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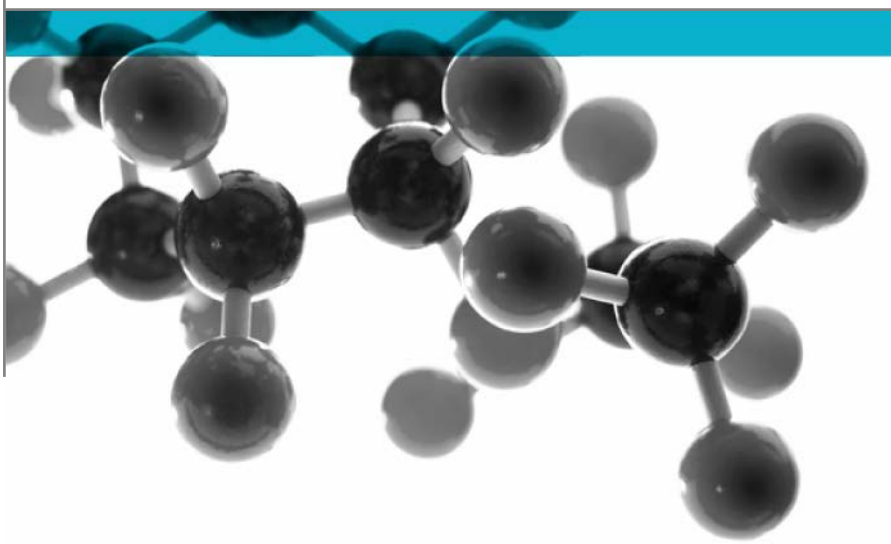
BS 476: Part 6: 1989+A1:2009



Method Of Test For
Fire Propagation For Products

A Report To: Mapei UK Ltd

Document Reference: 403271

Date: 4th October 2018

Issue No.: 1

Testing
Advising
Assuring

UKAS TESTING
0249

Executive Summary

Objective

To determine the performance of the following product when tested in accordance with BS 476: Part 6: 1989+A1: 2009.

Generic Description	Product reference	Thickness or application rate	Weight per unit area or density
Coating system applied to calcium silicate based board	None assigned	14.98mm*	14.97kg/m²*
Individual components used to manufacture composite:			
Top coating	"Mapecoat ACT 196"	2 x 0.15kg/m²	1.2g/cm²
Mesh	"Mapetherm Net"	1mm	160g/m²
Coating	"Planitop 210"	3mm	1310kg/m³
Primer	"Malech"	0.1kg/m²	1.01g/cm³
Substrate	"Promat – Brandschultzbauplatten; Promatect-H"	12mm	870kg/m³
Please see pages 5 & 6 of this test report for the full description of the product tested			

Test Sponsor

Mapei UK Ltd, Mapei House, Steel Park Road, Halesowen, West Midlands, B62 8HD

Test Results:

Fire propagation index, I = 0.1

Sub index, i_1 = 0.0

Sub index, i_2 = 0.0

Sub index, i_3 = 0.1

An uncertainty of measurement estimation has been conducted in relation to the fire propagation index, I and the sub index, i_1. The findings are as detailed in Annex A of this report.

Date of Test

24th August 2018

Signatories

Responsible Officer
T. Mort *
Senior Technical Officer

Authorised
S. Deeming *
Business Unit Head

* For and on behalf of **Exova Warringtonfire**.

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Test Details

Purpose of test

To determine the performance of a product when it is subjected to the conditions of the test specified in BS 476: Part 6: 1989+A1: 2009, "Fire tests on building materials and structures, method for fire propagation for products".

The test was performed in accordance with the procedure specified in BS 476: Part 6: 1989+A1: 2009, and this report should be read in conjunction with that British Standard.

Scope of test

BS 476: Part 6: 1989+A1: 2009 specifies a method of test, the result being expressed as a fire propagation index, that provides a comparative measure of the contribution to the growth of fire made by an essentially flat material, composite or assembly. It is primarily intended for the assessment of the performance of internal wall and ceiling linings.

