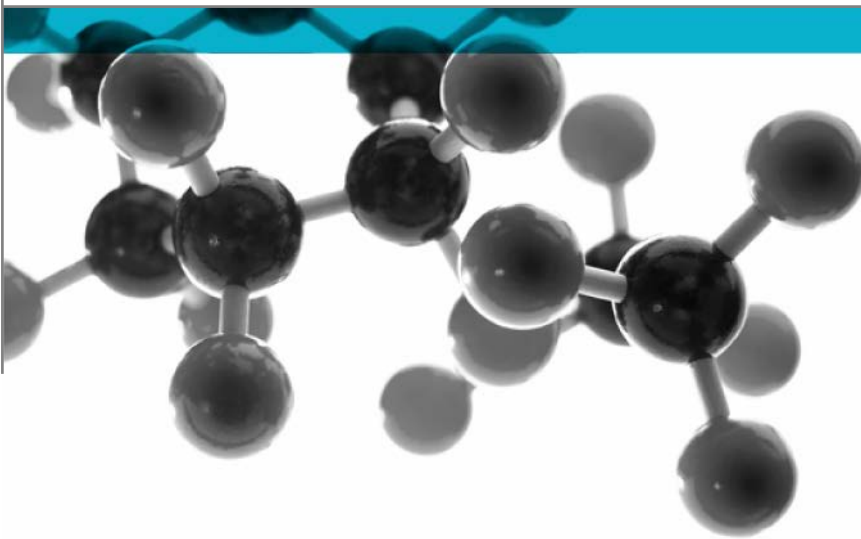


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# BS 476: Part 6: 1989+A1:2009



## Method Of Test For Fire Propagation For Products

A Report To: Mapei UK Ltd

Document Reference: 383103

Date: 25<sup>th</sup> May 2017

Issue No.: 1

Page 1

Testing  
Advising  
Assuring



## 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 / application rate	Weight per unit area or density
Coating system applied to a calcium silicate substrate	"Silancolor Paint Plus"	12.24mm *	11.44kg/m <sup>2</sup> *
<b>Individual components used to manufacture composite:</b>			
Top coat	"Silancolor Paint Plus"	2 x 0.2kg/m <sup>2</sup>	1.55g/cm <sup>3</sup>
Primer	"Silancolor Primer Plus"	0.2kg/m <sup>2</sup>	1.01g/cm <sup>3</sup>
Substrate	"Promat - Brandschutzbauplatten; Promatect-H"	12mm	870kg/m <sup>3</sup>
<b>*Determined by Exova Warringtonfire</b>			
<b>Please see page 5 of this test report for the full description of the product tested</b>			


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


**Test Results:**

<b>Fire propagation index, I</b>	=	<b>0.3</b>
<b>Sub index, i<sub>1</sub></b>	=	<b>0.2</b>
<b>Sub index, i<sub>2</sub></b>	=	<b>0.1</b>
<b>Sub index, i<sub>3</sub></b>	=	<b>0.0</b>

**Date of Test** 4<sup>th</sup> May 2017

## Signatories


Responsible Officer C. Meachin * Technical Officer


Authorised B. Dean * Technical Leader

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

Report Issued: 25<sup>th</sup> May 2017

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## Test Details

<b>Purpose of test</b>	<p>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".</p> <p>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.</p>
<b>Scope of test</b>	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.
<b>Fire test study group/EGOLF</b>	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.
<b>Instruction to test</b>	The test was conducted on the 4 <sup>th</sup> May 2017 at the request of Mapei UK Ltd, the sponsor of the test.
<b>Provision of test specimens</b>	The specimens were supplied by the sponsor of the test. <b>Exova Warringtonfire</b> was not involved in any selection or sampling procedure. <b>Exova Warringtonfire</b> supplied the substrate.
<b>Conditioning of specimens</b>	The specimens were received on the 28 <sup>th</sup> April 2017 and were conditioned to constant mass at a temperature of $23 \pm 2^{\circ}\text{C}$ and a relative humidity of $50 \pm 5\%$ prior to testing.
<b>Form in which the specimens were tested</b>	Composite - Combination of materials which are generally recognised in building constructions as discrete entities e.g. coated or laminated materials.
<b>Exposed face</b>	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. All values quoted are nominal, unless tolerances are given.

