

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 *.



**SÄCHSISCHES
TEXTIL
FORSCHUNGS
INSTITUT e.V.**

TEST REPORT

Order no. STFI: P2021 2763
Order no. applicant: none

Report date: 22th December 2021
Testing officer: Reinhardt

Applicant: Création Baumann AG
Bern-Zürich-Str. 23
4901 LANGENTHAL
SCHWEIZ

of: 21th December 2021
order receipt on: 21th December 2021
sample receipt on: 10th November 2020

Material to analyse:

signed by client	Colour
SCREENECTUS / SCREENEC R	7112 / 112
SCREENECTUS / SCREENEC R	7115 / 115
SCREENECTUS / SCREENEC R	7118 / 118
SCREENECTUS / SCREENEC R	7111 / 111
SCREENECTUS / SCREENEC R	7114 / 114

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

Analysis content:

- (1) Remission and transmission in the visible light range in accordance with DIN EN 14500: 2021-09
- (2) Remission and transmission in the global radiation range in accordance with DIN EN 14500: 2021-09
- (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
- (4) Measurement of the direct und diffuse transmission in the visible light range in accordance with DIN EN 14500: 2021-09
- (5) Measurement of the direct und diffuse transmission in the global radiation range in accordance with DIN EN 14500: 2021-09
- (6)* Classification of glare control in accordance with DIN EN 14501: 2021-09 (p.20; paragraph 6.3; table 7)
- (7)* Classification of privacy night in accordance with DIN EN 14501: 2021-09 (p.21; paragraph 6.4; table 8)
- (8)* Classification of the visual contact with the outside in accordance with DIN EN 14501: 2021-09 (p.22; paragraph 6.5; table 9)
- (9)* Classification of the daylight utilisation in accordance with DIN EN 14501: 2021-09 (p.22; paragraph 6.6; table 10) on the basis of the diffuse/hemispherical light transmission degree $\tau_{v,dif-h}$, approximately calculated after equation 32 in DIN EN 14500: 2021-09
- (10) Measurement of the rendering of colours without consideration of glazing in accordance with DIN EN 410: 2011-04

* 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
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
normal/normal light transmission degree	$\tau_{v,n-n}$	(380 – 780) nm (standard light D65)
normal/diffuse light transmission degree	$\tau_{v,n-dif}$	(380 – 780) nm (standard light D65)
normal/normal solar transmission degree	$\tau_{e,n-n}$	(300 – 2500) nm
normal/diffuse solar transmission degree	$\tau_{e,n-dif}$	(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.

Description of classification for visual comfort:

Description of classification for glare control, privacy night, visual contact with the outside and the daylight utilisation is given in DIN EN 14501: 2021-09 (p.16; paragraph 6.1, table 5).

Influence on visual comfort					
class	0	1	2	3	4
	very small effect	small effect	moderate effect	high effect	very high effect

Test results:

(1) Light range

UV-range

Colour	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}
7112 / 112	0,0350	0,6383	0,3267	0,0340
7115 / 115	0,0390	0,5887	0,3723	0,0390
7118 / 118	0,0317	0,6367	0,3316	0,0297
7111 / 111	0,0550	0,6517	0,2933	0,0440
7114 / 114	0,0290	0,6267	0,3443	0,0297

¹⁾ In textile samples which were finished with an optical brightener the measured values of the UV-transmission degree could be doubtful (higher) under the use of the above described measuring method.

(2) Global radiation range

Colour	solar transmission degree	solar remission degree	solar absorption coefficient
	$\tau_{e,n-h}$	$\rho_{e,n-h}$	α_e
7112 / 112	0,0467	0,6523	0,3010
7115 / 115	0,0533	0,6047	0,3420
7118 / 118	0,0417	0,6510	0,3073
7111 / 111	0,0567	0,6650	0,2783
7114 / 114	0,0440	0,6427	0,3133

