Determination of surface flammability according to IMO 2010 FTPC Part 5

COLTECH M90

FINAS
Finnish Accreditation Service
T001 (EN ISO/IEC 17025)

Requested by: Coltech Ltd

VTT EXPERT SERVICES LTD

Requested by	Coltech Ltd Industrial Area of Inofita GR-32011, Inofita, Greece
Order	25 April 2017 / Christos Tsourelis
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Assignment **Determination of surface flammability**

Product

The customer gave following information about the coating system:

Product name: **COLTECH M90**
Product description: indoor coating specially formulated for marine applications
Consumption: 1,0...1,7 m^2/l
Colour: White
Manufacturer: Coltech Ltd

Sample

The sample was chosen and test specimens were made by the customer.

Date of delivery: 2 May 2017

Type of sample: test specimens of white coating on 2,0 mm thick steel sheet

The customer gave following information about the test specimens:

COLTECH M90: 1,0 mm (dry film thickness)

Test method

IMO 2010 FTPC Part 5 - *Test for surface flammability*

Description of the test method and requirements are given in Appendix 1.

According to IMO 2010 FTPC Annex 2 paragraph 2.2 surface materials with both the total heat release (Q_t) of not more than 0,2 MJ and the peak heat release rate (Q_p) of not more than 1 kW (both values determined in accordance with Part 5 of Annex 1) are considered to comply with the requirements of Part 2 of Annex 1 without further testing.

Date of test 5 May 2017

Test results Test results are given in Table 1 and Appendix 2.

Table 1. *The fire characteristics of the tested system and the results (pass/fail) in respect to the criteria for bulkhead, wall and ceiling linings given by IMO 2010 FTPC Part 5.*

	CFE kW/m^2	Q_{sb} MJ/m^2	Q_t MJ	Q_p kW	Burning droplets
Test 1	39,88	4,36	0,02	0,83	no
Test 2	39,88	2,94	0,005	0,40	no
Test 3	36,75	4,80	0,012	0,31	no
Mean	**38,8**	**4,0**	**0,0**	**0,5**	**no**
Criteria for bulkhead, wall and ceiling linings according to IMO 2010 FTPC Part 5	≥ 20,0	≥ 1,5	≤ 0,7	≤ 4,0	no
Results in respect to the criteria	pass	pass	pass	pass	pass

Symbols in Table:

CFE = critical flux at extinguishment
Q_{sb} = heat for sustained burning
Q_t = total heat release
Q_p = peak heat release rate

Note

The results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

Classification

The tested coating COLTECH M90 (dft 1,0 mm) on at least 1,5 mm thick metal sheet meets the following classification criteria as material for bulkhead, wall and ceiling linings.

- low flame spread according to IMO 2010 FTPC Part 5
- smoke and toxicity according to IMO 2010 FTPC Part 2

Approval of the product may be obtained only on application to the appropriate Administration.

Espoo, 30 May 2017

Tiia Ryynänen
Product Manager

Jere Heikkinen
Expert

APPENDICES

Appendix 1, Description of the test method and criteria
Appendix 2, Test results

DISTRIBUTION

Customer	Original (2)
Archive	Original

DESCRIPTION OF THE METHOD

IMO 2010 FTPC Part 5 (IMO Resolution MSC.307(88) Annex 1 Part 5) - *Test for surface flammability (Test for surface materials and primary deck coverings)*

Specimens

Size: 155^{+0}_{-5} mm x 800^{+0}_{-5} mm. Amount: 8 pcs.

Materials and composites of normal thickness of 50 mm or less are attached, by means of an adhesive if appropriate, to the substrate to which they will be attached in practice. Over 50 mm thick specimens shall be reduced to the thickness of 50^{+3}_{-0} mm by cutting away the unexposed face.

Before test, the specimens should be conditioned to constant moisture content at a temperature of 23 ± 2 °C and a relative humidity of 50 ± 10 %.

Test procedure

The specimen is inserted to the test apparatus in a vertical position so that its longer side is horizontal. The specimen is exposed to an exact defined heat radiation caused by burning the mixture of propane gas and air in a radiation panel. The highest intensity of heat radiation at the nearest end of the specimen is 50,5 kW/m^2 and it decreases from this value towards the other end according to a defined curve. During the test the time of ignition, spread of flame, extinguishment of flame and heat for sustained burning are measured.

Performance criteria

Materials giving average values for all the surface flammability criteria that comply with the values as listed in table below are considered to meet the requirement for low flame spread.

Materials for bulkhead, wall and ceiling linings and primary deck coverings shall not produce burning droplets during the test. The burning droplets shall be considered as a reject material regardless of the surface flammability criteria. For floor coverings, no more than 10 burning drops are accepted.

	Bulkhead, wall and ceiling linings	Floor coverings:	Primary deck coverings
CFE (kW/m^2)	≥ 20,0	≥ 7,0	≥ 7,0
Q_{sb} (MJ/m^2)	≥ 1,5	≥ 0,25	≥ 0,25
Q_t (MJ)	≤ 0,7	≤ 2,0	≤ 2,0
Q_p (kW)	≤ 4,0	≤ 10,0	≤ 10,0
Burning droplets	Not produced	No more than 10 burning drops	Not produced

CFE = critical flux at extinguishment
Q_t = total heat release
Q_{sb} = heat for sustained burning
Q_p = peak heat release rate

16.9.2014

TEST RESULTS

Product: **COLTECH M90**

Test method: IMO 2010 FTPC Part 5 - *Test for surface flammability*

Test results: Test results are given in Tables 1 - 2.

Table 1. *The times to reach different positions, burning droplets and the maximum distance of flame spread on the centreline of the test specimen and end test time.*

	Test 1	Test 2	Test 3
Time to ignition	28	24	50
Time to 50 mm (s)	53	60	86
Time to 100 mm (s)	91	64	86
Time to 150 mm (s)	95	64	103
Time to 200 mm (s)	103	86	116
Time to 250 mm (s)	-	-	136
Burning droplets	no	no	no
Maximum distance (mm)	220	220	250
End of test (s)	600	600	600

Table 2. *The measured heat for ignition* and heat for sustained burning (Q_{sb}) values*

D (mm)	Test 1 Q_{sb} MJ/m^2	Test 2 Q_{sb} MJ/m^2	Test 3 Q_{sb} MJ/m^2	Mean Q_{sb} MJ/m^2
150	4,36	2,94	4,73	4,01
200	-	-	4,87	4,87
Average heat for sustained burning (Q_{sb}) when D ≤ 400 mm	**4,36**	**2,94**	**4,80**	**4,03**

D = Distance from the hot end of the test specimen.

* = Heat for ignition values are the values at the 150 mm position.