

# TEST LABORATORY



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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 \*.



## TEST REPORT

**Order no. STFI:** P2021 1849.4  
**Order no. applicant:** none

**Report date:** 31<sup>st</sup> August 2021  
**Testing officer:** Reinhardt

**Applicant:** Solncezaschitnye Sistemy Ltd.  
Mr. Ivan Klochkov  
BolshayaOchakovskaya str. 47A b.1  
119361 Moscow  
RUSSIAN FEDERATION

**of:** 10<sup>th</sup> August 2021  
**order receipt on:** 10<sup>th</sup> August 2021  
**sample receipt on:** 13<sup>th</sup> August 2021

### Material to analyse:

signed by client	code for order processing
A4212	P1849_21_4

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 410: 2011-04 (DIN EN 14500: 2008-08)
- (2) Remission and transmission in the global radiation range in accordance with DIN EN 410: 2011-04 (DIN EN 14500: 2008-08)
- (3) Measurement of translucent areas (openings) of fabric structure occurs in accordance with test method PM 20. The relation of openings to the total area defines the "openness factor" according to ASHRAE Fundamentals: 2001, p. 30.49. Total measured area contains thread material area and openings.

### 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	$\alpha_v$	380...780 nm
UV - transmission degree	$\tau_{UV}$	280...380 nm (UV-radiation)
solar transmission degree	$\tau_{e,n-h}$	280...2500 nm (global radiation)
solar remission degree	$\rho_{e,n-h}$	280...2500 nm (global radiation)
solar absorption coefficient	$\alpha_e$	280...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.

### Openness factor

For each sample 10 images are recorded, detected as binary images and concerning their area parts analysed. In the case of the present sample measuring areas of 21,0 mm<sup>2</sup> were used for the calculation, so that in total an area of 2,1 cm<sup>2</sup> was analysed.

#### Equipment:

- Microscope (Co. Wild) with ring lamp
- Image analysis system Vidmess (Co. Thalheim Spezialoptik)

#### Test results:

##### (1) Light range

##### UV-range

Code	light transmission degree	light remission degree	light absorption coefficient	UV-transmission degree <sup>1)</sup>
P1849_21	$\tau_{v,n-h}$	$\rho_{v,n-h}$	$\alpha_v$	$\tau_{UV}$
4	0,043	0,087	0,870	0,043

<sup>1)</sup> 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

Code	solar transmission degree	solar remission degree	solar absorption coefficient
P1849_21	$\tau_{e,n-h}$	$\rho_{e,n-h}$	$\alpha_e$
4	0,043	0,077	0,880

##### (3) Translucent areas

Code	area parts of openings [mm <sup>2</sup> ]		relative area parts of openings [%] („openness factor“)	
	mean value	standard deviation	mean value	standard deviation
P1849_21				
4	0,98	0,16	4,7	0,8



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 should 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.



Dipl.-Ing. Marian Hierhammer  
Head of test department



Patrick Reinhardt, M.Sc.  
field responsible collaborator