

Test Report

WARRES No. 126684

BS 6853: 1999 Appendix D, Clause D.8.4
Code Of Practice For Fire Precautions
In The Design And Construction Of
Passenger Carrying Trains

Methods For Measuring Smoke Density

Sponsored By

Four 4-Rail Services Limited
12 Magnet Road
East Lane Business Park
Wembley
Middlesex
HA9 7RG

Warrington
FIRE
research

Test Report

WARRES No. 126684

**BS 6853: 1999 Appendix D, Clause D.8.4
Code Of Practice For Fire Precautions
In The Design And Construction Of
Passenger Carrying Trains**

Methods For Measuring Smoke Density

Sponsored By

**Four 4-Rail Services Limited
12 Magnet Road
East Lane Business Park
Wembley
Middlesex**

HA9 7RG

1 Purpose Of Test

To determine the performance of a specimen of a coated panel when it is subjected to the conditions of test specified in BS 6853: 1999 "Code of practice for fire precautions in the design and construction of passenger carrying trains" Annex D.8.4 "Panel test".

2 Scope Of Test

BS 6853: 1989 Annex D.8.4 details a test procedure, the results being expressed as Ao(on) and Ao(off) values, for the measurement of the density of smoke emitted from a panel burning under the defined conditions of test. The results are used to determine compliance with the criteria given in BS 6853: 1999 Table 2,3,5 and 6.

3 Description Of Test Specimen

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

6mm thick 'Glasroc', a glass fibre reinforced gypsum board, manufactured by British Gypsum, was coated on one face with one coat of 'Protectosil', a clear, waterborne, anti-graffiti coating, brush applied at a coverage rate of from 100 to 200ml/m².

The sponsor was unwilling to provide further details of the manufacturer and composition of the coating.

The specimen was supplied by the sponsor of the test. Warrington Fire Research Centre was not involved in any selection or sampling procedure.

4 **Conditioning Of Test Specimens**

The specimens were received on the 21st August 2002

The test specimens were conditioned by maintaining them in door ambient conditions for 72 hours and then for a minimum of 16 hours at $23 \pm 2^\circ\text{C}$ and a relative humidity of $50 \pm 5\%$.

5 **Date Of Test**

The test was performed on the 29th August 2002.

6 **Test Procedure**

The test was performed in accordance with the procedure specified in BS 6853: 1999 Appendix D, Clause D.8.4 and this report should be read in conjunction with that Standard. Restraining clips were used to prevent excessive movement of the test specimen.

7 **Exposed Face**

The coated face of the specimen was exposed to the flame.

8 **Test Results**

The test results relate only to the behaviour of the specimens of the product under the particular conditions of test; they are not intended to be the sole criterion for assessing the potential smoke 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.

Ao values are calculated as follows:

$$A_o = A_m V / (nl)$$

Where

$$V = 27\text{m}^3 \text{ (volume of the cube)}$$

$$l = 3\text{m} \text{ (length of the optical path between windows)}$$

$$n = 1$$

All figures are rounded down to the second decimal place.

	Specimen No:1	Specimen No:2	Average
Ao(max)	: 3.47	3.53	3.50

Visual observations made during the test are given in Appendix 1 and 2.

The changes in A_0 with time were continuously recorded and graphs are presented in Figures 1 and 2.

9 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.

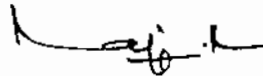
This report may only be reproduced in full. Extracts or abridgements shall not be published without permission of Warrington Fire Research Centre.

Tested By



A GREEN
Technical Assistant

Approved



S RAMALINGAME
Laboratory Supervisor
For and on behalf of
WARRINGTON FIRE RESEARCH CENTRE

Date of Issue: 02 October 2002

OBSERVATIONS DURING TEST

Specimen No: 1

TIME (MINS-SEC)	OBSERVATIONS
00:01	Test Commenced.
03:00	Alcohol flaming, specimen charring in flame zone.
10:00	Alcohol flaming, specimen char continued.
20:00	Alcohol flaming.
27:05	Alcohol flaming ceased.
40:00	Test terminated.

