0390-L-19/3
2 April 2020

Additional test report

Cantex Silicone Roof Coating / glass fleece 100 g.m^{-2} / EPS 100 SE / trapezoidal steel deck

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Cantex Silicone Roof Coating / glass fleece 100 g.m^{-2} / EPS 100 SE / trapezoidal steel deck

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Commercial register Registered by Chamber of Commerce Midden Nederland 23059445

Details

Principal	Cantex Dakrenovatie BV Milrooijseweg 47A NL-5248 KG BERLICUM
Contact person	M.J.T. Kuijpers
Email	info@cantex.eu
Date of order	26 September 2019
Project number Author	0390-L-19/3 W.J.B. Middag A.R. Hameete
Subject	test on external fire exposure to roofs according to CEN/TS 1187, test 1

This report is additional to the original test report issued as order number 0390-L-19/1, dated 28 February 2020. The original test report remains valid and has not been replaced by this additional test report

Contents

1 Introduction

By order of Cantex Dakrenovatie BV, Kiwa BDA Testing B.V. has determined the performance of roofs to external fire exposure according to CEN/TS 1187, test 1, on an insulated roof waterproofing system with the roof waterproofing sheet **Cantex Silicone Roof Coating**.

On 7 January 2020 four samples, provided by Cantex Dakrenovatie BV, have been received at Kiwa BDA Testing B.V. for the purpose of testing.

By request of the principal the supporting deck, the thermal insulation and the separation layer have been set at disposal by Kiwa BDA Testing B.V.

See annex III for photos of the products and further package data.

This product has not been retested. This additional test report is no technical review of the original test report 0390-L-19/1, dated 28 February 2020.

2 Test specimens

On 14 January 2020 the test specimens have been built up by Mr A.R. Hameete of Kiwa BDA Testing B.V.

According to the prescription of the principal the test specimens (according to CEN/TS 1187, § 4.4.3.1) have been built using the following products from the bottom up.

- Supporting deck : trapezoidal steel deck, 106 profile, thickness 0,75 mm
- Thermal insulation : unfinished expanded polystyrene, EPS 100 according to EN 13163; class E (EN 13501-1); thickness 100 mm, density 21 $kg.m^{-3}$
- Separation layer : uncoated glass fleece, 100 $g.m^{-2}$, untreated in order to prevent any affection of the fire behaviour
- Top layer : Cantex Silicone Roof Coating
  - material : silicone coating
  - thickness : 1,2 mm
  - mass : 1,43 $kg.m^{-2}$
  - product code : not applicable
  - manufacturer/supplier : Cantex Dakrenovatie BV
  - production code/date : not revealed
  - product standard : EN 13956

The apparent mass, density or thickness where applicable, has indicatively been determined.

The top layer and the thermal insulation have been fastened to the supporting deck with a linear fastening system (metal strip and metal point fasteners; see photo 1 in annex I).

Because of the properties and processing guidelines the roof waterproofing membrane has no joints. The test specimens have been made without a joint present.

No actions have been taken to prevent the flames passing around the edges of the specimen.

The buildup is according to the Dutch KOMO directive BRL 1511:2015 – Baanvormige dakbedekkingssystemen – Deel 1: Algemene bepalingen[1], as well as according to the standard insulated test roof according to the Dutch standard NEN 6063:2019 – Bepaling voor het brandgevaarlijk zijn van daken[2].

[1] Roof waterproofing systems, Part 1 – General stipulations.

[2] Test method for external fire exposure to roofs.

3 Investigation

The investigation has been performed in accordance with CEN/TS 1187:2012 – Test methods for external fire exposure to roofs, test 1 – Method with burning brands. By request of the principal the test has been performed at a slope of 15°.

A test is performed on four test specimens according to CEN/TS 1187, § 4.4.3.1: four test specimens of type 3.

A metal basket filled with 600 grams of wood wool, previously conditioned at 23 °C and 50% relative humidity, is placed on a test specimen, after which the wood wool is ignited.

During and/or after the test the following parameters are observed, measured and recorded.

