

# ***Classification report for roofs/roof coverings exposed to external fire*** ***No. 23426C***

## **Owner of the classification report**

RENOLIT BELGIUM NV  
Industriepark De Bruwaan 43  
9700 Oudenaarde  
Belgium

## **Introduction**

This classification report defines the classification assigned to the roof/roof covering “**RENOLIT ALKORPLAN A on PIR insulation**” in accordance with the procedures given in the standard EN 13501-5:2016: Fire classification of construction products and building elements – Part 5: Classification using data from external fire exposure to roof tests: Test 1: Method with burning brands.

**This classification report consists of 15 pages.**

## 1. DESCRIPTION OF THE ROOF/ROOF COVERING

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

	Nominal values (1)	Measured values (2)
<b>SUPPORTING DECK</b>		
Material	Wood particle board with gaps $5,0 \pm 0,5$ mm according to § 4.4.2. of the standard CEN/TS 1187	
<b>VAPOUR BARRIER</b>		
<b>A) RENOLIT ALKORPLUS 81012</b>		
Material	LDPE (low density polyethylene) vapour control layer for use in roofing systems	
Manufacturer	Known by the laboratory.	
Supplier	RENOLIT Belgium NV	
Reinforcement (material +g/m <sup>2</sup> )	None	
Total thickness (mm)	0,25	0,23
Total surface weight (g/m <sup>2</sup> )	220	225
Flame retardants	No	(3)
Fixing method	Loose laid	
Joints	According to CEN/TS 1187:2012	
Reaction to fire according to EN 13501-1	F according to classification report K-Hoch-130153.	
<b>B) RENOLIT ALKORPLUS 81002</b>		
Material	Self-adhesive bituminous vapour control layer with a fibre glass net reinforcement, and aluminium facing and a bitumen compound backing.	
Manufacturer	Known by the laboratory.	
Supplier	RENOLIT Belgium NV	
Reinforcement (material +g/m <sup>2</sup> )	Fiber glass net 54 g/m <sup>2</sup>	
Surfacing on the upper side (material + g/m <sup>2</sup> )	Aluminium 70 g/m <sup>2</sup>	
Surfacing on the lower side (material + g/m <sup>2</sup> )	Bitumen compound 730 g/m <sup>2</sup>	
Total thickness (mm)	0,80	0,8
Total surface weight (g/m <sup>2</sup> )	850	866
Flame retardants	No	(3)
Fixing method	Self-adhesive	
<i>Factory pre-applied adhesive (material + g/m<sup>2</sup>)</i>	Bituminous compound 730 g/m	
Joints	According to CEN/TS 1187:2012	
Reaction to fire according to EN 13501-1	E according to classification report LAPI 911.0D0050/13	