Fire test study group/EGOLF

Certain aspects of some fire test specifications are open to different interpretations. The Fire Test Study Group and EGOLF have identified a number of such areas and have agreed Resolutions which define common agreement of interpretations between fire test laboratories which are members of the Groups. Where such Resolutions are applicable to this test they have been followed.

Instruction to test

The test was conducted on the 24th August 2018 at the request of Mapei UK Ltd., the sponsor of the test.

Provision of test specimens

The specimens were supplied by the sponsor of the test. **Exova Warringtonfire** was not involved in any selection or sampling procedure.

Conditioning of specimens

The specimens for testing to BS 476: Part 6: 1989+A1: 2009 together with the specimens for testing to BS 476: Part 7: 1997 were received on the 7th August 2018.

Prior to the tests, all of the specimens were conditioned to constant mass at a temperature of 23 ± 2°C and a relative humidity of 50 ± 5%. One specimen from the total sample submitted for test was selected for constant mass verification.

Form in which the specimens were tested

Composite - Combination of materials which are generally recognised in building constructions as discrete entities e.g. coated or laminated materials.

Exposed face

The coated face of the specimens was exposed to the heating conditions of the test.

Description of Test Specimens

The description of the specimens given below has been prepared from information provided by the sponsor of the test. This information has not been independently verified by **Exova Warringtonfire.** All values quoted are nominal, unless tolerances are given.

General description		Coating system applied to calcium silicate based board
Name of manufacturer		Mapei
Overall thickness		14.98mm (determined by **Exova Warringtonfire**)
Overall weight per unit area		14.97kg/m² (determined by **Exova Warringtonfire**)
Top coating	Generic type	Acrylic based paint
	Product reference	"Mapecoat ACT 196"
	Name of manufacturer	Mapei
	Colour reference	"White"
	Number of coats	Two
	Application rate per coat	0.15kg/m²
	Weight per unit area	1.2g/cm²
	Application method	Roller or brush
	Curing process per coat	24 hours touch dry
	Flame retardant details	**See Note 1 below**
Mesh	Generic type	Reinforcing mesh
	Product reference	"Mapetherm Net"
	Name of manufacturer	Mapei
	Colour reference	"White"
	Number of layers	1
	Thickness	1mm
	Cell dimensions	4mm x 4mm
	Weight per unit area	160g/m²
	Flame retardant details	The component is inherently flame retardant
Coating	Generic type	Cement render
	Product reference	"Planitop 210"
	Name of manufacturer	Mapei
	Colour reference	"White"
	Number of coats	One
	Application thickness	3mm
	Density	1310kg/m³
	Application method	Trowel
	Curing process per coat	24 hours touch dry
	Flame retardant details	**See Note 1 below**
Primer	Generic type	Acrylic primer
	Product reference	"Malech"
	Name of manufacturer	Mapei
	Colour reference	"Clear"
	Number of coats	One
	Application rate	0.1kg/m²
	Density	1.01g/cm³
	Application method	Trowel
	Curing process per coat	24hrs touch dry
	Flame retardant details	**See Note 1 below**

Continued on next page

Substrate	Product reference	“Promat – Brandschultzbauplatten; Promatect-H”
	Generic type	Calcium Silicate based board
	Name of manufacturer	Promat
	Thickness	12mm
	Density	870kg/m³
	Flame retardant details	The substrate is inherently flame retardant
Brief description of manufacturing process		Net is applied into wet basecoat material.

Note 1. The sponsor of the test has confirmed that no flame retardant additives were utilised in the production of the component.

Test Results

Results

A total of three specimens were tested. The laboratory record sheet relating to each of the test specimens is appended to this report (refer to Tables 1, 2 and 3).

Throughout the test on each specimen careful observation was made of the product's behaviour within the apparatus and special note was taken of any of the phenomena listed in clause 9.2 of the Standard. None of the listed phenomena was observed and the test results on all three specimens tested were valid.

The following test results were obtained for the product.

Fire propagation index, I	**=**	**0.1**
Sub index, i_1	**=**	**0.0**
Sub index, i_2	**=**	**0.0**
Sub index, i_3	**=**	**0.1**

An uncertainty of measurement estimation has been conducted in relation to the fire propagation index, I and the sub index, i_1. The findings are as detailed in Annex A of this report.

