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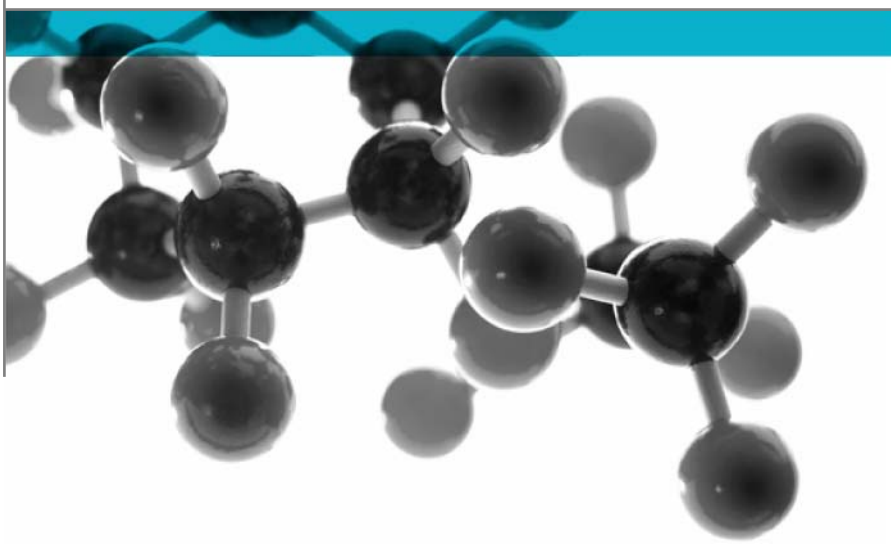
BS 476: Part 6: 1989+A1:2009



Method Of Test For
Fire Propagation For Products

A Report To: Staron UK Limited

Document Reference: 323316

Date: 16th November 2012

Issue No.: 2

Testing
Advising
Assuring

Registered Office: Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian EH28 8PL United Kingdom. Reg No.SC 70429
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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	Density
Flame retardant solid surface material	"Tristone Solid Surface A104"	12.3mm	1.75g/cm^3
Please see page 5 of this test report for the full description of the product tested			

Test Sponsor Staron UK Limited, Unit 1, Orde Wingate Way, Primrose Hill Industrial Estate, Stockton-on-Tees, TS19 0GA, United Kingdom

Test Results:

Fire propagation index, I = 11.6

Sub index, i_1 = 0.0

Sub index, i_2 = 5.7

Sub index, i_3 = 5.9

Date of Test 30th October 2012

Reason for revision This document replaces issue 1 (dated 9th November 2012) of the same number which has been withdrawn. The product and colour reference detailed in the issue 1 report were incorrect and the correct product reference "Tristone Solid Surface A104" and colour reference "Tristone Pure white" have been detailed in this issue 2 report.

Signatories

Responsible Officer D. J. Owen * Senior Technical Officer	Authorised T.Mort * Senior Technical Officer

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

Report Issued: 16th November 2012

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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 30th October 2012 at the request of Staron UK Limited, 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 23rd October 2012

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

Assembly - Fabrication of materials and/or composites that can contain air gaps. An air space was provided at the back of the product by testing over spacers of non-combustible insulation board 20 mm wide and 12.5mm thick.

Exposed face

The decorative 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	Flame retardant solid surface material
Product reference	"Tristone Solid Surface A104"
Composition details	Aluminium Tri-hydroxide 57-61% Acrylic Resin 36-41% Other Additives 1.9% Pigments 0.1-0.7%
Name of manufacturer	Lion Chemtech
Thickness	12.3mm (stated by sponsor) 12.1mm (determined by **Exova Warringtonfire**)
Density	1.75g/cm^3 (stated by sponsor) 1.75g/cm^3 (determined by **Exova Warringtonfire**)
Colour reference	"Tristone Pure White"
Trade name of flame retardant	"Aluminium Tri-hydroxide"
Generic type of flame retardant	Aluminium Tri-hydroxide
Amount of flame retardant	57-61%
Brief description of manufacturing process	The components were first mixed together, and then cast into the appropriate moulding, which was then cut and polished.

