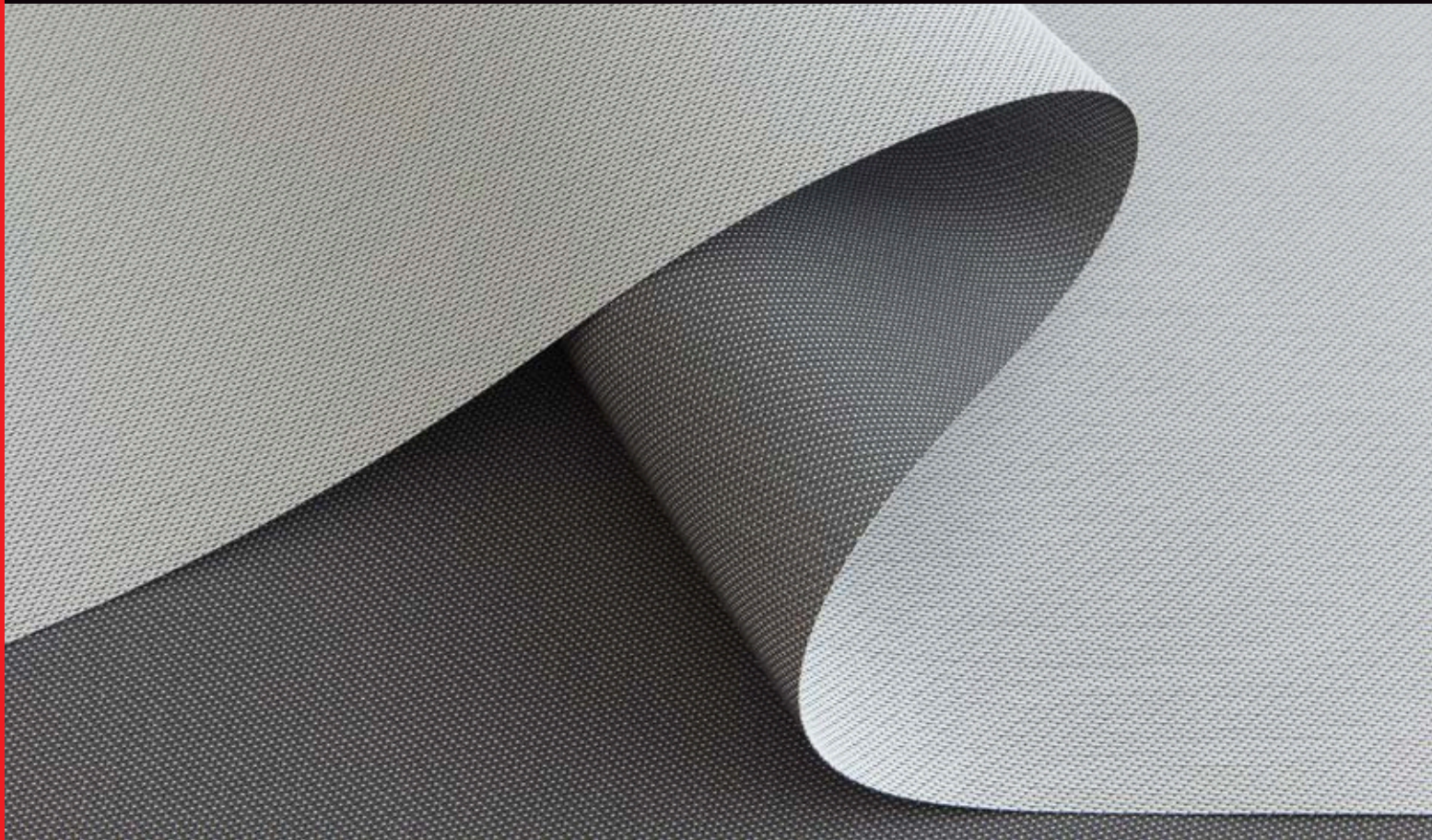


TECHNICAL

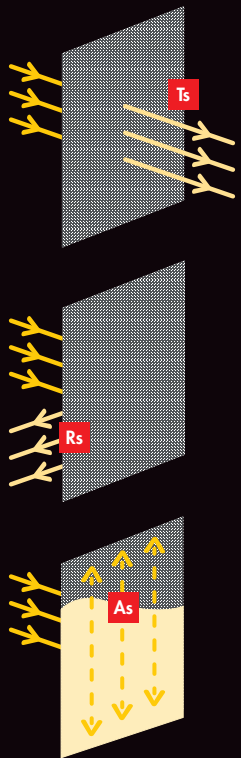
BOOKLET



INTELLIGENT FABRICS FOR SOLAR PROTECTION



THERMAL FACTORS



Solar radiation is always partially transmitted through, absorbed or reflected by the fabric. The sum of all 3 equals 100.

