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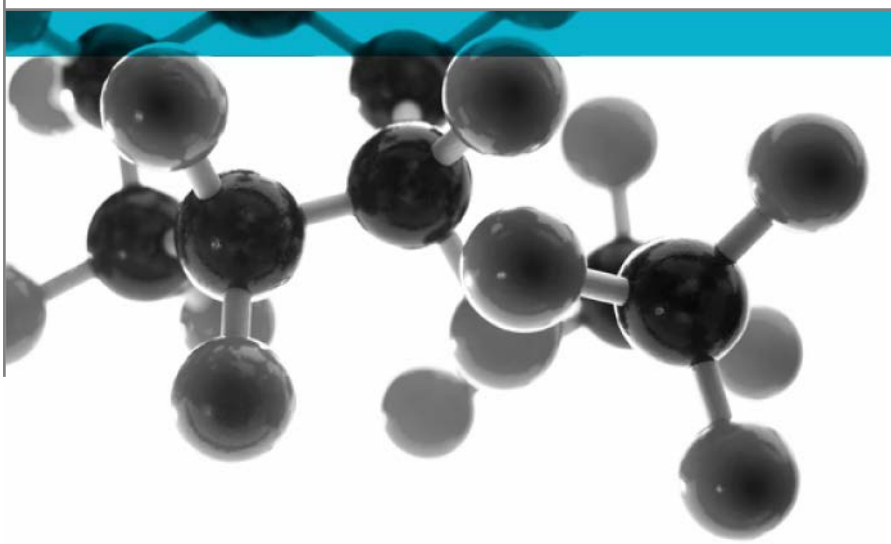
BS 476: Part 6: 1989+A1:2009



Method Of Test For
Fire Propagation For Products

A Report To: Sanglier Ltd.

Document Reference: 402953

Date: 15th August 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	Weight per unit area or density
Adhesive applied to one face of a calcium silicate board	"Tuskbond G500 Test Panels"	9mm	950kg/m³
Individual components used to manufacture composite:			
Adhesive	"Tuskbond G500"	Not applicable	50g/m²
Substrate	"Supalux"	9mm	950kg/m³
Please see page 5 of this test report for the full description of the product tested			

Test Sponsor

Sanglier Ltd., Shelley Close, Lowmoor Business Park, Kirkby in Ashfield, Nottingham, NG17 7JZ

Test Results:

Fire propagation index, I = 1.8

Sub index, i_1 = 0.8

Sub index, i_2 = 0.6

Sub index, i_3 = 0.4

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

7th and 10th 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 7th and 10th August 2018 at the request of Sanglier 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 27th July 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 adhesive 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		Adhesive applied to one face of a calcium silicate board
Product reference		"Tuskbond G500 Test Panels"
Name of manufacturer		Sanglier Ltd.
Overall thickness		9mm (stated by sponsor) 9.18mm (determined by **Exova Warringtonfire**)
Overall weight per unit area		950kg/m³ (stated by sponsor) 1018.38kg/m³ (determined by **Exova Warringtonfire**)
Adhesive (Test face)	Generic type	Styrene butadiene rubber copolymer contact adhesive
	Product reference	"Tuskbond G500"
	Name of manufacturer	Sanglier Ltd.
	Colour reference	"Pale Amber"
	Application rate	50g/m²
	Application method	Spray
	Flame retardant details	**See Note 1 below**
	Curing process	Solvent evaporation
Substrate	Generic type	Calcium silicate board
	Product reference	"Supalux"
	Name of manufacturer	Promat UK Ltd.
	Thickness	9mm
	Density	950kg/m³
	Flame retardant details	Non-combustible
Brief description of manufacturing process		1. A web of adhesive was spray applied from an aerosol onto a clean, dust free calcium silicate panel of known weight. 2. The adhesive solvent was allowed to evaporate and the dry weight of the adhesive calculated. 3. the process was repeated until a dry coat weight of 50g/m² was achieved.