External fire spread

- The time when the sustained flaming has progressed upwards 100 mm, 300 mm, 500 mm and 700 mm from the upper edge of the projection of the brand on to the exposed specimen surface and when reaching the upper edge of the measuring zone (see annex II).
- The time when the sustained flaming has progressed downwards 100 mm, 300 mm and 500 mm from the lower edge of the projection of the brand on to the exposed specimen surface and when reaching the lower edge of the measuring zone (see annex II).
- The fire spread lateral to the edges of the measuring zone (see annex II).
- The time of occurrence and description of any burning material (flaming droplets or debris) falling from the exposed surface.
- The extent during the test of the external fire spread upwards downwards, to the right and to the left, expressed as the maximum burnt length from the edges of the projection of the brand onto the exposed surface, measured at the end of the test.
- The extent of external damage.

Fire penetration and openings

- The time of fire penetration, if this has occurred.
- The time of occurrence and description of any burning material (flaming droplets or debris) falling from the visible underside of the specimen.
- The time of occurrence of openings and their dimensions.

Damage

- The extent of internal damage upwards and downwards, measured after the test from the edges of the projection of the brand.
- The maximum length of burnt material upwards and downwards in each layer, measured after the test from the edges of the projection of the brand.
- The extent of internal damage.

At 60 minutes after the start of the test, after all the fire symptoms are gone or the fire has been extinguished (30 minutes after the beginning of the test), the roof is opened and checked for non-flaming fire propagation.

On 15 January 2020 the test has been performed by Mr A.R. Hameete of Kiwa BDA Testing B.V. in the presence of Mr D. Lemmers and Mr M.J.T. Kuijpers of Cantex Dakrenovatie BV in the fire laboratory of Kiwa BDA Testing B.V.

In annex I a photo report of the test and the test results is given.

4 Results

4.1 Test specimen 1 (type 3)

4.1.1 Fire behaviour during the test

Description	**Result [min:s]**				
Roofing burning after	0:43				
Fire gone out after	10:04				
Fire spread [1]	**100 mm**	**300 mm**	**500 mm**	**700 mm**	**MZ** [2]
▪ upwards	- [3]	- [3]	- [3]	- [3]	- [3]
▪ downwards	2:32	- [3]	- [3]	n.a.	- [3]
▪ lateral (left)	n.a.	n.a.	n.a.	n.a.	- [3]
▪ lateral (right)	n.a.	n.a.	n.a.	n.a.	- [3]

[1] Length of damage area measured from the edge of the basket.
[2] Edge measuring zone.
[3] Not been reached.

4.1.2 Special observations made during the test

Description	**Results**
Temperature in the test room before the start of the test	18 °C
Smoke coming out of the edges	after 6 minutes and 37 seconds
Occurrence of explosion	none
Flaming droplets or debris falling from the exposed surface	none
Fire penetration of the specimen	none
Flaming droplets or debris falling from the underside of the surface	none
Test specimen opened	after 60 minutes
Presence of glowing parts 60 minutes after the start of the test	no

4.1.3 *Measurements made after the test*

Description	Results
External fire spread / burnt length [1)]	
▪ upwards	95 mm
▪ downwards	140 mm
▪ maximum burnt length	235 mm
▪ lateral (left)	20 mm
▪ lateral (right)	125 mm
Internal fire spread glass fleece [1)]	
▪ upwards	90 mm
▪ downwards	140 mm
▪ maximum burnt length	230 mm
Internal fire spread insulation [1)]	
▪ upwards	150 mm
▪ downwards	170 mm
▪ maximum burnt length	320 mm
Through openings	
▪ number of openings (> 25 mm^2)	0
▪ number of cracks (> 2 mm wide)	0
▪ total area (openings and cracks)	0 mm^2
Damaged area	
▪ external	0,13 m^2
▪ insulation	0,29 m^2
Damaged length (internal) glass fleece [1)]	
▪ upwards	90 mm
▪ downwards	140 mm
Damaged length (internal) insulation [1)]	
▪ upwards	240 mm
▪ downwards	190 mm
[1)] Length of damaged area measured from the edge of the basket.	

4.2 Test specimen 2 (type 3)

4.2.1 Fire behaviour during the test

Description	**Result [min:s]**				
Roofing burning after	0:41				
Fire gone out after	8:28				
Fire spread [1]	**100 mm**	**300 mm**	**500 mm**	**700 mm**	**MZ** [2]
▪ upwards	- [3]	- [3]	- [3]	- [3]	- [3]
▪ downwards	- [3]	- [3]	- [3]	n.a.	- [3]
▪ lateral (left)	n.a.	n.a.	n.a.	n.a.	- [3]
▪ lateral (right)	n.a.	n.a.	n.a.	n.a.	- [3]

[1] Length of damage area measured from the edge of the basket.
[2] Edge measuring zone.
[3] Not been reached.

