TEST LABORATORY

The test laboratory is accredited in compliance with DIN EN ISO/IEC 17025 by the Deutsche Akkreditierungsstelle GmbH. The accreditation is also valid for products of Regulation EU 2016/425. Test methods not included in the scope of accreditation are marked by a *.

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SÄCHSISCHES TEXTIL FORSCHUNGS INSTITUT e.V.

TEST REPORT

Order no. STFI:	**P2025 2582**
Order no. applicant:	B2025-0081
Report date:	12th December 2025
Testing officer:	Reinhardt
Applicant:	RHODETEC GmbH Mrs. Katrin Dietze Annaberger Str. 73 09111 Chemnitz
Testing application:	
of:	4th December 2025
order receipt on:	4th December 2025
sample receipt on:	-

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

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Material to analyse:

signed by client	code for order processing
SiGr01 shade-film, one-sided metallized	H43213 SiGr01
SiGr02 shade-film, one-sided metallized	H53628 SiGr02
SiGr07 shade-film, one-sided metallized	H50461 SiGr07
SiWh00 shade-film, one-sided metallized	H40111 SiWh00

Code	sample of order	testing application			testing period
		of	order receipt on	sample receipt on	
H43213 SiGr01	P2023 2364 H43213	8th November 2023		13th November 2023	13th - 14th November 2023
H53628 SiGr02	P2024 2140 H53628	28th October 2024		4th November 2024	4th - 13th November 2024
H50461 SiGr07	P2024 1795 H50461	6th September 2024			6th - 11th September 2024
H40111 SiWh00	P2023 0310 H 40111	13th February 2023		15th February 2023	15th - 16th February 2023

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

Analysis content:

(1) Measurement of the remission and transmission in the visible light range in accordance with DIN EN 14500: 2021-09 (DIN EN 410: 2011-04)

(2) Measurement of the remission and transmission in the global radiation range in accordance with DIN EN 14500: 2021-09 (DIN EN 410: 2011-04)

(3)* Calculation of the total energy permeability degree g_{tot} of a window system with sun protective material, following DIN EN ISO 52022-1: 2018-01 and approximate calculation of the reduce factor F_c

* Standards for calculation and assessment are not allowed for accreditation

Conditions:

Optical tests

test parameter	symbol	range of radiation
light transmission degree	$\tau_{v,n-h}$	(380 – 780) nm (standard light D65)
light remission degree	$\rho_{v,n-h}$	(380 – 780) nm (standard light D65)
light absorption coefficient	α_v	(380 – 780) nm (standard light D65)
UV - transmission degree	τ_{UV}	(280 – 380) nm
solar transmission degree	$\tau_{e,n-h}$	(300 – 2500) nm
solar remission degree	$\rho_{e,n-h}$	(300 – 2500) nm
solar absorption coefficient	α_e	(300 – 2500) nm

Equipment: UV-VIS-NIR double beam spectrophotometer, company PERKIN - ELMER Corp., USA; 150 mm integrating sphere; irradiation perpendicular to the integrating sphere opening; 8° slope of the sample area to the light incidence axis for remission measurements

For each material sample of the client three samples in the format (55 x 75) mm are taken, one in the machine direction, one in the cross machine direction and one diagonally. The irradiation takes place, if not otherwise noted, on the material side which is faced to the solar radiation in usage (marked by client). The results are mean values of three measurements.

Test results:

(1) Light range and UV-range

Code	light transmission degree	light remission degree	light absorption coefficient	UV-transmission degree[1)]
	$\tau_{v,n-h}$	$\rho_{v,n-h}$	α_v	τ_{UV}
H43213	0,006	0,836	0,158	0,006
H53628	0,026	0,725	0,249	0,025
H50461	0,079	0,551	0,370	0,067
H40111	0,000	0,825	0,175	0,000

[1)] For products that have fluorescence effects, e.g. due to the finishing with optical brighteners, the measured result of the UV-transmission degree using the measurement method described above can be incorrect (increased).

(2) Global radiation range

Code	solar transmission degree	solar remission degree	solar absorption coefficient
	$\tau_{e,n-h}$	$\rho_{e,n-h}$	α_e
H43213	0,007	0,831	0,162
H53628	0,027	0,728	0,245
H50461	0,080	0,569	0,351
H40111	0,000	0,828	0,172

(3)* Total energy permeability degree g_{tot} and reduce factor F_c

Usage as internal sun protection material

	Single glazing		Double glazing with air filling		Double glazing with argon filling and low-e coating	
Code	U_g = 5,8 W/(m²K) g = 0,85		U_g = 2,9 W/(m²K) g = 0,76		U_g = 1,2 W/(m²K) g = 0,59	
	g_{tot}	F_c	g_{tot}	F_c	g_{tot}	F_c
H43213	0,23	0,27	0,27	0,35	0,30	0,50
H53628	0,29	0,34	0,32	0,42	0,33	0,56
H50461	0,39	0,46	0,41	0,54	0,38	0,65
H40111	0,23	0,27	0,27	0,36	0,30	0,50

	Solar controlled double glazing with argon filling and low-e coating		Triple glazing with argon filling and low-e coating	
Code	U_g = 1,1 W/(m²K) g = 0,32		U_g = 0,8 W/(m²K) g = 0,55	
	g_{tot}	F_c	g_{tot}	F_c
H43213	0,23	0,73	0,30	0,54
H53628	0,24	0,76	0,33	0,59
H50461	0,26	0,81	0,37	0,68
H40111	0,23	0,73	0,30	0,54

Mounting assumptions:

- sun protective material inside and closed
- aerated air interspace to the glazing

The mathematical model in DIN EN ISO 52022-1: 2018-01 (simplified method) for calculation of g_{tot} is appropriated to a coarse compare of sun protection materials. The model is only valid for the following boundary requirements:

- $0 \leq \tau_{e,n\text{-}h} \leq 0,5$
- $0,1 \leq \rho_{e,n\text{-}h} \leq 0,8$

If the above-mentioned boundary requirements are not fulfilled, the calculation of F_c from g_{tot} and g is not guaranteed either. The calculation is recommended in accordance with DIN EN ISO 52022-3: 2018-01 (detailed calculation method). There for it is necessary to measure the reflection of the sample side which is not directly exposed by the sun radiation and the sample thickness at least in addition to the data of this order. In case of known conditions to be used at a building it is unalterable.

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 of the relevant order. This test report shall not be published in parts. The testing periods of each sample material are given in the table in section "Material to analyse".

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.

Dipl.-Ing. Marian Hierhammer
head of test department

stfi geprüft

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field responsible collaborator