

**Determination of installed thermal resistance into a roof and into a wall of  
PRO BARDAGE / PRO W according to EN ISO 6946:2017**

(test name)

Test method: Determination of installed thermal resistance into a roof and into a wall of PRO BARDAGE / PRO W according to EN ISO 6946:2017

(number of normative document or test method, description of test procedure, test uncertainty)

Product name: PRO BARDAGE / PRO W

(identification of the specimen)

Customer: SAS ATI FRANCE, 146 Avenue du Bicentenaire – FR-01120 Dagneux, France

(name and address of enterprise)

Manufacturer: SAS ATI FRANCE, 146 Avenue du Bicentenaire – FR-01120 Dagneux, France

**Calculation results:**

Roof slope angle, $\alpha$	Calculation method reference no.	Calculation result, $R$ , (m <sup>2</sup> ·K)/W
Pitched roof ( $\alpha = 0^\circ$ )	EN ISO 6946:2017	3.84
Pitched roof ( $\alpha = 30^\circ$ )		3.90
Pitched roof ( $\alpha = 45^\circ$ )		3.95
Wall ( $\alpha = 90^\circ$ )		4.12

*R value for others pitched sloop (different  $\alpha$  value) can be determined by linear interpolation between two calculated R values*

**Calculation made by:** Building Physics Laboratory, Institute of Architecture and Construction of Kaunas University of Technology

(Name of the organization)

Products used in calculation: Multilayer reflective insulation product PRO BARDAGE / PRO W (110 mm)  
(test report no. 129 SF/22 U)

Declared thickness of product PRO BARDAGE / PRO W – 80±10 mm

Additional information: Application, 2022-06-09

Annex: Annex 1. Calculation results

(the numbers of the annexes should be pointed out)

Head of Laboratory:

(approves the test results)

K. Banionis

(n., surname)

(signature)

Calculated by

(calculation made by)

DOKUMENTAI

A. Stonkuvienė

(n., surname)

(signature)

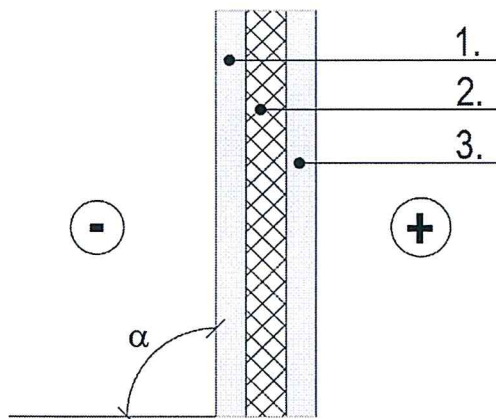
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**Annex 1: Calculation results**

**Table 1: Products R- values**

Product	Thermal resistance R, (m <sup>2</sup> ·K)/W
PRO BARDAGE / PRO W (test report No. 129 SF/22 U)	<b>R<sub>core90/90</sub> = 3.25</b>
<p><i>"R<sub>core90/90</sub>" is the declared R core value following EN 16012 + A1.</i>  <i>"R<sub>core90/90</sub>" is calculated on 4 results of 4 samples came from 4 different fabrication dates following EN 16012 + A1 (and using the fractile 90/90 calculation rules <math>S_{R-prod} = \sqrt{\frac{\sum(R_i - R_{average})^2}{n-1}}</math>);</i></p>	



Temperature regime 20°C / 0°C	
1.	Unventilated Air cavity #1, 20 mm
2.	PRO BARDAGE / PRO W, 110 mm
3.	Ventilated Air cavity #2, 20 mm

**Figure 1. Roof construction design**

**Table 2: Roof construction calculation results for slope  $\alpha = 0^\circ$  (EN ISO 6946)**

PRO BARDAGE / PRO W installed on roof			
Angle: $\alpha = 0^\circ$	Layer	R value	Unit
Ascendant Heat Flux (Winter period)	Unventilated Air cavity # 1	0.4380	m <sup>2</sup> ·K/W
	<b>PRO BARDAGE / PRO W</b>	<b>3.25</b>	<b>m<sup>2</sup>·K/W</b>
	Ventilated Air cavity # 2	0.1474	m <sup>2</sup> ·K/W
	<b>R<sub>Total</sub></b>	<b>3.84</b>	<b>m<sup>2</sup>·K/W</b>

**Table 3: Roof construction calculation results for slope  $\alpha = 30^\circ$  (EN ISO 6946)**

PRO BARDAGE / PRO W installed on roof			
Angle: $\alpha = 30^\circ$	Layer	R value	Unit
Ascendant Heat Flux (Winter period)	Unventilated Air cavity # 1	0.4879	m <sup>2</sup> ·K/W
	<b>PRO BARDAGE / PRO W</b>	<b>3.25</b>	<b>m<sup>2</sup>·K/W</b>
	Ventilated Air cavity # 2	0.1671	m <sup>2</sup> ·K/W
	<b>R<sub>Total</sub></b>	<b>3.90</b>	<b>m<sup>2</sup>·K/W</b>

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**Table 4: Roof construction calculation results for slope  $\alpha = 45^\circ$  (EN ISO 6946)**

<b>PRO BARDAGE / PRO W installed on roof</b>			
<b>Angle: <math>\alpha = 45^\circ</math></b>	<b>Layer</b>	<b>R value</b>	<b>Unit</b>
<b>Ascendant Heat Flux (Winter period)</b>	Unventilated Air cavity # 1	0.5173	$\text{m}^2 \cdot \text{K/W}$
	<b>PRO BARDAGE / PRO W</b>	3.25	$\text{m}^2 \cdot \text{K/W}$
	Ventilated Air cavity # 2	0.1790	$\text{m}^2 \cdot \text{K/W}$
	<b>R Total</b>	<b>3.95</b>	<b><math>\text{m}^2 \cdot \text{K/W}</math></b>

**Table 5: Wall construction calculation results for slope  $\alpha = 90^\circ$  (EN ISO 6946)**

<b>PRO BARDAGE / PRO W installed on wall</b>			
<b>Angle: <math>\alpha = 90^\circ</math></b>	<b>Layer</b>	<b>R value</b>	<b>Unit</b>
<b>Ascendant Heat Flux (Winter period)</b>	Unventilated Air cavity # 1	0.6317	$\text{m}^2 \cdot \text{K/W}$
	<b>PRO BARDAGE / PRO W</b>	3.25	$\text{m}^2 \cdot \text{K/W}$
	Ventilated Air cavity # 2	0.2333	$\text{m}^2 \cdot \text{K/W}$
	<b>R Total</b>	<b>4.12</b>	<b><math>\text{m}^2 \cdot \text{K/W}</math></b>

**Requirements for calculation validity:**

- Calculations of R values are valid for a pitched roof ( $\alpha$  is generally from  $30^\circ$  to  $90^\circ$ ).
- Calculations of R values are valid when PRO BARDAGE / PRO W is installed from the internal side of the Roof or the external part of the Roof.
- Calculations of R values are valid when PRO BARDAGE / PRO W is installed in agreement with the installation guidelines described into the manufacturer brochure.

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