

TEST REPORT

WARRES NO. 52020

BS 476: PART 7: 1987
METHOD FOR CLASSIFICATION OF THE
SURFACE SPREAD OF FLAME OF PRODUCTS

SPONSORED BY

SMYTH PLASTIC LIMITED
Unit 7, Panmure Industrial Estate, Carnoustie, Tayside, DD7 7NP

THE PROFESSIONALS IN FIRE SAFETY •

Warrington
FIRE
research
CONSULTANCY • TESTING

Warrington Fire Research Centre, Holmesfield Road, Warrington, United Kingdom

Telephone: (0925) 55116 Telex: 628743 WARRES G Telefax: (0925) 55419

TEST REPORT

WARRES NO. 52020

BS 476: PART 7: 1987
METHOD FOR CLASSIFICATION OF THE
SURFACE SPREAD OF FLAME OF PRODUCTS

SPONSORED BY

SMYTH PLASTICS LIMITED
Unit 7
Panmure Industrial Estate
Carnoustie
Tayside, DD7 7NP

PURPOSE OF TEST

To determine the performance of specimens of a product when they are subjected to the conditions of the test specified in British Standard 476: Part 7: 1987, "Fire tests on building materials and structures, method for classification of the surface spread of flame of products".

SCOPE OF TEST

BS 476: Part 7: 1987 specifies a method of test for measuring the lateral spread of flame along the surface of a specimen of a product orientated in the vertical position, and a classification system based on the rate and extent of flame spread. It provides data suitable for comparing the performances of essentially flat materials, composites, or assemblies, which are used primarily as the exposed surfaces of walls or ceilings.

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.

The product was "Fybaclad (colour reference grey)", a glass fibre reinforced polyester resin laminate having an overall thickness of 4 mm, one decorative embossed face and one gel-coated face.

The sponsor requested that details of the various components should not be included in the test report but further details of all the components of the product have been provided and are held on our confidential file relating to this investigation.

The specimens were supplied by the sponsor. Warrington Fire Research Centre was not involved in any selection or sampling procedure.

CONDITIONING OF SPECIMENS

The specimens were received on 3th September 1990.

Prior to test the specimens were conditioned to constant mass at a temperature of $23 \pm 2^{\circ}\text{C}$ and a relative humidity of $50 \pm 10\%$.

DATE OF TEST

The test was performed on 6th September 1990.

TEST PROCEDURE

The test was performed in accordance with the procedure specified in BS 476: Part 7: 1987, as amended by AMD 6249 dated 31st January 1990, and this report should be read in conjunction with that British Standard.

FORM IN WHICH THE SPECIMENS WERE TESTED

The specimens were tested in the form of a composite. The definitions for a material, composite and assembly have been assumed to be those given in BS 476: Part 6: 1989.

EXPOSED FACE

The decorative, embossed face of the specimens was exposed to the radiant heat of the test when the specimens were mounted in the test position.

TEST 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.

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.

The test results for the individual specimens, together with observations made during the test and comments on any difficulties encountered during the test are given in Table 1.

In accordance with the class definitions given in BS 476: Part 7: 1987, the specimens tested are classified as Class 1.

Note: If the prefix 'D' or suffix 'R' or 'Y' is included in the classification, this indicates that the results should be treated with caution. An explanation of the reason for the prefix and suffixes is given in Appendix 1, together with the irradiance along the horizontal reference line of the specimen position during the test and the classification limits specified in the Standard.

INTERPRETATION OF TEST RESULTS

Attention is drawn to Appendix 2 entitled "Effect of thermal characteristics on the performance of assemblies".

Responsible Officer

P. E. Lythgoe

P. E. LYTHGOE
Senior Technical Officer -
Fire Performance of
Materials and Components

Approved

R. J. Shaw

R. J. SHAW
Director
for and on behalf of
WARRINGTON FIRE RESEARCH CENTRE

Date of issue: 25th March 1991

LIN2086

TABLE 1

SPECIMEN No.	1	2	3	4	5	6
Maximum distance travelled at 1.5 minutes (mm)	75	NIL	NIL	NIL	NIL	NIL
Distance (mm)	Time to travel to indicated distance (minutes, seconds)					
75	1,02					
165						
190						
215						
240						
265						
290						
375						
455						
500						
525						
600						
675						
710						
750						
785						
825						
900						
Time to reach maximum distance travelled (minutes, seconds)	1,02,					
Maximum distance travelled in 10 minutes (mm)	75	NIL	NIL	NIL	NIL	NIL

Note: Six specimens are usually tested. If the test on any specimen is deemed to be invalid, as defined in the Standard, it is permissible for up to a maximum of nine specimens to be tested in order to obtain the six valid test results.

Observations made during test and comments on any difficulties encountered during the test.

Light transitory flaming and flashing occurred on all the specimens approximately 50 mm above the reference line reaching up to a maximum distance of 165 mm during the first four minutes of the tests.

APPENDIX 1

Irradiance along the horizontal reference line of the specimen position during the test.

Distance along reference line from the hotter end of the specimen position (in mm)	75	225	375	525	675	825
Irradiance at points specified above (kW/m ²)	32.5	21.0	14.5	10.0	7.0	5.0

Note: a tolerance of ± 0.5 kW/m² is specified on the irradiance measurement.

Classification of spread of flame

Classification	Spread of flame at 1.5 min		Final spread of flame	
	Limit	Limit for one specimen in sample	Limit	Limit for one specimen in sample
	mm	mm	mm	mm
Class 1	165	165 + 25	165	165 + 25
Class 2	215	215 + 25	455	455 + 45
Class 3	265	265 + 25	710	710 + 75
Class 4	exceeding the limits for Class 3			

Explanation of prefix and suffixes which may be added to the classification

1. A suffix R is added to the classification if more than six specimens are required in order to obtain six valid test results (e.g. class 2R).
2. A prefix D is added to the classification of any product which does not comply with the surface characteristics specified in the Standard and has therefore been tested in a modified form (e.g. class D3).
3. A suffix Y is added to the classification if any softening and/or other behaviour that may affect the flame spread occurs (e.g. class 3Y).

For example, a classification of D3RY could be achieved indicating (a) a modified surface has been used; (b) a class 3 result has been obtained; (c) additional specimens have been used to obtain 6 valid results and; (d) softening and/or other behaviour has occurred which is considered to have affected the test result.

TEST REPORT

WARRES NO. 52020

BS 476: PART 7: 1987
METHOD FOR CLASSIFICATION OF THE
SURFACE SPREAD OF FLAME OF PRODUCTS

THE PROFESSIONALS IN FIRE SAFETY •

*W*arrington
FIRE
research
CONSULTANCY • TESTING