



T018 (EN ISO/IEC 17025)
I006 (EN 45004, Annex A)

Determination of surface flammability of a
coated mineral wool

PAROC Marine Slab 40 G3

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
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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 G3
Old name: PAROC Slab 40 + EKC-401(W)

According to the customer:

- base board: stone wool, nominal density 40 kg/m³.
- surface, white glass fibre cloth, nominal weight 400 g/m², manufactured by Valmieras Stikla Skiedra, Valmiera, Latvia.

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 20 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. According to the customer the glass fibre cloth was attached with Theokoll 500 glue (quantity 27 g/m²).

The measured density of the base board was 38 kg/m³.
The measured mass of the glass fibre cloth was 433 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 method IMO FTPC Part 5 - Test for surface flammability
(IMO Resolution MSC.61(67) Part 5)
Test procedure IMO Resolution A.653(16)

Description of the test method and requirements are given in Appendix 2

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

Test results First two specimens were tested with the pilot flame at normal position. The surface of the specimens did not ignite. According to the IMO Resolution A.653(16) one additional test were made with the pilot flame angled to impinge on the upper half of the test specimen. The surface of the specimen did not ignite. All the tests were terminated after 10 min exposure time.

Fire characteristics of the material tested are presented in the following table.

	Q_t MJ	Q_p kW
Test 1	0,01	0,12
Test 2	0,01	0,08
Test 3	0,0	0,03
Mean	0,01	0,08
Criteria for bulkhead, wall and ceiling linings according to IMO FTPC Part 5	$\leq 0,7$	$\leq 4,0$
Classification as a bulkhead, wall and ceiling lining according to IMO FTPC Part 5	pass	pass

Q_t = total heat release

Q_p = peak heat release rate

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

The other fire characteristics could not be determined, because the specimens did not ignite and the flame front did not spread at all over the surface of the specimens.

Other observations: No material fell down during the tests.

Classification The tested mineral wool PAROC Marine Slab 40 G3 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).

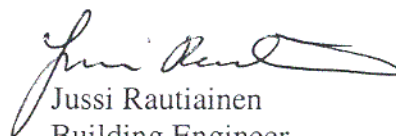
Approval of the product may be obtained only on application to the appropriate Administration.

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 27 December 2004



Riitta Kajastila
Group Manager



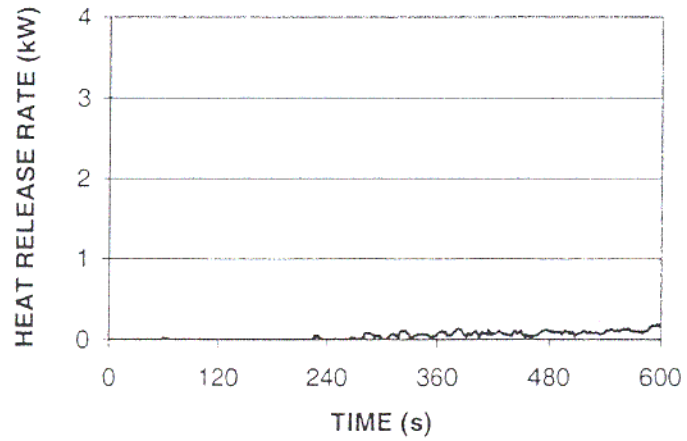
Jussi Rautiainen
Building Engineer

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

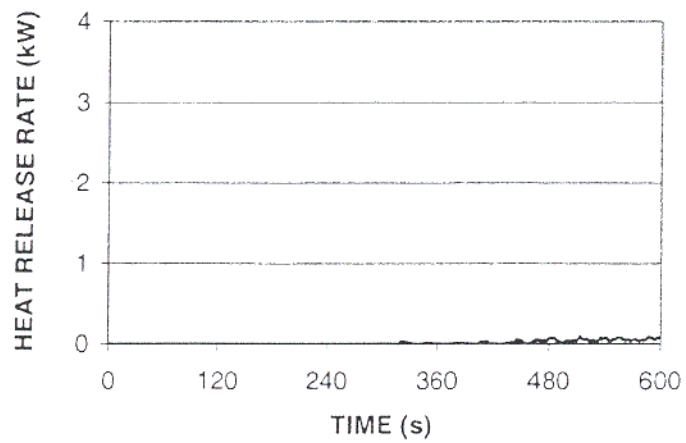
Distribution Customer Original
VTT Original

Appendix I

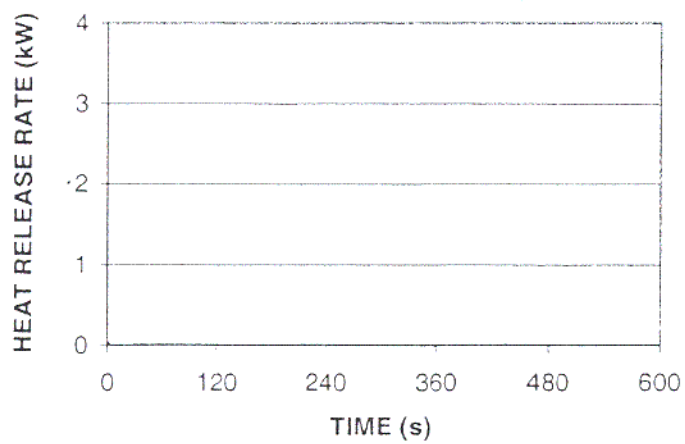
TEST 1



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_{-5}^{+0} mm x 800_{-5}^{+0} 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_{-0}^{+3} 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