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	**=**	**1.8**
Sub index, i_1	**=**	**0.8**
Sub index, i_2	**=**	**0.6**
Sub index, i_3	**=**	**0.4**

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 : 7-Aug-18**

Time mins t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts-Tc/10t	Sub Index Of Performance
0.50	14	13	0.20	
1.00	19	18	0.10	
1.50	25	22	0.20	
2.00	30	26	0.20	
2.50	33	29	0.16	
3.00	36	32	0.13	0.99
4.00	67	64	0.08	
5.00	103	102	0.02	
6.00	135	130	0.08	
7.00	157	152	0.07	
8.00	174	167	0.09	
9.00	188	181	0.08	
10.00	200	193	0.07	0.49
12.00	217	206	0.09	
14.00	228	220	0.06	
16.00	239	223	0.10	
18.00	247	236	0.06	
20.00	250	242	0.04	0.35
Total Index of Performance S			**=**	**1.83**

SubIndex s1 **0.99**

SubIndex s2 **0.49**

SubIndex s3 **0.35**

Index of Performance S **1.83**

Table 2

Laboratory Record Sheet

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

Specimen No. : 2 **Date : 10-Aug-18**

Time mins t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts-Tc/10t	Sub Index Of Performance
0.50	**14**	**13**	**0.20**	
1.00	**19**	**18**	**0.10**	
1.50	**25**	**22**	**0.20**	
2.00	**28**	**26**	**0.10**	
2.50	**32**	**29**	**0.12**	
3.00	**35**	**32**	**0.10**	**0.82**
4.00	**68**	**64**	**0.10**	
5.00	**104**	**102**	**0.04**	
6.00	**139**	**130**	**0.15**	
7.00	**159**	**152**	**0.10**	
8.00	**176**	**167**	**0.11**	
9.00	**193**	**181**	**0.13**	
10.00	**203**	**193**	**0.10**	**0.74**
12.00	**217**	**206**	**0.09**	
14.00	**230**	**220**	**0.07**	
16.00	**238**	**223**	**0.09**	
18.00	**247**	**236**	**0.06**	
20.00	**253**	**242**	**0.06**	**0.37**
Total Index of Performance S			**=**	**1.93**

SubIndex s1 **0.82**

SubIndex s2 **0.74**

SubIndex s3 **0.37**

Index of Performance S **1.93**

Table 3

Laboratory Record Sheet

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

Specimen No. : 3 **Date : 10-Aug-18**

Time mins t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts-Tc/10t	Sub Index Of Performance
0.50	**14**	**13**	**0.20**	
1.00	**19**	**18**	**0.10**	
1.50	**23**	**22**	**0.07**	
2.00	**27**	**26**	**0.05**	
2.50	**31**	**29**	**0.08**	
3.00	**34**	**32**	**0.07**	**0.56**
4.00	**68**	**64**	**0.10**	
5.00	**105**	**102**	**0.06**	
6.00	**134**	**130**	**0.07**	
7.00	**159**	**152**	**0.10**	
8.00	**175**	**167**	**0.10**	
9.00	**191**	**181**	**0.11**	
10.00	**203**	**193**	**0.10**	**0.64**
12.00	**221**	**206**	**0.13**	
14.00	**233**	**220**	**0.09**	
16.00	**242**	**223**	**0.12**	
18.00	**249**	**236**	**0.07**	
20.00	**255**	**242**	**0.07**	**0.47**
Total Index of Performance S			**=**	**1.67**

SubIndex s1 **0.56**

SubIndex s2 **0.64**

SubIndex s3 **0.47**

Index of Performance S **1.67**

Annex A

Uncertainty of measurement

Specimen No.	1	2	3	Average
Fire propagation index, I	+0.77 -0.40	+0.77 -0.38	+0.77 -0.30	+0.77 -0.36
Sub index i_1	+0.76 -0.37	+0.76 -0.35	+0.76 -0.26	+0.76 -0.33

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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