0422-L-20/1 12 November 2020

Test report

Resitrix SKW Full bond / FG 35 / Georgia-Pacific DensDeck[®] Prime Roof Board





BDA TESTING expertise in façades and roofs

Trust Quality Progress



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Details

Principal

Subject

Contact person Email Date of order Project number Author Carlisle Construction Materials B.V. Industrieweg 16 NL-8263 AD KAMPEN B. Smit bart.smit@ccm-europe.com 4 September 2020 0422-L-20/1 W.J.B. Middag A.R. Hameete test on external fire exposure to roofs according to CEN/TS 1187, test 2

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1 Introduction

By order of Carlisle Construction Materials B.V., Kiwa BDA Testing B.V. has investigated the performance of roofs to external fire exposure according to CEN/TS 1187, test 2, on an insulated roof waterproofing system consisting of a **Resitrix SKW Full bond** roof waterproofing sheet on a **Georgia-Pacific DensDeck**[®] **Prime Roof Board** substrate with a **FG 35** primer.

On 17 September 2020 six test specimens, provided by Carlisle Construction Materials B.V., have been received at Kiwa BDA Testing B.V. for the purpose of testing.

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



2 Test specimens

Bij request of the principal, Kiwa BDA Testing B.V. did not supervise the fabrication of the test specimens.

According to the prescription of the principal the test specimens (according to CEN/TS 1187, § 5.4.2) have been built using the following products from the bottom up (see annex I).

•	Substrate	:	Georgia-Pacific DensDeck - material	Prime Roof Board : Gypsum, faced on both sides with a fibre glass facing
			thicknessdensity	: 12,9 mm : 707,2 kg.m ⁻³ (without facings)
			- manufacturer/supplier	: Georgia-Pacific Gypsum LLC
			- production code / date	: GPG1 03 20 G2 USA 02:46
			 product standard 	: EN 15283-1
•	Adhesive/primer	:	FG 35 - manufacturer/supplier - production code / date	 Carlisle Construction Materials B.V. not revealed
•	Roof covering	:	F	
	* top layer	:	 Resitrix SKW Full bond material thickness mass product code manufacturer/supplier production code / date product standard 	 : SBS / EPDM : 2,6 mm : 2,72 kg.m⁻² : not applicable : Carlisle Construction Materials B.V. : 18.05.20 - 01-16 / 0.026471-c : EN 13956

The top layer has been fastened to the thermal insulation using the self-adhesive properties of the roof waterproofing sheet.

Before testing, the test specimens (excluding supporting deck) have been conditioned to constant mass at a temperature of 23 °C and a relative humidity of 50% (according to CEN/TS 1187, § 5.5.2).



3 Test

On 15 October 2020 the tests have been performed by Mr W.J.B. Middag and Mr A.R. Hameete of Kiwa BDA Testing B.V. in the fire laboratory of Kiwa BDA Testing B.V.

The tests have been performed in accordance with CEN/TS 1187:2012 – Test methods for external fire exposure to roofs, Test 2 – Method with burning brands and wind. Three tests have been performed with air velocities along the test specimen of 2 m.s⁻¹ and 4 m.s⁻¹, respectively.

The testing equipment used has been a BDA Fire Resistance Tester, type N.

A test specimen is mounted at a slope of 30° to the horizontal plane, and a forced airflow is passing over the exposed surface. A wooden crib is dried for 24 hours in a ventilated oven at 105 °C. The wooden crib is placed on the crib ignition stand. The crib is ignited and allowed to burn for 30 s. Immediately thereupon the burning wooden crib is placed on the surface of the test specimen. On the moment of placing the crib the air supply to the lower fan has been shut off and of 15 s after placing the crib the air supply is opened again.

During the test the following parameters are observed measured and recorded:

- the time at which the specimen ignites;
- the time at which the flames die out;
- the time at which the glow dies out;
- the behaviour of the specimen during the test is recorded, this includes melting, foaming, charring, expansion, shrinkage, delamination or any other behaviour.

The test is terminated after all the fire symptoms are gone or the fire has been extinguished (15 minutes after the beginning of the test), or when the flame front has reached the upper end of the test specimen.

After the test the following parameters are measured and recorded:

- the condition of the test specimen after the test is recorded, this includes melting, foaming, charring, expansion, shrinkage, delamination or any other behaviour;
- the length of damaged material of the roof covering and the substructure, measured from the centre of the wood crib position.

A photo report of the results is given in annex II.



4 Test results

Description	TS 1	TS 2	TS 3	Mean
Time [min:s]				
 specimen ignites 	0:35	0:34	0:34	0:34
 flames die out 	8:21	8:58	9:34	8:58
 glow dies out 	8:21	8:58	9:49	9:03
Length of damaged				
material measured from				
the centre of the wood crib				
position [mm]				
 roof covering ¹⁾, upwards 	457	435	430	441
 substrate, upwards 	65	110	150	108
¹⁾ The length of the damage has been measured on the top layer.				

Table 1 – Test results of tests with an air velocity of 2 m.s⁻¹

Table 2 –	Test results	of tests with	an air velocit	$v of 4 m s^{-1}$
	restresuits	or lesis with		y 01 4 111.3

Description	TS 1	TS 2	TS 3	Mean
Time [min:s]				
 specimen ignites 	0:39	0:39	0:41	0:40
 flames die out 	3:42	4:07	4:46	4:12
 glow dies out 	5:36	6:14	5:36	5:49
Length of damaged				
material measured from				
the centre of the wood crib				
position [mm]				
 roof covering ¹, upwards 	440	425	425	430
 substrate, upwards 	20	40	45	35
¹⁾ The length of the damage has been measured on the top layer.				



5 Direct field of application of test results

Roof pitch

Any roof pitch.

Substrate

 Only for the product used on a substrate with composition identical to that used in the test and having a density greater than or equal to 0,75 times the density used in the test.

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.

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.

The uncertainty of measurement is given in annex III.

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Gorinchem, 12 November 2020 The laboratory

W.J.B. Middag laboratory technician

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

Kiwa BDA Testing B.V.



manager



Member

I Photos of the products and further package data

Top layer





Substrate



II Photo report of the results

Photo 1 Test with an air velocity of 2 m.s⁻¹.



Photo 2 Test with an air velocity of 4 m.s^{-1} .



Photo 3

Overview of the roof covering after the test with an air velocity of 2 m.s⁻¹.



Photo 4

Overview of the roof covering after the test with an air velocity of 4 m.s⁻¹.



Photo 5 Overview of the substrate after the test with an air velocity of 2 m.s⁻¹.



Photo 6

Overview of the substrate after the test with an air velocity of 4 m.s⁻¹.



III Measurment uncertainties

CEN/TS 1187, T2

Measurement equipment	Kiwa ID	Measurement uncertainty
Measuring tape	3027	(5000 ± 0,23) mm
Balance	2034B	(400 ± 0,056) g
Timing device	1008	(1 ± 0,24) s.(24 h) ⁻¹
Vane-wheel anemometer	1012F	(4,01 ± 0,068) m.s ⁻¹
Hot-wire anemometer	1012G	(9,84 ± 0,216) m.s ⁻¹
Flow meter	0057	(0 ± 0,086) g.h ⁻¹
Thermohygrometer (temperature)	1099	(25 ± 0,321) °C
Thermohygrometer (humidity)	1099	(70 ± 1,489) % RH