

Classification report for roofs/roof coverings exposed to external fire No. 21619D

Owner of the classification report

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Introduction


This classification report defines the classification assigned to the roof/roof covering «**TerraSmart Rail System**» 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 11 pages

1. DESCRIPTION OF THE ROOF/ROOF COVERING

	Nominal values (1)		Measured values (2)
SUPPORTING DECK			
Material	Oriented Strand Board (OSB)		
Thickness (mm)	18		
Density (kg/m³)	667		
PRIMER			
Material	Bituminous synthetic rubber hotmelt waterproofing		
Trade name	IKO Permateg Ecowrap		
Manufacturer	IKO Group		
Supplier	IKO Group		
Flame retardants	None		
Weight percentage (w%)	(*)		
Surface weight (g/m²)	8000		
Application	Hot Applied		
INSULATING LAYER			
Material	Extruded polystyrene (XPS) insulation board		
Trade name	Danosa Danopren TR40 XPS Insulation		
Manufacturer	Danosa		
Supplier	Build 4 Less		
Thickness (mm)			
Single layered	40		44
Multi layered	160		176
Density (kg/m³) of the foam	32		30,4
Flame retardants	None		(3)
Fixing method	Loosely laid. The XPS pieces are interlocked with one another.		
Reaction to fire according to EN 13501-1	E		
VAPOUR CONTROL LAYER			
Material	Felt		
Trade name	Vent 3 Membrane		
Manufacturer / Supplier	Cromer Building Products		
Thickness (mm)	0,43		0,4
Surface weight (g/m²)	115		185
Flame retardants	None		(3)
Fixing method	Loosely laid		
Reaction to fire according to EN 13501-1	E		

ROOF COVERING		
<u>First layer</u>		
A) <u>RPF-1</u>		
Material	Adjustable polypropylene (PP) pedestals, composed of 3 main parts: the support base, the adjustable threaded section and the support head	
Photo of the pedestal		
Manufacturer / Supplier	Ryno Ltd	
Height / thickness (mm)		
<i>Pedestal</i>	35	35 (**)
<i>Support base</i>	22	32,6
<i>Adjustable threaded section</i>	21	29,4
<i>Support head</i>	5	8,4
Diameter (mm)		
<i>Support base</i>	200	198,1
<i>Adjustable threaded section</i>	100	100,1
<i>Support head</i>	120	118,4
Weight of the pedestal (g)	170	202
Flame retardants	None	(3)
Fixing method	Loosely laid	

B) <u>RDA-6C</u>														
Material	Adjustable polypropylene (PP) pedestals, composed of 3 main parts: the support base, the adjustable threaded section and the support head													
Photo of the pedestal														
Manufacturer / Supplier	Ryno Ltd													
Height / thickness (mm)	<table> <tr> <td><i>Pedestal</i></td><td>200</td><td>200 (**)</td></tr> <tr> <td><i>Support base</i></td><td>87</td><td>91,3</td></tr> <tr> <td><i>Adjustable threaded section</i></td><td>95</td><td>89,6</td></tr> <tr> <td><i>Support head</i></td><td>10</td><td>18,3</td></tr> </table>		<i>Pedestal</i>	200	200 (**)	<i>Support base</i>	87	91,3	<i>Adjustable threaded section</i>	95	89,6	<i>Support head</i>	10	18,3
<i>Pedestal</i>	200	200 (**)												
<i>Support base</i>	87	91,3												
<i>Adjustable threaded section</i>	95	89,6												
<i>Support head</i>	10	18,3												
Diameter (mm)	<table> <tr> <td><i>Support base</i></td><td>220</td><td>217</td></tr> <tr> <td><i>Adjustable threaded section</i></td><td>100</td><td>101,6</td></tr> <tr> <td><i>Support head</i></td><td>114 x 140</td><td>113,8 x 189,8</td></tr> </table>		<i>Support base</i>	220	217	<i>Adjustable threaded section</i>	100	101,6	<i>Support head</i>	114 x 140	113,8 x 189,8			
<i>Support base</i>	220	217												
<i>Adjustable threaded section</i>	100	101,6												
<i>Support head</i>	114 x 140	113,8 x 189,8												
Weight of the pedestal (g)	885	610												
Flame retardants	None	(3)												
Fixing method	Loosely laid													

