BRE Global Test Report

EN 13823 Single Burning Item (SBI) test on ARMARK PUREZONE60

Prepared for: Armadillo Marketing Limited T/A Armadillo Lighting

Date: 26 January 2021

Report Number: P119024-1000 Issue 1

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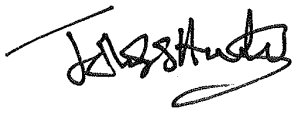
Signature 

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1 Objective

To assess the performance of the sample described in Section 2 of this report when subjected to the tests specified in EN 13823: 2010 + A1: 2014[1].

2 Sample

2.1 Traceability

The test sample was supplied by the test sponsor. BRE Global was not involved in the sample selection process and therefore cannot comment upon the relationship between the sample supplied for test and the product supplied to market. The results apply to the sample as received.

2.2 Description of sample and test format

Unless otherwise stated all measurements are nominal.

Parameter	**Details**
Test sponsor	Armadillo Marketing Limited T/A Armadillo Lighting Bigods Hall Bigods Lane Great Dunmow Essex, CM6 3BE England
Prepared for	Armadillo Marketing Limited T/A Armadillo Lighting Bigods Hall Bigods Lane Great Dunmow Essex, CM6 3BE England
Manufacturer of sample	Hexis S.A. ZI Horizons Sud 34110 Frontignan France
Place of manufacture	Note 1
Trade name	ARMARK PUREZONE60
Sample reference	ARMARK PUREZONE60
Sample description (as provided by test sponsor/manufacturer)	Self-adhesive anti-microbial film made of: • Acrylic adhesive • PVC film
Description of sample (as received)	A transparent film applied to a nominal 2 mm-thick aluminium sheet.
Test sponsor's product data	
Generic type of product	Cast polymeric PVC containing antimicrobial agents coated with pressure-sensitive acrylic adhesive.

Parameter	Details
Nominal thickness (mm)	0.105
Nominal mass per unit area (kg/m²)	0.120
Colour	Transparent
Flame retardant treatment added, or organic content limited during production (yes/no)	Note 1
European product standard, if applicable	Note 1
Film	
Generic type of film	Cast polymeric PVC containing antimicrobial agents
Manufacturer	Note 1
Finish	Gloss
Nominal thickness (µm)	60
Nominal density (kg/m³)	Note 1
Nominal mass per unit area (kg/m²)	Note 1
Colour	Transparent
Adhesive	
Generic type of adhesive	Solvent-based, pressure-sensitive, acrylic-based adhesive (present on the film).
Manufacturer	Note 1
Nominal thickness (µm)	40
Nominal density (kg/m³)	Note 1
Nominal mass per unit area (g/m²)	40
Colour	Transparent
Substrate and ventilation conditions	
Generic type of substrate	Aluminium sheet
Manufacturer	Note 1
Nominal thickness (mm)	2
Nominal density (kg/m³)	2700
Nominal mass per unit area (kg/m²)	5.4
Type of air gap	None
Measured sample data, determined by BRE Global, measured at a temperature of 23 ± 3 °C and at a relative humidity of 50 ± 5 %	
Mean sample thickness (mm)	EN 13823: 2.00 EN ISO 11925-2: 2.01 (range 2.00 to 2.01) Substrate: 1.91 Dry film: 0.10 (range 0.09 to 0.10)

Parameter	Details
Mean sample mass per unit area (kg/m²)	EN 13823: 5.26 (range 5.26 to 5.27) EN ISO 11925-2: 5.27 (range 5.26 to 5.27) Substrate: 5.15 (range 5.14 to 5.15) Film: 0.12
Mean sample mass per unit area of dry film (g/m²)	117.22 (range 116.37 to 118.08)
Test information	
Face to be tested	Film face
Orientation aspects	Not applicable
Test sponsor's sampling identification	Note 1
BRE Global sample number	E13163
Sample receipt date	02 November 2020
Date into conditioning	02 November 2020
Date of test	18 November 2020
Additional information	Purchase Order: PROD.:10527 dated 14/10/2020

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

2.3 Description of substrate and fixing

The test specimen was self-adhered to a nominal 2 mm-thick, 2700 kg/m³ aluminium sheet using a solvent-based, pressure-sensitive, acrylic-based adhesive (present on the back face of the film).