4.2.2 Special observations made during the test

Description	**Results**
Temperature in the test room before the start of the test	18 °C
Smoke coming out of the edges	after 5 minutes and 40 seconds
Occurrence of explosion	none
Flaming droplets or debris falling from the exposed surface	none
Fire penetration of the specimen	none
Flaming droplets or debris falling from the underside of the surface	none
Test specimen opened	after 60 minutes
Presence of glowing parts 60 minutes after the start of the test	no

4.2.3 *Measurements made after the test*

Description	Results
External fire spread / burnt length [1)]	
▪ upwards	20 mm
▪ downwards	90 mm
▪ maximum burnt length	110 mm
▪ lateral (left)	45 mm
▪ lateral (right)	35 mm
Internal fire spread glass fleece [1)]	
▪ upwards	20 mm
▪ downwards	80 mm
▪ maximum burnt length	100 mm
Internal fire spread insulation [1)]	
▪ upwards	140 mm
▪ downwards	140 mm
▪ maximum burnt length	280 mm
Through openings	
▪ number of openings (> 25 mm^2)	0
▪ number of cracks (> 2 mm wide)	0
▪ total area (openings and cracks)	0 mm^2
Damaged area	
▪ external	0,12 m^2
▪ insulation	0,26 m^2
Damaged length (internal) glass fleece [1)]	
▪ upwards	20 mm
▪ downwards	80 mm
Damaged length (internal) insulation [1)]	
▪ upwards	180 mm
▪ downwards	190 mm
[1)] Length of damaged area measured from the edge of the basket.	

4.3 Test specimen 3 (type 3)

4.3.1 Fire behaviour during the test

Description	Result [min:s]				
Roofing burning after	0:37				
Fire gone out after	8:39				
Fire spread [1]	**100 mm**	**300 mm**	**500 mm**	**700 mm**	**MZ** [2]
▪ upwards	- [3]	- [3]	- [3]	- [3]	- [3]
▪ downwards	3:34	- [3]	- [3]	n.a.	- [3]
▪ lateral (left)	n.a.	n.a.	n.a.	n.a.	- [3]
▪ lateral (right)	n.a.	n.a.	n.a.	n.a.	- [3]

[1] Length of damage area measured from the edge of the basket.
[2] Edge measuring zone.
[3] Not been reached.

4.3.2 Special observations made during the test

Description	Results
Temperature in the test room before the start of the test	21 °C
Smoke coming out of the edges	after 5 minutes and 26 seconds
Occurrence of explosion	none
Flaming droplets or debris falling from the exposed surface	none
Fire penetration of the specimen	none
Flaming droplets or debris falling from the underside of the surface	none
Test specimen opened	after 60 minutes
Presence of glowing parts 60 minutes after the start of the test	no

4.3.3 Measurements made after the test

Description	Results
External fire spread / burnt length [1)]	
▪ upwards	50 mm
▪ downwards	130 mm
▪ maximum burnt length	180 mm
▪ lateral (left)	20 mm
▪ lateral (right)	50 mm
Internal fire spread glass fleece [1)]	
▪ upwards	40 mm
▪ downwards	120 mm
▪ maximum burnt length	160 mm
Internal fire spread insulation [1)]	
▪ upwards	150 mm
▪ downwards	160 mm
▪ maximum burnt length	310 mm
Through openings	
▪ number of openings (> 25 mm^2)	0
▪ number of cracks (> 2 mm wide)	0
▪ total area (openings and cracks)	0 mm^2
Damaged area	
▪ external	0,11 m^2
▪ insulation	0,29 m^2
Damaged length (internal) glass fleece [1)]	
▪ upwards	40 mm
▪ downwards	120 mm
Damaged length (internal) insulation [1)]	
▪ upwards	180 mm
▪ downwards	190 mm
[1)] Length of damaged area measured from the edge of the basket.	

