

## Test Report No. 16969A

### Sponsor

Thermaflex Isolatie B.V.  
Veerweg 1, P.O. Box 531  
5140 AM Waalwijk  
The Netherlands

### Construction product and trade name

Polyolefine insulation foam **ThermaSmart PRO**

### Nature of the tests

Tests concerning the reaction to fire of this material according to the IMO Res. MSC 307(88) Annex 1 part 5 – Test for surface flammability (Test for surface materials and primary deck coverings).

PREPARED BY

APPROVED BY

**This report consists of 7 pages, including 2 annexes**

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## 1. DESCRIPTION OF THE TEST METHOD

At the request of the sponsor, the test and the classification of the material are carried out in accordance with the prescriptions of IMO Res. MSC 307(88) Annex 1 part 5 (2010 FTP code) - Recommendation on improved fire test procedures for surface flammability of bulkhead, ceiling and deck finish materials."

There were no deviations from the specifications mentioned in the test standard. This behaviour is characterised by test results, only of a conventional nature, so that these test results do not have an "absolute value".

## 2. IDENTIFICATION OF THE PRODUCT

<u>Date of test samples arrival</u>	:	09/12/2014
<u>Identification of the samples</u>	:	Production place Thermaflex Isolatie B.V., Waalwijk Production date 08/2014 Production line Sheet Line Identification 1, 2, 3, 4, 5, 6, A4
<u>Sampling done by</u>	:	The sponsor (Mr. Ties van Beurden)
<u>Sampling date</u>	:	26/11/2014
<u>Name of the sponsor</u>	:	Thermaflex Isolatie B.V. Veerweg 1, P.O. Box 531 5140 AM Waalwijk The Netherlands
<u>Name of the manufacturer/supplier</u>	:	Thermaflex Isolatie B.V. Veerweg 1, P.O. Box 531 5140 AM Waalwijk The Netherlands
<u>Trade name</u>	:	<b>ThermaSmart PRO</b>

Description of the product:

*This description is based on the information given by the sponsor.*

	Nominal values (*)	Measured values (**)
<b>THERMASMART PRO</b>		
Type of product	The tested product is a polyolefine insulation foam with an embossed surface	
Type of material	insulation foam, used for primary deck covering	
Manufacturer	Thermaflex Isolatie B.V.	
Thickness (mm)	25	23
Surface mass (g/m <sup>2</sup> )	750	1039
Dimensions of samples (mm)	155 x 800	155 x 800
Use of fire retardants	Yes (11 %)	
Colour	Grey	

(\*) Based on the information given by the sponsor.

(\*\*) Values verified by the laboratory.

(\*\*\*) Unverifiable by the laboratory.

Mounting and fixing:

The material was fixed onto a steel plate with thickness 3 mm (measured value 3mm) and density 7800 kg/m<sup>3</sup> (measured value 7670 kg/m<sup>3</sup>) using ThermaGlue 474. The glue was applied in an amount of 250g/m<sup>2</sup>.

The tested face was the embossed surface of the insulation foam.

Due to the embossing, the first sample was tested lengthwise, the next two samples were tested crosswise.

Conditioning

Conditioning happens according to the prescriptions specified in the standard mentioned above: 'Before test, the specimens shall be conditioned to constant moisture content, at a temperature of 23 ± 2°C and a relative humidity of 50 ± 5 %.'

Start of conditioning : 09/12/2014

End of conditioning : 04/02/2015

### 3. RESULTS AND OBSERVATIONS

Test date : 04/02/2015

*Position of the pilot flame: not impinging.*

#### a) General observations and duration of tests

Specimen number	1 (*)	2 (**)	3 (***)	1 (*)	2 (**)	3 (***)
Flame spread (s)			Qsb (MJ/m <sup>2</sup> )			
50 mm	9	9	6	0.44	0.44	0.29
100 mm	18	15	12	0.90	0.75	0.60
150 mm	21	18	15	0.99	0.85	0.71
200 mm	24	21	18	1.02	0.89	0.77
250 mm	30	27	24	1.10	0.99	0.88
300 mm	42	42	45	1.25	1.25	1.34
350 mm	81	57	57	1.86	1.31	1.31
400 mm	144	81	102	2.51	1.41	1.78
450 mm	(-)	132	213	(-)	1.66	(-)
500 mm		270	(-)		(-)	
550 mm		(-)				
600 mm						
650 mm						
700 mm						
750 mm						
Max. Flame spread (mm)	430	500	460			
Duration of the test (s)	1280	1380	1617			

(-) Not reached

(\*) The sample was tested lengthwise

(\*\*) The sample was tested crosswise

(\*\*\*) Since the results of sample 2 obtained worst case results over sample 1, sample 3 was tested crosswise as well.

b) Derived fire characteristics

DERIVED FIRE CHARACTERISTICS					
Specimen number		1	2	3	Average
Average heat for sustained burning (MJ/m <sup>2</sup> )	Qsb	1.5	1.1	1.1	1.2
Heat for ignition (MJ/m <sup>2</sup> )	HFI	1.0	0.9	0.7	0.9
Critical flux at extinguishment (kW/m <sup>2</sup> )	CFE	14.4	8.7	11.7	11.6
Peak heat release rate (kW)	Qp	1.4	1.5	1.6	1.5
Total heat release (MJ)	Qt	0.8	1.1	1.2	1.0
Falling burning particles	-	No	No	No	No

c) Additional observations

Sample 1: Flashing, Unstable flame front, Charring, Melting, Disintegration of specimen

Sample 2: Charring, Melting, Changes in form

Sample 3: Charring, Melting, Changes in form

d) Graph of q (Kw) and Qt (MJ) in function of time (s) for each specimen:

See annex 1.