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	**= 11.6**
Sub index, i_1	**= 0.0**
Sub index, i_2	**= 5.7**
Sub index, i_3	**= 5.9**

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 - BS 476:PART 6:1989+A1:2009

Specimen No. : 1 **Date : 30-Oct-12**

Time mins t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts- Tc/10t	Sub Index Of Performance
0.50	**9**	**13**	**0.00**	
1.00	**15**	**18**	**0.00**	
1.50	**19**	**23**	**0.00**	
2.00	**22**	**28**	**0.00**	
2.50	**26**	**32**	**0.00**	
3.00	**30**	**36**	**0.00**	**0.00**
4.00	**63**	**65**	**0.00**	
5.00	**107**	**102**	**0.10**	
6.00	**153**	**131**	**0.37**	
7.00	**211**	**153**	**0.83**	
8.00	**261**	**167**	**1.18**	
9.00	**322**	**182**	**1.56**	
10.00	**362**	**193**	**1.69**	**5.72**
12.00	**399**	**207**	**1.60**	
14.00	**413**	**220**	**1.38**	
16.00	**414**	**229**	**1.16**	
18.00	**402**	**233**	**0.94**	
20.00	**387**	**239**	**0.74**	**5.81**
Total Index of Performance S			**=**	**11.53**

SubIndex s1 **0.00**

SubIndex s2 **5.72**

SubIndex s3 **5.81**

Index of Performance S **11.53**

Table 2

Laboratory Record Sheet

FIRE PROPAGATION TEST - BS 476:PART 6:1989+A1:2009

Specimen No. : 2 **Date : 30-Oct-12**

Time mins t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts-Tc/10t	Sub Index Of Performance
0.50	10	13	0.00	
1.00	15	19	0.00	
1.50	19	24	0.00	
2.00	23	30	0.00	
2.50	27	33	0.00	
3.00	30	37	0.00	0.00
4.00	61	69	0.00	
5.00	105	107	0.00	
6.00	151	133	0.30	
7.00	203	156	0.67	
8.00	262	173	1.11	
9.00	322	189	1.48	
10.00	370	198	1.72	5.28
12.00	405	213	1.60	
14.00	412	223	1.35	
16.00	416	233	1.14	
18.00	413	237	0.98	
20.00	406	242	0.82	5.89
Total Index of Performance S			**=**	**11.17**

SubIndex s1 **0.00**

SubIndex s2 **5.28**

SubIndex s3 **5.89**

Index of Performance S **11.17**

Table 3

Laboratory Record Sheet

FIRE PROPAGATION TEST - BS 476:PART 6:1989+A1:2009

Specimen No. : 3 **Date : 30-Oct-12**

Time mins t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts-Tc/10t	Sub Index Of Performance
0.50	9	12	0.00	
1.00	13	18	0.00	
1.50	18	23	0.00	
2.00	21	27	0.00	
2.50	24	32	0.00	
3.00	29	36	0.00	0.00
4.00	61	65	0.00	
5.00	105	102	0.06	
6.00	154	129	0.42	
7.00	210	152	0.83	
8.00	266	168	1.23	
9.00	324	182	1.58	
10.00	375	192	1.83	5.94
12.00	412	209	1.69	
14.00	420	217	1.45	
16.00	412	225	1.17	
18.00	407	232	0.97	
20.00	401	237	0.82	6.10
Total Index of Performance S			**=**	**12.04**

SubIndex s1 **0.00**

SubIndex s2 **5.94**

SubIndex s3 **6.10**

Index of Performance S **12.04**

Revision History

Issue No : 1	Re-issue Date: 16th November 2012
Revised By: D J Owen	Approved By: T Mort
Reason for Revision: This document replaces issue 1 (dated 9th November 2012) of the same number which has been withdrawn. The product and colour reference detailed in the issue 1 report were incorrect and the correct product reference "Tristone Solid Surface A104" and colour reference "Tristone Pure white" have been detailed in this issue 2 report.	
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Issue No :	Re-issue Date:
Revised By:	Approved By:
Reason for Revision:	