(1) Based on the information given by the sponsor

(2) Values verified by the laboratory

(3) Unverifiable by the laboratory

	Nominal values (1)	Measured values (2)
<b>ADHESIVE (OPTIONAL)</b>		
Material	Sprayable, one component PU adhesive	
Trade name	RENOLIT ALKORPLUS 81065 DUALFIX	
Manufacturer	Known by the laboratory.	
Supplier	RENOLIT Belgium NV	
Applied amount, wet (g/m <sup>2</sup> )	130	
Solid content (m%)	85%	
Use of flame retardants	No	
Curing time (hh:mm)	00:45	
Application method	Applied in beads	
<b>INSULATING LAYER</b>		
<b>A) POWERDECK F</b>		
Material	PIR (polyisocyanurate) insulation board faced on both sides with a mineral coated glass fleece	
Backing (material + g/m <sup>2</sup> )	Known by the laboratory.	
Facing (material + g/m <sup>2</sup> )	Known by the laboratory.	
Manufacturer / Supplier	Recticel Insulation	
Thickness (mm)	100	(4)
Density, of the core material (kg/m <sup>3</sup> )	30	(4)
Flame retardants	Yes	(3)
Compressive strength (in accordance with EN 826) (kPa)	CS(10/Y)120	
Fixing method	Adhered or mechanical fixed	
<i>Distance between the fixations (mm)</i>	Along with the slope: 1600. Perpendicular to the slope: 700.	
Joins	According to CEN/TS 1187:2012 – test method 1	
<i>Type</i>	Butted	
<i>Overlap (mm)</i>	0	
Reaction to fire according to EN 13501-1	E according to classification report 2016-Efectis-R001743.	
<b>B) EUROTHANE SILVER</b>		
Material	PIR (polyisocyanurate) insulation board faced on both sides with a silver gastight multilayer complex.	
Backing/facing (material + g/m <sup>2</sup> )	Known by the laboratory.	
Manufacturer / Supplier	Recticel Insulation	
Thickness (mm)	100	100
Density, of the core material (kg/m <sup>3</sup> )	30	32
Flame retardants	Yes	(3)
Compressive strength (in accordance with EN 826) (kPa)	CS(10/Y)150	
Fixing method	Adhered or mechanical fixed	
<i>Distance between the fixations (mm)</i>	Along with the slope: 1600. Perpendicular to the slope: 700.	
Joins	According to CEN/TS 1187:2012 – test method 1	
<i>Type</i>	Butted	
<i>Overlap (mm)</i>	0	
Reaction to fire according to EN 13501-1	F according to classification report WFR 17876D.	

(1) Based on the information given by the sponsor

(2) Values verified by the laboratory

(3) Unverifiable by the laboratory

(4) Not verified by the laboratory

	NOMINAL VALUES (1)	MEASURED VALUES (2)
<b>C) EUROTHANE BI4</b>		
Material	PIR (polyisocyanurate) insulation board faced on both sides with a bituminous glass fleece.	
Backing/facing (material + g/m <sup>2</sup> )	Known by the laboratory.	
Manufacturer / Supplier	Recticel Insulation	
Thickness (mm)	100	100
Density, of the core material (kg/m <sup>3</sup> )	30	37
Flame retardants	Yes	(3)
Compressive strength (in accordance with EN 826) (kPa)	CS(10/Y)150	
Fixing method	Adhered or mechanical fixed	
<i>Distance between the fixations (mm)</i>	Along with the slope: 1600. Perpendicular to the slope: 700.	
Joints	According to CEN/TS 1187:2012 – test method 1	
Type	Butted	
Overlap (mm)	0	
Reaction to fire according to EN 13501-1	F according to classification report WFR 17876D.	
<b>ADHESIVE</b>		
<b>A) RENOLIT ALKORPLUS 81064</b>		
Material	Sprayable synthetic rubber-based contact adhesive	
Manufacturer	Known by the laboratory.	
Supplier	RENOLIT Belgium NV	
Applied amount, wet (g/m <sup>2</sup> )	300	
Solid content (m%)	37	
Use of flame retardants	No	
Curing time (hh:mm)	06:00	
Application method	Evenly sprayed onto the substrate	
<b>B) RENOLIT ALKORPLUS 81068</b>		
Material	One component PU adhesive	
Manufacturer	Known by the laboratory.	
Supplier	RENOLIT Belgium NV	
Applied amount, wet (g/m <sup>2</sup> )	300	
Solid content (m%)	83	
Use of flame retardants	No	
Curing time (hh:mm)	06:00	
Application method	Evenly spread onto the substrate	