4. DECLARATION OF FIRE BEHAVIOUR

*The test results relate only to the behaviour of the product under the particular conditions of the test. These results are not intended to be the sole criterion for assessing the potential fire hazard of the material in use.*

*The test results are only valid for the specimens of the product as they have been tested. Small differences in the composition or thickness of the specimen may significantly affect the performance during the test and may therefore invalidate the test results.*

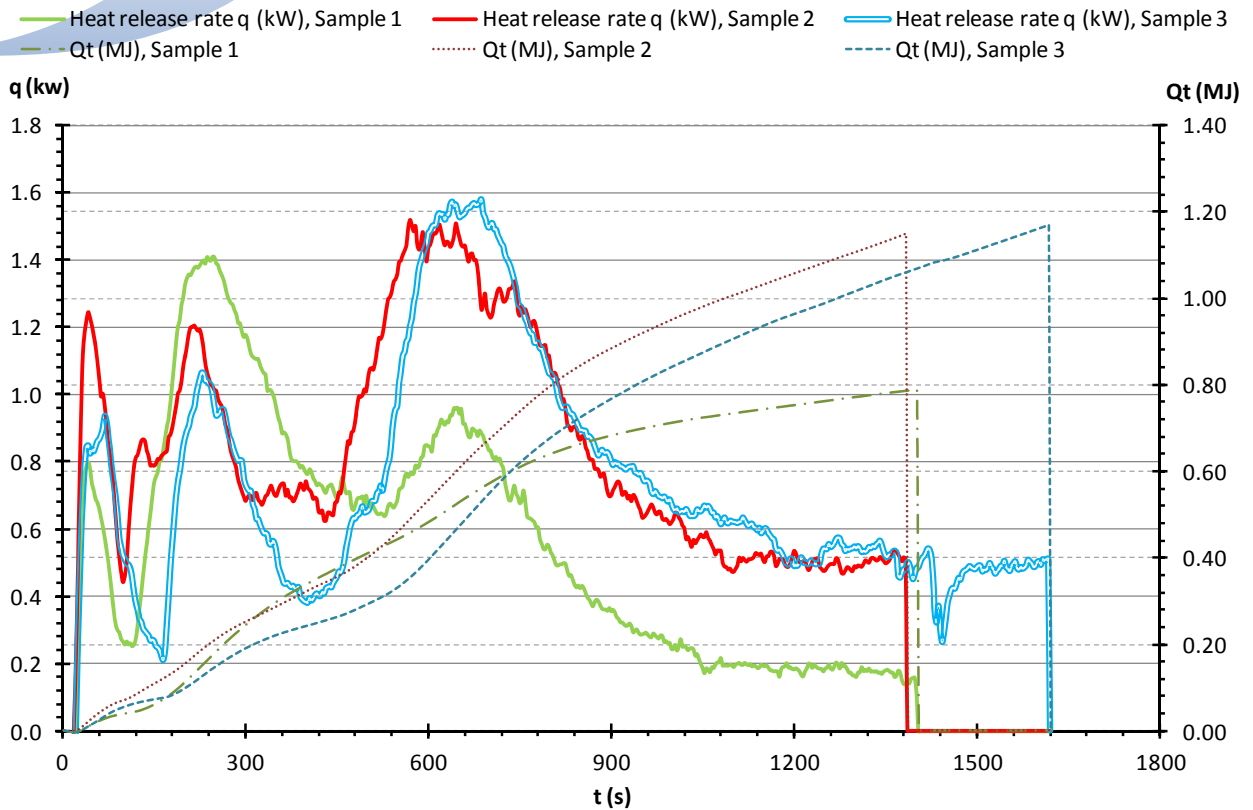
*In order to obtain test results which are representative for the product which is supplied or used, the conformity between the test specimen and the product should be assured. This is the role of the manufacturer and/or the supplier.*

The specimens of the product «**ThermaSmart PRO**» meet all the criteria given in the IMO document for **floor coverings and primary deck coverings** and therefore can be considered to have low flame spread in compliance with the International Convention for the Safety of Life at Sea, 1974.

The specimens of the product «**ThermaSmart PRO**» do not comply with IMO Res. MSC 307(88) annex 1 part 2: testing is required (see IMO Res. MSC 307(88) annex 2).

Annex 1

**Graph of q (Kw) and Qt (MJ) in function of time (s) for each specimen**



## Annex 2

Criteria				
Parameters	bulkhead, wall and ceiling linings	floor coverings	primary deck coverings	comply with IMO Res. MSC 307(88) annex 1 part 2 without further testing (see IMO Res. MSC 307(88) annex 2)
Qsb (MJ/m <sup>2</sup> )	≥ 1.5	≥ 0.25	≥ 0.25	-
HFI (MJ/m <sup>2</sup> )	-	-	-	-
CFE (kW/m <sup>2</sup> )	≥ 20.0	≥ 7.0	≥ 7.0	-
Qp (kW)	≤ 4.0	≤ 10.0	≤ 10.0	≤ 1.0
Qt (MJ)	≤ 0.7	≤ 2.0	≤ 2.0	≤ 0.2
Falling burning particles	No	≤ 10	No	-

Parameters	Results of the test
Qsb (MJ/m <sup>2</sup> )	1.2
HFI (MJ/m <sup>2</sup> )	0.9
CFE (kW/m <sup>2</sup> )	11.6
Qp (kW)	1.5
Qt (MJ)	1.0
Falling burning particles	No