CALCULATION REPORT No. <u>130 SF/22</u>
<u>Date: 17 of June 2022</u>

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Determination of installed thermal resistance into a roof and into a wall of MIX PR 80 according to EN ISO 6946:2017

(test name)

Test method: Determination of installed thermal resistance into a roof and into a wall of MIX PR 80 according to EN ISO 6946:2017

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

Product name: **MIX PR 80**

(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, α	Calculation method reference no.	Calculation result, R, $(m^2 \cdot K)/W$
Pitched roof ($\alpha = 0°$)	EN ISO 6946:2017	**6.04**
Pitched roof ($\alpha = 30°$)		**6.12**
Pitched roof ($\alpha = 45°$)		**6.16**
Wall ($\alpha = 90°$)		**6.34**

R value for others pitched sloop (different α 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 W** (110 mm) (test report no. 129 SF/22 U)
Declared thickness of product **PRO W** – 80±10 mm
Panel of biosourced insulation with vegetal fibers (rice straw) **PR 80** (80 mm) (recalculated by the test report no. 168-1 SFL/21 R)

Additional information: Application, 2022-06-09

Annex: *Annex 1. Calculation results*

(the numbers of the annexes should be pointed out)

Head of Laboratory: K. Banionis
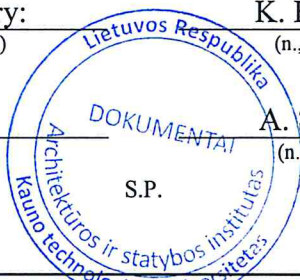
(approves the test results) (n., surname) (signature)

Calculated by A. Stonkuvienė

(calculation made by) (n., surname) (signature)

S.P.

Annex 1: Calculation results

Table 1: Products R- values

Product	Thermal resistance R, (m²·K)/W
PRO W (test report n° 129 SF/22 U)	$R_{core90/90} = 3.25$
PR 80 (test report n° 168-1 SFL/21 R)	$R_{recalc} = 2.05$

"Rcore90/90" is the declared R core value following EN 16012 + A1.
"Rcore90/90" 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 $S_{R-prod} = \sqrt{\frac{\sum(R_i - R_{average})^2}{n-1}}$;).
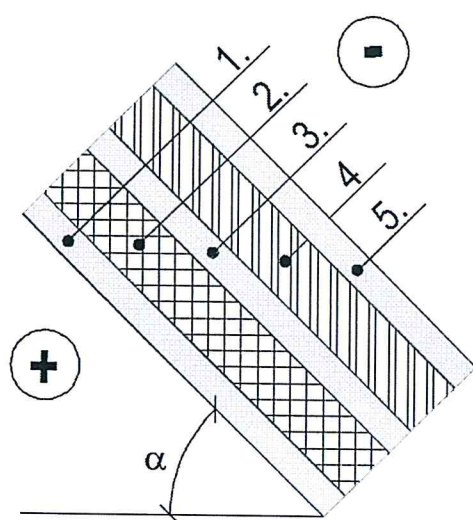
Temperature regime 20°C / 0°C	
1.	Unventilated Air cavity #1, 20 mm
2.	PR 80, 80 mm
3.	Unventilated Air cavity #2, 20 mm
4.	PRO W, 110 mm
5.	Ventilated Air cavity #3, 20 mm

Figure 1. Roof construction design

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

MIX PR 80 installed on roof			
Angle: α = 0°	Layer	R value	Unit
Ascendant Heat Flux (Winter period)	Unventilated Air cavity # 1	0.1515	m²·K/W
	PR 80	2.05	m²·K/W
	Unventilated Air cavity # 2	0.4421	m²·K/W
	PRO W	3.25	m²·K/W
	Ventilated Air cavity # 3	0.1475	m²·K/W
	R Total	6.04	m²·K/W

Table 3: Roof construction calculation results for slope α = 30° (EN ISO 6946)

MIX PR 80 installed on roof			
Angle: α = 30°	Layer	R value	Unit
Ascendant Heat Flux (Winter period)	Unventilated Air cavity # 1	0.1571	m²·K/W
	PR 80	2.05	m²·K/W
	Unventilated Air cavity # 2	0.4929	m²·K/W
	PRO W	3.25	m²·K/W
	Ventilated Air cavity # 3	0.1672	m²·K/W
	R Total	**6.12**	**m²·K/W**

Table 4: Roof construction calculation results for slope α = 45° (EN ISO 6946)

MIX PR 80 installed on roof			
Angle: α = 45°	Layer	R value	Unit
Ascendant Heat Flux (Winter period)	Unventilated Air cavity # 1	0.1600	m²·K/W
	PR 80	2.05	m²·K/W
	Unventilated Air cavity # 2	0.5230	m²·K/W
	PRO W	3.25	m²·K/W
	Ventilated Air cavity # 3	0.1792	m²·K/W
	R Total	**6.16**	**m²·K/W**

Table 5: Wall construction calculation results for slope α = 90° (EN ISO 6946)

MIX PR 80 installed on wall			
Angle: α = 90°	Layer	R value	Unit
Ascendant Heat Flux (Winter period)	Unventilated Air cavity # 1	0.1695	m²·K/W
	PR 80	2.05	m²·K/W
	Unventilated Air cavity # 2	0.6402	m²·K/W
	PRO W	3.25	m²·K/W
	Ventilated Air cavity # 3	0.2336	m²·K/W
	R Total	**6.34**	**m²·K/W**

Requirements for calculation validity:

- Calculations of R values are valid for a pitched roof (α is generally from 30° to 90°).
- Calculations of R values are valid when MIX PR 80 is installed from the internal side of the Roof or the external part of the Roof.
- Calculations of R values are valid when MIX PR 80 is installed in agreement with the installation guidelines described into the manufacturer brochure.