(1) Based on the information given by the sponsor

(2) Values verified by the laboratory

(3) Unverifiable by the laboratory

		Nominal values (1)	Measured values (2)
<b>ROOF COVERING</b>			
<b>A) RENOLIT ALKORPLAN A 35179</b>			
Material	Fleece-backed membrane of flexible PVC (polyvinyl chloride) with a polyester fleece backing.		
Manufacturer	RENOLIT Ibérica SA		
Supplier	RENOLIT Belgium NV		
Reinforcement (material + g/m <sup>2</sup> )	None		
Surfacing on the lower side (material + g/m <sup>2</sup> )	Polyester fleece 300 g/m <sup>2</sup>		
Total thickness (mm)	3,2 (1,2 without fleece)		(4)
Total surface weight (g/m <sup>2</sup> )	1800		(4)
Flame retardants	Yes		(3)
Organic content (m%)	Not communicated by the sponsor		
Fixing method	Fully bonded		
Joints	According to CEN/TS 1187:2012 – test method 1		
	Type	Hot air welded	
	Overlap (mm)	80	
<b>B) RENOLIT ALKORPLAN A 35F79</b>			
Material	Fleece-backed membrane of flexible PVC (polyvinyl chloride) with a polyester fleece backing and a polyester reinforcement.		
Manufacturer	RENOLIT Ibérica SA		
Supplier	RENOLIT Belgium NV		
Reinforcement (material + g/m <sup>2</sup> )	Polyester 93 g/m <sup>2</sup>		
Surfacing on the lower side (material + g/m <sup>2</sup> )	Polyester fleece 300 g/m <sup>2</sup>		
Total thickness (mm)	3,2 (1,2 without fleece)		(4)
Total surface weight (g/m <sup>2</sup> )	1800		(4)
Flame retardants	Yes		(3)
Organic content (m%)	Not communicated by the sponsor		
Fixing method	Fully bonded		
Joints	According to CEN/TS 1187:2012 – test method 1		
	Type	Hot air welded	
	Overlap (mm)	80	

(1) Based on the information given by the sponsor

(2) Values verified by the laboratory

(3) Unverifiable by the laboratory

(4) Not verified by the laboratory

Summary of parameters and tested systems:

	A-1 (23426A)	A-2 (23426A)	A-3 (19248A)
Top coat	<b>RENOLIT ALKORPLAN A 35179</b>	<b>RENOLIT ALKORPLAN A 35F79</b>	RENOLIT ALKORPLAN A 35179
Fixing method	Adhered	Adhered	Adhered
Insulation	Powerdeck F (100mm)	Powerdeck F (100mm)	Powerdeck F (100mm)
Fixing method	<b>Adhered</b>	Mechanically fixed	<b>Mechanically fixed</b>
Vapour barrier	RENOLIT ALKORPLUS 81012	RENOLIT ALKORPLUS 81012	RENOLIT ALKORPLUS 81012
Fixing method	Loose laid	Loose laid	Loose laid
Support	Wood particle board with gaps $5,0 \pm 0,5$ mm according to § 4.4.2. of the standard CEN/TS 1187		

## 2. TEST REPORTS AND TEST RESULTS IN SUPPORT OF THIS CLASSIFICATION

### a) Test reports

Name of the laboratory	Name of the sponsor	Test report ref. No.	Test dates	Test method
WFRGENT N.V. Ghent, Belgium	RENOLIT BELGIUM NV	23426A	06-03-2024 & 15-03-2024	CEN/TS 1187:2012 – test method 1
WFRGENT N.V. Ghent, Belgium	RENOLIT BELGIUM NV	19248A	18-07-2018, 27-07-2018 & 14-08-2018	CEN/TS 1187:2012 – test method 1
WFRGENT N.V. Ghent, Belgium	RENOLIT BELGIUM NV	23426B	N.a.	CEN/TS 16459:2019 & EN 15725:2023

Test conditions: 23426A

Specimen No.	A-1	A-2
Date of test	06-03-2024	15-03-2024
Roof pitch	15	15
Room temperature at start of test (°C):	15	17

Parameters	Criteria	Test results		Compliance
		A-1	A-2	Yes/No
Internal fire spread upwards (mm)	< 700 mm	100	80	Yes
External fire spread upwards (mm)	< 700 mm	100	94	Yes
Internal fire spread downwards (mm)	< 600 mm	66	70	Yes
External fire spread downwards (mm)	< 600 mm	64	70	Yes
Maximum burned length internal (mm)	< 800 mm	166	150	Yes
Maximum burned length external (mm)	< 800 mm	164	164	Yes
Burning, droplets/debris falling from exposed side	None	None	None	Yes
Burning, glowing particles penetrating the roof	None	None	None	Yes
Single through opening (mm <sup>2</sup> )	< 25 mm <sup>2</sup>	0	0	Yes
Sum of all through openings (mm <sup>2</sup> )	< 4500 mm <sup>2</sup>	0	0	Yes
Lateral fire spread	< edges*	< edges	< edges	Yes
Internal glowing combustion	None	None	None	Yes
Radius of fire spread (horizontal roof) (mm)	< 200 mm	(-)	(-)	(-)