4.4 Test specimen 4 (type 3)

4.4.1 Fire behaviour during the test

Description	Result [min:s]				
Roofing burning after	0:34				
Fire gone out after	8:20				
Fire spread [1]	**100 mm**	**300 mm**	**500 mm**	**700 mm**	**MZ** [2]
▪ upwards	4:35	- [3]	- [3]	- [3]	- [3]
▪ downwards	- [3]	- [3]	- [3]	n.a.	- [3]
▪ lateral (left)	n.a.	n.a.	n.a.	n.a.	- [3]
▪ lateral (right)	n.a.	n.a.	n.a.	n.a.	- [3]

[1] Length of damage area measured from the edge of the basket.
[2] Edge measuring zone.
[3] Not been reached.

4.4.2 Special observations made during the test

Description	Results
Temperature in the test room before the start of the test	19 °C
Smoke coming out of the edges	after 5 minutes and 14 seconds
Occurrence of explosion	none
Flaming droplets or debris falling from the exposed surface	none
Fire penetration of the specimen	none
Flaming droplets or debris falling from the underside of the surface	none
Test specimen opened	after 60 minutes
Presence of glowing parts 60 minutes after the start of the test	no

4.4.3 Measurements made after the test

Description	Results
External fire spread / burnt length [1)]	
▪ upwards	110 mm
▪ downwards	95 mm
▪ maximum burnt length	205 mm
▪ lateral (left)	60 mm
▪ lateral (right)	70 mm
Internal fire spread glass fleece [1)]	
▪ upwards	90 mm
▪ downwards	80 mm
▪ maximum burnt length	170 mm
Internal fire spread insulation [1)]	
▪ upwards	150 mm
▪ downwards	140 mm
▪ maximum burnt length	290 mm
Through openings	
▪ number of openings (> 25 mm^2)	0
▪ number of cracks (> 2 mm wide)	0
▪ total area (openings and cracks)	0 mm^2
Damaged area	
▪ external	0,12 m^2
▪ insulation	0,29 m^2
Damaged length (internal) glass fleece [1)]	
▪ upwards	90 mm
▪ downwards	80 mm
Damaged length (internal) insulation [1)]	
▪ upwards	180 mm
▪ downwards	250 mm
[1)] Length of damaged area measured from the edge of the basket.	

5 Field of application

This result is valid for the following conditions:

Range of pitches
- < 20°.

Range of decks
- Any profiled and non-perforated steel deck;
- Any non-combustible continuous deck with a minimum thickness of 10 mm.

Remarks:

The results are only related to the investigated samples, products and/or systems. Kiwa BDA Testing B.V. is not liable for interpretations or conclusions that are made in consequence of the results obtained.

The uncertainty of measurement can be retrieved at Kiwa BDA Testing B.V.

If sampling was not performed by Kiwa BDA Testing B.V., no judgement can be given with regard to the origin and representativeness of the samples.

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Gorinchem, 2 April 2020
The laboratory

W.J.B. Middag
laboratory technician

Kiwa BDA Testing B.V.

K. van Zee
manager

Designated as Notified Body NB 1640 pursuant to the Construction Products Regulation (EU, No 305/2011)

Member

I Photo report of the test

Photo 1
The specimen is ready to be tested.

Photo 2
The basket filled with wood wool has been placed on test specimen 1.

Photo 3
The wood wool has been ignited.

Photo 4
The wood wool and the roofing are burning.

Photo 5
The fire is spreading downwards.

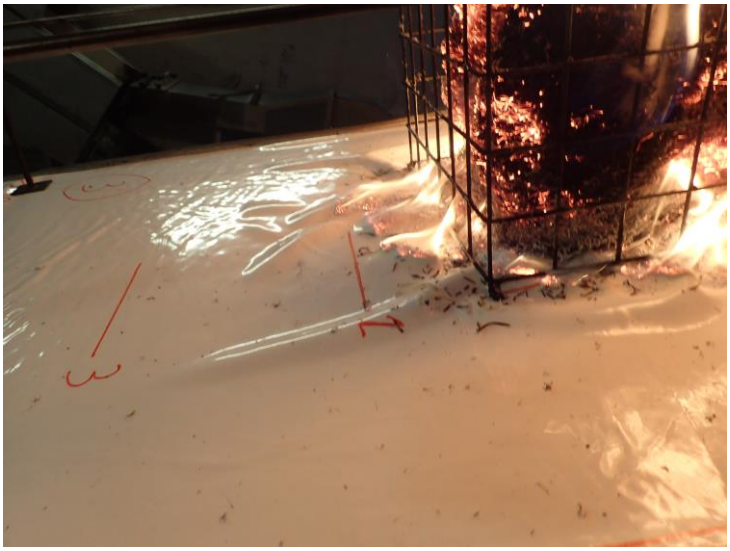


Photo 6
The fire is spreading upwards.

