



DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RUSEARCH AND FIRE OFFICES' COMMITTEE

JOINT FIRE RESEARCH ORGANIZATION

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A COMPARISON OF THE "FIRE RESISTANCE" TEST of ADMIRALTY SPECIFICATION DNC/M/71A and

THE SMALL SCALE SPREAD OF FLAME TEST OF B.S. 476: 1953

May, 1954.

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by

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### Introduction

There are at present several tests designed to assess the fire hazards of paints and surface finishes, and manufacturers may be called on by Government Departments and other bodies to supply paint to various specifications. It is considered by the Committee responsible for B.S. 476, that the surface spread of flame test is the best available means for indicating the suitability of paints for use in buildings.

The purpose of the present note is to report the results of experiments which were made to find whether the surface spread of flame test could be correlated with the 'fire resistance' test of Admiralty Specification DNC/M/71A.

### ... Fire Resistance test of Admiralty Specification DNC/M/71A

The Admiralty test was designed to show whether a fire can be transmitted through a steel bulkhead by the flaming of the heated paint on the unexposed side.

The paint under examination is applied on a primer of aluminium paint to a 12 in. x 12 in. x \(^1/32\) in. steel panel, half the panel having a single coat, and the other half two coats. The paint is applied by brush to give a film weight of between 1 oz and 2 oz yd^2 per coat. After drying, the unpainted side of the panel is heated by a circular gas ring so adjusted "that an unpainted panel becomes red hot in 20 seconds". The panel is exposed to the gas flame for one minute and the paint film is watched for signs of flashing, blister formation, ignition of carbonized residue, and peeling and flaking of the residue from the steel panel. The paint is classified subjectively on these observations.

Samples of paint which had been graded good, indifferent and bad on this test were applied to steel and subjected to the small scale surface spread of flame test described in an Appendix to B.S.476: 1953.

## Surface spread of flame test

Results of the investigation on this test are given in Table 1.

1. S. & D. A.

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Type of	Grading on	Small Scale Surface Spread of Flame Test			
paint	Admiralty	Applied	Primer	Weight of	Final distance of
Code No.	Test	to	ж.		
				application oz/sq.yd	57. 44.4
3239 A/53 1728 " 1980 " 2488 " 1428 " 1428 " 1428 " 1428 " 1428 " 1428 " 1428 " 1428 " 1428 " 1428 " 1428 " 1428 "	Good Good Indifferent Indifferent Bad Bad Bad Bad Bad Bad Bad Bad Bad Bad	1/32" steel  Asbestos millboard	NO YES	3 24246969	less than 1 in. on all specimens

\* The primer was aluminium paint to Admiralty Specification DNC/M/74B applied by brush to give a dry film weight of 1 oz/sq.yd.

The final distance of flame spread was less than one inch even with high weights of application and also when applied to asbestos millboard which has a much lower thermal conductivity than steel.

# Conclusions

It was not possible to differentiate on the small scale spread of flame test between paints graded "good" on the Admiralty test and those graded "bad". It is evident that the paint properties required by the Admiralty in their specification DNC/M/71A cannot be assessed on the test of B.S. 476