$T_s + R_s + A_s = 100\%$ of solar energy.

T_s **SOLAR TRANSMITTANCE:** proportion of solar energy transmitted through the fabric. A low percentage means the fabric performs well at reducing solar energy.

τ_e

R_s **SOLAR REFLECTANCE:** proportion of solar radiation reflected by the fabric. A high percentage means the fabric performs well at reflecting solar energy.

ρ_e

A_s **SOLAR ABSORPTANCE:** proportion of solar radiation absorbed by the fabric. A low percentage means the fabric absorbs little solar energy.

α_e

g_{tot} **TOTAL SOLAR FACTOR:** percentage of solar energy which actually penetrates into a room through the blind and glazing. A low value means good thermal performance.



OPTICAL FACTORS



OF **OPENNESS FACTOR (T_{vnn}):** relative area of the openings in the fabric (hole). It is considered as independent of the colour. For fabrics with the same weave, it should be measured using the darkest colour in the range.

C_o

T_v **VISIBLE LIGHT TRANSMITTANCE (T_{vnh}):** total percentage of light radiated through the fabric over a wavelength of 380 to 780 nm (nanometers), called the visible spectrum (total illumination).

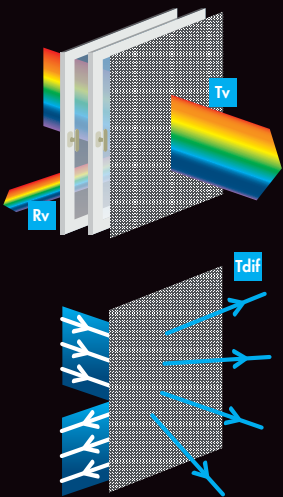
TL

R_v **VISIBLE LIGHT REFLECTANCE (R_{vnh}):** proportion of light reflected by the fabric.

ρ_v

T_{dif} **DIFFUSE TRANSMISSION FACTOR:** correlation of the two factors above: $T_{dif} = T_v - OF$. It is indicated as **T_{vndif}** for the aspects of glare and shape recognition (outward visibility / night privacy). A low figure shows a better visual comfort. However, for natural light control, it is indicated as **T_{vdifh}** . It is used to ascertain a fabric's light diffusion capacity. A high figure means more natural light.

$$T_v = T_{vnh} = T_{vnn} + T_{vndif}$$



The regulations value the **g_{tot}** factor for thermal comfort and **T_v** for visual comfort.



ZOOM EN 14501

■ Thermal and optical values, as defined in the European standard EN 14501 (Blinds and Shutters, Thermal and Visual Comfort, Performance Characteristics and Classification), are used to measure the performance of a fabric's solar protection properties. The standard is based on a number of criteria and establishes various comfort classifications:

- for thermal comfort: the solar factor
- for visual comfort: control of opacity, privacy at night, vision to the exterior, glare control, use of natural light, colour rendering.

There are 5 levels of performance classification:

- ① very little effect
- ② little effect
- ③ moderate effect
- ④ good effect
- ⑤ very good effect

■ The EN 14501 standard defines the total solar factor **g_{tot} (fabric + glass)** as the most important property for **thermal comfort** and the **T_v value** for **visual comfort**.

■ To calculate the total solar factor, two calculation standards are used:

- **EN 13363-1 – the Simplified method** – calculates approximate values for the total solar energy transmittance (g_{tot}) of glazing and shading combined. Inputs for this calculation are solar integrated optical and thermal parameters of glazing and shading. The calculation procedure is straightforward and can easily be performed in a spreadsheet. The results of this calculation are generally higher (up to 0.1) than the more precise values obtained from EN 13363-2.

- **EN 13363-2 – the Detailed calculation method** – calculates more precise values for the total solar energy transmittance (g_{tot}) of glazing and shading combined. This calculation is based on the spectral transmission and reflection data of the solar protection device and the glazing. The calculation requires specialized software to solve the non-linear system of equations. The outcomes of calculations according to EN 13363-2 are suited as input for cooling load calculations.

■ The **Textinergie®** tool (www.textinergie.org) helps quantify the **energy savings where textile solar protection** is used, by simply specifying the geographical situation, building's orientation, glazed surface of the room, blind position and colour of the fabric.

