

Classification report for roofs/roof coverings exposed to external fire No. 21538C

Owner of the classification report

AXTER LIMITED
West Road, Ransomes Europark
IP3 9SX Ipswich
UNITED KINGDOM

Introduction

This classification report defines the classification assigned to the roof/roof covering «**Hyranger Multi Layer Warm Roof 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 10 pages

1. DESCRIPTION OF THE ROOF/ROOF COVERING

	Nominal values (1)	Measured values (2)
SUPPORTING DECK		
Material	OSB	
Thickness (mm)	18	
Density (kg/m³)	600	
PRIMER		
A) VERNIS ANTAC		
Material	Cold bituminous adhering primer	
Manufacturer / Supplier	Axter Limited	
Weight percentage (w%)	54	
Applied surface weight (l/m²)	150-300	
Application	Roller applied	
B) VERNIS SA (*)		
Material	Cold bituminous adhering primer	
Manufacturer / Supplier	Axter Limited	
Weight percentage (w%)	Not communicated	
Applied surface weight (l/m²)	Known by laboratory	
Application	Spray applied	
C) WILOTEKT SURFACE CONDITIONING PRIMER (*)		
Material	Cold bituminous adhering primer	
Manufacturer / Supplier	Axter Limited	
Weight percentage (w%)	54	
Applied surface weight (l/m²)	150-200	
Application	Roller applied	
VAPOUR BARRIER		
Material	SBS Elastomeric bitumen with composite reinforcement	
Trade name	Vap Alu ADH	
Manufacturer / Supplier	Axter Limited	
Reinforcement (material + g/m²)	Composite aluminium and glass fibre 120 g/m²	
Thickness (mm)	2,2	(3)
Surface weight (g/m²)	3175	(3)
Flame retardants	No	(3)
Fixing method	Self-adhesive	
Reaction to fire according to EN 13501-1	NPD	
ADHESIVE		
Material	PU Adhesive	
Trade name	Hyrastik EVO	
Manufacturer / Supplier	Axter Limited	
Flame retardants	N/A	
Weight percentage (w%)	100	
Surface weight (l/m²)	0,1 – 0,2	
Application	In Beads 20 to 30 mm wide	

INSULATING LAYER (ADHESIVE)		
Material	Polyisocyanurate (PIR) board covered with coated glass tissue and bituminised glass tissue with polypropylene fleece	
Trade name	Hytherm (ADH/BF)	
Backing/facing material (g/m²)	Coated glass tissue and bituminised glass tissue with polypropylene fleece (weight not provided)	
Manufacturer / Supplier	Axter Limited	
Thickness (mm)	120	(3)
Density (kg/m³) of the foam	30	(3)
Flame retardants	No	(3)
Fixing method	PU Adhered	
Reaction to fire according to EN 13501-1	E	
ROOF COVERING		
1.1) <u>First layer</u>		
A) <u>Hyranger spot ADH</u>		
Material	Elastomeric bitumen membrane with polyester reinforcement and a microperforated film and sand finishing on top.	
Manufacturer / Supplier	Axter Limited	
Mineral finish (material + g/m²)	Macroperforated film + sand 100 g/m²	
Reinforcement (material + g/m²)	Stabilised polyester 120 g/m²	
Thickness (mm)	2,69	(3)
Surface weight (g/m²)	3160	(3)
Flame retardants	No	(3)
Fixing method	Self-adhesive	
B) <u>Stickflex / Stickflex Sanded</u>		
Material	SBS Elastomeric bitumen with a glass fiber reinforcement	
Trade name	Stickflex / Stickflex Sanded	
Manufacturer / Supplier	Axter Limited	
Reinforcement (material + g/m²)	Glass fiber 50 g/m²	
Mineral finish (material + g/m²)	Sand, quantity known by laboratory	
Thickness (mm)	2,0	(1)
Surface weight (g/m²)	3075	(1)
Flame retardants	No	(1)
Fixing method	Self-adhesive	
1.2) <u>Top layer</u>		
Material	SBS Elastomeric bitumen with a polyester reinforcement and a mineral slate finishing on top.	
Trade name	Hyranger 40 PY FP / Hyranger 40 Flame Free / Hyranger 40 FR	
Manufacturer / Supplier	Axter Limited	
Mineral finish (material + g/m²)	Mineral slate 1000	
Reinforcement (material + g/m²)	Stabilised polyester 180 g/m²	
Thickness (mm)	3,5	(3)
Surface weight (g/m²)	5075	(3)
Flame retardants	No	(3)
Fixing method	Torched + heat activated	

(1) Based on the information given by the sponsor

(2) Values verified by the laboratory

(3) Unverifiable by the laboratory

(*) Classified through extended application

Summary of parameters and tested systems:

