INSTITUTE OF ARCHITECTURE AND
CONSTRUCTION OF KAUNAS
UNIVERSITY OF TECHNOLOGY

BUILDING PHYSICS LABORATORY

CALCULATION REPORT No. 133 SF/22

Date: 17 of June 2022

Determination of installed thermal resistance into a roof and into a wall of PRO WALL DOUBLE according to EN ISO 6946:2017

(test name)

Test method: Determination of installed thermal resistance into a roof and into a wall of PRO WALL DOUBLE according to EN ISO 6946:2017
(number of normative document or test method, description of test procedure, test uncertainty)

Product name: **PRO WALL DOUBLE**
(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 (α = 0°)	EN ISO 6946:2017	**7.09**
Pitched roof (α = 30°)		**7.15**
Pitched roof (α = 45°)		**7.20**
Wall (α = 90°)		**7.36**
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 WALL** (110 mm) (test report no. 129 SF/22 U)
Declared thickness of product **PRO WALL** – 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: K. Banionis
(approves the test results) (n., surname) (signature)

Calculated by A. Stonkuvienė
(calculation made by) (n., surname) (signature)

Lietuvos Respublika DOKUMENTAI Architektūros ir statybos institutas Kauno technologijos universitetas S.P.

Validity – the named data and results refer exclusively to the tested and described specimens.
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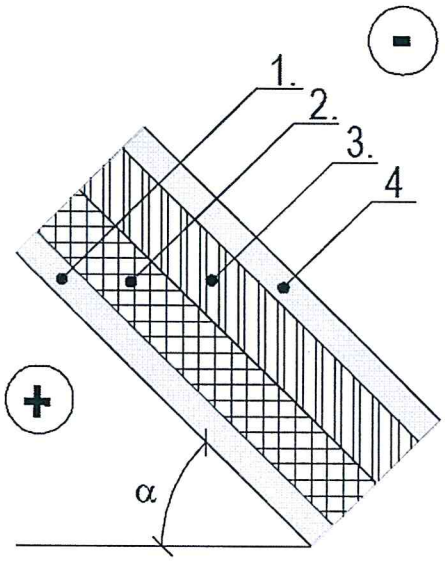
Annex 1: Calculation results

Table 1: Products R- values

Product	Thermal resistance R, (m²·K)/W
PRO WALL (test report No. 129 SF/22 U)	$R_{core90/90}$ = **3.25**
"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* $S_{R-prod} = \sqrt{\frac{\Sigma(R_i - R_{average})^2}{n-1}}$;*).*	



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

Figure 1. Roof construction design

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

PRO WALL DOUBLE installed on roof			
Angle: α = 0°	**Layer**	**R value**	**Unit**
Ascendant Heat Flux (Winter period)	Unventilated Air cavity # 1	0.4375	m²·K/W
	PRO WALL	3.25	m²·K/W
	PRO WALL	3.25	m²·K/W
	Ventilated Air cavity # 2	0.1475	m²·K/W
	R_{Total}	**7.09**	**m²·K/W**

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

PRO WALL DOUBLE installed on roof			
Angle: α = 30°	**Layer**	**R value**	**Unit**
Ascendant Heat Flux (Winter period)	Unventilated Air cavity # 1	0.4872	m²·K/W
	PRO WALL	3.25	m²·K/W
	PRO WALL	3.25	m²·K/W
	Ventilated Air cavity # 2	0.1672	m²·K/W
	R_{Total}	**7.15**	**m²·K/W**

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

PRO WALL DOUBLE installed on roof			
Angle: α = 45°	**Layer**	**R value**	**Unit**
Ascendant Heat Flux (Winter period)	Unventilated Air cavity # 1	0.5166	m²·K/W
	PRO WALL	3.25	m²·K/W
	PRO WALL	3.25	m²·K/W
	Ventilated Air cavity # 2	0.1792	m²·K/W
	R_{Total}	**7.20**	**m²·K/W**

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

PRO WALL DOUBLE installed on wall			
Angle: α = 90°	**Layer**	**R value**	**Unit**
Ascendant Heat Flux (Winter period)	Unventilated Air cavity # 1	0.6306	m²·K/W
	PRO WALL	3.25	m²·K/W
	PRO WALL	3.25	m²·K/W
	Ventilated Air cavity # 2	0.2337	m²·K/W
	R_{Total}	**7.36**	**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 PRO WALL DOUBLE is installed from the internal side of the Roof or the external part of the Roof.
- Calculations of R values are valid when PRO WALL DOUBLE is installed in agreement with the installation guidelines described into the manufacturer brochure.

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