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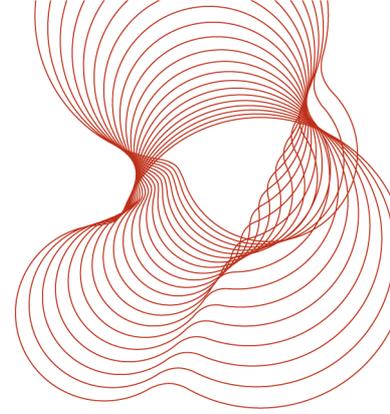
**BS 476: Part 3: 2004 test  
on SureSeal EPDM  
1.2mm on a plywood  
deck**

Prepared for:  
Flex-R Ltd  
Unit 5 Central Park  
Bellfield Road  
High Wycombe  
Bucks  
HP13 5HG

5<sup>th</sup> December 2012  
Test report number 281504B  
revision 1



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**Prepared on behalf of BRE Global by**

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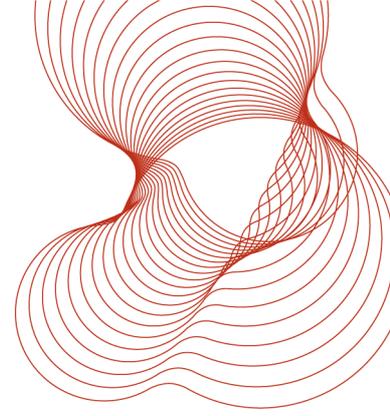
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This report is made on behalf of BRE Global. By receiving the report and action on it, the client accepts that no individual is personally liable in contract, tort or breach of statutory duty (including negligence). No third party has any right to rely on this report.



## 1 Objective

To classify the sample specified in Section 2 according to its capacity to resist penetration by fire and its spread of flame characteristics, as shown by the external fire exposure roof test and criteria of BS 476: Part 3: 2004<sup>1</sup>.

## 2 Sample

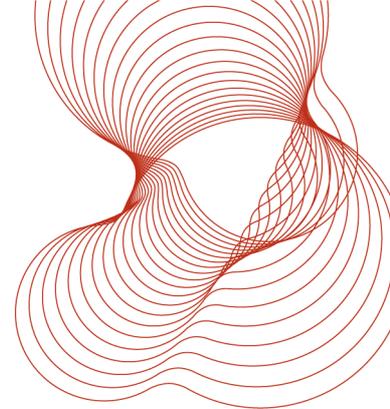
### 2.1 Traceability

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	Flex-R Ltd Unit 5 Central Park Bellfield Road High Wycombe Bucks HP13 5HG
Manufacturer of sample	Carlisle SynTec EPDM Membranes
Sample name/reference	SureSeal EPDM 1.2mm on a plywood deck
Sample description (as provided by test sponsor/manufacturer)	Details of the sample provided by the sponsor are given in Annex 1
Description of sample (as received)	Dark grey membrane, 1.08mm thick , adhered to 18.3mm thick plywood
Sample receipt date	6 <sup>th</sup> August 2012
Test face	Membrane face
Test format	The test was carried out in the flat position
Date of test	3 <sup>rd</sup> 7 <sup>th</sup> September 2012



### 3 Conditioning

The specimens were conditioned as required by the standard.

### 4 Results

#### 4.1 Preliminary ignition test

Specimen reference	Joint	Flame spread mm	Flame duration min:s	Penetration min:s
E5186-6	None	0	0:00	None

#### 4.2 Spread of flame test

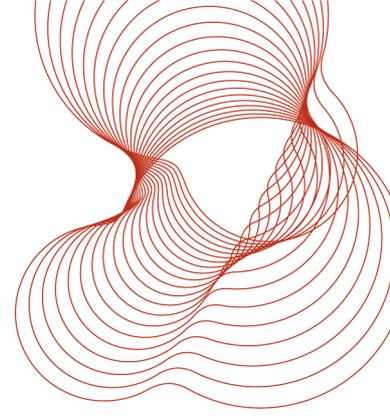
Specimen reference	Joint	Flame spread mm	Flame duration min:s
E5186-1	Membrane	0	8:40
E5186-2	Membrane	30	6:27
E5186-3	Membrane	160	30.03

The mean flame spread was 63mm

#### 4.3 Penetration test

Specimen reference	Joint	Penetration min:s	Observations
E5186-7	Apparent pre-made joint in membrane	None	No ignition, large bulge in membrane
E5186-4	None	None	No ignition, large bulge in membrane
E5186-5	Membrane	None	Ignited at joint, large bulge in membrane

4.4 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

- 5.1 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.
- 5.2 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.