OBSERVATIONS DURING TEST

Specimen No: 2

TIME (MINS-SEC)	OBSERVATIONS
00:01	Test Commenced.
03:00	Alcohol flaming, specimen charring in flame zone.
10:00	Alcohol flaming, specimen char continued.
20:00	Alcohol flaming.
27:45	Alcohol flaming ceased.
40:00	Test terminated.

Warres: 126684 Specimen No: 1

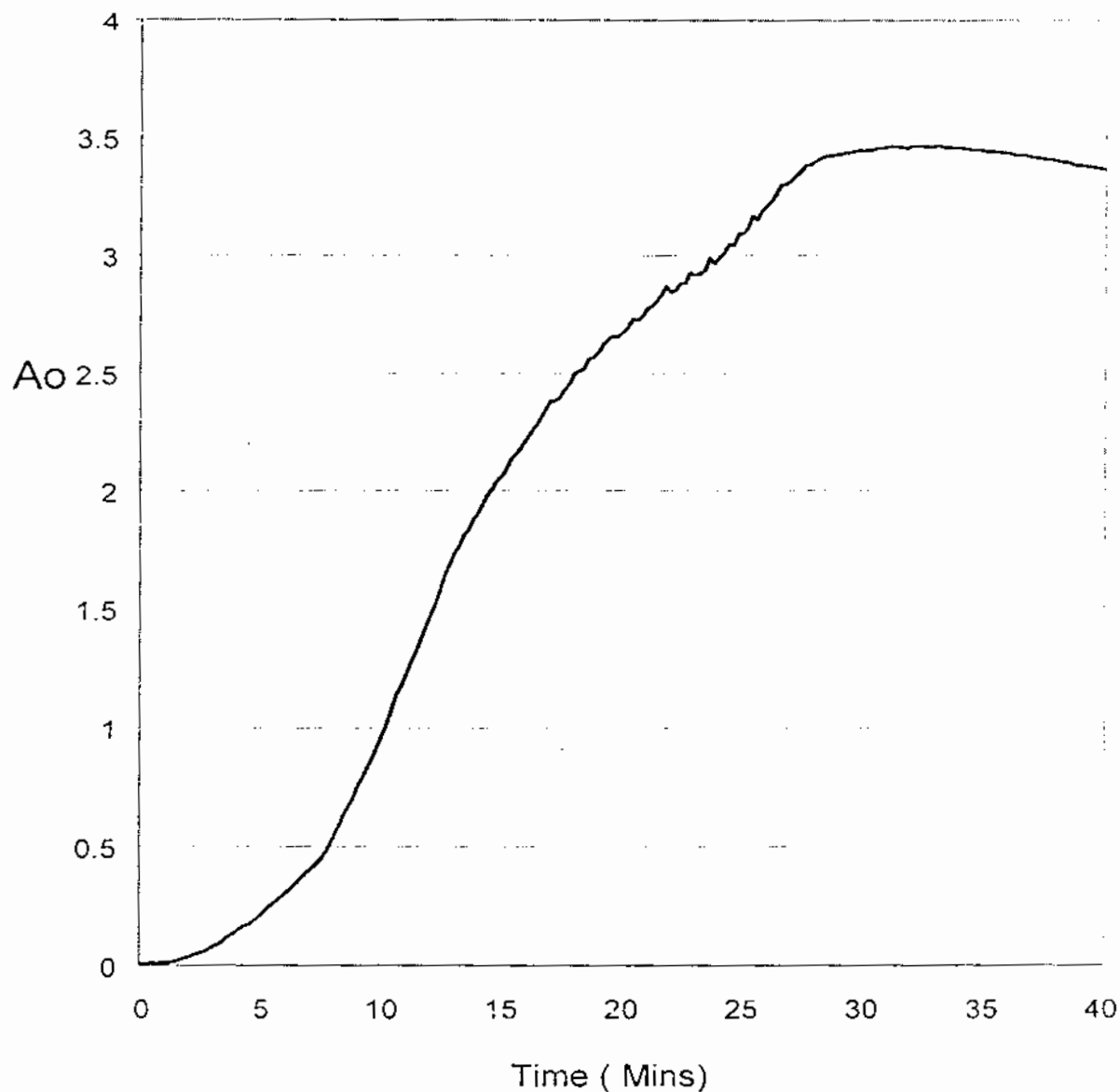


Figure 1 Variation of Absorbance (Ao) with time (Specimen No: 1)

