The Loss Prevention Council
LPC Laboratories
Melrose Avenue, Borehamwood, Hertfordshire, WD6 2BJ, UK
Telephone: 0181 207 2345 Fax: 0181 207 6305

TE 91888

TEST REPORT

Title: External fire exposure roof test (B.S. 476 : Part 3 : 1958) on Metrobond stone coated steel roof tiles.

Client: Metrotile Europe NV,
Heerssterueldweg 15,
1.Z Oost,
3700 Tongeren,
Belgium.

Date: 26 November 1998

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SUMMARY

A sample of Metrobond stone coated steel roofing tiles was submitted to an external fire exposure roof test (B.S. 476 : Part 3 : 1958) on 27 October 1998.

A designation of EXT.S.AA was achieved.

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1 OBJECTIVE

To classify Metrobond stone coated steel roofing tiles according to its capacity to resist penetration by fire and its spread of flame characteristics, as shown by the external fire exposure roof test and criteria of B.S. 476 : Part 3 : 1958[1], at the request of Metrotile Europe N.V.

2 SAMPLE

2.1 The sample was described by the sponsor as Metrobond stone coated steel roofing tiles. The tile was indicated to be produced as follows:

Steel details:

Trade name : NZ steel BHP/B steel CS BMT = 0.4mm ± 5%.
Mechanical properties Grade g 250 or g 300.
A primer coat is applied to the top side and paint finish to the underside in initial preparation.

An acrylic base coat is applied to the top side.

Stone chips are then applied at 1.06kg/m².

An acrylic over glaze is then applied as the finish coat.

2.2 Further details are provided and kept on a confidential file.

2.3 The specimens were built up as follows:

Base - Three 50mm-square (section) x 840mm-long battens, 345mm apart, then 840mm square of bituminous felt, 1.6mm thick, over laid on the battens, then three 22mm-thick x 48mm-wide x 840mm-long battens placed 320mm apart, opposed by 90° to the lower three battens to provide a base frame 840mm square.

One row of steel imitation roof tiles with a joint in the central position was attached to the bare frame so that the top edge of the tiles butted up against the lower edge of the middle (22mm thick x 48mm wide) batten. The second set of imitation tiles, without a joint, was placed to butt up against the bottom of the top (22mm thick x 48mm wide) batten and the tile in turn overlapped the top of the lower set of tiles.

In all cases, 50mm nails were used to fix the felt, battens and the steel tiles together.

The finished specimen gave two rows of the Metrobond stone coated steel roofing tile.

2.4 Seven nominally identical specimens, 33in (838mm) square, were tested. On 7 of the specimens (Specimens 1 to 7) there was a joint.

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3 CONDITIONING

Prior to the test the specimens were conditioned to equilibrium in an atmosphere within 65°-75°F (18°-24°C) and 55-65% relative humidity.

4 PROCEDURE

4.1 General

The specimens were mounted at an angle of 45°, for test purposes, to represent a sloping roof.

4.2 Preliminary ignition test

One specimen was tested in accordance with Section 4 of the standard on 27 October 1998.

4.3 Spread of flame test on roof surface

Three specimens were tested in accordance with Section 6 of the standard on 27 October 1998.

4.4 Fire penetration test

Three specimens were tested in accordance with Section 5 of the standard on 27 October 1998.

5 RESULTS

5.1 No fire penetration or sustained ignition occurred in the preliminary ignition test on specimen number 1.

5.2 No sustained ignition or flame spread occurred in the spread of flame test on any of the specimens tested (Nos. 2,3 and 4).

5.3 No fire penetration occurred in the penetration test on any of the three specimens tested (Nos. 5,6 and 7).

5.4 No dripping of material occurred from the underside of any specimen, nor any mechanical failure, or development of holes.

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6 DESIGNATION OF SPECIMENS

6.1 The designation of specimens subject to conditions of external fire shall be according to both the time of penetration and the distance of spread of flame along their external surface.

6.2 Each category designation shall consist of two letters, e.g. AA, AC, BB, these being determined as follows:

First letters:

A. Those specimens which have not been penetrated within 1 hour.

B. Those specimens which are penetrated in not less than ½ hour.

C. Those specimens which are penetrated in less than ½ hour.

D. Those specimens which are penetrated in the preliminary flame ignition test.

Second letters:

A. Those specimens on which there is no spread of flame.

B. Those specimens on which there is not more than 21 inches (533mm) spread of flame.

C. Those specimens on which there is more than 21 inches (533mm) spread of flame.

D. Those specimens which continue to burn for 5 minutes after the withdrawal of the test flame or spread more than 15 inches (381mm) across the region of burning in the preliminary test.

6.3 Attention shall be drawn to dripping from the underside of the specimen, any mechanical failures, and any development of holes, by adding a suffix 'X' to the designation to denote that one or more of these took place during the test.

6.4 When it is required to indicate test results obtained on the sample by designation, the following method shall be used:

The designation letter for penetration shall be given followed by that for spread of flame and preceded by the letters EXT.F. or EXT.S. according to whether the flat or inclined test has been made and when necessary the suffix 'X' shall be added. Thus, for example:

EXT.F.AA; EXT.F.ACX;
EXT.S.BA; EXT.S.CCX.

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7 CONCLUSIONS

A sample of a sloping roofing system Metrobond stone coated steel roofing tile, as described in this report, when tested in accordance with B.S. 476 : Part 3 : 1958, achieved the designation of EXT. S.AA.

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 5 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.

8 REFERENCE

1 Fire tests on building materials and structures. Part 3. External fire exposure roof tests. British Standard 476 : Part 3 : 1958. British Standards Institution, London, 1958.

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Test and report by:

R.L. Huntley
Technical Officer

RLH/MB
26 November 1998

Approved by:

R.A. Jones
Section Manager, Building Products

P.J. Field
Laboratory Manager