\* edges measuring zone (-) Not applicable

Test conditions: 19248A

<b>Specimen No.</b>	A-3
Date of test	18-07-2018
Roof pitch	15
Room temperature at start of test (°C):	17

Parameters	Criteria	Test results	Compliance
		A-3 (19248D)	Yes/No
Internal fire spread upwards (mm)	< 700 mm	190	Yes
External fire spread upwards (mm)	< 700 mm	190	Yes
Internal fire spread downwards (mm)	< 600 mm	90	Yes
External fire spread downwards (mm)	< 600 mm	90	Yes
Maximum burned length internal (mm)	< 800 mm	280	Yes
Maximum burned length external (mm)	< 800 mm	280	Yes
Burning, droplets/debris falling from exposed side	None	None	Yes
Burning, glowing particles penetrating the roof	None	None	Yes
Single through opening (mm <sup>2</sup> )	< 25 mm <sup>2</sup>	0	Yes
Sum of all through openings (mm <sup>2</sup> )	< 4500 mm <sup>2</sup>	0	Yes
Lateral fire spread	< edges*	< edges	Yes
Internal glowing combustion	None	None	Yes
Radius of fire spread (horizontal roof) (mm)	< 200 mm	(-)	(-)

Test conditions: 19248B

Specimen No.	1	2	3	4
Date of test	21-08-2018	21-08-2018	17-07-2018	21-08-2018
Roof pitch	15	15	15	15
Room temperature at start of test (°C):	21	21	26	22

Build-up: RENOLIT ALKORPLAN A 35179 (glued) + Eurothane AL (Mechanically fixed)

Vapour barrier: RENOLIT ALKORPLUS 81012 (loose laid)

Substrate: Wood particle board 5,0 ± 0,5 mm

Parameters	Criteria	Test Results				Compliance
		1	2	3	4	yes/no
Internal fire spread upwards (mm)	< 700 mm	560	420	270	400	yes
External fire spread upwards (mm)	< 700 mm	560	420	270	400	yes
Internal fire spread downwards (mm)	< 600 mm	70	70	70	100	yes
External fire spread downwards (mm)	< 600 mm	70	70	70	100	yes
Maximum burned length internal (mm)	< 800 mm	630	490	340	500	yes
Maximum burned length external (mm)	< 800 mm	630	490	340	500	yes
Burning, droplets/debris falling from exposed side	None	None	None	None	None	yes
Burning, glowing particles penetrating the roof	None	None	None	None	None	yes
Single through opening (mm <sup>2</sup> )	< 25 mm <sup>2</sup>	0	0	0	0	yes
Sum of all through openings (mm <sup>2</sup> )	< 4500 mm <sup>2</sup>	0	0	0	0	yes
Lateral fire spread	< edges*	< edge	< edge	< edge	< edge	yes
Internal glowing combustion	None	None	None	None	None	yes
Radius of fire spread (horizontal roof only) (mm)	< 200 mm	(-)	(-)	(-)	(-)	yes

\* edges measuring zone (-) Not applicable

### 3. CLASSIFICATION AND DIRECT FIELD OF APPLICATION

#### a) Reference

This classification has been carried out in accordance with clause 9 Test 1 of EN 13501-5:2016, the related harmonized product standard is EN 13956:2012 and EXAP-standard CEN/TS 16459:2019.