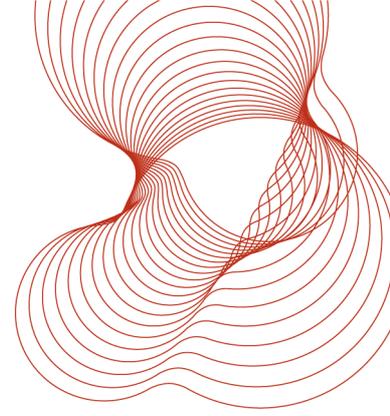
### Second letters:

- 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

A sample as described in this report, when tested in accordance with BS 476 : Part 3 : 2004<sup>1</sup>, achieved the designation of EXT.F.AB.

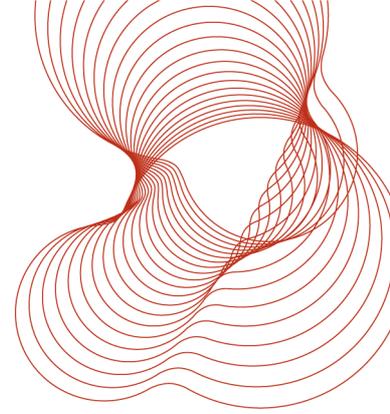
## 7 Validity

This report is revision 1 of BRE report 281504B dated 25<sup>th</sup> September 2012. At the request of the client, a correction to the product description has been made in this report. BRE report 281504B dated 25<sup>th</sup> September 2012 has been withdrawn with effect from the date of this report.

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



## Annex 1

General description		SURESEAL 1.2mm EPDM /PLYWOOD
Product reference		SURESEAL 1.2mm EPDM
Specimen configuration		SURESEAL 1.2mm EPDM/PLY
Overall thickness		20MM
Overall weight per unit area		11.5KG
Waterproofing membrane (Test Face)	General description of membrane	1.2MM EPDM
	Product reference of membrane	SURESEAL 1.2mm EPDM
	Overall weight per unit area	1.0 KG
	Overall thickness of	1.2MM
	Generic type	EPDM
	Name of manufacturer	CARLISLE SYNTEC
	Colour reference	SLATE GREY
	Trade name of flame retardant	OPTION 4
	Generic type of flame retardant	OPTION 4
	Amount of flame retardant	OPTION 4
Bonding details (membrane to plywood)		
Adhesive	Product reference	WBA
	Generic type	ACRYLIC ADHESIVE
	Name of manufacturer	OPTION 3
	Application rate	250ML/M2
	Colour reference	WHITE
	Trade name of flame retardant	OPTION 4
	Generic type of flame retardant	OPTION 4
	Amount of flame retardant	OPTION 4
Deck	Product reference	PLYWOOD
	Generic type	PLYWOOD
	Name of manufacturer	OPTION 2
	Thickness	18MM
	Density / weight per unit area	10.50KG
	Colour reference	BROWN
	Trade name of flame retardant	OPTION 4
	Generic type of flame retardant	OPTION 4
	Amount of flame retardant	OPTION 4

OPTION 1. – The sponsor was unwilling to provide this information.

OPTION 2. – The sponsor was unable to provide this information.

OPTION 3. – The sponsor of the test has provided this information but at the specific request of the sponsor, these details have been omitted from the report and are instead held on the confidential file relating to this investigation.

OPTION 4. - The sponsor of the test has confirmed that no flame retardant additives were utilised in the production of the product / component.

=====REPORT ENDS=====