

BRE Global Test Report

BS 476: Part 3: 2004 External fire exposure to roofs test on Flexitec 2020 on 9mm Masterboard calcium silicate base

Prepared for: Res-Tec Ltd
Date: 03 November 2017
Report Number: P108719-1000 Issue 1

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Date 03 November 2017

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1 Objective

To classify the sample described in Section 2 according to its capacity to resist penetration by fire and its spread of flame characteristics, using the external fire exposure to roofs test and criteria specified in BS 476: Part 3: 2004¹.

2 Sample

2.1 Traceability

The test samples were supplied by the client. BRE Global were not involved in the sample selection process and therefore cannot comment upon the relationship between samples supplied for test and the product supplied to market.

2.2 Description of sample and test format.

Unless otherwise stated all measurements are nominal.

Test Sponsor	Res-Tec Ltd Unit 25 Castle Park Industrial Estate, Flint, Flintshire, CH6 5XA
Manufacturer of sample	Res-Tec Ltd
Sample name/reference	Flexitec 2020 on 9mm Masterboard calcium silicate base
Sample description (as provided by test sponsor/manufacturer)	A product description as provided by the test sponsor has been included in this report as appendix A.
Description of sample (as received)	White calcium silicate type board with a light grey textured coating on one face, over all thickness 10.3 to 10.7mm as measured. Thickness of grey layer approximate 1.3 – 1.7mm. Thickness of base approximate 9.0mm.
Sample receipt date	06 June 2017
Test face	Light grey textured coated face.
Test format	The test was carried out in the flat position
Date of test	04 September 2017



3 Conditioning

The specimens were conditioned as required by the standard.

4 Results

4.1 Preliminary ignition test

Specimen reference	Joint	Ambient	Flame spread mm	Flame duration min:s	Penetration min:s
E10085-1	None	20.4°C 77.8%RH	Nil	Nil	None

4.2 Spread of flame test

Specimen reference	Joint	Ambient	Flame spread mm	Flame duration min:s
E10085-5	None	26.6°C 90.1%RH	0mm (under pilot only)	4:47
E10085-6	None	27.1°C 91.5%RH	0mm (under pilot only)	5:29
E10085-7	None	27.8°C 88.7%RH	0mm (under pilot only)	5:18

The mean flame spread was 0mm



4.3 Penetration test

Specimen reference	Joint	Ambient	Penetration min:s	Observations
E10085-2	None	20.4°C 77.8%RH	Nil	No significant observations
E10085-3	None	27.3°C 88.8%RH	Nil	No significant observations
E10085-4	None	27.5°C 91.6%RH	Nil	No significant observations

4.4 Observations

No dripping of material occurred from the underside of any specimen tested, nor was any mechanical failure, or development of holes, observed.

5 Designation of specimens

The designation of specimens subject to conditions of external fire shall be according to both the time of penetration and the distance of spread of flame along their external surface.

Each category designation shall consist of two letters, e.g. AA, AC, BB, these being determined as follows:

First letters:

- A. Those specimens which have not been penetrated within 1 hour.
- B. Those specimens which are penetrated in not less than ½ hour.
- C. Those specimens which are penetrated in less than ½ hour.
- D. Those specimens which are penetrated in the preliminary flame ignition test.

Second letters:

- A. Those specimens on which there is no spread of flame.
- B. Those specimens on which there is not more than 533mm spread of flame.
- C. Those specimens on which there is more than 533mm spread of flame.
- D. Those specimens which continue to burn for 5 minutes after the withdrawal of the test flame or spread more than 381mm across the region of burning in the preliminary test.



- 5.3 Attention shall be drawn to dripping from the underside of the specimen, any mechanical failures, and any development of holes, by adding a suffix 'X' to the designation to denote that one or more of these took place during the test.
- 5.4 When it is required to indicate test results obtained on the sample by designation, the following method shall be used:

The designation letter for penetration shall be given followed by that for spread of flame and preceded by the letters EXT.F. or EXT.S. according to whether the flat or inclined test has been made and when necessary the suffix 'X' shall be added. Thus, for example:

EXT.F.AA; EXT.F.ACX;

EXT.S.BA; EXT.S.CCX.

6 Conclusion

The sample described in section 2 of this report, when tested in accordance with British Standard 476: Part 3: 2004 Incorporating Amendment 1: 2006 and Amendment 2: 2007, achieved the designation of **EXT.F.AA**.

7 Validity

The specification and interpretation of fire test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over 5 years old should be considered by the user. The laboratory that issued the report will be able to offer, on behalf of the legal owner, a review of the procedures adopted for a particular test to ensure that they are consistent with current practices, and if required may endorse the test report.

