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Test Report: ICL/H18/9039 Rev 1

International Maritime Organisation, Fire Test Procedure Code: 2010

Part 5 APPENDIX 1

**FIRE TEST PROCEDURES FOR SURFACE FLAMMABILITY OF BULKHEAD, CEILING,
DECK FINISH MATERIALS AND PRIMARY DECK COVERINGS**

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International Maritime Organisation, Fire Test Procedure Code: 2010 Part 5 APPENDIX 1 FIRE TEST PROCEDURES FOR SURFACE FLAMMABILITY OF BULKHEAD, CEILING, DECK FINISH MATERIALS AND PRIMARY DECK COVERINGS

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1 Introduction

International Maritime Organisation, Fire Test Procedure Code Part 5 Appendix 1: "FIRE TEST PROCEDURES FOR SURFACE FLAMMABILITY OF BULKHEAD, CEILING, DECK FINISH MATERIALS AND PRIMARY DECK COVERINGS"

The principle of the test method is for evaluating flammability characteristics of specimens held in the vertical orientation. By exposure to a radiant heat source and a pilot flame, means are provided to observe the times to ignition, spread and extinguishment of flames along the length. Additionally, the measurement of the stack gas thermocouples are taken as the burning progresses.

The test method provides a means for the comparative assessment of products, however, it does not model a real fire situation and the results cannot therefore be used to describe the fire hazard of materials under actual fire conditions.

2 Description of Test Specimens

The description of the specimens 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 0.37mm thick Vescom vinyl wall covering with digital printing (Batch Number 165618-001) having a nominal mass of 350g/m² and consisting of :
Face: Flame retardant Vinyl film nominally 0.2mm thick. (Weight approximately 310g/m²) Backing: Non woven Cutron (Weight 40g/m²).

The wall covering was bonded to one face of a 12mm thick Calcium silicate board (Density 780g/m³) using Starch and PVAc adhesive referenced "Vescom 2000" applied at 170g/m².

The sponsor of the test did not supply further details relating to the composition of the product tested.

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3 Conditioning of Specimens

The specimens were received on 6th March 2018

The specimens were conditioned to constant mass at $23 \pm 2^{\circ}\text{C}$ and $50 \pm 5\%$ RH, before testing.

4 Date of Test

The tests were performed on 28th March 2018

5 Test Procedure

The test was performed in accordance with the procedure called up in International Maritime Organisation, Fire Test Procedure Code Part 5 Appendix 1: FIRE TEST PROCEDURES FOR SURFACE FLAMMABILITY OF BULKHEAD, CEILING, DECK FINISH MATERIALS AND PRIMARY DECK COVERINGS. This report should be read in conjunction with these Standards.

6 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 and toxic emission 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 will therefore invalidate the test results. It is the responsibility of the supplier of the product to ensure that the product, which is supplied, is identical with the specimens, which were tested. Uncertainty measurement has not been taken into account when presenting the test results.

The results of tests are summarised below in Table 1:-

Parameter	Average of 3 specimens
Critical flux at extinguishment, CFE (kW/m ²)	43.73
Heat for sustained burning, Q _{sb} (MJ/m ²)	2.94
Total heat release, Q _t (MJ)	0.01
Peak heat release, q _p (kW)	0.14
Flaming droplets	0

Full results are given in Appendix 1 Table 2 and Table 3.

7 Requirements

Table 1 : Surface flammability criteria

	Bulkhead, wall and ceiling linings	Floor coverings	Primary deck coverings
<i>CFE</i> (kW/m ²)	≥ 20.0	≥ 7.0	≥ 7.0
<i>Qsb</i> (MJ/m ²)	≥ 1.5	≥ 0.25	≥ 0.25
<i>Qt</i> (MJ)	≤ 0.7	≤ 2.0	≤ 2.0
<i>Qp</i> (kW)	≤ 4.0	≤ 10.0	≤ 10.0
Burning droplets	Not produced	No more than 10 burning drops	Not produced

Where:

<i>CFE</i>	=	Critical flux at extinguishment
<i>Qsb</i>	=	Heat for sustained burning
<i>Qt</i>	=	Total heat release
<i>Qp</i>	=	Peak heat release rate

8 Conclusion

When tested in accordance with the procedure called up in International Maritime Organisation, Fire Test Procedure Code Part 5 Appendix 1 the product meets the requirements for Bulkhead, wall and ceiling linings.

