Interscience Fire Laboratory
Building 63
Haslar Marine Technology Park
Haslar Road, Gosport
Hampshire PO12 2AG
United Kingdom
Tel. : +44 (0) 20 8692 5050
Fax.: +44 (0) 20 8692 5155
Email: firetesting@intersciencecomms.co.uk

Test Report No: ICL/H18/9165

Code of practice for fire precautions in the design and construction of passenger carrying trains BS 6853: 1999 Annex D, Clause D.8.4 Methods For Measuring Smoke Density

Sponsored By

Tensid UK Limited
Unit 1 Craven Court, Canada Road,
Byfleet, KT14 7JL

Code of practice for fire precautions in the design and construction of passenger carrying trains
BS 6853: 1999 Annex D, Clause D.8.4
Methods For Measuring Smoke Density

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1 Purpose of Test

To determine the performance of a specimen of a 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" 60^0 Panel test".

2. Scope of Test

BS 6853: 1989 Annex D.8.4 specifies 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 product 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 product 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 a two part paint referenced "L F P L i n e M a r k i n g P a i n t" consisting of Part a as base and Part B as an activator.

The sponsor of the test stated that the rate of application is 4 to $5m^2$/litre on one face of a 5mm thick inert board. The sponsor of the test has supplied Technical data / safety sheets relating to the product and these are held on our file relating to this investigation.

The specimens were received on 3rd April 2018

4. Conditioning of Test Specimens

The test specimens were conditioned by maintaining them in indoor ambient conditions for 72 hours and then for a minimum of 16 hours at 23 ± 2°C and a relative humidity of 50 ± 5%.

5. Date of Test

The test was performed on 19th April 2018

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.

Exposed Face

Painted face was exposed to the flame.

7. 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. Uncertainty measurement has not been taken into account when presenting the test results.

Parameter	Run1	Run 2	Average
Ao(on max)	1.497	1.074	1.286
Ao(on end)	1.397	0.996	1.197
Ao(off) corrected	1.947	1.415	1.681

Note : No melting, dripping or falling off char was observed

Where the value of Ao decreased from a maximum value during the ON phase. Ao(off) is corrected by adding the difference between Ao(on max) and Ao(on end) to Ao(off). Thus: Ao(off) = Ao(off end) + Ao(on max) - Ao(on end).

The changes in transmission with time were continuously recorded and Ao v Time graphs are presented in Figures 1 and 2.

8. Requirements

The smoke emission requirements for Interior Vertical services given in table 2 of BS 6853:1999 are as follows:

Parameter	Vehicle category		
	Ia	Ib	II
Ao(on) max	2.6	4.2	9.4
Ao(off) max	3.9	6.3	14.0

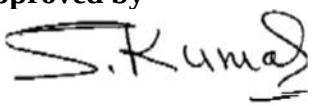
9. Conclusion

The panels tested in accordance with BS 6853 Annex D8.4 has achieved Ao(on max) value of 1.286 and Ao(off) Value of 1.681 and therefore satisfies the requirements of Vehicle Category Ia, Ib and II.

