



T018 (EN ISO/IEC 17025)
I006 (EN ISO/IEC 17020)
(Type A)

Determination of surface flammability of a
coated mineral wool

PAROC Marine Slab 40 N3

Test method: IMO FTPC Part 5
Test for surface flammability
(IMO Resolution MSC.61(67) Part 5)
Test procedure IMO Resolution A.653(16)

Requested by: Paroc Oy Ab

Requested by Paroc Oy Ab
P.O. Box 294
FIN-01301 Vantaa
Finland

Order 23 September 2004 / Tuomo Hjelt

Testing Laboratory **VTT TECHNICAL RESEARCH CENTRE OF FINLAND**
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Task **Determination of surface flammability of a coated mineral wool**

The product tested New name: PAROC Marine Slab 40 N3
Old name: PAROC Slab 40 + SM75

According to the customer:

- base board: stone wool, nominal density 40 kg/m³.
- surface, black glass fibre felt, nominal weight 60 g/m², manufactured by Johns Manville Sales GmbH, Wertheim, Germany.

Samples of the product will be stored for reference by VTT until 30 October 2005.

Manufacturer Paroc Oy Ab, P.O. Box 294, FIN-01301 Vantaa, Finland

Date of supply 27 September 2004

Date of test 22 October 2004

Test specimens The tests specimens measuring 155 mm x 800 mm x 50 mm were made on 23 September 2004 in the factory in Lappeenranta witnessed by Mr Jussi Rautiainen from VTT Building and Transport.

The measured density of the base board was 38 kg/m³.
The measured mass of the glass fibre cloth was 60 g/m².

The test specimens were conditioned to constant moisture content at a temperature of 23 ± 2 °C and a relative humidity of 50 ± 10 %.

Test details

Three specimens were tested.
A pilot flame with acetylene gas and air was used.

Test results

The following table gives the times to reach different positions and the maximum distance of flame spread on the centreline of the test specimen:

Distance from the hot end of the test specimen	Test 1 Time (s)	Test 2 Time (s)	Test 3 Time (s)
Ignition	No ignition	2	2
100 mm		3	3
Maximum distance		100 mm	100 mm
End of test	at 600 s	at 184 s	at 184 s

Other observations: No material fell down during the tests.

All the fire characteristics of the tested material are presented in the following table:

	CFE kW/m ²	Q _{sb} MJ/m ²	Q _t MJ	Q _p kW
Test 1	> 50,5	*	0,02	0,09
Test 2	48,4	*	0,00	0,02
Test 3	48,4	*	0,00	0,01
Mean	> 49,1	> 1,5	0,01	0,04
Criteria for bulkhead, wall and ceiling linings according to IMO FTPC Part 5	≥ 20,0	≥ 1,5	≤ 0,7	≤ 4,0
Classification as a bulkhead, wall and ceiling lining according to IMO FTPC Part 5	pass	pass	pass	pass

* = Heat for ignition and heat for sustained burning (Q_{sb}) could not be determined, because specimen did not ignite or the flame front did not reach the 150 mm position.

Rate of heat release in tests 1...3 is presented in Appendix 1.

CFE = critical flux at extinguishment

Q_{sb} = heat for sustained burning

Q_t = total heat release

Q_p = peak heat release rate

Classification The tested mineral wool PAROC Marine Slab 40 N3 may be regarded as a material with

low flame spread for bulkhead, wall and ceiling linings

according to IMO FTPC Part 5 (IMO Resolution MSC.61(67) Part 5).

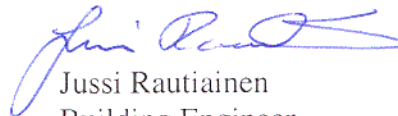
Approval of the product may be obtained only on application to the appropriate Administration.

Note According to the standard: " the results relate only 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."