2.4 Jointing details

There were no joints in the test specimen, other than the corner joint.

2.5 Mounting technique

The back face of the test specimen (sample and substrate) were mounted directly against the front face of a calcium silicate backing board.

3 Conditioning

The test specimens were conditioned as required by the test standard.

4 Results

4.1 Tabulated data

Table 1: Event summary

Event	Occurrence of event (Yes/No)		
Run Number	1	2	3
Calorimeter code	S181120c	S181120d	S181120e
Occurrence of a surface flash	No	No	No
Smoke from the specimen not entering the hood during the test	No	No	No
Falling of parts of the specimen	No	No	No
Development of a gap in the corner (mutual fixing of backing boards fails)	No	No	No
Occurrence of one or more conditions which justify an early termination of the test	No	No	No
Distortion (1) or collapse (2) of the specimen	Yes (1)*	Yes (1)*	Yes (1)*
Test duration (s)	1560	1560	1560
Any other event	See observations		

* The aluminium substrate on the short wing bowed during the test.

Note:

Specimens with an average rate of smoke production value, RSP_{av}, of not more than 0.1 m²/s during the total test period or a total smoke production value of not more than 6 m² over the total test period have a SMOGRA value of zero.

The fire growth rate indices are calculated only for that part of the exposure period in which the threshold levels for $RHR_{av}(t)$ and THR have been exceeded. If one or both threshold values are not exceeded during the exposure period, FIGRA is equal to zero. The threshold value used for $RHR_{av}(t)$ is 3 kW. Two different THR threshold values are used, resulting in $FIGRA_{0.2MJ}$ and $FIGRA_{0.4MJ}$.

Values of THR_{600s} and TSP_{600s} refer to a time of 600 s after the flame has been applied to the specimen. This is 300 s after the start of the test, and therefore represents a time of 900 s in the graphs presented below.

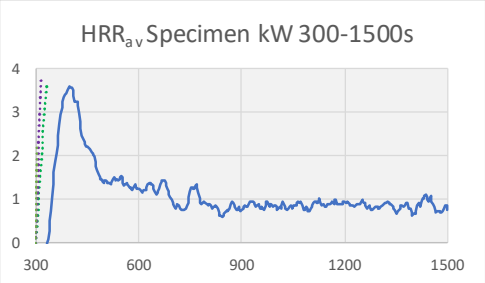
The results of a test are not valid for classification purposes when an early termination of the test has occurred.

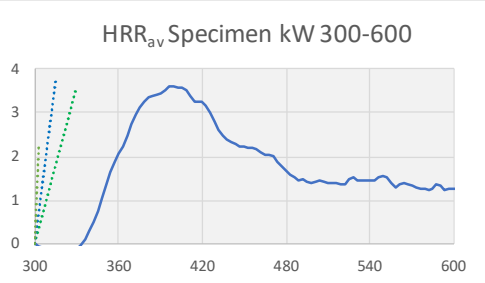
4.2 Observations

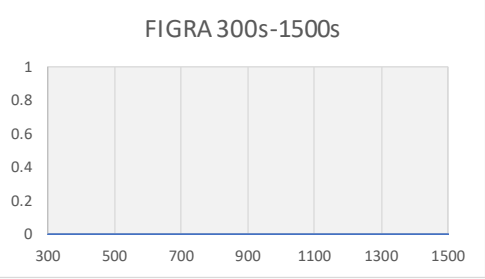
Run	Comments
1	301s: The main burner was ignited. 360s: The film had begun to delaminate in the corner area. The short wing was slightly bowed. 393s: Surface flaming was observed along the periphery of the damaged area. 579s: Non-flaming debris was observed on the trolley floor, this consisted of the charred polymeric film. 633s: Surface flaming was observed along the periphery of the damaged area. 768s: Non-flaming debris was observed on the trolley floor. 1272s: Non-flaming debris was observed on the trolley floor.
2	302s: The main burner was ignited. 351s: The film had delaminated in the flame impingement area. 372s: Surface flaming was observed along the periphery of the damaged area. 399s: The short wing was slightly bowed in the corner area. 693s: Non-flaming debris was observed on the trolley floor. 810s: Non-flaming debris was observed on the trolley floor. 876s: Non-flaming debris was observed on the trolley floor. 894s: Non-flaming debris was observed on the trolley floor.
3	301s: The main burner was ignited. 357s: The film had delaminated in the flame impingement area. 396s: Surface flaming was observed along the periphery of the damaged area. 570s: Surface flaming was observed for a duration of approximately two to three seconds. 651s: Surface flaming was observed at the edge of the damaged area for a duration of approximately five seconds. 1062s: Non-flaming debris was observed within the burner zone. 1329s: Non-flaming debris was observed on the trolley floor.