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

Usage as internal sun protection material

Colour	Single glazing		Double glazing with air interspace		Double glazing with low emission degree and argon interspace		Triple glazing with low emission degree and argon interspace	
	$U_g=5,8 \text{ W}/(\text{m}^2\text{K})$ $g=0,85$		$U_g=2,9 \text{ W}/(\text{m}^2\text{K})$ $g=0,76$		$U_g=1,2 \text{ W}/(\text{m}^2\text{K})$ $g=0,59$		$U_g=0,8 \text{ W}/(\text{m}^2\text{K})$ $g=0,55$	
	g_{tot}	F_c	g_{tot}	F_c	g_{tot}	F_c	g_{tot}	F_c
7112 / 112	0,34	0,40	0,36	0,48	0,36	0,60	0,35	0,63
7115 / 115	0,37	0,43	0,39	0,51	0,37	0,63	0,36	0,66
7118 / 118	0,34	0,40	0,36	0,48	0,36	0,60	0,35	0,63
7111 / 111	0,33	0,39	0,36	0,47	0,35	0,60	0,34	0,63
7114 / 114	0,34	0,40	0,37	0,48	0,36	0,61	0,35	0,64

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:

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

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.

(4-5) Diffuse und normal transmission degree

Colour	normal/hemispherical light transmission degree	normal/diffuse light transmission degree	normal/normal light transmission degree
	$\tau_{v,n-h}$	$\tau_{v,n-dif}$	$\tau_{v,n-n}$
7112 / 112	0,0350	0,0053	0,0297
7115 / 115	0,0390	0,0040	0,0350
7118 / 118	0,0317	0,0060	0,0257
7111 / 111	0,0550	0,0240	0,0310
7114 / 114	0,0290	0,0030	0,0260

Colour	normal/hemispherical solar transmission degree	normal/diffuse solar transmission degree	normal/normal solar transmission degree
	$\tau_{e,n-h}$	$\tau_{e,n-dif}$	$\tau_{e,n-n}$
7112 / 112	0,0467	0,0170	0,0297
7115 / 115	0,0533	0,0180	0,0353
7118 / 118	0,0417	0,0157	0,0260
7111 / 111	0,0567	0,0260	0,0307
7114 / 114	0,0440	0,0187	0,0253

(6-9)* Classification

Colour	glare control	privacy night	sight contact with the outside
7112 / 112	3	2	2
7115 / 115	3	2	2
7118 / 118	3	2	2
7111 / 111	2	2	2
7114 / 114	3	2	2

Colour	diffuse/hemispherical light transmission degree	daylight utilisation
	$\tau_{v,dif-h}$	
7112 / 112	0,0267	1
7115 / 115	0,0294	1
7118 / 118	0,0243	1
7111 / 111	0,0443	1
7114 / 114	0,0219	1

(10) Colour rendering index without consideration of glazing

Colour	colour rendering index
7112 / 112	99
7115 / 115	99
7118 / 118	99
7111 / 111	99
7114 / 114	99


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 relate to the results from the test report P2020 2407.1.

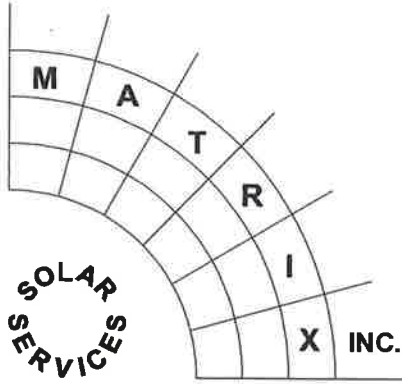
All materials received in connection with this order will be stored for a maximum period of six months unless agreed otherwise. Exempted from this practice are materials which will not be stored due to technical or safety-related reasons.



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Dated: Nov 7, 2020

Report No. 20-054v2 to: Cr ation Baumann AG
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SCREENTECTUS / SCREENTEC R

Subject of Report: Openness-Factor of one Shade Fabrics

The material is tested on Nov 7, 2020 by Matrix, Inc., at its Mesa Arizona Solar Laboratory in compliance with ASHRAE standard 74. The test results are expressed as percentages. Verotex supplied and identified the materials.

Description	Test#					Average O-F*
	1	2	3	4	5	
SCREENTECTUS / SCREENTEC R	3.7	3.8	3.7	3.7	3.8	3.74

* No statement of accuracy is given or implied. The results are stated as they are, to indicate a trend but not a hard value.

Certified by:

R. Kumar

R M Kumar, Head of Engineering
Matrix, Inc.