Photo 7
Smoke comes out of the edges.

Photo 8
The burnt section of the roofing of test specimen 1.

Photo 9
The burnt section of the insulation of test specimen 1.

Photo 10
The burnt section of the roofing of test specimen 2.

Photo 11
The burnt section of the insulation of test specimen 2.

Photo 12
The burnt section of the roofing of test specimen 3.

Photo 13
The burnt section of the insulation of test specimen 3.

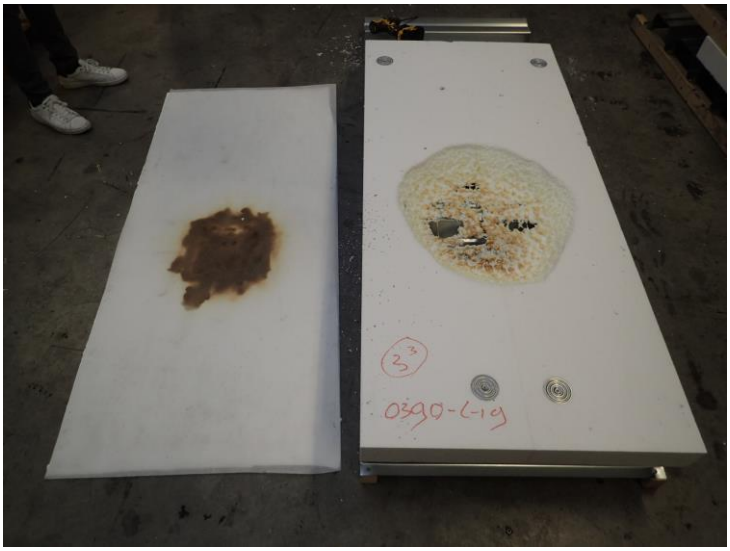
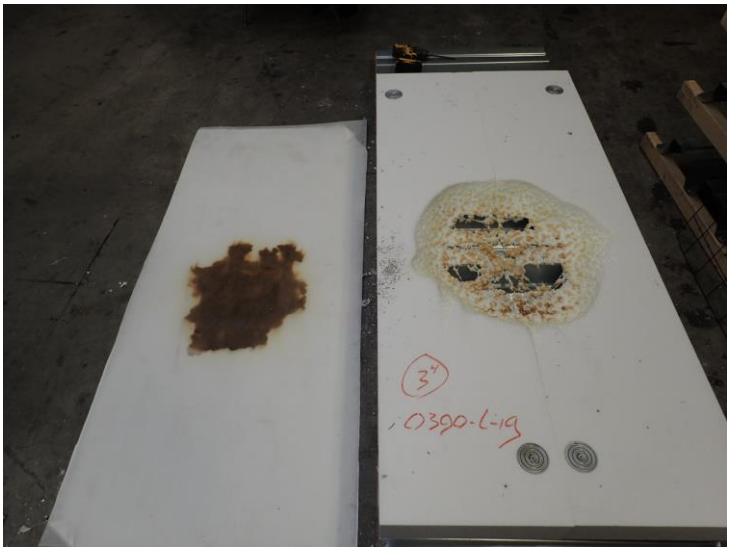


