TEST LABORATORY

SÄCHSISCHES TEXTIL FORSCHUNGS INSTITUT e.V.

TEST REPORT

Order no. STFI:	**P2025 2417.7**
Order no. applicant:	none
Report date:	13th January 2026
Testing officer:	Reinhardt
Applicant:	Zimmer+Rhode GmbH Ms. Meike Ludwig Zimmersmühlenweg 14-18 61440 Oberursel

Testing application:

of:	3rd November 2025
order receipt on:	3rd November 2025
sample receipt on:	11th November 2025

Chairman of the Board
Dipl.-Ing.-Ök. Andreas Berthel

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Material to analyse:

signed by client	code for order processing
MELODY colour: 1025	P2417_25_5

Sampling was carried out by the client; the testing laboratory has no information on this.

Analysis content:

(1) Measurement of the heat transfer through the combination of an inlying sun protection material and a window with the heat box test after DIN EN ISO 8990: 1996-09

Conditions:

The measurement equipment after the heat box test allows the determination of the heat transfer of the combination of an inlying sun protection material and a window. The test device is divided into a warm and a cold room side, which are held separately to each other into a defined temperature. A window with a size of approximately (67 x 67) cm consists of an aluminium frame and -casement and defines the boundary area between the warm and cold room side. For the measurement a double glazing (4-16-4) with a Low-E coating was used inside the window casement. The warm room side is temperate by the use of a heating plate. The required electrical power in steady-state conditions, which is needed to keep up the temperature on the warm room side, is measured. The warm room side is surrounded by a temperature protection cover to minimize thermal heat losses to the environment. The test device allows radiative and convective heat interaction with the sample material.

The sample material is fixed into a frame. The connection points between the frame and the sample material will be sealed air tight, so that air perfusions are widely reduced. The frame with the sample material is mounted in the warm room side of the test device with the help of a rail system, so that a distance of approximately d = 10 cm reveals between the inlayed sun protection material and the window glazing. A lateral perfusion of air through the frame is broadly reduced caused by the use of the rail system. For each sample material 3 measurement samples are tested

The measurements are done under steady-state conditions with the following requirements:

- set temperature warm room side: 21°C
- set temperature cold room side: 6°C
- set air humidity warm room side: 50 % r.H.
- measurement time in steady-state 300 min

Following the construction of the test device and the sensor positions are shown schematically.

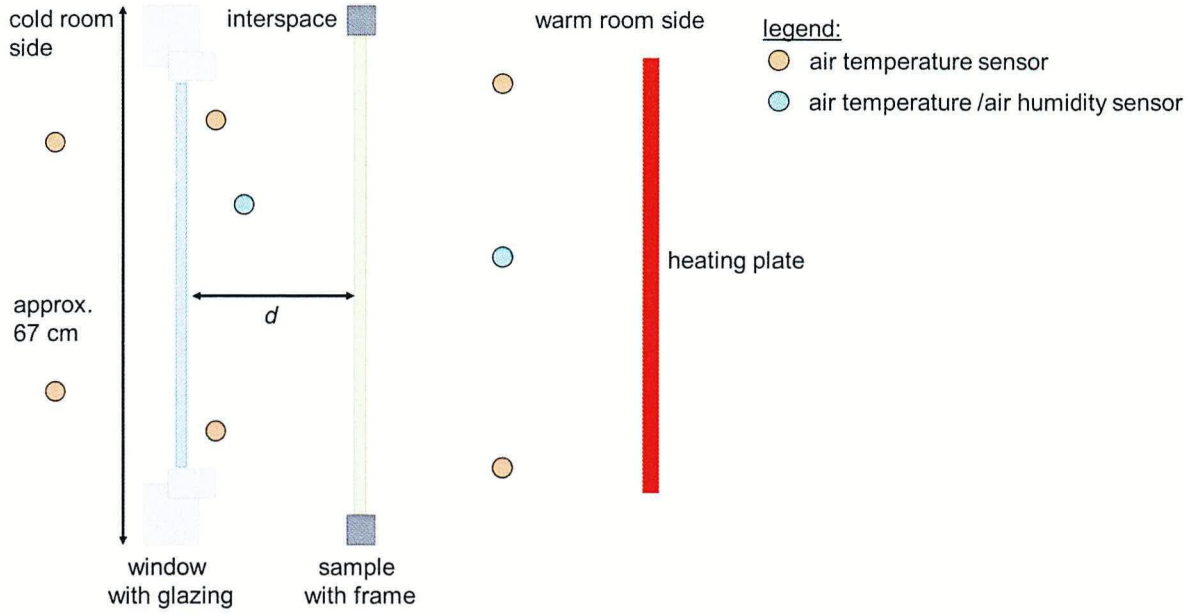

Figure 1: schematically illustration of the construction of the heat transfer test device with sensor positions (illustration not true to scale).

Test results:

(1) heat transfer test

arithmetic mean sensor data in steady-state conditions		window	window with inlying sun protection material P2417_25_5
air temperature [°C]	warm room side	21,0	21,0
	cold room side	6,0	6,0
	interspace	20,5	15,6
temperature difference [K] (warm room side – cold room side)		15,0	15,0
air humidity warm room side [% r.H.]		51	49,7

Code	relative reduction of the heat transfer caused by the use of the inlying sun protection material
P2417_25_5	(33 ± 2) %

The given measurement uncertainty refers to a level of confidence of 95 % with an expansion factor k=2.

remarks to the measurement results:
The use of the inlying sun protection material P2417_25_5 result to a reduction of the heat transfer of 33 %, under the conditions of the described test setup (window with double glazing, distance sun protection material – glazing, sample mounting, and others)

The basis to determine the relative heat transfer reduction are represented by the needed electrical heating powers to upkeep the set temperature on the warm room side of 21°C, at testing with and without inlying sun protection material. The relative heat transfer reduction is calculated as the ratio between the saved electrical heat power (differences of the needed heat power without and with sun protection material) caused by the use of the inlying sun protection material and the needed electrical power at testing without sun protection material.

The heat transfer reduction is perceptible in a cooling of the air temperature between window and inlying sun protection material.

Please keep in mind that the test setup and the specific sample mounting almost prevent lateral convective heat transfer around the sample material, which causes in praxis often.

Further information on the test procedures or results are available at the accredited testing laboratory and can be provided to the client upon request.

The test results refer to the delivered specimen. This test report shall not be published in parts. The testing period is defined as timeframe between receipt of the sample and issue date of test report.

All materials received in connection with this order will be stored for a maximum period of six months unless agreed otherwise. Exempted from this practice are materials which will not be stored due to technical or safety-related reasons.

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Patrick Reinhardt, M.Sc.
field responsible collaborator