	A-1	R-2
Top layer	Hyranger 40 PY FP	Hyranger 40 PY FP
Fixation	Torched +heat activated	Torched +heat activated
Under layer	Hyranger Spot ADH	Stickflex Sanded
Fixation	Self-adhesive	Self-adhesive
Insulation	PIR (120 mm)	PIR (120 mm)
Fixation	PU adhered	PU adhered
Vapour barrier	Vap Alu ADH	Vap Alu ADH
Fixation	Self-adhesive	Self-adhesive
Primer	Vernis Antac	N/A
Substrate	OSB (18 mm ; 600 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	Axter Ltd.	21538A	CEN/TS 1187:2012: Test 4
WFRGENT nv Ghent - Belgium	Axter Ltd.	20295R	CEN/TS 1187:2012: Test 4
WFRGENT nv Ghent - Belgium	Axter Ltd.	20295S	CEN/TS 1187:2012: Test 4
WFRGENT nv Ghent - Belgium	Axter Ltd.	20295T	CEN/TS 16459:2019

b) Test results

Test conditions: 21538A

Test date: 15/09/2021

Room temperature at start of test (°C): 19

Roof pitch: 0°

Substrate: OSB (18 mm ; 600 kg/m³)

PRELIMINARY IGNITION TEST WITH BURNING BRANDS (STAGE 1)

Specimen No:	A-1'
Duration of flaming after withdrawal of the test flame (min:sec)	00:00
Maximum flame spread distance (mm)	90
Time to fire penetration (min:sec)	Did not penetrate
Nature of the penetration	N.a.

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

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

Specimen No:	A-1	Average
Time to fire penetration (min:sec)	Did not penetrate	Did not penetrate
Nature of the penetration	N.a.	-
Additional observations: The specimen ignited. Carbonization and melting of the top layer were visible. Additionally, burning particles persisting both longer and shorter than 5 seconds were visible. The specimen extinguished after 27:28.		

Test conditions: 20295R

Test date: 19/03/2020 & 20/03/2020
Room temperature at start of test (°C): 18
Roof pitch: 0°.
Substrate: OSB (18 mm ; 600 kg/m³)

PRELIMINARY IGNITION TEST WITH BURNING BRANDS (STAGE 1)

Specimen No:	R-1'	R-2'(*)	R-3'	R-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)	40	110	80	90
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.

(¹) The results of preliminary test correspond with the obtained results of the penetration test.

(*) Reused in the official test 20295S.

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

Specimen No:	R-1	R-2(*)	R-3	R-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.	N.a.
Additional observations: None of the specimens ignited. Carbonization and melting of the top layer were visible for all specimens.					

(*) Reused in the official test 20295S.

Test conditions: 20295S

Test dates: 19/03/2020 & 27/04/2020

Room temperature at start of test (°C): 18

Roof pitch: 0°.

Substrate: OSB (18 mm ; 600 kg/m³)

Build-up: OSB + bituminous primer + VAP ALU ADH + Hyrastik EVO + Hytherm (ADH/BF) + Stickflex Sanded + Hyranger 40 PY FP

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	0,11	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 13707:2004.

b) Classification

The roof / roof covering «**Hyranger Multi Layer Warm Roof System**» in relation to its external fire performance is classified:

BROOF (t4)

c) Direct field of application

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

- Range of pitches: $\leq 10^\circ$

d) Extended field of application

- Range of layer 0: bituminous top layer: Hyranger 40 PY FP / Hyranger 40 Flame Free/ Hyranger 40 FR

Thickness:	3,5 mm
Surface weight:	5075 g/m ²
Reinforcement:	Polyester 180 g/m ²
Fixing method:	Torched + heat activated

- Range of layer 1: bituminous under layer: Stickflex / Stickflex Sanded

Thickness:	2,0 mm
Surface weight:	3075 g/m ²
Mineral finish	
<i>Sand</i>	Known by laboratory
<i>No mineral finish</i>	N/A
Reinforcement:	Glass fiber 50 g/m ²
Fixing method:	Self-adhesive

OR

- Range of layer 1: bituminous under layer: Hyranger Spot ADH

Thickness:	2,69 mm
Surface weight:	3160 g/m ²
Mineral finish	Macroperforated film and sand 100 g/m ²
Reinforcement:	Polyester 120 g/m ²
Fixing method:	Self-adhesive

- Range of layer 2: Coated glass tissue and bitumenised glass tissue with polypropylene fleece faced PIR insulation

Thickness (single & double layer):	50 mm or more
Mineral finish	Coated glass tissue and bitumenised glass tissue with polypropylene fleece (weight not provided)
Density of the foam:	30 kg/m ³
Reaction to fire according to EN13501-1	E or better
Fixing method:	PU adhered

- Range of layer 3: Hyrastik EVO (PU adhesive)

Weight percentage (w%)	100
Surface weight applied:	30-60 m ² / 6 L
Flame retardant	No
Application method	In beads 20 to 30 mm wide

- Range of layer 4: bituminous vapour barrier (Hyranger Spot ADH, Roll 25 Alpa Alu, Force line 2VV, Force line 3VV, Hyranger 25/25 TS, Stickflex Sanded, Stickflex, Force SA and Force Line 2S, SK Vap)

Reaction to fire according to EN13501-1	NPD
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- Range of layer 5: Cold bituminous primer, as tested and described in §1.2

- Range of layer 6: Supporting deck

Range of supporting decks:	OSB (18 mm or more, 600 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)

Annex ZA of the harmonized standard

- EN 13707:2004 – “Flexible sheets for waterproofing - Reinforced bitumen 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

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