

Test Report

WARRES NO. 302952

ISO 4589 - 3; 1996

Plastics - Determination Of Burning Behaviour
By Oxygen Index
Part 3 - Elevated - Temperature Test

Sponsored By

Dow Deutschland GmbH & Co OHG
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1 Purpose Of Test

To assess the performance of a material when it is tested in accordance with ISO 4589 - 3: 1996: "Plastics - Determination of burning behaviour by oxygen index Part 3 - Elevated - Temperature Test". Test was carried out at 60°C.

2 Material Sent For Test

The description of the material given below has been prepared from the information provided by the sponsor of the test. All values quoted are nominal, unless tolerances are given.

The specimens comprised a flexible plastic foam acoustic insulation sheet (product reference "Quesh FR 2000 natural sound management foam, colour reference "black") having a measured thickness of 10mm and a calculated density of 35 Kg/m³ and which was stated by the sponsor to have been extruded from a polyethylene foam.

The sponsor provided limited composition details of the product and these details are held on our confidential file relating to this investigation. The sponsor, however, was unwilling to provide further details relating to the particular flame retardant used in the manufacture of the product.

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

3 Conditioning Of Specimens

The specimens were received on the 16th April 2002.

Prior to test the specimens were conditioned to equilibrium with air at 23 ± 2°C and a relative humidity of 50 ± 5 per cent for at least 88 hours.

4 Method Of Test

Specimens measuring nominally 100mm long by 10mm wide by 10mm thick were used. The thickness of the specimens used conforms with the requirements specified in Table 2 of the Standard for test specimen Form III for sheet material as received. The specimens were tested in accordance with the test procedure specified in Clause 8 of the Standard using the Stanton Redcroft Oxygen Index apparatus.

The logo for Warrington Fire Research, featuring a stylized 'W' and the words 'Warrington FIRE research' in a bold, sans-serif font.

5 Date Of Test

The test was performed on 25th April 2002.

6 Results Of Tests

The test results relate only to the behaviour of the specimens under the particular conditions of this test, they should not be used to infer the fire hazards of the material in other forms or under other fire conditions.

The test results relate only to the specimens of the materials in the form in which they were tested. Small differences in the composition of the product or thickness of the specimens may significantly affect the performance during the tests 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.

In accordance with Sections 8 and 9 of the Standard, the results obtained are given in appendix A.

7 Conclusion

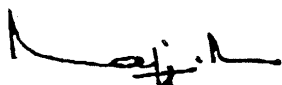
When tested in accordance with the procedure specified in ISO 4589 - 3: 1996 at a temperature of 60°C the material shows an oxygen index of 30.5%.

8 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.

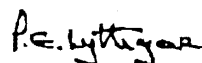
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Tested By



S RAMALINGAME
Laboratory Supervisor

Approved



P E LYTHGOE
Testing Manager
for and on behalf of
WARRINGTON FIRE RESEARCH CENTRE

Date of issue: 15 May 2002.

(fmds)

APPENDIX A

MATERIAL TESTED

Part 1 – Preliminary oxygen concentration

| | | | | | | | | | |
|--------------------------|------|------|------|------|--|--|--|--|--|
| Oxygen Concentration (%) | 23.0 | 29.0 | 30.0 | 31.0 | | | | | |
| Burning period (s) | 0 | 0 | 5 | 30 | | | | | |
| Length burnt (mm) | 0 | 0 | <10 | 50 | | | | | |
| Response ('X' or 'O') | O | O | O | X | | | | | |

Part 2 – Determination of the oxygen index value

| N _T series measurements | | | | | | | | | | |
|--|------|------|------|------|------------|-----------------|------|------|------|------|
| N _L series measurements (8.6.1 + 8.6.2) | | | | | (8.6.3) cf | | | | | |
| Oxygen concentration (%) | 30.0 | 30.2 | 30.4 | 30.6 | | 30.6 | 30.4 | 30.6 | 30.4 | 30.6 |
| Burning period (s) | 5 | 10 | 10 | 30 | | 30 | 10 | 30 | 10 | 30 |
| Length burnt (mm) | <10 | 10 | 10 | 50 | | 50 | 10 | 50 | 10 | 50 |
| Response ('X' or 'O') | O | O | O | X | | X | O | X | O | X |
| Column (2 3 4 or 5) | 4 | | | | | Row (1 to 16): | | | | 6 |
| k value from table 4 | | | | | | -0.45 | | | | |

$$OI = c_f + kd = 30.6 + (-0.45 \times 0.2)$$

$$= 30.5\% \text{ (to one decimal place, for reporting OI)}$$

$$= 30.51\% \text{ (to 2 decimal places, for calculation of and verification of } d \text{ as required in part 3)}$$

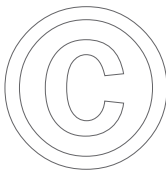
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