Espoo 8 March 2005



Riitta Kajastila
Group Manager

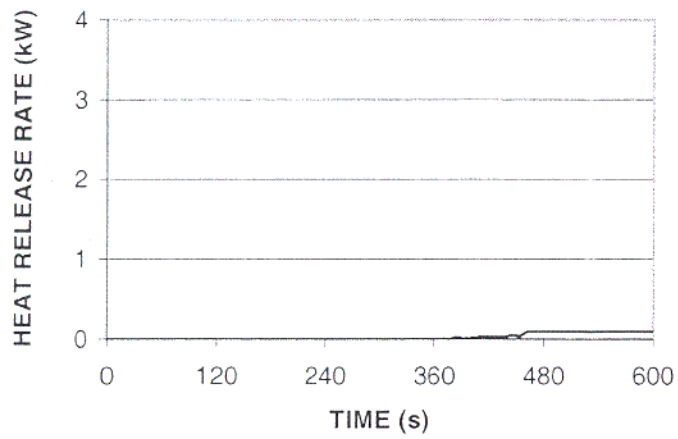
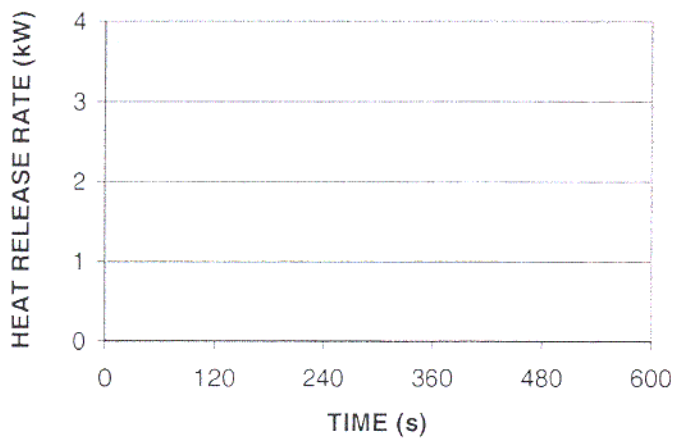
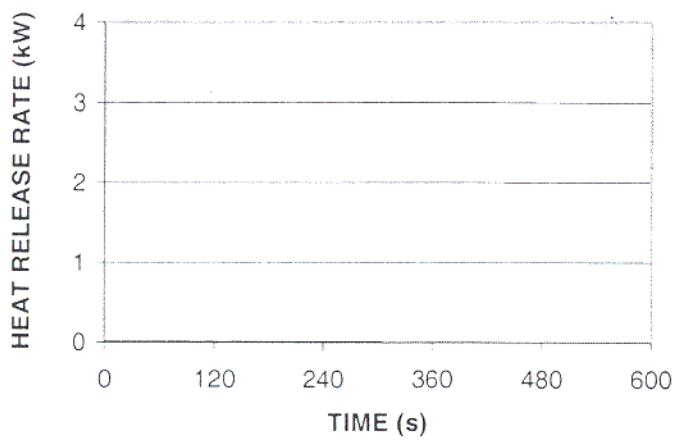


Jussi Rautiainen
Building Engineer

Appendix Appendix 1, Rate of heat release results
Appendix 2, Method description and requirements

Distribution Customer Original
VTT Original

Appendix 1

TEST 1**TEST 2****TEST 3**

SPREAD OF FLAME

Description of the method IMO FTPC Part 5 - Test for surface flammability (IMO Resolution MSC.61(67) Part 5, test procedure IMO Resolution A.653(16).

Specimens

Size: 155^{+0}_{-5} mm x 800^{+0}_{-5} mm. Amount: 10 pcs.

Materials and composites of normal thickness 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 methane gas and air in a radiation panel. The highest intensity of heat radiation at the nearest end of the specimen is $50,5$ kW/m² 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.

Criteria

Materials giving average values for all the surface flammability criteria not exceeding those listed below, are considered to meet the requirement for low flame spread.

Bulkhead, wall and ceiling linings:

$$CFE \geq 20,0 \text{ kW/m}^2$$

$$Q_{sb} \geq 1,5 \text{ MJ/m}^2$$

$$Q_t \leq 0,7 \text{ MJ}$$

$$Q_p \leq 4,0 \text{ kW}$$

Floor coverings:

$$CFE \geq 7,0 \text{ kW/m}^2$$

$$Q_{sb} \geq 0,25 \text{ MJ/m}^2$$

$$Q_t \leq 2,0 \text{ MJ}$$

$$Q_p \leq 10,0 \text{ kW}$$

where

CFE = critical flux at extinguishment

Q_{sb} = heat for sustained burning

Q_t = total heat release

Q_p = peak heat release rate