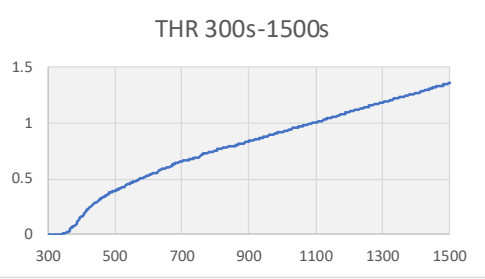
4.3 Graphical outputs and summary data

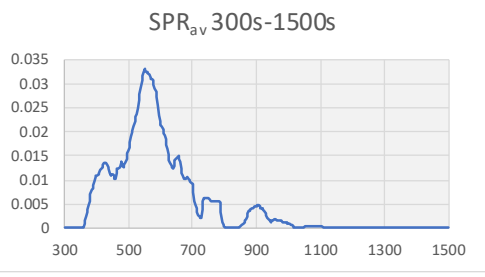
General Information		**Product**	
Product Identification	ARMARK PUREZONE60 self-adhesive PVC film	Sample number	E13163
		Substrate	2mm aluminium sheet
Standard used	BS EN 13823	Mounting	Self-adhesive
Date of test	18/11/2020	Joints	None
Filename	s181120c.rw1		
Report reference	P119024-1000		
		Conditioning	
Laboratory		Conditioned	Yes
Laboratory name	BRE Global	Time interval	Held on file
Operator	C A Rock	Weight 1 (g)	Held on file
		Weight 2 (g)	Held on file
Test Results			
THR_{600}	0.84	**Additional Information**	
$FIGRA_{0.2MJ}$	28.5	Time to $FIGRA_{0.2MJ}$ (s)	414
$FIGRA_{0.4MJ}$	0.0	Time to $FIGRA_{0.4MJ}$ (s)	#N/A
TSP_{600}	6.2	Time to SMOGRA (s)	#N/A
SMOGRA	0.0		
Comments			
LFSedge {Y/N}	No		
FDP (f =< 10s) {Y/N}	No	**Chart Legend**	
FDP (f > 10s) {Y/N}	No	B FIGRA Threshold	
Full test duration/performed {Y/N}	Yes	C FIGRA Threshold	
Smoke Correction Used	Yes	D FIGRA Threshold	

