

Extended application report for roofs/roof coverings exposed to external fire No. 20576C

Owner of the extended application report

TILCOR ROOF SYSTEMS UK
Foresters Hall 25-27 Weslow Street
SEL 9 3RV London
UNITED KINGDOM

Normative references

This extended application (EXAP) report concerns test results obtained in accordance with test method CEN/TS 1187:2012 – test method 4. The extended application process is carried out in conformity with the following extended application document: CEN/TS 16459:2013: External fire exposure of roofs and roof coverings – Extended application of test results from CEN/TS 1187. The extended application process also applies rules (if any) as defined in the following product standard(s) and/or ETAG(s): EN508:2014.

This extended application report consists of 7 pages.

1. DETAILS OF PRODUCT CONCERNED

1.1. Nature

Product Technical Specifications: coated metallic roof tiles

Product family: EN508:2014

End-use application: Metal roof tiles

1.2. Description

	Nominal value (1)	Measured value (2)
SUPPORTING DECK		
Material	Wooden battens	
Dimensions (mm)	20x50	
Density	Known by laboratory	
ROOF TILES		
1.1 <u>Steel</u>		
Material	0,39 mm Zincalume Steel	
Trade name	Steel	
Manufacturer / Supplier	Manufacturer of the steel itself: New Zealand Steel Shaping of the tiles: Ross Roof Group	
Thickness (mm)	0,39	(3)
Surface weight (g/m ²)	4279	(3)
Flame retardants	No	(3)
Fixing method	Mechanically fixed through nails	
1.2 <u>Basecoat</u>		
Generic type	Acrylic base coat	
Product reference	Base coat	
Manufacturer / Supplier	Ross Roof Group	
Colour	Terracotta & Charcoal	
Thickness (µm)	300	(3)
Surface weight (g/m ²)	560	(3)
Flame retardants	No	(3)
Fixing method	Sprayed	
1.3 <u>Granule</u>		
Material	Stone Granule	
Trade name	Granule	
Manufacturer / Supplier	CL Rock (Terracotta) & Excelsior Grit (Charcoal)	
Thickness (mm)	1,4	(3)
Surface weight (g/m ²)	1760	(3)
Flame retardants	No	(3)
Fixing method	Pored	

1.4 <u>Top Coat</u>		
Generic type	Acrylic overglaze	
Product reference	Glaze	
Manufacturer / Supplier	BASF	
Colour	Clear	
Thickness (µm)	60	(3)
Surface weight (g/m ²)	121	(3)
Flame retardants	No	(3)
Fixing method	Sprayed	

(1) Based on the information given by the sponsor

(2) Values verified by the laboratory

(3) Unverifiable by the laboratory

Summary of tested systems and parameters

	A-1	A-2
Top coat	Clear acrylic overglaze	
Mineral finish	Stone granules	
Base coat + colour	Acrylic (Terracotta)	Acrylic (Charcoal)
Steel	0,39 mm Zinalume	
Support	Wooden battens	

2. TEST REPORTS & RESULTS IN SUPPORT OF THIS EXTENDED APPLICATION

1.1. Test reports

Name of the laboratory	Name of the sponsor	Test report ref. No.	Test date	Test method
WFRGENT N.V. Ghent, Belgium	Tilcor Roof Systems UK	20576A&B	04/09/2020	CEN/TS 1187:2012 – T4

Deviations from test standard: Number of tested samples

1.2. Test samples

Test report ref. No.	Sampling procedure	Conditioning	Number of samples tested
20576A	AVCP 3	According to CEN/TS 1187:2012	2x2
20576B	AVCP 3	According to CEN/TS 1187:2012	4

1.3. Test results

1.3.1. Test results on CEN/TS 1187:2012 – test method 4

Test conditions: 20576A

Test date: 04/09/2020

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

Roof pitch: 45°

PRELIMINARY IGNITION TEST WITH BURNING BRANDS (STAGE 1)

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

(*) Preliminary test corresponding with the penetration test in stage 2

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

Specimen No:	A-1(*)	A-2	Average
Time to fire penetration (min:sec)	Did not penetrate	Did not penetrate	Did not penetrate
Nature of the penetration	N.a.	N.a.	N.a.
Additional observations: Panels did not ignite, carbonization Marked variability between the specimen: None			