#### b) Classification

The roof / roof covering “**RENOLIT ALKORPLAN A on PIR insulation**“ in relation to its external fire performance is classified:

### **BR00F (t1)**

#### c) Field of application

The classification is valid for the system as described in §1 for the following conditions:

- Range of pitches: < 20°

#### d) Extended field of application

- Range of layer a: The Cap sheet: RENOLIT ALKORPLAN A 35179 and RENOLIT ALKORPLAN A 35F79, tested and described in §1. In accordance with the EXAP-rules, valid for:

Type of product / Product composition:	PVC, As tested
Effective thickness:	1,2 - 2,4 mm, for the same product
Surface weight:	1800 g/m <sup>2</sup> up to 3200 g/m <sup>2</sup> , for the same product
Colour	Any colour
Joints:	80 mm or wider
Surfacing on the lower side:	300 g/m <sup>2</sup> or less.
Reinforcement (OPTIONAL)	<ul style="list-style-type: none"> <li>• Higher or lower surface weights than 93 g/m<sup>2</sup> of polyester.</li> <li>• Valid for the same type of sheet with additional glass fleece.</li> </ul>
Surfacing on the upper side:	Surfacing (paints) which does not exceed combustible mass per unit area of 250 g/m <sup>2</sup> (dry conditions).
Factory pre-applied adhesive	N.a.
Fixing method (e.g. adhesive)	Adhered
Flame retardants:	Yes

- Range of layer b: The adhesive: RENOLIT ALKORPLUS 81064, RENOLIT ALKORPLUS 81068 tested and described in §1. In accordance with the EXAP-rules in, adhesives:

Type of product:	As tested, in combination with the membrane (waterproofing). May be changed, depending on the 'last damaged layer' and 'first undamaged layer', as described in "Order of layers in the system" in §3.2.1 of the EXAP report 23426B.
Product composition:	As tested; can be replaced by other adhesives belonging to the same type (Cold bituminous adhesives, PU-adhesives (1 or 2 component), CR-type adhesive, SBR-type adhesive, hot bitumen, ...)
Binder content:	
<i>Renolit Alkorplus 81064</i>	Valid for a solid content of 37% ± 15 %, for adhesives from the same type.
<i>Renolit Alkorplus 81068</i>	Valid for a solid content of 83% ± 15 %, for adhesives from the same type.
Surface weight:	300 g/m <sup>2</sup> or less, for adhesives of the same type.
Curing time:	06:00
Flame retardants:	No

- Range of layer c: The Insulation: Powerdeck F, Eurothane Silver, Eurothane BI 4, tested and described in §1. In accordance with the EXAP-rules, valid for:

Type of product:	The test result is valid for the same roofing product installed on a similar PUR/PIR product with a better or equal reaction to fire classification, starting from class E. Test results from tests at 15 degrees are valid for other PUR/PIR products, only if the reaction to fire classification of the product to be used is equivalent or better. In addition, the same or smaller compressive strength is required.
Product composition:	As tested
Thickness:	50 mm or more
Binder content:	N/A
Joints:	Tested with butt joints, also valid for step joints or similar.
Surfacing on upper / lower side:	
<i>Powerdeck F</i>	Known by the laboratory.
<i>Eurothane Silver</i>	Known by the laboratory.
<i>Eurothane BI4</i>	Known by the laboratory.
Reaction to fire classification according to EN 13501-1	
<i>Powerdeck F</i>	E. The laboratory did not check this class to the corresponding classification report 2016-Efectis-R001743.
<i>Eurothane Silver</i>	F. The laboratory did not check this class to the corresponding classification report WFR 17876D.
<i>Eurothane BI4</i>	F. The laboratory did check this class to the corresponding classification report WFR 17876D.
Fixing method (e.g. adhesive)	Adhered or mechanically fixed
Compressive strength according to EN 826	CS (10/Y) 150 or less
Spacing and type of mechanical fixing (fasteners)	As tested, narrower spacing included; type of fastener not relevant.
Flame retardants:	
<i>Powerdeck F</i>	Yes
<i>Eurothane Silver</i>	Yes
<i>Eurothane BI4</i>	Yes

- Range of layer d: The adhesive (OPTIONAL): RENOLIT ALKORPLUS 81065 DUALFIX tested and described in §1. In accordance with the EXAP-rules, adhesives:

Type of product:	As tested, in combination with the membrane (waterproofing). May be changed, depending on the 'last damaged layer' and 'first undamaged layer', as described in "Order of layers in the system" in §3.2.1 of the EXAP report 23426B.
Product composition:	As tested; can be replaced by other adhesives belonging to the same type (Cold bituminous adhesives, PU-adhesives (1 or 2 component), CR-type adhesive, SBR-type adhesive, hot bitumen, ...)
Binder content:	Valid for a solid content of 85% ± 15 %, for adhesives from the same type.
Surface weight:	130 g/m <sup>2</sup> or less, for adhesives of the same type.
Curing time:	00:45
Flame retardants:	No

- Range of layer e: The Vapour control layer: RENOLIT ALKORPLUS 81012, RENOLIT ALKORPLUS 81002, tested and described in §1. In accordance with the EXAP-rules, valid for:

Type of product / Product composition:	VCL can be replaced by other vapour barriers belonging to the same group of materials as identified in the relevant standards.
<i>RENOLIT ALKORPLUS 81012</i>	EN 13984:2013
<i>RENOLIT ALKORPLUS 81002</i>	EN 13970:2004 + A1:2006
Reaction to fire classification according to EN 13501-1	
<i>RENOLIT ALKORPLUS 81012</i>	F or better. The laboratory did not check this class to the corresponding classification report. K-Hoch-130153.
<i>RENOLIT ALKORPLUS 81002</i>	E or better. The laboratory did not check this class to the corresponding classification report LAPI 911.0DC0050/13.

- Range of layer f: Supporting deck: Wood particle board with gaps 5,0 ± 0,5 mm, in accordance with CEN/TS 1187.

Range of supporting deck:	* Any wooden continuous deck * Any non-combustible deck with gaps not exceeding 5 mm (including non-perforated steel deck)
---------------------------	---

➤ End-use parameters of the roof systems

Number of layers	As tested
Order of layer in the roofing system	As tested
Mounting method:	As tested
Fixing method (e.g. adhesive)	As tested
Spacing and type of mechanical fixing (fasteners)	As tested, narrower spacing included; type of fastener not relevant.
Lowest affected layer	Insulation layer
Uppermost unaffected layer	Vapour control layer, can be replaced by any other material with reaction to fire classification F or better. The laboratory did not check this class to the corresponding classification report.
Layer(s) below the uppermost unaffected layer	Substrate can be replaced by any other layer

#### 4. LIMITATIONS

At the time the standard EN 13501-5:2016 was published, no decision was made concerning the duration of validity of a classification document.

Provisions of Regulation (EU) 305/2011, commonly known as the Construction Products Regulation (CPR), prevail over any conflicting provisions in the harmonized standards and technical specifications.

#### 5. WARNING

This classification report does not represent type approval nor certification of the product.

**6. CONCERNING DECLARATION OF PERFORMANCE (DOP) ACCORDING TO THE CONSTRUCTION PRODUCT REGULATION (CPR)**

Annex ZA of the harmonized standard

- EN 13956:2012 – “Flexible sheets for waterproofing — Plastic and rubber sheets for roof waterproofing”

declares that a System 3 Attestation of Conformity (AoC) under the Construction Products Directive (CPD: 89/106/EEC) is required for all external fire performance declarations better than class  $F_{\text{roof}}$  (t1, t2, t3, t4). Under the Construction Products Regulation (CPR: EU 305/2011) this corresponds with a System 3 of Assessment and Verification of Constancy of Performance (AVCP) as basis for a Declaration of Performance (DoP).

The classification assigned to the product in this report is appropriate to such a Declaration of Performance of the essential characteristics of the construction product by the manufacturer within the context of a System 1 Assessment and Verification of Constancy of Performance. Under the Construction Products Regulation a Declaration of Performance (DoP) is a requirement for affixing the CE marking.

PREPARED BY

APPROVED BY

This document is the original version of this classification report and is written in English.

This report may be used only literally and completely for publications. - For publications of certain texts, in which this report is mentioned, our permission must be obtained in advance.

The authenticity of the electronic signatures is assured by Belgium Root CA.