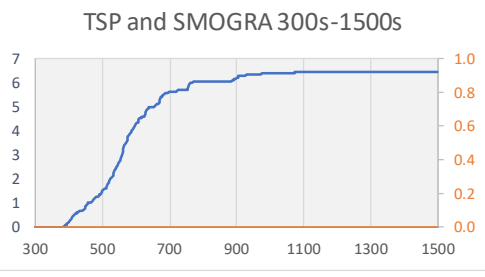




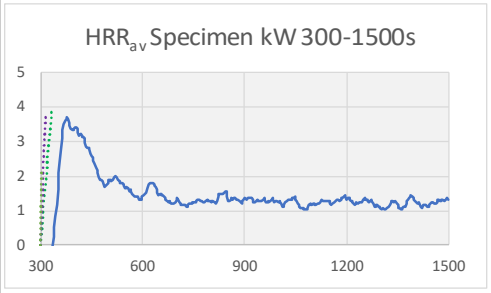


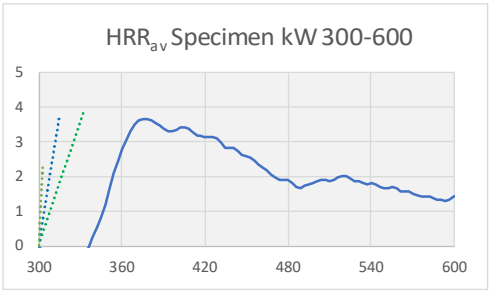


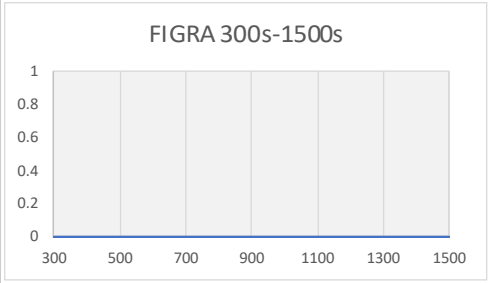


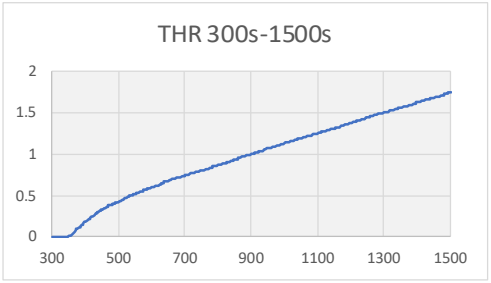


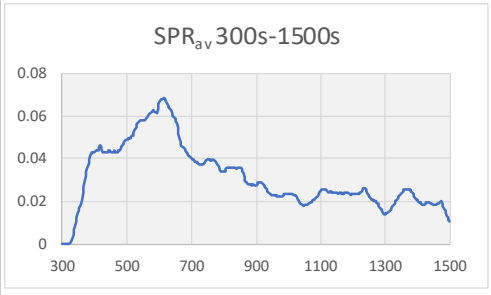
General Information		**Product**	
Product Identification	ARMARK PUREZONE60 self-adhesive PVC film	Sample number	E13163
		Substrate	2mm aluminium sheet
Standard used	BS EN 13823	Mounting	Self-adhesive
Date of test	18/11/2020	Joints	None
Filename	P119024-1000		
Report reference	s181120d		
		Conditioning	
Laboratory		Conditioned	Yes
Laboratory name	BRE Global	Time interval	Held on file
Operator	C A Rock	Weight 1 (g)	Held on file
		Weight 2 (g)	Held on file
Test Results			
THR_{600}	1.00	**Additional Information**	
$FIGRA_{0.2MJ}$	31.2	Time to $FIGRA_{0.2MJ}$ (s)	408
$FIGRA_{0.4MJ}$	0.0	Time to $FIGRA_{0.4MJ}$ (s)	#N/A
TSP_{600}	24.7	Time to SMOGRA (s)	#N/A
SMOGRA	0.0		
Comments			
LFSedge {Y/N}	No		
FDP (f =< 10s) {Y/N}	No	**Chart Lengend**	
FDP (f > 10s) {Y/N}	No	B FIGRA Threshold	
Full test duration/performed {Y/N}	Yes	C FIGRA Threshold	
Smoke Correction Used	Yes	D FIGRA Threshold	

