

**Determination of the non-combustibility of PAROC Marine Slab 80**

<b>Requested by</b>	<b>Paroc Group Oy</b> Tommi Siitonen P.O. Box 47 FI-00621 Helsinki, Finland Tommi.Siitonen@paroc.com
<b>Order ref.</b>	6 September 2018 / Tommi Siitonen
<b>Contact person</b>	<b>Eurofins Expert Services Oy</b> Sanna Järvinen Kivimiehentie 4 FI-02150 Espoo, Finland SannaJarvinen@eurofins.fi
<b>Product</b>	The customer gave the following information about the product:  Product name: PAROC Marine Slab 80 Manufacturer: UAB Paroc, Vilnius, Lithuania Product description: stone wool slab Thicknesses: 30-180 mm Nominal density: 80 kg/m <sup>3</sup> Nominal organic content: 2,5 %
<b>Sample</b>	The quality control sample of the product was chosen by the customer.  Date of delivery: 27 February 2019 Product code: 8506264 Line: 1 Manufacturing date: 22 February 2019 Size of sample: 70 mm x 600 mm x 1200 mm Density measured by Eurofins: about 75 kg/m <sup>3</sup> Moisture content measured by Eurofins: about 0,1 % Organic content measured by Eurofins: about 2,6 %
<b>Specimens</b>	From the sample five test specimens were made with diameter of 45 mm and a height of 50 mm.
<b>Test method</b>	IMO 2010 FTPC Part 1 - Non-combustibility test  The description of the test method is presented in Appendix 1.
<b>Dates of tests</b>	13, 14 and 15 March 2019
<b>Test results</b>	The test results are shown in Appendix 2.

<b>Note</b>	The test 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.
<b>Classification</b>	<p>The tested stone wool product, PAROC Marine Slab 80 met the requirements for non-combustible material according to IMO 2010 FTPC Part 1.</p> <p>Approval of the material may be obtained only on application to the appropriate Administration.</p>

**Espoo, 8 April 2019**



*Sanna Jarvinen*  
Operational Team Manager

Appendices	Appendix 1, Description of the test method Appendix 2, Test results
Distribution	Customer Original Archive Original

**DESCRIPTION OF THE METHOD****IMO 2010 FTPC Part 1 *Non-combustibility test*****Moisture content**

Three weighted specimens of each material in the sample are heated in a ventilated oven at a temperature of  $105 \pm 2$  °C (gypsum-based, cementations and similar materials shall be dried at a temperature of  $55 \pm 5$  °C) for 24 h and reweighed when cooled in a desiccator. The moisture content is calculated as a percentage of the dry weight.

**Organic content**

After the percentage moisture contents have been calculated, the three specimens shall be further heated in an oven at a temperature of  $500 \pm 20$  °C for 2 h and weighted when cooled in a desiccator. The organic content is calculated as a percentage of the dry weight.

The organic content of each material used in the test specimen shall be within  $\pm 0,3$  % absolute of the value stated as the nominal organic content.

**Non-combustibility test****Specimens**

The test specimens shall be cylindrical and shall have a diameter of 43...45 mm and a height of  $(50 \pm 3)$  mm. For non-homogenous materials, the test specimen shall be constructed such that all layers are represented in the test specimen in proportion to their presence, by volume, in the original sample. For homogenous products, five test specimens shall be made and for non-homogenous products ten test specimens.

**Conditioning**

The test specimens shall be dried in a ventilated oven maintained at  $(60 \pm 5)$  °C, for between 20 h and 24 h, and cooled to ambient temperature in a desiccators prior to testing.

**Test procedure**

The test specimen is placed in a vertical tube furnace with a temperature of  $750 \pm 5$  °C. Temperature alterations caused by possible burning of the test specimen are measured with three thermocouples, of which one is in the furnace, one on the test specimen surface and one in the test specimen centre. During the test the flaming time of the test specimen is also measured. For non-homogenous products five specimens are tested with one surface on the top of the specimens, and five specimens the same surface on the bottom.

**The evaluation criteria**

The material is deemed non-combustible according to IMO 2010 FTPC Part 1 if all the following criterias are satisfied.

- the average furnace thermocouple temperature rise does not exceed 30°C,
- the average test specimen surface thermocouple temperature rise does not exceed 30°C,
- the average duration of sustained flaming does not exceed 10 s and
- the average mass loss does not exceed 50 %.

5.7.2018

**TEST RESULTS**
**Method:** IMO FTPC 2010 Part 1 – Non-Combustibility Test

**Product name:** PAROC Marine Slab 80

**Moisture and organic content:**

Test	Moisture content, %	Organic content, %
1	0,09	2,54
2	0,08	2,70
3	0,08	2,65
<b>Mean</b>	<b>0,1</b>	<b>2,6</b>

**Non-combustibility test:**

Test	Mass loss, %	Temperatures, °C					Temperature rise, °C		Duration of sustained flaming, s
		$T_{i(\text{furnace})}$ initial furnace	$T_{m(\text{furnace})}$ maximum furnace	$T_{f(\text{furnace})}$ final furnace	$T_{m(\text{surface})}$ maximum specimen surface	$T_{f(\text{surface})}$ final specimen surface	$T_{r(\text{furnace})}$	$T_{r(\text{surface})}$	
1	2,8	753	782	777	803	781	5	22	0
2	2,4	752	786	785	793	787	1	6	0
3	2,1	753	783	782	785	782	1	3	0
4	2,5	754	799	797	798	789	2	9	0
5	2,3	754	794	793	806	797	1	9	0
<b>Mean</b>	<b>2,4</b>						<b>2</b>	<b>10</b>	<b>0</b>

 Specimen surface temperature rise:  $T_{r(\text{surface})} = T_{m(\text{surface})} - T_{f(\text{surface})}$ 

 Furnace temperature rise  $T_{r(\text{furnace})} = T_{m(\text{furnace})} - T_{f(\text{furnace})}$ 
**Summary of results:**

The average furnace thermocouple temperature rise: 2 °C

The average test specimen surface thermocouple temperature rise: 10 °C

The average duration of sustained flaming: 0 s

The average mass loss: 2,4 %.