8 Reference

- 1 British Standard 476-3: 2004. Fire tests on building materials and structures. Part 3. Classification and method of test for external fire exposure to roofs. British Standards Institution, London, 2007.



Appendix A

The following is a product definition sheet provided by the test sponsor.

PRODUCT DEFINITION

Trade name	Flexitec 2020
Product reference/number	N/A
Manufacturer	Res-Tec Ltd
General description	Liquid Applied Flexible Polyester Roof Waterproofing System
Thickness	1.7mm (nominal)
Density or mass per unit area	2.38kg/m ²
Flame retardant treatment used in production of product	Aluminium Oxide Trihydrate
Test face (layer 1)- - Name/reference - Type - Thickness - Mass per unit area - Colour	Flexitec 2020 (Batch No. FT0410012) Liquid Applied Flexible Polyester 0.5mm 0.71kg/m ² (with catalyst) Light Grey
Layer 2 - Name/reference - Type - Thickness - Mass per unit area - Colour	Flexitec 2020 (Batch No. FT0410012) Liquid Applied Flexible Polyester Resin 0.85mm (without reinforcement) 1.22kg/m ² (with catalyst) Light Grey
Layer 3 (Note: within Layer 2) - Name/reference - Type - Thickness - Mass per unit area - Colour	Fibreglass Chopped Strand Mat Chopped Strand Glass reinforcing Mat Note 1 225g/m ² Note 1
Layer 4 - Name/reference - Type - Thickness - Mass per unit area - Colour	Flexitec Primer (Batch No. UN1303112) Note 1 0.2mm 0.22kg/m ² (with catalyst) White
Layer 5 - Name/reference - Type - Thickness - Mass per unit area - Colour	Masterboard Calcium Silicate 9mm 9kg/m ² Note 1

Note 1: This information was not provided by the test sponsor.

BRE Global Test Report

CEN/TS 1187: 2012 Test 4 External fire exposure to roofs test on Flexitec 2020 on 9mm Masterboard calcium silicate base

Prepared for: Res-Tec Ltd
Date: 30 October 2017
Report Number: P108719-1001 Issue 1

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Position Section Leader, Reaction to Fire

Date 03 November 2017

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1 Objective

To determine the capacity to resist penetration by fire of the sample described in Section 2 using the external fire exposure to roofs test specified in CEN/TS 1187: 2012 Test 4¹.

2 Sample

2.1 Traceability

The test samples were supplied by the client. BRE Global were not involved in the sample selection process and therefore cannot comment upon the relationship between samples supplied for test and the product supplied to market.

2.2 Description of sample and test format.

Unless otherwise stated all measurements are nominal.

Test Sponsor	Res-Tec Limited Unit 25, Castle Park Industrial Estate, Flint, Flintshire, CH6 5XA
Manufacturer of sample	Res-Tec Ltd
Sample name/reference	Flexitec 2020 on 9mm Masterboard calcium silicate base
Sample description (as provided by test sponsor/manufacturer)	A product description as provided by test sponsor has been included in this report as Appendix A.
Description of sample (as received)	White calcium silicate type board with a grey textured coating on one face, over all thickness 10.3 to 10.7mm as measured. Thickness of grey layer approximate 1.3 – 1.7mm. Thickness of base approximate 9.0mm.
Sample receipt date	06 June 2017
Test face	Light grey textured coated face.
Test format	The test was carried out in the flat position
Date of test	04 September



3 Conditioning

The specimens were conditioned as required by the standard.

4 Results

4.1 Preliminary ignition test

Specimen reference	Joint	Ambient	Flame spread mm	Flame duration min:s	Penetration min:s
E10085-1	None	20.4°C 77.8%RH	Nil	Nil	None

4.2 Penetration test

Specimen reference	Joint	Ambient	Penetration min:s	Observations
E10085-2	None	20.4°C 77.8%RH	Nil	No significant observations
E10085-3	None	27.3°C 88.8%RH	Nil	No significant observations
E10085-4	None	27.5°C 91.6%RH	Nil	No significant observations

4.3 Observations

No dripping of material occurred from the underside of any specimen tested, nor was any mechanical failure, or development of holes, observed.



5 Conclusion

CEN/TS 1187: 2012 does not contain acceptance criteria and therefore this test report does not indicate a pass or fail of the product.

6 Validity

The specification and interpretation of fire test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over 5 years old should be considered by the user. The laboratory that issued the report will be able to offer, on behalf of the legal owner, a review of the procedures adopted for a particular test to ensure that they are consistent with current practices, and if required may endorse the test report.