Prepared by

C. B. Chong
Fire Scientist

Approved by



S.Kumar
Technical Manager

Date of Issue: 10th April 2018

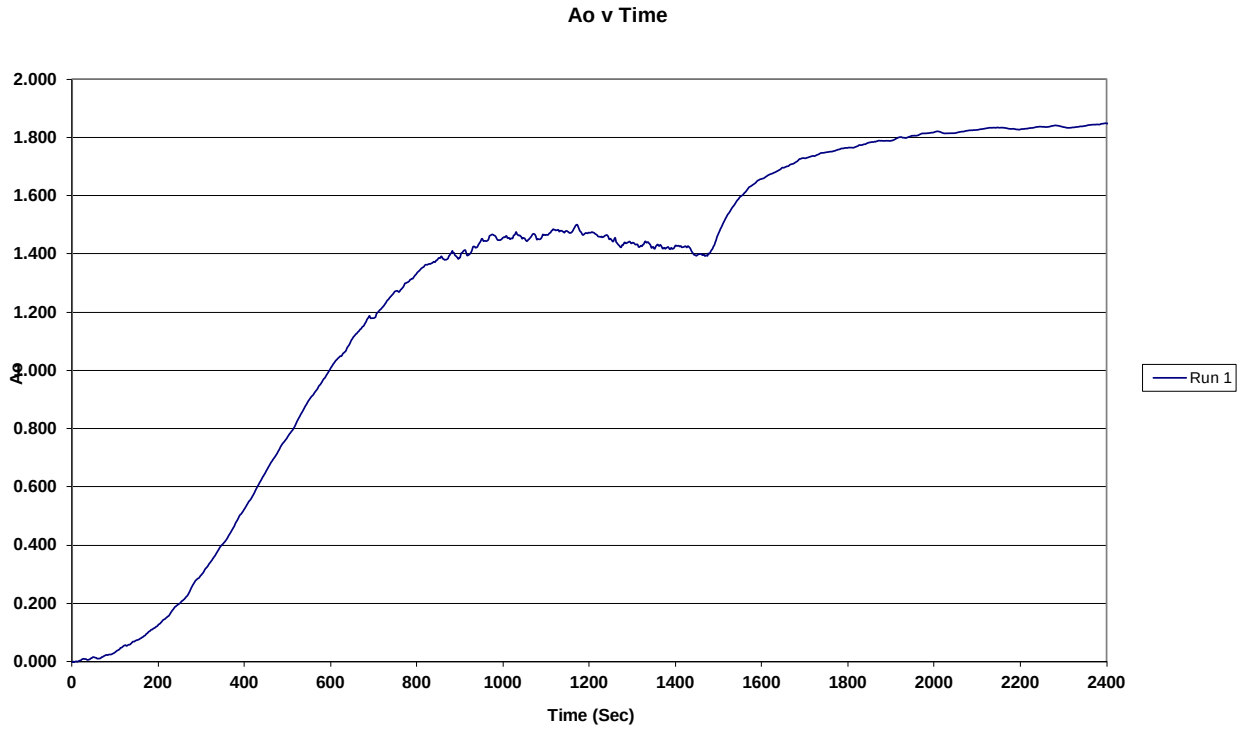


Figure 1 Variation of Absorbance (Ao) with time (Test No 1)

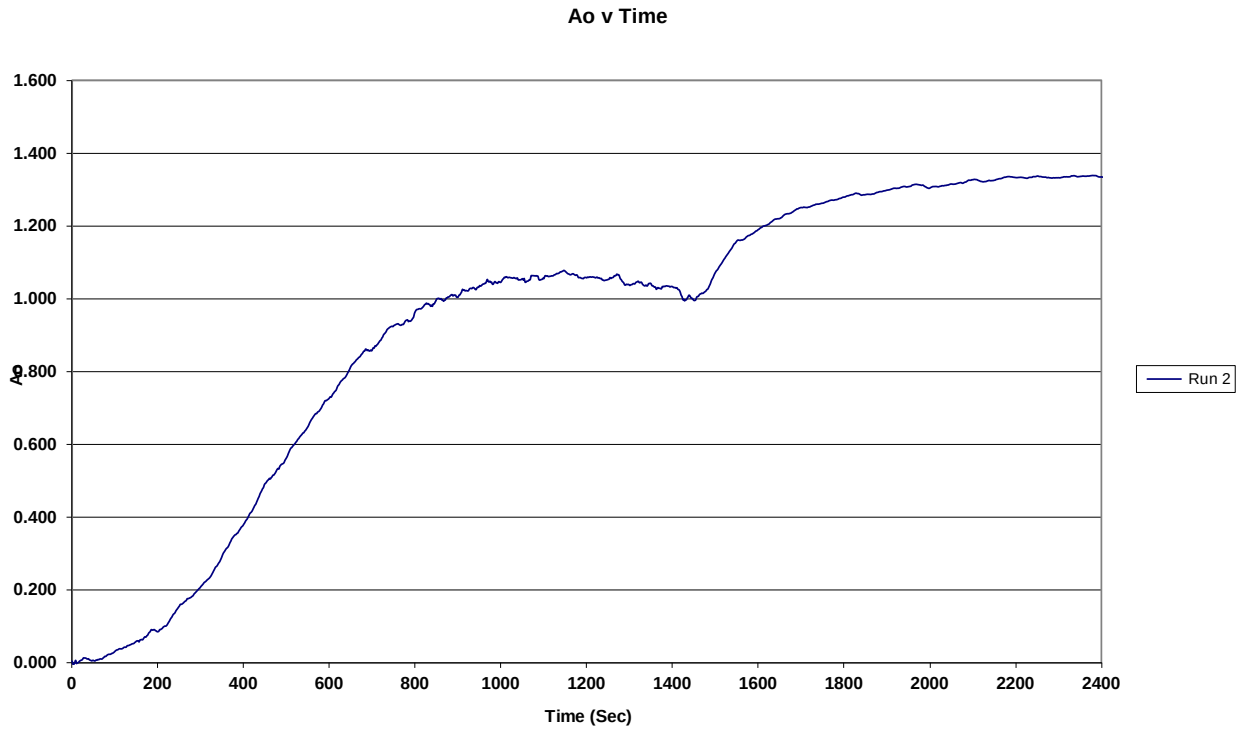


Figure 2 Variation of Absorbance (Ao) with time (Test No: 2)