture 32 BarrierSheet after testing



Picture 33 BarrierSheet after testing



Picture 34 BarrierSheet after testing

Insulation PIR



Picture 35 insulation after testing



Picture 36 insulation after testing



Picture 37 insulation after testing



Picture 38 insulation after testing



Picture 39 insulation after testing

APPENDIX: Specimen preparation



Picture 40 steel deck specimen 1, 2, 3 and 4



Picture 41 PE foil specimen 1, 2, 3 and 4



Picture 42 AllShield BarrierSheet under insulation specimen 1



Picture 43 InSuRoof PIR specimen 1, 3 and 4



Picture 44 AllShield BarrierSheet above insulation specimen 1



Picture 45 mounting specimen 1,



Picture 46 Rhenofol CV, Polyester reinforced PVC roof sheet specimen 1



Picture 47 AllShield BarrierSheet under insulation specimen 2



Picture 48 InSuRoof PIR specimen 2



Picture 49 mounting specimen 2, 3 and 4



Picture 55 Rhenofol CV, Polyester reinforced PVC roof sheet specimen 2



Picture 51 Picture 35 Rhenofol CV, Polyester reinforced PVC roof sheet specimen 3



Picture 52 Picture 35 Rhenofol CV,
Polyester reinforced PVC roof sheet
specimen 3