7 Reference

- 1 CEN/TS 1187: 2012. Test methods for external fire exposure to roofs. Test 4 – Two stage method incorporating burning brands, wind and supplementary radiant heat. CEN, Avenue Marnix 17, B-1000, Brussels, Belgium.



Appendix A

A product description table as supplied by the test sponsor:-

PRODUCT DEFINITION

Trade name	Flexitec 2020
Product reference/number	N/A
Manufacturer	Res-Tec Ltd
General description	Liquid Applied Flexible Polyester Roof Waterproofing System
Thickness	1.7mm (nominal)
Density or mass per unit area	2.38kg/m ²
Flame retardant treatment used in production of product	Aluminium Oxide Trihydrate
Test face (layer 1)- - Name/reference - Type - Thickness - Mass per unit area - Colour	Flexitec 2020 (Batch No. FT0410012) Liquid Applied Flexible Polyester 0.5mm 0.71kg/m ² (with catalyst) Light Grey
Layer 2 - Name/reference - Type - Thickness - Mass per unit area - Colour	Flexitec 2020 (Batch No. FT0410012) Liquid Applied Flexible Polyester Resin 0.85mm (without reinforcement) 1.22kg/m ² (with catalyst) Light Grey
Layer 3 (Note: within Layer 2) - Name/reference - Type - Thickness - Mass per unit area - Colour	Fibreglass Chopped Strand Mat Chopped Strand Glass reinforcing Mat Note 1 225g/m ² Note 1
Layer 4 - Name/reference - Type - Thickness - Mass per unit area - Colour	Flexitec Primer (Batch No. UN1303112) Note 1 0.2mm 0.22kg/m ² (with catalyst) White
Layer 5 - Name/reference - Type - Thickness - Mass per unit area - Colour	Masterboard Calcium Silicate 9mm 9kg/m ² Note 1

Note 1: This information was not provided by the test sponsor.

BRE Global Classification Report

Classification report for roofs/roof coverings exposed to external fire in accordance with EN 13501-5: 2005 + A1:2009 on Flexitec 2020 on 9mm Masterboard calcium silicate base

Prepared for: Res-Tec Ltd
Date: 03 November 2017
Report Number: P108719-1002 Issue 1

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Name J Hunter

Position Section Leader, Reaction to Fire

Date 03 November 2017

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BRE Global

EXTERNAL EXPOSURE TO FIRE CLASSIFICATION REPORT OF Flexitec 2020 on 9mm Masterboard calcium silicate base.

Classification report No.:	P108719-1002
Issue number:	1
Sponsor:	Res-Tec Ltd, Unit 25, Castle Park Industrial Estate, Flint, Flintshire, CH6 5XA
Product name:	Flexitec 2020 on 9mm Masterboard calcium silicate base
Prepared by:	BRE Global Ltd., Bucknalls Lane, Garston, Watford, WD25 9XX, England.
Notified Body Number	0832
Date of issue:	03 November 2017

This classification report consists of nine pages and may only be used or reproduced in its entirety



1 Introduction

This classification report defines the classification assigned to roof/roof covering Flexitec 2020 on 9mm Masterboard calcium silicate base in accordance with the procedures given in EN 13501-5: 2005 + A1: 2009¹.

2 Description of the roof/roof covering

2.1 Traceability

The test samples were supplied by the client. BRE Global were not involved in the sample selection process and therefore cannot comment upon the relationship between samples supplied for test and the product supplied to market.

2.2 Description of sample and test format.

Unless otherwise stated all measurements are nominal.

Test Sponsor	Res-Tec Limited, Unit 25, Castle Park Industrial Estate, Flint, Flintshire, CH6 5XA
Manufacturer of sample	Res-Tec Ltd
Sample name/reference	Flexitec 2020 on 9mm Masterboard calcium silicate base
Sample description (as provided by test sponsor/manufacturer)	A product description as provided by test sponsor has been included in this classification report as Appendix A.
Description of sample (as received)	White calcium silicate type board with a grey textured coating on one face, over all thickness 10.3 to 10.7mm as measured. Thickness of grey layer approximate 1.3 – 1.7mm. Thickness of base approximate 9.0mm.
Test face	Light grey textured coated face.
Test format	The test was carried out in the flat position



Reports in support of classification

Name of Laboratory	Name of sponsor	Test report ref. no.	Test method
BRE Global	Res-Tec Ltd	P108719-1001	CEN/TS 1187: 2012 Test 4

3 Test results in support of classification

3.1 Test conditions:

Test pitch: Flat
Deck: As product description, Section 2
Supporting structure: As product description, Section 2