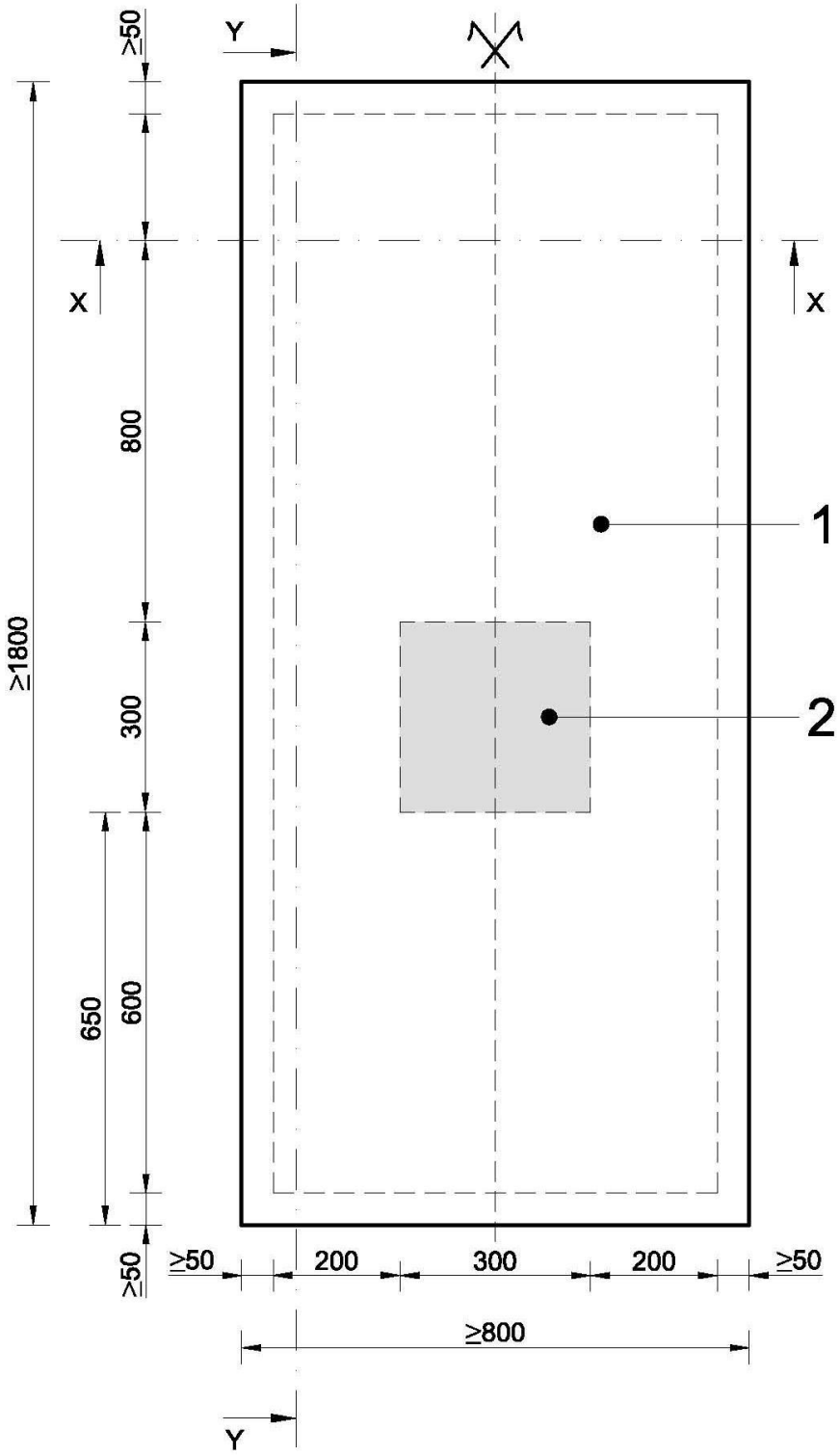
Photo 14
The burnt section of the roofing of test specimen 4.

Photo 15
The burnt section of the insulation of test specimen 4.



