



Confidential Report

Our Ref: **27/04274/07/17**



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Notified Body
for PPE Directive,
Construction Products Regulation
& Marine Equipment Directive
I.D. No. 0338 & 0339



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Date: 24 July 2017

Our Ref: 27/04274/07/17
Your Ref:

Page: 1 of 7

Client: Boulder Developments Ltd
Black Horse Farm
Main Street
Norwell
NG23 6JN

Job Title: Fire Test on One Sample of Foil Material

Client's Order No: 2253

Date of Receipt: 4 July 2017

Description of Sample(s): One sample of foil, referenced SuperFoil FR.
Also received a roll of self-adhesive aluminium tape, to seal the raw edges of each specimen.

Work Requested: We were asked to make the following test(s):

BS 476 Part 7 & 6

- * subcontracted test, UKAS accredited
- ** subcontracted test, EN ISO/IEC 17025 accredited
- *** not UKAS accredited



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Our Ref: 27/04274/07/17
Your Ref:

Page: 2 of 7

Client: Boulder Developments Ltd

FIRE TESTS ACCORDING TO BS 476:PART 7:1987 (AS AMENDED) (Method for classification of the surface spread of flame of products)

Date of Test: 21/06/2017

Conditioning

The sample was conditioned to constant mass at a temperature of $23\pm 2^{\circ}\text{C}$ and a relative humidity of $50\pm 10\%$ and maintained in this condition until required for testing

Procedure

The test was carried out in accordance with BS 476:Part 7: 1987(1993). The sponsor sampled the material and the specimens were cut from the sample to the dimensions set out in the standard by BTTG. The specimens were tested stapled to a 12mm calcium silicate backing board. The sample edges were taped and stapled.

The following were recorded:-

- a) the time at which the flame front crosses each vertical reference line;
- b) the maximum extent of flame spread during the first 1.5 min from the start of the test;
- c) the maximum extent of flame spread during the whole test i.e. 10 min or less (if applicable)
- d) the time (and distance) at which maximum flame spread is reached.

The flame spread at 1.5min and the final flame spread results were compared with the standard class limits and a classification was assigned.



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Our Ref: 27/04274/76/17
Your Ref:

Page: 3 of 7

Client: Boulder Developments Ltd

Requirements

The class limits for flamespread, detailed in BS 476:Part 7: are set out below.

	Flame spread at 1.5 min (mm)	Final flame spread (mm)
Class 1	165 (+25)	165 (+25)
Class 2	215 (+25)	455 (+45)
Class 3	265 (+25)	710 (+75)
Class 4	Exceeding Class 3 limits.	

A definitive classification is based on a sample of six specimens and the figure in brackets gives the tolerance by which only one specimen in six may exceed the class limit assigned.

Results

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.

Time for flame spread to reach (s) (mm)					Flame spread at 1.5 min (mm)	Maximum flame spread (mm)	Time to reach maximum flame spread (s)
165	215	265	455	710			
---	---	---	---	---	60	60	200
---	---	---	---	---	70	70	120
---	---	---	---	---	60	60	130
---	---	---	---	---	75	75	80
---	---	---	---	---	60	60	210
---	---	---	---	---	60	60	62

The results indicate that the sample met the performance requirements of Class 1.



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Our Ref: 27/04274/76/17
Your Ref:
Page: 4 of 7

Client: Boulder Developments Ltd

FIRE TESTS ACCORDING TO BS 476-6:1989+A1:2009 (2015) **Fire tests on building materials and structures. Method of test for fire propagation for products**

Date of Test: 24/07/2017

Test Method

The test was carried out in accordance with BS 476-6:1989+A1:2009 (2015).

Prior to testing the sample the calibration of the equipment was determined to ensure compliance with the test limits set out in the standard.

The sponsor sampled the material and the specimens were cut from the sample received to the dimensions set out in the standard by BTTG. The specimens were tested stapled to a 12mm calcium silicate board. The sample edges were taped and stapled.

Temperatures of the flue gases were measured to the nearest degree centigrade at the time intervals and periods set out below, taking zero time as the moment of ignition of the gas supply. The temperature was measured by means of two thermocouples with their measuring junctions located in the cowl of the apparatus as required by the standard.

The relevant temperature-time intervals were observed for each individual specimen and the calibration board according to the ranges 0 to 3 minutes every 30 seconds, 4 to 10 minutes every 1 minute and 12 to 20 minutes every 2 minutes to give 3 time periods.

N.B: The shrinkage in the plane of the calibration board was not determined after heat soaking at 1000°C.



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Date: 24 July 2017

Our Ref: 27/04274/76/17
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Page: 5 of 7

Client: Boulder Developments Ltd

Calculation of Results

At each time interval the temperature of the calibration board was subtracted from that of the individual specimen temperature, this was then divided by ten multiplied by the time interval.

The sum of each individual value in each time period was then calculated to give an index of performance, s , for each specimen.

The fire propagation index of the product is calculated from the average of the individual s values for the total number of specimens in each time period.

$$\text{Total } I = i_1 + i_2 + i_3$$

A definitive classification is based on a sample of at least three specimens.

Requirements

A Class 0 is the highest National product performance classification for lining materials. To meet Class 0 a material has to meet the requirements laid down in the UK Building Regulations 2010, Approved Document B, Appendix A that states that a composite material is either:

- composed throughout of materials of limited combustibility; or
- a class 1 material which has a propagation index (I) of not more than 12 and a sub index (i_1) of not more than 6 when tested to BS 476 Part 6.

Results

Number of specimens tested	Sub-index i_1	Sub-index i_2	Sub-index i_3	Total Fire propagation index I
3	2.4	5.7	1.6	9.6





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Your Ref:

Page: 6 of 7

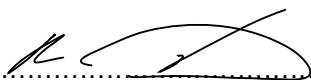
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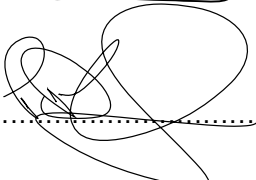
Comments

In our opinion:-

- 1) 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.
- 2) The results indicate that the sample met the requirements of Class 0 of the UK Building Regulations 2010, Approved Document B, Appendix A.

Uncertainty of measurement has not been taken into account when presenting the test result. The relevant uncertainty value is included as an annex which forms an integral part of the report.

Reported by:..... ..... K Pillinger, Laboratory Technician

Countersigned by:..... ..... P Doherty, Operational Head

Enquiries concerning this report should be addressed to Customer Services.



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Page: 7 of 7

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Uncertainty Budget - Annex

The overall uncertainty budget for BS 476-7:1987 is as follows:-

BS 476-7:1987

Overall: $\pm 20\%$

BS 476-6:

The overall uncertainty budget for BS 476-6:1989+A1:2009 (2015) is as follows:-

Overall: $\pm 6\%$



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