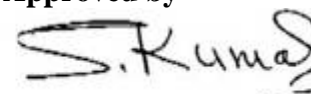
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Appendix 1

Table 2

Parameter	Run 1	Run 2	Run 3	Average
Length of test (s)	600	600	600	600
Heat for ignition (MJ/m ²)	3.01	2.40	3.33	2.91
Critical flux at extinguishment, CFE (kW/m ²)	46.25	45.36	39.58	43.73
Heat for sustained burning, Q _{sb} (MJ/m ²)	3.01	2.40	3.40	2.94
Total heat release, Q _t (MJ)	0.011	0.008	0.014	0.011
Peak heat release, q _p (kW)	0.11	0.17	0.14	0.14

Individual rake data from each specimen run

Table 3

	Run 1	Run 2	Run 3	Average
Time (min, s) to	s	s	s	s
ignition:	3	2	3	3
station 50mm:	7	6	7	7
station 100mm:	26	31	35	31
station 150mm:	65	52	72	63
station 200mm:			83	83
station 250mm:				
station 300mm:				
station 350mm:				
station 400mm:				
station 450mm:				
station 500mm:				
station 550mm:				
station 600mm:				
station 650mm:				
station 700mm:				
station 750mm:				
Flaming out time:	168	112	98	126
Flaming droplets:	0	0	0	0
Final travel (mm)	150	160	225	178
Length of the test (Sec)	600	600	600	600

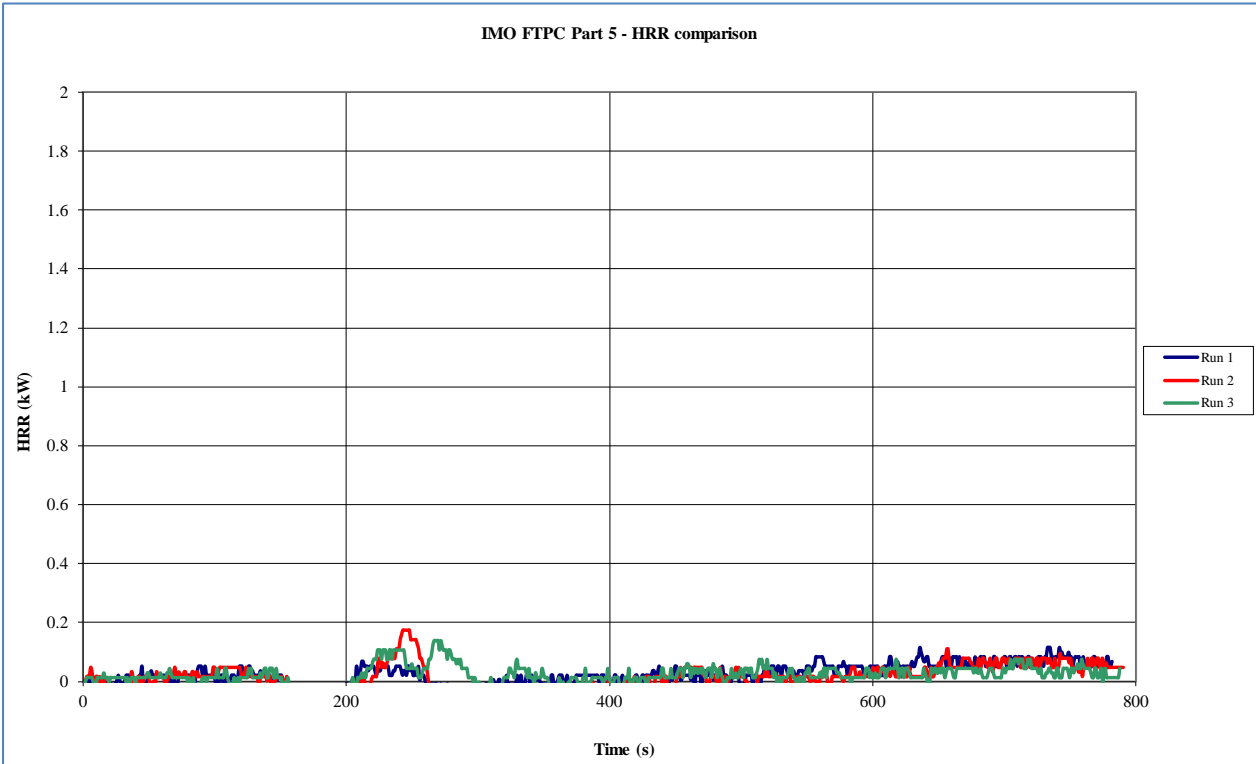


Chart 1. HRR vs time curves for the 3 specimens tested