THERMAL AND OPTICAL FACTORS of reference glazings - EN 14501

REFERENCE GLAZINGS	Thermal transmittance W/(m ² K)	Solar factor	Light transmittance	Light reflectance
	U	g	T _v	R _v
A: clear single glazing	5,8	0,85	0,83	0,08
B: clear double glazing	2,9	0,76	0,69	0,14
C: low emission double glazing	1,2	0,59	0,49	0,29
D: reflective double glazing with a low emission layer	1,1	0,32	0,27	0,29



ADVICE AND CARE INSTRUCTIONS

■ **STORAGE CONDITIONS:** the fabric should always remain in its native outer packaging (plastic film, cardboard mandrel) during storage, and/or moving. It is better to place the rolls of fabrics in individual cardboard tubes. The rolls of fabric should be stored horizontally, but not piled up, in a place where the temperature and level of humidity are as constant as possible. Long-time storage under high temperature (> 45°C) may cause fading of colours.

The fabric should never be folded. For long-term storage, it is strongly inadvisable to leave rolled or folded panels on top of each other.

■ **RECOMMENDATIONS FOR HANDLING:** for an easier handling of wide width fabric and to avoid having marks on it, Mermet recommends to roll the panel(s) onto a tube at each stage of the making-up. For fabrics with a white acrylic coating on one side (Kibo 8500, Flocké 11201), it is recommended to handle it on a clean dust-free and dry surface. Screen Nature Ultimetal®, Satiné 5500 Low E and 5500 Métal: as for all metallised fabrics, cotton gloves must be worn during the making-up process to prevent footprint on the metal side.

■ THE FOLLOWING CARE INSTRUCTIONS APPLY TO ALL OF OUR FABRICS:

- Handle the fabric with care: clean and dry hands.
- Do not scrub.
- Do not use solvents or any abrasive substance that might damage the fabric.
- All types of chemicals will cause permanent damage to the fabric. Therefore, if cleaning windows etc., the blind will have to be raised to avoid any direct or indirect spray or splatter of chemicals on the fabric.

■ SCREEN VISION - SCREEN DESIGN - SCREEN THERMIC

■ EXTERNAL SCREEN CLASSIC

- Remove dust with vacuum cleaner or compressed air, avoid pulling or stretching the fabric.
- Clean with a sponge dipped in water.
- Leave the blind down until completely dry.

■ BLACKOUT 100% / SATINÉ 21154

■ ACOUSTICS

■ SCREEN LOW E / SATINÉ 5500 LOW E

■ SCREEN NATURE – SCREEN NATURE ULTIMETAL®

- Handle the fabric with use of gloves.
- Regular light dusting with feather duster is suggested. When vacuuming, avoid pulling or stretching the fabric.
- Clean with a soft and damp sponge.
- Leave the blind down until completely dry.

■ BLACKOUT 100% / KIBO 8500 - FLOCKÉ 11201 - KARELLIS 11301

- Clean with a soft and damp sponge (only on the textile side for Kibo 8500 and Flocké 11201 fabrics).
- Leave the blind down until completely dry.

■ **ADVICE NOTE** are available upon request: support@sunscreen-mermet.com



5 YEAR WARRANTY

The solar protection fabrics in the Mermet® collection, made of coated fibreglass yarns or treated fibreglass, are covered by a warranty of five years.

This warranty can be applied only under normal conditions of use and care of the fabrics as described in the technical specifications and according to the maintenance advice of Mermet in its catalogue.

■ TERMS OF APPLICATION

The warranty is subject to full payment of the invoice and comes into effect on the date of purchase of the fabrics; it covers:

- breaking strength: equal to at least 70% of its original value according to standard ISO 1421
- the fire-resistance classifications specified in the product brochures of the MERMET® collection
- uniform fading due to ultraviolet radiation
- colour fastness to light: all colours of Mermet® fabrics (except White for which colour fastness is not guaranteed) have a value of 7/8 on a scale of 1 to 8 according to the standard ISO 105-B02.

Under this warranty, Mermet undertakes to replace free of charge the panels of fabric accepted as defective, after inspection and agreement by its quality department. For this purpose, the panels of fabric must be made available to Mermet. In case of replacement, the duration of the warranty is not extended and is still effective as from the date of purchase.

All claims must be submitted with the invoice of the fabric purchased and sent, within 30 days after the defect has been noticed, by registered letter to:

MERMET S.A.S.

