

Technical report No CFI/LS-20-013/03

U-value of three-layer insulation product

08 March 2021

SUMMARY

Thermal conductivity measurements for three samples (three-layer insulation product 'PVC sheet - thermal insulation core - PVC sheet') have been performed in accordance with LVS 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".

Thickness of each sample was measured and thermal transmittance (U-value) was calculated. The following U-values were calculated for the respective measured sample thickness:

- 1,482 W/m².K (24,24 mm),
- 0,849 W/m².K (39,61 mm),
- 0,724 W/m².K (48,81 mm).

SPONSOR

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Executive summary

Tasks

- Determination of thermal transmittance (U-value) for three samples cut from the three-layer thermal insulation product (polymer sheet - thermal insulation core - polymer sheet).

Deliverables

- Issue of report in English and in Latvian.

Specimen

The specimen are three samples cut from the thermal insulation product. Each sample is marked. The marking of the respective specimen are "24", "40" and "48" representing the approximate sample thickness in millimetres. The width and length of each sample is approximately 200 mm.

According to the sample description provided by the Sponsor, the specimen consists of two PVC facings (thickness 1 mm) and the extruded polystyrene foam insulation core. The samples are manufactured by the Company ЧУП Аврора Пласт (Republic of Belarus, Mogilev region, 213823, Bobruisk). The product is intended for the use in windows, doors, partitions and wall cladding.

Sampling

The Sponsor is responsible for the sampling and the delivery of the samples to ISSP as well as the sample description.

Experimental

Sample preparation

Prior to testing, samples were conditioned in laboratory for at least 24 hours at atmospheric pressure, temperature 20,3 °C and relative humidity 62%, until the change in weight between measurements did not exceed 0,5%. Samples were tested without additional mechanical treatment. Laboratory ageing of samples was not performed

Apparatus

Linseis Heat Flow Meter 200, calibrated 01 March 2021.

Test method

Thermal conductivity was determined in accordance with LVS 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".

Calculation of results

Thickness and thermal conductivity for each sample were measured and expressed, rounding the test result to the nearest 0.0001 W/m.K. Thermal transmittance was calculated and rounded up to the nearest 0,001 W/m².K. Thermal resistance was calculated by rounding the result down to the nearest 0,001 m².K/W.

Results

Thermal conductivity

Test results of thermal conductivity, thickness and apparent density are given in table 1.

Table 1. Test results

Specimen marking	Thickness, mm	Apparent density, ρ , kg/m ³	Thermal conductivity, W/m.K
24	24,24 ± 0,03	186 ± 2	0,0359
40	39,61 ± 0,03	94 ± 1	0,0336
48	48,81 ± 0,02	105 ± 1	0,0353

Thermal transmittance (U-value) un thermal resistance

Calculation results of thermal transmittance and thermal resistance are given in table 2.

Table 2. Calculation results

Specimen marking	Thermal transmittance (U-value), W/m ² .K	Thermal resistance, m ² .K/W
24	1,482	0,675
40	0,849	1,178
48	0,724	1,382

Important notes

This technical report can be published only with the written permission of the Sponsor (SIA Baltic Fenster).

This technical report can be related to the tested specimen only. The presentation or publication of the contents of this report is allowed only in full except with written allowance of ISSP (Supplier).