3.2 Preliminary test (stage 1)

Parameter	Criteria				Test result	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	0 sec	Y	-	-	-
Flame spread distance	< 0,38m	< 0,38m	< 0,38m	No limit	0 mm	Y	-	-	-
Penetration	None	None	None	None	None	Y	-	-	-

3.3 Penetration test (stage 2)

Parameter	Criteria				Test results				Compliance			
	Class B _{ROOF(t4)}	Class C _{ROOF(t4)}	Class D _{ROOF(t4)}	Class E _{ROOF(t4)}	Specimen 1	Specimen 2	Specimen 3	Mean*	Class B _{ROOF(t4)}	Class C _{ROOF(t4)}	Class D _{ROOF(t4)}	Class E _{ROOF(t4)}
Penetration time	≥ 60 min	< 60 min ≥ 30 min	<30 min	< 30 min	60 min	60 min	60 min	60 min	Y	-	-	-

* 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



4 Classification and field of application

4.1 Reference of classification

This classification has been carried out in accordance with EN 13501-5: 2005 + A1: 2009¹.

4.2 Classification

The roof/roof covering Flexitec 2020 on 9mm Masterboard calcium silicate base in relation to its external fire performance is classified:

B_{ROOF}(t4)

4.3 Field of application

This classification is valid for the following conditions:

Range of pitches: $0^\circ \leq \text{pitch} \leq 10^\circ$

Deck and supporting structure: 9mm Masterboard calcium silicate ba

The classification is valid only for the deck and supporting structure tested.

5 Limitations

This classification document does not represent type approval or certification of the product.

This classification document has been written with reference to a test carried out to CEN/TS 1187: 2012, which supersedes ENV 1187: 2002 and is expected to be recognised in any update to EN 13501-5: 2005 + A1: 2009. There is no change to the test procedure in CEN/TS 1187: 2012 Test 4. Therefore, this test is also compliant with the ENV 1187: 2002, which is the method specified in this classification standard, EN 13501-1: 2005 + A1: 2009.

The specification and interpretation of fire test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons, it is recommended that the relevance of test and classification reports over five years old should be considered by the user. The laboratory that issued the report will be able to offer, on behalf of the legal owner, a review of the procedures adopted for a particular test or classification to ensure that they are consistent with current practices, and if required may endorse the report.



6 Reference

- 1 EN 13501-5: 2005 + A1: 2009 Fire classification of construction products and building elements – Part 5: Classification using data from external fire exposure to roofs tests. CEN, Avenue Marnix 17, B-1000, Brussels, Belgium. 2009.
- 2 CEN/TS 1187: 2012 Test methods for external fire exposure to roofs. Test 4 – Two stage method incorporating burning brands, wind and supplementary radiant heat. CEN, Avenue Marnix 17, B-1000, Brussels, Belgium. 2012.
- 3 ENV 1187: 2002 + A1: 2005. Test methods for external fire exposure to roofs. Test 4 – Two stage method incorporating burning brands, wind and supplementary radiant heat. CEN, Avenue Marnix 17, B-1000, Brussels, Belgium. 2002



Appendix A Test Sponsor's Product Description

A product description table as supplied by the test sponsor:-

PRODUCT DEFINITION

Trade name	Flexitec 2020
Product reference/number	N/A
Manufacturer	Res-Tec Ltd
General description	Liquid Applied Flexible Polyester Roof Waterproofing System
Thickness	1.7mm (nominal)
Density or mass per unit area	2.38kg/m ²
Flame retardant treatment used in production of product	Aluminium Oxide Trihydrate
Test face (layer 1)- - Name/reference - Type - Thickness - Mass per unit area - Colour	Flexitec 2020 (Batch No. FT0410012) Liquid Applied Flexible Polyester 0.5mm 0.71kg/m ² (with catalyst) Light Grey
Layer 2 - Name/reference - Type - Thickness - Mass per unit area - Colour	Flexitec 2020 (Batch No. FT0410012) Liquid Applied Flexible Polyester Resin 0.85mm (without reinforcement) 1.22kg/m ² (with catalyst) Light Grey
Layer 3 (Note: within Layer 2) - Name/reference - Type - Thickness - Mass per unit area - Colour	Fibreglass Chopped Strand Mat Chopped Strand Glass reinforcing Mat Note 1 225g/m ² Note 1
Layer 4 - Name/reference - Type - Thickness - Mass per unit area - Colour	Flexitec Primer (Batch No. UN1303112) Note 1 0.2mm 0.22kg/m ² (with catalyst) White
Layer 5 - Name/reference - Type - Thickness - Mass per unit area - Colour	Masterboard Calcium Silicate 9mm 9kg/m ² Note 1

Note 1: This information was not provided by the test sponsor.