(*) reused in the official test 20576B

Test conditions: 20576B

Test date: 04/09/2020

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

Support structure: wooden battens as tested

Roof pitch: 45°

Build-up: Tilcor bond system with the terracotta coloured roof tiles

	Specimen number	Time to fire penetration (min:sec)	Duration of flaming after withdrawal of test flame (min:sec)	Maximum flame spread distance (mm)
Stage 1	1	Did not penetrate	00:00	0
Stage 2	2	Did not penetrate	(-)	(-)
	3	Did not penetrate	(-)	(-)
	4	Did not penetrate	(-)	(-)
	Average	Did not penetrate	(-)	(-)

(-) not applicable

1.4. Additional supporting data used in the extended application process

1.4.1. Observations and additional supporting data

- None

3. **RESULTS OF THE EXTENDED APPLICATION**

3.1. Principles applied for the extension of the field of application

This extended application procedure is based on:

CEN/TS 16459:2019 by use of additional test results which, together with the initial test result, enables consideration of a larger range of one or several product parameters and end-use application parameters.

3.2. Procedure

Under annex D of the above-mentioned standard, extrapolation rules are stated which are relevant to the test method and type of product used for this extrapolation ⁽¹⁾. The paragraphs below are relevant for the extrapolation, performed in this report.

3.2.1 Rules for extrapolation according to §5.2 and annex D of CEN/TS 16459:2013 - method 3

Product / End-use parameter for which an extended application is obtained	Extended application based on CEN/TS 16459:2019	Rule or statement
Product composition	§ 5.5.2 Product composition and formulation/reaction-to-fire classification	"The composition of the product can influence the fire performance."
Colour	§ 5.5.3 Colour (consider also pigment)	"Colour can affect the surface emissivity and absorptivity of the specimen under test. Dark colours might heat up more quickly than light colours or shiny surfaces."

(1) Annex C: "Application rules for test results from CEN/TS 1187 test 3, per product group"

To evaluate the product parameter “Colour” tests were performed according to CEN/TS 1187:2012 on:

- 20576A-1: system with the lightest colour as coating (terracotta)
- 20576A-2: system with the darkest colour as coating (charcoal)

The comparison is based on the reasoning that terracotta is a relevant lighter, more reflective colour and charcoal the darkest and most absorptive.

As a conclusion, the comparative tests showed no difference in results and were all within the Broof(T4) classification criteria, confirmed by the full official test conducted on the lightest product variation (20576A-1). As the coating layers are thin and the contribution towards a fire is low, these results can be considered valid for all colours

4. **EXTENDED APPLICATION RESULTS**

4.1. Application range – product family

This extended application for the product as described in §1.2, is valid for the following end-use applications:

➤ Layer 0: Acrylic overglaze

Product:	Acrylic base coat
Thickness:	300 µm
Surface weight:	560 g/m ²
Colour:	All colours
Fixation	Sprayed

- Layer 1: Granule: all colours allowed
- Layer 2: Zinc alloy base coat: as tested
- Layer 3: Aluzinc metal tile: as tested
- Layer 4: Supporting deck: Timber; as tested

4.2. Fire performance parameters

All products as described in §1.2. and within the field of application as defined in §4.1. , can be considered to obtain reaction to fire test results that are better comply with the following :

PRELIMINARY TEST (STAGE 1)

Parameter	Criteria				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	Yes	Yes	Yes	Yes
Flame spread distance	< 0,38 m	< 0,38 m	< 0,38 m	No limit	Yes	Yes	Yes	Yes
Penetration	None	None	None	None	Yes	Yes	Yes	Yes

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	Compliance			
	Class B _{ROOF} (t4)	Class C _{ROOF} (t4)	Class D _{ROOF} (t4)	Class E _{ROOF} (t4)
Penetration	Yes	Yes	Yes	Yes

5. ADDITIONAL STATEMENT

The extended application results relate to the behaviour of a product/product family under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product/product family in use.

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

PREPARED BY

APPROVED BY

This document is the original version of this extended application 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.