Warres: 126684 Specimen No: 2

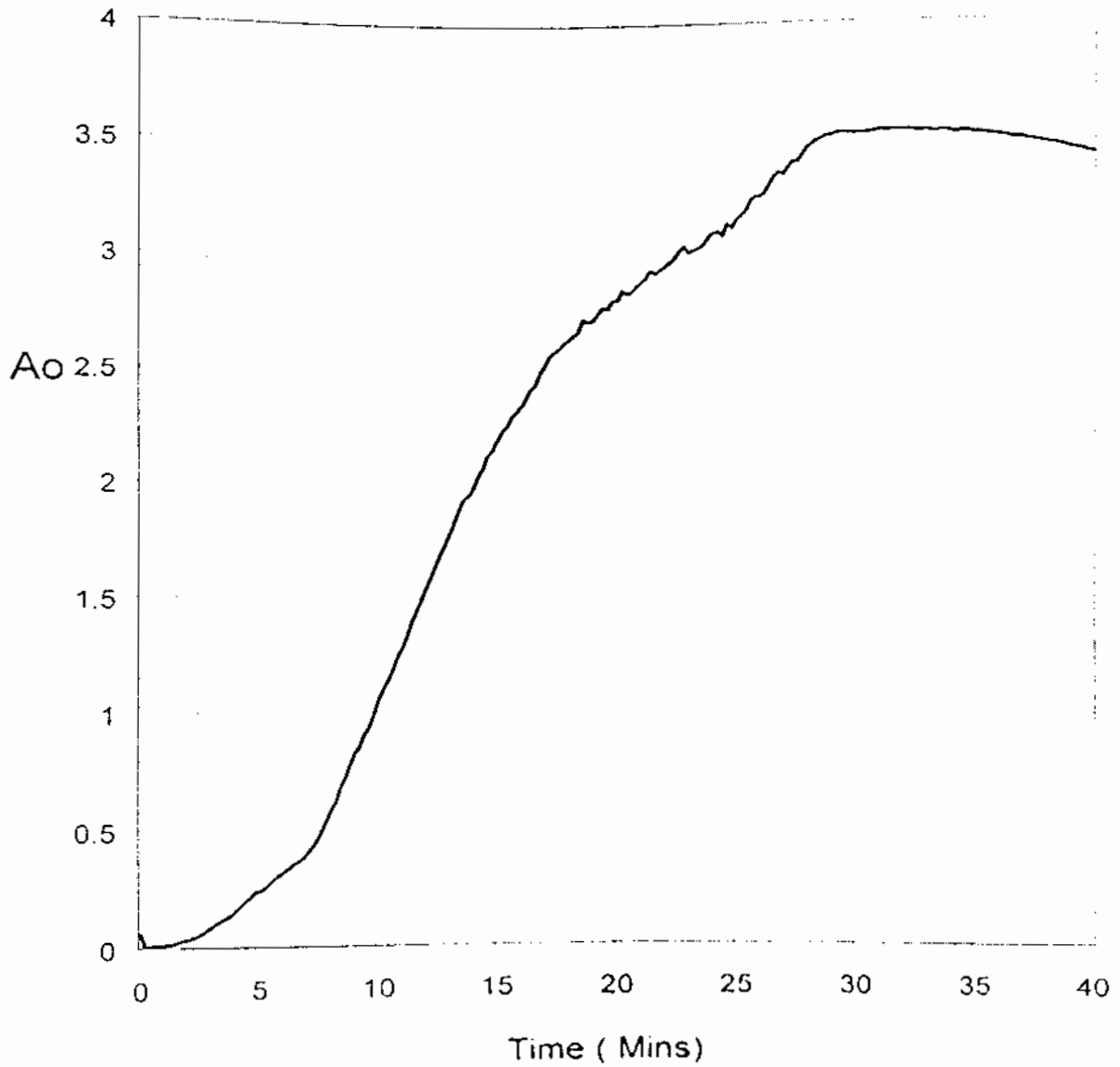


Figure 2 Variation of Absorbance (Ao) with time (Specimen No: 2)