II Measuring zone and position of the brand

Dimensions in millimetres



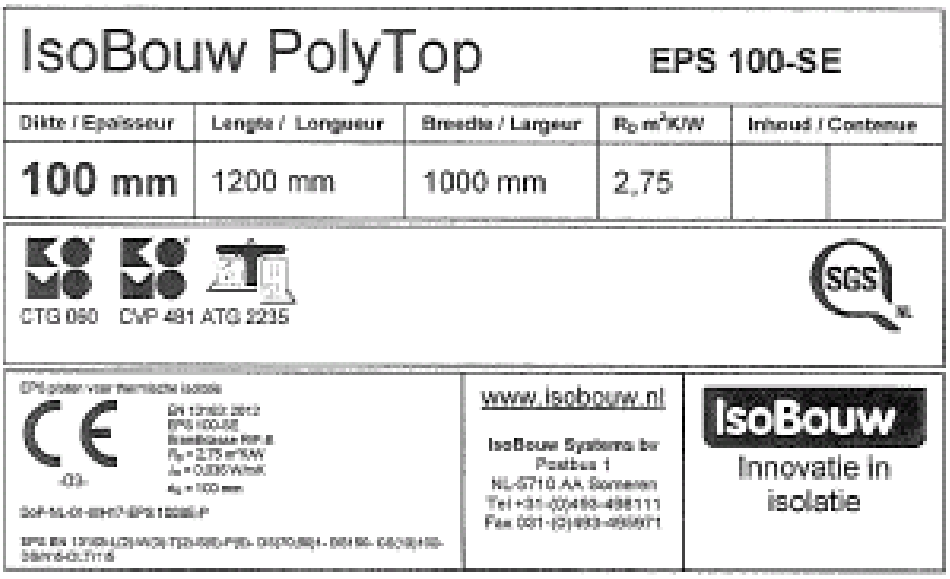
1 Measuring zone
2 Basket filled with wood wool

III Photos of the products and further package data

Roofing sheet

Separation layer

Thermal insulation



IsoBouw PolyTop EPS 100-SE

Dikte / Epaisseur	Lengte / Longueur	Breedte / Largeur	R_D m²K/W	Inhoud / Contenue	
100 mm	1200 mm	1000 mm	2,75		

CTG 050 CVP 491 ATG 2235

SGS

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Fax 031-(0)493-495971

IsoBouw
Innovatie in isolatie

De gegevens voor de standaarddikte van een vlakke plaat zijn hierboven vermeld, voor andere dikten en afschot: zie tabel hieronder.

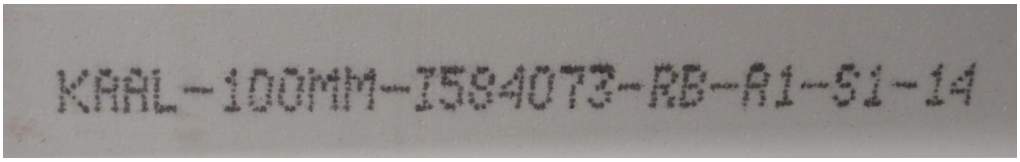
Vlak		Afschot 1 %		Afschot 1,5 %		Afschot 2 %	
d (mm)	R_D (m²K/W)	d (mm)	R_D gem (m²K/W)	d (mm)	R_D gem (m²K/W)	d (mm)	R_D gem (m²K/W)
40	1,10	30-40	0,95	30-45	1,00	40-60	1,35
50	1,35	40-60	1,25	45-60	1,45	60-80	1,90
60	1,65	50-60	1,50	60-75	1,85	80-100	2,50
70	1,90	60-70	1,80	75-90	2,25	100-120	3,05
80	2,20	70-80	2,05	90-105	2,70	120-140	3,60
90	2,50	80-90	2,35	105-120	3,10	140-160	4,15
100	2,75	90-100	2,60	120-135	3,50	160-180	4,70
110	3,05	100-110	2,90	135-150	3,95	180-200	5,25
120	3,30	110-120	3,15	150-165	4,35		
130	3,60	120-130	3,45	165-180	4,75		
140	3,85	130-140	3,75	180-195	5,20		
150	4,15	140-150	4,00				
160	4,40	150-160	4,30				
170	4,70	160-170	4,55				
180	5,00	170-180	4,85				
190	5,25	180-190	5,10				
200	5,55	190-200	5,40				

Cacheerlaag:

- : Geen cacheerlaag
Flex : Mineraal gecoat polyester glasvlies
1000 : Gebitumineerd glasvlies, herkenbaar aan witte band met IsoBouw logo (aan de bovenzijde van de plaat)
2400 : Gebitumineerd glasvlies
2800 : Gebitumineerd glasvlies, herkenbaar aan wit polyestervlies (aan de onderzijde van de overlap)

Afschot:

Als er afschot in de platen zit, zijn de maten met inkjet op de platen aangegeven



Supporting deck

Trapezoidal steel deck, VD 106R/750 (dimensions in mm)