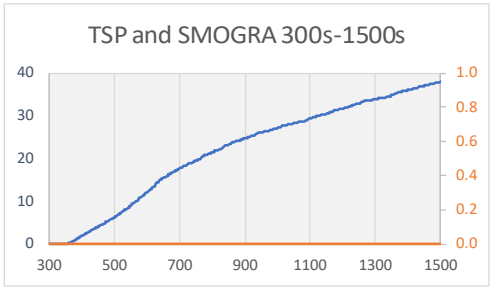




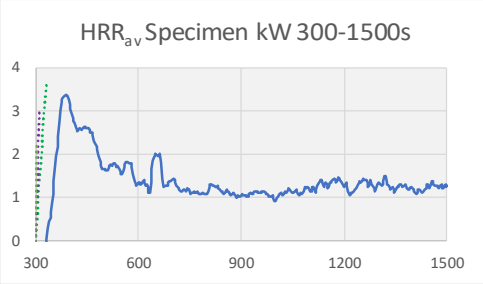


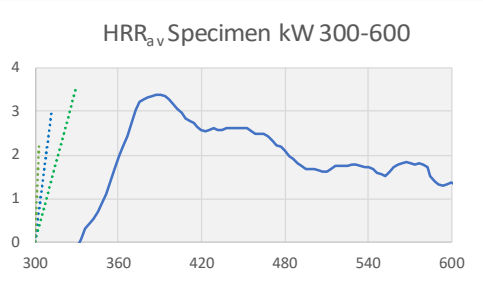


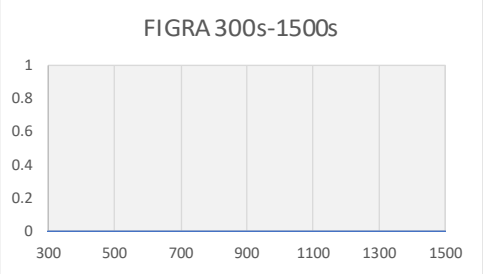


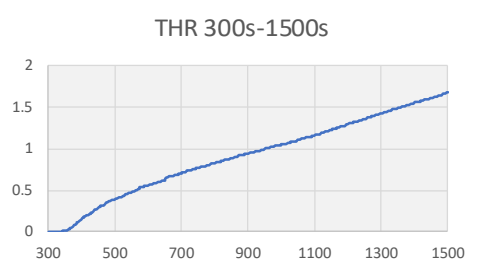


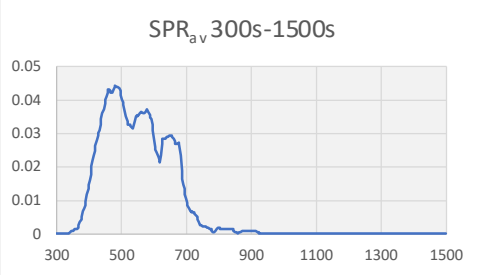
General Information		**Product**	
Product Identification	ARMARK PUREZONE60 self-adhesive PVC film	Sample number	E13163
		Substrate	2mm aluminium sheet
Standard used	BS EN 13823	Mounting	Self-adhesive
Date of test	18/11/2020	Joints	None
Filename	s181120e.rw1		
Report reference	P119024-1000		
		Conditioning	
Laboratory		Conditioned	Yes
Laboratory name	BRE Global	Time interval	Held on file
Operator	C A Rock	Weight 1 (g)	Held on file
		Weight 2 (g)	Held on file
Test Results			
THR_{600}	0.94	**Additional Information**	
$FIGRA_{0.2MJ}$	0.0	Time to $FIGRA_{0.2MJ}$ (s)	#N/A
$FIGRA_{0.4MJ}$	0.0	Time to $FIGRA_{0.4MJ}$ (s)	#N/A
TSP_{600}	10.3	Time to SMOGRA (s)	#N/A
SMOGRA	0.0		
Comments			
LFSedge {Y/N}	No		
FDP (f =< 10s) {Y/N}	No	**Chart Legend**	
FDP (f > 10s) {Y/N}	No	B FIGRA Threshold	
Full test duration/performed {Y/N}	Yes	C FIGRA Threshold	
Smoke Correction Used	Yes	D FIGRA Threshold	

