Classification report for roofs/roof coverings exposed to external fire No. 21636J-rev.1

First issue date: 25/05/2022

Owner of the classification report

RENOLIT BELGIUM NV
De Bruwaan 43
9700 Oudenaarde
BELGIUM

Introduction

This classification report defines the classification assigned to the roof/roof covering **«RENOLIT ALKORPLAN F SMART»** 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 roofs tests: Test 4: Method with two stages incorporating burning brands, wind and supplementary radiant heat.

This classification report consists of 9 pages

1. DESCRIPTION OF THE ROOF/ROOF COVERING

	Nominal values (1)	Measured values (2)
SUPPORTING DECK		
Material	OSB	
Thickness (mm)	18	
Density (kg/m³)	680	
VAPOUR BARRIER		
Material	Low-density polyethylene (LDPE) vapour control barrier	
Trade name	**RENOLIT ALKORPLUS 81012**	
Manufacturer	(4)	
Supplier	RENOLIT Belgium	
Thickness (mm)	0,25	0,23
Surface weight (g/m²)	218	209
Flame retardants	No	(3)
Fixing method	Loose laid	
Reaction to fire according to EN 13501-1	F (*)	
INSULATING LAYER		
Material	Polyisocyanurate (PIR) insulation board faced on both sides with a foil facing	
Trade name	**RECTICEL EUROTHANE SILVER**	
Backing/facing material (g/m²)	Multilayer coated aluminium (±180 g/m²)	
Manufacturer	Recticel Insulation	
Supplier	Recticel Insulation	
Thickness (mm)		
Single-layered	80 & 120	80 & 121
Double-layered	80+120 & 120+120	80 + 121 & 121 + 121
Density (kg/m³) of the foam	± 30	30,9 (including backing and facing) (80 mm)
Flame retardants	Yes	(3)
Fixing method	Mechanically fastened	
Reaction to fire according to EN 13501-1	F (**)	
ROOF COVERING		
Material	Waterproofing roof membrane of flexible polyvinyl chloride (PVC) with a polyester reinforcement	
Trade name	**RENOLIT ALKORPLAN F SMART**	
Manufacturer	RENOLIT Iberica	
Supplier	RENOLIT Belgium	
Colour	Cool ivory	
Reinforcement (material + g/m²)	Polyester 93 g/m²	
Thickness (mm)	1,2 & 1,5	1,2 & 1,5
Surface weight (g/m²)	1500 - 1850	1566 & 1838
Flame retardants	Yes	(3)
Fixing method	Mechanical fastened	

(1) Based on the information given by the sponsor
(2) Values verified by the laboratory
(3) Unverifiable by the laboratory
(4) Known by the laboratory
(*) The reaction to fire classification of RENOLIT ALKORPLUS 81012 is Euroclass F, according to the declaration of performance, DoP No. 810122501217.
(**) The reaction to fire classification of RECTICEL EUROTHANE SILVER is Euroclass F, according to the declaration of performance, DoP No. 64030-a-CPR_2021.11.1.

	F-1	F-2	F-3	F-4	F-5
Cap sheet	**RENOLIT ALKORPLAN F SMART (1,2 mm)**	**RENOLIT ALKORPLAN F SMART (1,5 mm)**	RENOLIT ALKORPLAN F SMART (1,5 mm)	RENOLIT ALKORPLAN F SMART (1,5 mm)	RENOLIT ALKORPLAN F SMART (1,5 mm)
Fixing method	Mechanically fastened	Mechanically fastened	Mechanically fastened	Mechanically fastened	Mechanically fastened
Insulation	RECTICEL EUROTHANE SILVER (80 mm)	**RECTICEL EUROTHANE SILVER (80 mm)**	**RECTICEL EUROTHANE SILVER (120 mm)**	**RECTICEL EUROTHANE SILVER (80+120 mm)**	**RECTICEL EUROTHANE SILVER (120+120 mm)**
Fixing method	Mechanically fastened	Mechanically fastened	Mechanically fastened	Mechanically fastened	Mechanically fastened
Vapour barrier	RENOLIT ALKORPLUS 81012	RENOLIT ALKORPLUS 81012	RENOLIT ALKORPLUS 81012	RENOLIT ALKORPLUS 81012	RENOLIT ALKORPLUS 81012
Fixing method	Loose laid	Loose laid	Loose laid	Loose laid	Loose laid
Support	OSB (18 mm ; 680 kg/m³)				

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 method
WFRGENT nv Ghent - Belgium	Renolit Belgium NV	21636F-rev.1	CEN/TS 1187:2012: Test 4
WFRGENT nv Ghent - Belgium	Renolit Belgium NV	21636G-rev.1	CEN/TS 1187:2012: Test 4
WFRGENT nv Ghent - Belgium	Renolit Belgium NV	21636H-rev.1	CEN/TS 16459:2019

b) Test results

Test conditions: 21636F-rev.1

Specimen No.	**F-1(')**	**F-2(')**	**F-3(')**	**F-4(')**	**F-5(')**
Date of test	15/12/2021	15/12/2021	28/01/2022	28/01/2022	28/01/2022
Roof pitch	0°	0°	0°	0°	0°
Room temperature at start of test (°C):	18	18	19	19	19
Substrate	OSB (18 mm ; 680 kg/m³)				

(') The results of preliminary test correspond with the obtained results of the penetration test.

PRELIMINARY IGNITION TEST WITH BURNING BRANDS (STAGE 1)

Specimen No:	**F-1'**	**F-2'(*)**	**F-3'**	**F-4'**	**F-5'**
Duration of flaming after withdrawal of the test flame (min:sec)	00:02	00:02	00:02	00:02	00:03
Maximum flame spread distance (mm)	100	105	100	100	100
Time to fire penetration (min:sec)	Did not penetrate	Did not penetrate	Did not penetrate	Did not penetrate	Did not penetrate
Nature of the penetration	N.a.	N.a.	N.a.	N.a.	N.a.

