

TEST REPORT No. 025 SF/26 R
Date: 5th of March 2026

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Test methods: LST EN ISO 22097:2023 Thermal insulation for buildings - Reflective insulation products - Determination of thermal performance.
LST EN 12667:2002 Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Products of high and medium thermal resistance.
Test method – heat flow meter.
Type and identification of apparatus – symmetrical single-specimen apparatus No. 1/99 (ISO 8301).
(number of normative document or test method, description of test procedure, test uncertainty)

Customer: Ropre Lda, Parque Industrial do Conhoso, Rua M, Lote 15, 6200-027 Covilhã, Portugal
(name and address)

Manufacturer: Boltherm Lda, Parque Industrial do Conhoso, Rua M, Lote 19, 6200-027 Covilhã, Portugal
(name and address)

Samples description: Type 2 multilayer reflective insulation
Name of product - **231 / 231 IGN V / CEILINGO R'BULL PRO 10**, 600×600mm;
Declared thickness of product 10±3mm. Product density 40 kg/m³.
(name, description and identification details of a specimen)

Samples selected: By customer
(who selected/place/date)

Samples delivery date: 20/02/2026

Place of samples conditioning: Building Physics Laboratory, Institute of Architecture and Construction Kaunas University of Technology, Tunelio st. 60, LT 44451 Kaunas, Lithuania
(name and address)

Samples conditioning date: 22/02/2026 **Date of testing:** 23/02/2026

Production date: 12/02/2026

Tested at: Building Physics Laboratory IAC KTU
(name and address)

Test results:

Name of the indicator and unit	Test method reference no.	Test result
Core thermal resistance of product R_{core} (m ² ·K)/W	LST EN ISO 22097:2023	0.26
Thermal resistance of system with 2 air gaps R_{system} , (m ² ·K)/W		1.59

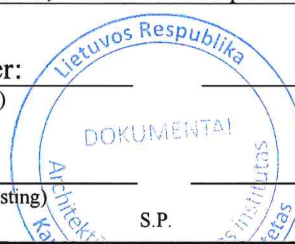
Additional

information: Mean ambience temperature 10.00 °C, ambience relative humidity 51.0 %.

Annexes:

Annex 1. Tests results; **Annex 2.** Calculation of thermal resistance including associated airspaces; **Annex 3.** The parameters of heat flow meter apparatus.

Technical manager:
(approves the test results)



(signature)

J. Ramanauskas
(n., surname)

Tested by:
(technically responsible for testing)

(signature)

A. Burlingis
(n., surname)

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

Specimen No. 025/26

Heat flow direction – horizontal		
Conditioning of sample – Climate chamber 48 h, T = 23±2°C, RH = 50±5 %.		
Testing parameters	unit	Value
Temperature of hot plate, $T(h)$	°C	20.01
Temperature of cold plate, $T(c)$	°C	0.02
Density of heat flow of hot plate, $q(h)$	W/m ²	77.28
Density of heat flow of cold plate, $q(c)$	W/m ²	76.12
Mean density of heat flow through the specimen, q	W/m ²	76.70
Mean temperature of specimen, T	°C	10.02
Mean thermal conductivity, λ	W/(m·K)	0.03975
Uncertainty of the measurement, $\Delta\lambda$	W/(m·K)	± 0.000249
Core thermal resistance, R_c	(m ² ·K)/W	0.2606
Uncertainty of the measurement, ΔR	m ² ·K/W	± 0.0005

Annex 2. Calculation of thermal resistance including associated airspaces according EN 16863 Annex D and EN ISO 6946:

- Declared emissivity of the product surfaces 0.05;
- Temperature difference across each air cavity of 5K, mean temperature of 10°C;
- Thermal resistance of one air gaps 0.6640 m²·K/W;
- Thermal resistance of two air gaps 1.3280 m²·K/W;

Calculation of thermal resistance including two vertical airspaces:

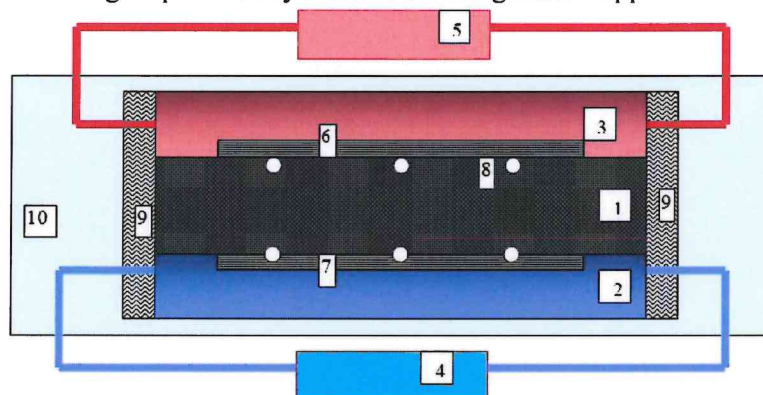
Air gap 20 mm – Product 10.4 mm - Air gap 20 mm

$$R_{system} = 0.2606 + 1.3280 = 1.5886 = 1.59 \text{ m}^2 \cdot \text{K/W}$$

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Annex 3. The parameters of heat flow meter apparatus:

SCHEME OF HEAT FLOW METER APPARATUS
Single specimen symmetrical configuration apparatus



- | | |
|---------------------------------------|---|
| 1 – Specimen under testing; | 7 – Heat flow meter at cooling plate; |
| 2 – Cooling plate; | 8 – Thermo-couple; |
| 3 – Heating plate; | 9 – Guarded space, |
| 4 – Cooling thermostat; | 10 – Surrounding with controlled constant |
| 5 – Heating thermostat; | temperature. |
| 6 – Heat flow meter at heating plate; | |

Notes:

- Specimen dimensions 600 x 600 mm, central measuring area of heat flow meter 250 x 250 mm.
- Possibility to measure under various heat flow directions: horizontal, upwards, downwards, on different angles with horizontal plane.
- Used edge heat losses reduction methods:
 - Specimen thickness limitation (to 150 mm);
 - Controlled ambient temperature during the test equal to the mean specimen temperature.

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