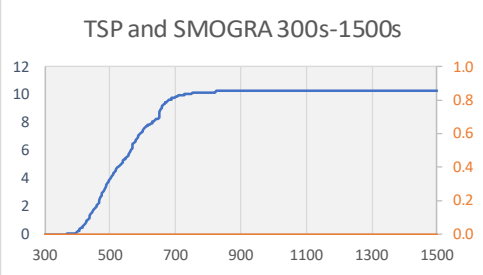










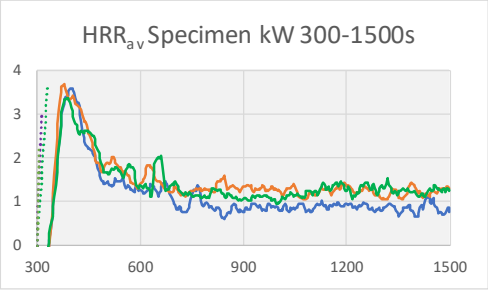


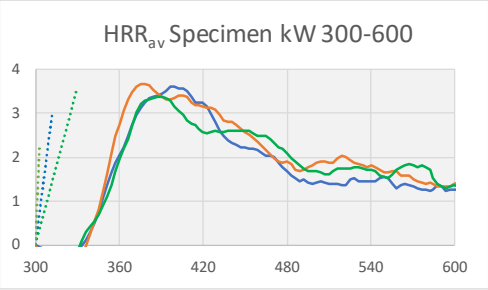
Product Identification	Run 1	Run 2	Run 3
Specimen number	E13163	E13163	E13163
Operator	C A Rock	C A Rock	C A Rock
Date of test	18-Nov-20	18-Nov-20	18-Nov-20
Filename	s181120c.rw1	P119024-1000	s181120e.rw1
THR_{600}	**0.84**	**1.00**	**0.94**
$FIGRA_{0.2MJ}$	**28.5**	**31.2**	**0.0**
$FIGRA_{0.4MJ}$	**0.0**	**0.0**	**0.0**
TSP_{600}	**6.2**	**24.7**	**10.3**
SMOGRA	**0.0**	**0.0**	**0.0**
Time of $FIGRA_{0.2MJ}$ (s)	414	408	#N/A
Time of $FIGRA_{0.4MJ}$ (s)	#N/A	#N/A	#N/A
LFSedge {Y/N}	N	N	N
FDP (f =< 10s) {Y/N}	N	N	N
FDP (f > 10s) {Y/N}	N	N	N
Smoke Correction Used	Yes	Yes	Yes

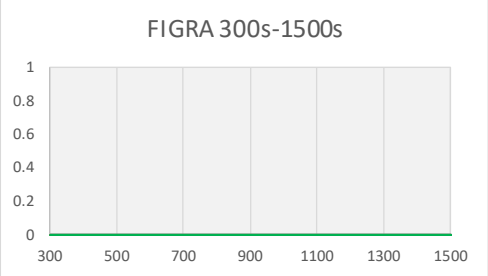
Chart Legend

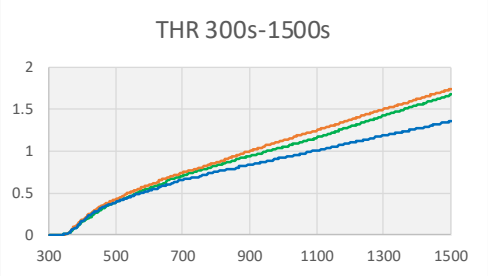
Run 1
Run 2
Run 3
B FIGRA Threshold
C FIGRA Threshold
D FIGRA Threshold

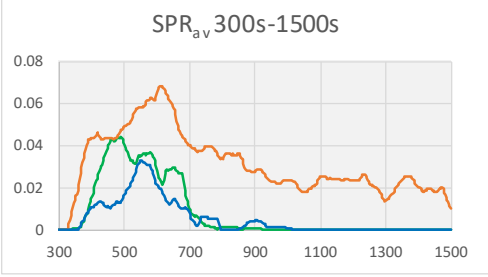
Test Averages	
THR_{600}	0.93
$FIGRA_{0.2MJ}$	19.90
$FIGRA_{0.4MJ}$	0.00
TSP_{600}	13.72
SMOGRA	0.00
LFSedge {Y/N}	N

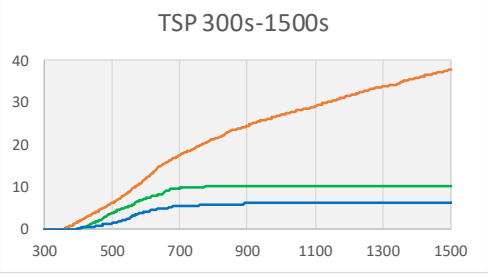












4.4 Photographs

P119024-1000 (Run 1) Pre-test photographs

P119024-1000 (Run 2) Pre-test photographs

P119024-1000 (Run 3) Pre-test photographs

5 Conclusion

EN 13823 does not contain acceptance criteria and therefore this test report does not indicate a pass or fail of the product.

6 Validity

These test results relate to the behaviour of the sample in the form in which it was tested; the results do not necessarily relate to products produced as a result of further processing or refinement of the sample under test.

The test results relate only to behaviour of the test specimens of the product under the particular conditions of test, they are not intended to be the sole criteria for assessing the potential fire hazard of the product in use.

The information in section 2.2 and in Appendix A of this report, other than that indicated otherwise, was supplied by the test sponsor and was not independently verified by BRE Global. The validity of the results is conditional on the accuracy of that data.

7 Reference

1 EN 13823: 2010 + A1: 2014. Reaction to fire tests for building products - Building products excluding floorings exposed to the thermal attack by a single burning item. CEN, Avenue Marnix 17, B-1000 Brussels. 2014.

Report Ends