C) <u>RDF-1</u>		
Material	Adjustable polypropylene (PP) pedestals, composed of 3 main parts: the support base, the adjustable threaded section and the support head	
Photo of the pedestal		
Manufacturer / Supplier	Ryno Ltd	
Height / thickness (mm)		
<i>Pedestal</i>	35	35 (**)
<i>Support base</i>	20,25	20,8
<i>Adjustable threaded section</i>	18	16,5
<i>Support head</i>	5 (24,44 with top piece)	8,4 (27,2 with the top piece)
Diameter (mm)		
<i>Support base</i>	200	199,2
<i>Adjustable threaded section</i>	100	100,5
<i>Support head</i>	113	113,1
Weight of the pedestal (g)	170	170
Flame retardants	None	(3)
Fixing method	Loosely laid	
<u>Second layer (OPTIONAL)</u>		
Material	Aluminium joist supports with a rubber gasket	
Trade name	ADS Lower Joist & RST Top Rail	
Manufacturer / Supplier	Ryno Ltd	
Thickness (mm)	52	± 56
Surface weight (g/m²)	5950	8936
Dimensions	845 x 845	845 x 841
Flame retardants	None	(3)
Fixing method	Loosely laid	

<u>Top layer</u>		
Material	Porcelain tiles.	
Trade name	20 mm Porcelain	
Manufacturer / Supplier	Ryno Ltd	
Thickness (mm)	20	20
Dimensions	420 x 420	420 x 422
Surface weight (g/m ²)	41667	20311
Flame retardants	None	
Fixing method	Loosely laid onto RST Top Rail	

(1) Based on the information given by the sponsor

(2) Values verified by the laboratory

(3) Unverifiable by the laboratory

(*) Not communicated by the sponsor

(**) The separate pieces of the pedestal fit into each other, making the total height adjustable. This results in the total height not being the sum of the separate pieces.

Summary of parameters and tested systems:

	A-1	A-2	A-3	A-3
Top coat	20 mm porcelain	20 mm porcelain	20 mm porcelain	20 mm porcelain
Fixing method	Loosely laid	Loosely laid	Loosely laid	Loosely laid
Support	ADS Lower Joist & RST Top Rail	ADS Lower Joist & RST Top Rail	ADS Lower Joist & RST Top Rail	N/A
Fixing method	Loosely laid	Loosely laid	Loosely laid	N/A
Pedestal	RDF-1	RDF-1	RDA-6C	RPF-1
Fixing method	Loosely laid	Loosely laid	Loosely laid	Loosely laid
Vapour control layer	Vent 3 Membrane	Vent 3 Membrane	Vent 3 Membrane	Vent 3 Membrane
Fixing method	Loosely laid	Loosely laid	Loosely laid	Loosely laid
Insulation	XPS (40 mm)	XPS (160 mm)	XPS (40 mm)	XPS (40 mm)
Fixing method	Loosely laid	Loosely laid	Loosely laid	Loosely laid
Primer	IKO Permateg Ecwrap	IKO Permateg Ecwrap	IKO Permateg Ecwrap	IKO Permateg Ecwrap
Support	OSB (18 mm ; 667 kg/m ³)			

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	Ryno Ltd.	21619A	CEN/TS 1187:2012: Test 4
WFRGENT nv Ghent - Belgium	Ryno Ltd.	21619B	CEN/TS 1187:2012: Test 4
WFRGENT nv Ghent - Belgium	Ryno Ltd.	21619C	CEN/TS 16459:2019

b) Test results

Test conditions: 21619A

Specimen No.	A-1(')	A-2(')	A-3(')	A-4(')
Date of test	17/11/2021	17/11/2021	05/01/2022	05/01/2022
Roof pitch	0°	0°	0°	0°
Room temperature at start of test (°C):	17	17	17	17
Substrate	OSB (18 mm (667 kg/m³))			