(') The results of preliminary test correspond with the obtained results of the penetration test.
(*) Reused in the official test 21636G-rev.1.

PENETRATION TEST WITH BURNING BRANDS, WIND AND SUPPLEMENTARY RADIANT HEAT (STAGE 2)

Specimen No:	F-1	F-2(*)	F-3	F-4	F-5	Average
Time to fire penetration (min:sec)	Did not penetrate	Did not penetrate	Did not penetrate	Did not penetrate	Did not penetrate	Did not penetrate
Nature of the penetration	N.a.	N.a.	N.a.	N.a.	N.a.	-
Additional observations: All specimens ignited. Carbonization and melting of the top layer were visible for all specimens. Additionally, contraction of the top layer was visible for specimens F-1 and F-2. Specimen F-1 extinguished after 19:46, specimen F-2 extinguished after 26:31, specimen F-3 extinguished after 39:15, specimen F-4 extinguished after 53:41 and specimen F-5 extinguished after 47:22.						

(*) Reused in the official test 21636G-rev.1.

Test conditions: 21636G-rev.1

Specimen No.	1	2	3	4
Date of test	15/12/2021	15/12/2021	14/02/2022	15/02/2022
Roof pitch	0°	0°	0°	0°
Room temperature at start of test (°C):	18	18	18	18
Substrate	OSB (18 mm ; 680 kg/m³)			

Build-up: OSB + RENOLIT ALKORPLUS 81012 + RECTICEL EUROTHANE SILVER (80 mm) + RENOLIT ALKORPLAN F SMART (1,5 mm)

PRELIMINARY TEST (STAGE 1)

Parameter	Criteria				Test [a] results	Compliance			
	Class B_{ROOF}(t4)	Class C_{ROOF}(t4)	Class D_{ROOF}(t4)	Class E_{ROOF}(t4)	Spec. 1	Class B_{ROOF}(t4)	Class C_{ROOF}(t4)	Class D_{ROOF}(t4)	Class E_{ROOF}(t4)
Burn time	< 5 min	< 5 min	< 5 min	≥ 5 min	00:02	Yes	Yes	Yes	Yes
Flame spread distance	< 0,38 m	< 0,38 m	< 0,38 m	No limit	0,11	Yes	Yes	Yes	Yes
Penetration	None	None	None	None	None	Yes	Yes	Yes	Yes

(a) Not for extended application.

PENETRATION TEST (STAGE 2)

Parameter	Criteria			
	Class B_{ROOF}(t4)	Class C_{ROOF}(t4)	Class D_{ROOF}(t4)	Class E_{ROOF}(t4)
Penetration	≥ 60 min	< 60 min ≥ 30 min	< 30 min	< 30 min
Parameter	**Test [(a)] results**			
	Spec. 1	Spec. 2	Spec. 3	Mean [a]
Penetration	None	None	None	None
Parameter	**Compliance**			
	Class B_{ROOF}(t4)	Class C_{ROOF}(t4)	Class D_{ROOF}(t4)	Class E_{ROOF}(t4)
Penetration	Yes	Yes	Yes	Yes

(a) If one or two of the specimens have not failed at one hour, a time of 60 min shall be used in calculating the mean time of penetration.

3. CLASSIFICATION AND FIELD OF APPLICATION

a) Reference

This classification has been carried out in accordance with clause 9 test 4 of EN 13501-5:2016 and EN 13956:2012.

b) Classification

The roof / roof covering **«RENOLIT ALKORPLAN F SMART»** in relation to its external fire performance is classified:

B_{ROOF} (t4)

c) Direct field of application

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

- Range of pitches: ≤ 10°

d) Extended field of application

- Range of layer 0: The cap sheet: RENOLIT ALKORPLAN F SMART

Thickness:	1,2 – 1,5 mm
Surface weight:	1500 – 1850 g/m²
Reinforcement:	Polyester 93 g/m² or less
Fixing method of the toplayer onto insulation:	Mechanically fastened

- Range of layer 1: The insulation: PIR insulation with a multi-layer foil on both sides

Thickness:	80 mm or more
Density:	± 30 kg/m³
Facing/backing:	Multilayer coated aluminium ± 180 g/m²
Reaction to fire classification:	F or better
Flame retardants:	Yes
Fixing method:	Mechanically attached

- Range of layer 2: The vapour control layer: RENOLIT ALKORPLUS Polyethylene vapour control layer

Reaction to fire classification:	F or better

- Range of layer 3: Supporting deck

Range of supporting deck:	OSB (18 mm or more ; 680 kg/m³)

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_{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 3 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
Mikel Nachtergaele Project assistant	Bart Sette General Manager Ghent

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.

Revision History

Issue (revision) No: Rev 1	Re-issue Date: 24/10/2023
Revised by: Roel Coppens	Approved by: Mikel Nachtergaele
 Roel Coppens Polyvalent Medewerker Gent	 Mikel Nachtergaele Project assistant

Reason for Revision:
This document supersedes and replaces all previous issues and revisions of the reports, which are void from their date of issue.
The only update in this revision of the classification report is the addition of the revision reference (-rev.1 or greater) to the referenced test reports to reflect a change to conditioning. No other changes have been made to the report.
The revision author and approver have only considered and reviewed the addition of the revision reference (-rev.1 or greater) to the referenced test reports; they have not carried out a full peer review on any other aspect of the original report, which had been prepared and approved by the author and approver, stated under paragraph 6 of this report.