General description		Coating system applied to a calcium silicate substrate
Product reference		"Silancolor Paint Plus"
Thickness		12.24mm (determined by <b>Exova Warringtonfire</b> )
Weight per unit area		11.44kg/m <sup>2</sup> (determined by <b>Exova Warringtonfire</b> )
Top coat (test face)	Generic type	Siloxane
	Product reference	"Silancolor Paint Plus"
	Name of manufacturer	Mapei
	Colour reference	"Base P" (stated by sponsor) "White" (observed by <b>Exova Warringtonfire</b> )
	Number of coats	Two
	Application rate per coat	0.2kg/m <sup>2</sup>
	Density	1.55g/cm <sup>3</sup>
	Application method	Brush
	Flame retardant details	<b>See Note 1 below</b>
Curing process per coat	24 hours	
Primer	Generic type	Siloxane
	Product reference	"Silancolor Primer Plus"
	Name of manufacturer	Mapei
	Colour reference	"Clear"
	Number of coats	One
	Application rate per coat	0.2kg/m <sup>2</sup>
	Density	1.01g/cm <sup>3</sup>
	Application method	Brush
	Flame retardant details	<b>See Note 1 below</b>
Curing process per coat	24 hours	
Calcium silicate	Generic type	Calcium Silicate based board
	Product reference	"Promat - Brandschutzbauplatten; Promatect-H"
	Manufacturer	Promat
	Thickness	12mm
	Density	870 kg/m <sup>3</sup>
	Flame retardant details	The substrate is inherently flame retardant
Brief description of manufacturing process		<b>See Note 2 below</b>

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

**Note 2: The sponsor was unable to provide this information.**

## 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.**

<b>Fire propagation index, I</b>	<b>=</b>	<b>0.3</b>
<b>Sub index, <math>i_1</math></b>	<b>=</b>	<b>0.2</b>
<b>Sub index, <math>i_2</math></b>	<b>=</b>	<b>0.1</b>
<b>Sub index, <math>i_3</math></b>	<b>=</b>	<b>0.0</b>

**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.

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**Table 1**
Laboratory Record Sheet
**FIRE PROPAGATION TEST - BS476:PART 6:1989+A1:2009**
**Specimen No. : 1**
**Date : 4-May-17**

Time mins t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts- Tc/10t	Sub Index Of Performance
0.50	10	9	0.20	0.64
1.00	15	14	0.10	
1.50	20	18	0.13	
2.00	24	22	0.10	
2.50	27	26	0.04	
3.00	31	29	0.07	
4.00	62	60	0.05	0.05
5.00	95	97	0.00	
6.00	123	123	0.00	
7.00	142	146	0.00	
8.00	161	162	0.00	
9.00	174	174	0.00	
10.00	183	185	0.00	
12.00	201	200	0.01	
14.00	209	211	0.00	
16.00	220	219	0.01	
18.00	227	224	0.02	
20.00	229	230	0.00	
<b>Total Index of Performance S</b>			<b>=</b>	<b>0.72</b>

**SubIndex s1                      0.64**
**SubIndex s2                      0.05**
**SubIndex s3                      0.03**
**Index of Performance S        0.72**

**Table 2**
Laboratory Record Sheet
**FIRE PROPAGATION TEST - BS476:PART 6:1989+A1:2009**
**Specimen No. : 2**
**Date : 4-May-17**

Time mins  t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts-Tc/10t	Sub Index Of Performance
0.50	11	12	0.00	
1.00	16	17	0.00	
1.50	21	22	0.00	
2.00	25	26	0.00	
2.50	29	30	0.00	
3.00	34	35	0.00	0.00
4.00	64	65	0.00	
5.00	102	103	0.00	
6.00	132	133	0.00	
7.00	155	156	0.00	
8.00	171	172	0.00	
9.00	185	186	0.00	
10.00	194	195	0.00	0.00
12.00	211	213	0.00	
14.00	222	222	0.00	
16.00	230	231	0.00	
18.00	239	236	0.02	
20.00	244	240	0.02	0.04
<b>Total Index of Performance S</b>			<b>=</b>	<b>0.04</b>

**SubIndex s1                      0.00**
**SubIndex s2                      0.00**
**SubIndex s3                      0.04**
**Index of Performance S   0.04**



**Table 3**
Laboratory Record Sheet
**FIRE PROPAGATION TEST - BS476:PART 6:1989+A1:2009**
**Specimen No. : 3**
**Date : 4-May-17**

Time mins t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts- Tc/10t	Sub Index Of Performance
0.50	11	11	0.00	
1.00	16	17	0.00	
1.50	21	21	0.00	
2.00	25	25	0.00	
2.50	29	29	0.00	
3.00	32	32	0.00	0.00
4.00	65	65	0.00	
5.00	103	101	0.04	
6.00	132	129	0.05	
7.00	155	152	0.04	
8.00	170	168	0.03	
9.00	183	182	0.01	
10.00	193	194	0.00	0.17
12.00	207	209	0.00	
14.00	218	220	0.00	
16.00	226	227	0.00	
18.00	232	235	0.00	
20.00	237	238	0.00	0.00
<b>Total Index of Performance S</b>			<b>=</b>	<b>0.17</b>

**SubIndex s1                      0.00**
**SubIndex s2                      0.17**
**SubIndex s3                      0.00**
**Index of Performance S        0.17**

## Revision History

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

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