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

a) Test results

PRELIMINARY IGNITION TEST WITH BURNING BRANDS (STAGE 1)

Specimen No:	A-1'	A-2'	A-3'	A-4'(*)
Duration of flaming after withdrawal of the test flame (min:sec)	00:00	00:00	00:00	00:00
Maximum flame spread distance (mm)	0	0	0	0
Time to fire penetration (min:sec)	Did not penetrate	Did not penetrate	Did not penetrate	Did not penetrate
Nature of the penetration	N.a.	N.a.	N.a.	N.a.

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

(*) Reused in official test 21619B.

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

Specimen No:	A-1	A-2	A-3	A-4(*)	Average
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.	-
Additional observations: None of the specimens ignited.					

(*) Reused in official test 21619B.

Test conditions: 21619B

Specimen No.	1	2	3	4
Date of test	05/01/2022	05/01/2022	12/01/2022	12/01/2022
Roof pitch	0°	0°	0°	0°
Room temperature at start of test (°C):	17	17	17	17
Substrate	OSB (18 mm ; 667 kg/m³)			

Build-up: OSB + IKO Permasec Ecwrap + XPS (40 mm) + Vant 3 Membrane + RPF-1 + 20 mm porcelain

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)		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	00:00	Yes	Yes	Yes	Yes
Flame spread distance	< 0,38 m	< 0,38 m	< 0,38 m	No limit	0,0	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} (t ₄)	Class C _{ROOF} (t ₄)	Class D _{ROOF} (t ₄)	Class E _{ROOF} (t ₄)
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} (t ₄)	Class C _{ROOF} (t ₄)	Class D _{ROOF} (t ₄)	Class E _{ROOF} (t ₄)
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.

b) Classification

The roof / roof covering «**TerraSmart Rail System**» 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: Porcelain tiles

Thickness:	20 mm
Dimensions:	200 x 200 mm or more
Surface weight:	41667 g/m ²
Use of fire retardants:	None
Fixing method:	Loosely laid

➤ Range of layer 1: ADS Lower Joist & RST Top Rail

Material:	Aluminium joist supports with a rubber gasket
Thickness:	52 mm or more
Dimensions:	200 x 200 or greater
Surface weight:	Varies depending on layout
Use of fire retardants:	None
Fixing method:	Loosely laid

➤ Range of layer 2: Pedestals: RDF-1, RPF-1 or RDA-6C

Material:	Adjustable polypropylene (PP) pedestals, composed of 3 main parts: the support base, the adjustable threaded section and the support head
Pedestal height:	35 mm or more
Use of fire retardants:	None
Fixation method	Loosely laid

➤ Range of layer 3: Vapour control layer

Material:	Felt
Reaction to fire according to EN 13501-5	E or better

➤ Range of layer 4: Insulation: XPS

Thickness:	40 mm or more (single or multi-layered)
Density:	32 kg/m ³
Use of fire retardants:	None
Reaction to fire according to EN 13501-5	E or better
Fixation method	Loosely laid. The XPS pieces are interlocked with one another.

➤ Range of layer 5: Bituminous synthetic rubber primer, as tested and described in §

➤ Range of layer 6: Supporting deck

Range of supporting deck:	OSB (18 mm or more ; 667 kg/m ³)
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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)**

According to the information delivered by the sponsor to the laboratory on the technical information sheet, there was no product standard for CE marking available at the time the classification report for the tested material/product was drafted. When such a product standard is published, this report may be submitted again to the laboratory to evaluate the adequacy of the report for CE marking.

The sponsor of this report has nevertheless committed himself to use a third party for the sampling and to assure in this way the traceability of the test samples.

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