After sale service

58, chemin du Mont Maurin

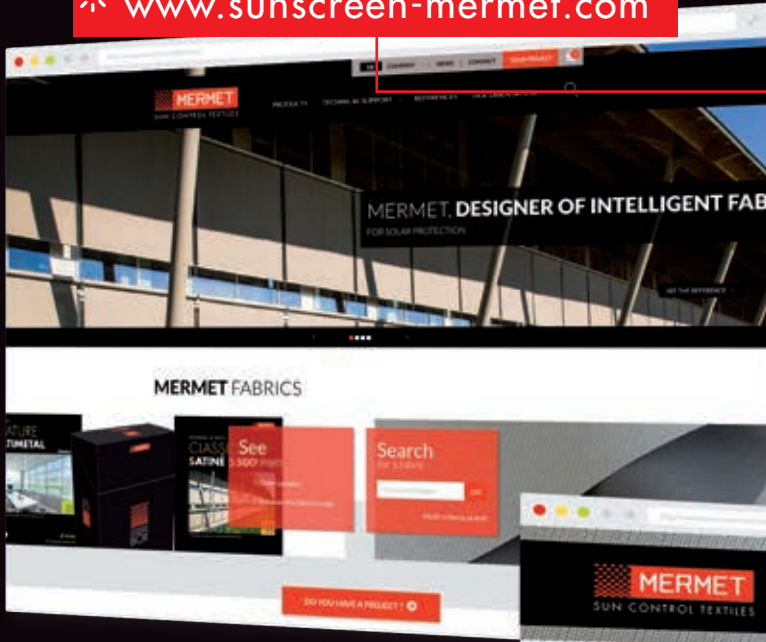
FR - 38630 Les Avenières Veyrins-Thuellin

The warranty does not cover defects or deterioration due to the following reasons:

- transport or storage conditions
- poor preparation or making up
- improper mechanisms for use of the fabric
- installation of the mechanism
- normal wear and tear or ageing of the fabric
- accidents, bad weather or neglect for which Mermet cannot be held liable: high winds, atmospheric pollution, accidental discharges.

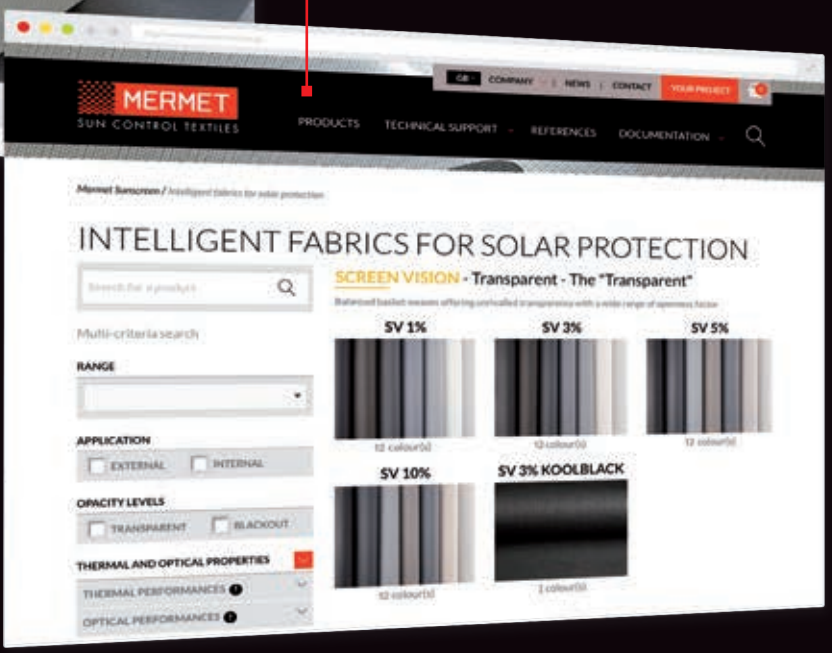
Furthermore, the warranty does not cover the costs of labour, dismantling, reassembly and transport. Mermet accepts no liability if the product is used for applications for which it was not intended.

www.sunscreen-mermet.com



FIND IN 3 CLICKS
THE FABRIC BEST SUITED
 to your project

- A search engine with performances criteria
- Many documents for download
- All products information available
- A library of references



permatco + caractis V1 - 02/2018 © : P-Faugois - Mermet SAS

MERMET COLLECTION offers a wide choice of fabrics for external and internal application, from transparency to total darkness, for thermal and optical comfort. To receive other brochures from the collection, **contact us**.



SCREEN VISION / DESIGN / THERMIC / LOW E EXTERNAL SCREEN CLASSIC SCREEN NATURE BLACKOUT 100 % ACOUSTICS



58, chemin du Mont Maurin - 38630 Les Avenières Veyrins-Thuellin - France
 Tel. +33(0) 474 336 615 - Fax +33(0) 474 339 729

This brochure must be read and interpreted in accordance with the General Terms & Conditions of Sale of MERMET SAS, with which it forms an indissoluble whole. The General Terms & Conditions of Sale that are current at any time are those contained on the MERMET SAS website at the following address: www.sunscreen-mermet.com.