NOTE: If a suffix 'R' is included in the above fire propagation index, I, then this indicates that the results should be treated with caution.

Applicability of test result

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

The test results relate only to the specimens of the product in the form in which they were tested. Small differences in the composition or thickness of the product may significantly affect the performance during the test and may therefore invalidate the test results. Care should be taken to ensure that any product which is supplied or used is fully represented by the specimens which were tested.

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 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 to ensure that they are consistent with current practices, and if required may endorse the test report.

Table 1

Laboratory Record Sheet

FIRE PROPAGATION TEST - BS476:PART 6:1989+A1:2009

Specimen No. : 1 **Date : 24-Aug-18**

Time mins t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts-Tc/10t	Sub Index Of Performance
0.50	12	13	0.00	
1.00	18	20	0.00	
1.50	24	24	0.00	
2.00	29	29	0.00	
2.50	34	34	0.00	
3.00	38	38	0.00	0.00
4.00	69	70	0.00	
5.00	106	110	0.00	
6.00	134	141	0.00	
7.00	159	162	0.00	
8.00	175	181	0.00	
9.00	189	192	0.00	
10.00	200	205	0.00	0.00
12.00	217	222	0.00	
14.00	229	234	0.00	
16.00	237	239	0.00	
18.00	248	244	0.02	
20.00	254	256	0.00	0.02
Total Index of Performance S			**=**	**0.02**

SubIndex s1 **0.00**

SubIndex s2 **0.00**

SubIndex s3 **0.02**

Index of Performance S **0.02**

Table 2

Laboratory Record Sheet

FIRE PROPAGATION TEST - BS476:PART 6:1989+A1:2009

Specimen No. : 2 **Date : 24-Aug-18**

Time mins t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts-Tc/10t	Sub Index Of Performance
0.50	12	14	0.00	
1.00	17	20	0.00	
1.50	25	25	0.00	
2.00	30	31	0.00	
2.50	34	33	0.04	
3.00	38	38	0.00	0.04
4.00	69	71	0.00	
5.00	109	110	0.00	
6.00	138	142	0.00	
7.00	160	161	0.00	
8.00	175	178	0.00	
9.00	190	190	0.00	
10.00	200	201	0.00	0.00
12.00	218	219	0.00	
14.00	230	230	0.00	
16.00	245	238	0.04	
18.00	242	248	0.00	
20.00	247	255	0.00	0.04
Total Index of Performance S			**=**	**0.08**

SubIndex s1 **0.04**

SubIndex s2 **0.00**

SubIndex s3 **0.04**

Index of Performance S **0.08**

Table 3

Laboratory Record Sheet

FIRE PROPAGATION TEST - BS476:PART 6:1989+A1:2009

Specimen No. : 3 **Date : 24-Aug-18**

Time mins t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts-Tc/10t	Sub Index Of Performance
0.50	11	13	0.00	
1.00	17	20	0.00	
1.50	23	24	0.00	
2.00	28	29	0.00	
2.50	33	34	0.00	
3.00	37	38	0.00	0.00
4.00	69	70	0.00	
5.00	107	110	0.00	
6.00	139	141	0.00	
7.00	163	162	0.01	
8.00	179	181	0.00	
9.00	193	192	0.01	
10.00	206	205	0.01	0.04
12.00	219	222	0.00	
14.00	231	234	0.00	
16.00	239	239	0.00	
18.00	249	244	0.03	
20.00	252	256	0.00	0.03
Total Index of Performance S			**=**	**0.06**

SubIndex s1 **0.00**

SubIndex s2 **0.04**

SubIndex s3 **0.03**

Index of Performance S **0.06**

Annex A

Uncertainty of measurement

Specimen No.	1	2	3	Average
Fire propagation index, I	+0.54 -0.02	+0.37 -0.04	+0.32 -0.03	+0.41 -0.03
Sub index i_1	+0.53 -0.00	+0.36 -0.04	+0.31 -0.00	+0.40 -0.01

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Revision History

Issue No :	Re-issue Date:
Revised By:	Approved By:
Reason for Revision:	

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Revised By:	Approved By:
Reason for Revision:	