

# MicroShade®

## Datasheet

### Type: MS-A Vertical

MicroShade® belongs to a family of effective solar shading solutions constructed of micro lamellas in a strip of steel. The MicroShade® strip is mounted in the cavity of two- or three-layer low-E glazing.

The standard width of the strip is 140 mm. The MicroShade® strip can be mounted in any position.

#### Progressive solar shading

The micro lamellas in the MicroShade® strip filter the sunlight according to the same principle as ordinary blinds. Sunlight incident at low angles passes relatively unimpeded through the lamellas while solar radiation incident at high angles is effectively blocked.

The solar angle varies depending on the time of day and season. During the summer, when the angle of the sun is high, the MicroShade® shades more of the incident radiation than during the winter. Thus, the MicroShade® provides the strongest shading when most needed.

#### Application

MicroShade® MS-A Vertical is the traditional MS-A just designed for vertical mounting in the pane. The lamellas of MicroShade® MS-A Vertical has a tilt of 16° and has been developed for application in facades, where it provides the most effective shading. MS-A Vertical can also be applied in roofs with a shading effect that is only slightly reduced compared to the facades. MS-A Vertical can be applied at all orientations, but is sensitive to direction of mounting.

MicroShade® MS-A Vertical is a good compromise between an effective shading and satisfactory daylight conditions while visibility is maintained. MS-A Vertical is color neutral. For information on other types of MicroShade® shading: [www.microshade.net](http://www.microshade.net).

# Technical data for MicroShade<sup>®</sup> glazing

## Construction

MicroShade<sup>®</sup> glazing is dimensioned in accordance with current standards. MicroShade<sup>®</sup> glazing can be supplied in standard two- or three-layer glazing constructions.

External glass: Tempered

Internal glass: Normally supplied with low-E float glass. Tempered or laminated low-E glass can be delivered if specified.

Spacer: Warm edge, stainless steel or similar.

Gas filling: Argon

## U- value

Type	U-value (W/m <sup>2</sup> K)
2-layer MS-A Vertical, (4-16-4)	1.1
3-layer MS-A Vertical, (4-12-4-12-4)	0.7

## Light- & solar energy transmittance

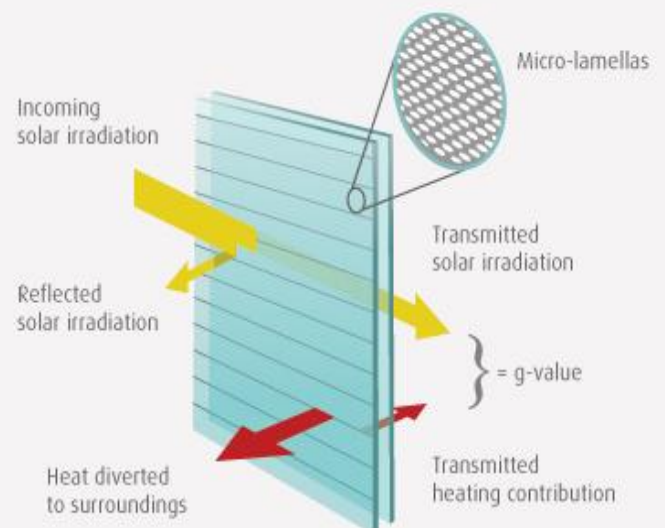
The light transmittance indicates the ratio between the volume of transmitted daylight through the window and the amount of incident daylight on the window. The daylight is defined by the radiation distribution of illuminant D65 (EN410:1998).

The direct solar energy transmittance through a window is defined as the ratio between the transmitted and incident solar energy on the window.

The total solar energy transmittance or g-value (solar factor) is calculated as the sum of the transmitted solar radiation and the transmitted heat contribution divided by the incident solar energy on the window.

A low g-value indicates strong solar shading and a high g-value indicates weaker shading.

For MicroShade<sup>®</sup> the light transmittance and g-value of the glazing change with the incident angle of the solar radiation: At low radiation angles MicroShade<sup>®</sup> allows a high transmittance while the transmittance is low at higher angles.



## Optical properties – two-layer MicroShade® glazing

The tables show the g-value, the direct solar energy transmittance and the daylight transmittance for MicroShade® glazing at selected angles of incidence.

The data shown is valid for two-layer glazing with MicroShade® type MS-A Vertical.

### The construction of the glazing

4 mm Planilux + MicroShade® MS-A Vertical + 4 mm Planitherm Ultra N II with argon filling from Saint Gobain (Calumen II).

All optical data is calculated according to EN 410:1998.

Table 1: g-values	Solar hight (degrees)						
	0	15	30	45	60	75	
Azimuth (degrees)	0	0.39	0.35	0.29	0.21	0.09	0.03
	15	0.38	0.33	0.28	0.21	0.09	0.03
	30	0.35	0.31	0.26	0.18	0.07	0.03
	45	0.30	0.26	0.21	0.14	0.05	0.02
	60	0.20	0.17	0.13	0.07	0.03	0.02
	75	0.03	0.03	0.03	0.02	0.02	0.01

Table 2: Solar direct transmittance	Solar hight (degrees)						
	0	15	30	45	60	75	
Azimuth (degrees)	0	0.33	0.29	0.24	0.17	0.05	0.00
	15	0.32	0.28	0.23	0.16	0.05	0.00
	30	0.29	0.26	0.21	0.14	0.04	0.00
	45	0.24	0.21	0.17	0.10	0.02	0.00
	60	0.15	0.13	0.09	0.04	0.00	0.00
	75	0.00	0.00	0.00	0.00	0.00	0.00

Table 3: Light transmittance	Solar hight (degrees)						
	0	15	30	45	60	75	
Azimuth (degrees)	0	0.48	0.41	0.34	0.24	0.08	0.00
	15	0.46	0.40	0.33	0.23	0.07	0.00
	30	0.42	0.37	0.29	0.19	0.05	0.00
	45	0.35	0.30	0.24	0.14	0.02	0.00
	60	0.22	0.18	0.13	0.05	0.00	0.00
	75	0.01	0.00	0.00	0.00	0.00	0.00



## Color rendering index

The color rendering of transmitted light through the MicroShade® MS-A Vertical is neutral.

The color rendering index is calculated according to EN 410:1998 by assessing the color rendering of eight different color standards illuminated with a standard light source through the window.

The color rendering is measured on a scale from 0 to 100, with 100 as the best (neutral) and the overall index is the average of the eight. According to EN 410:1998 a color rendering index above 90 indicates high color neutrality.

Color rendering index for MicroShade® by normal incident light:								
Color	1	2	3	4	5	6	7	8
Ra	99,8	99,7	99,5	99,6	99,5	99,2	99,5	99,7

All information is intended as guidance.  
MicroShade A/S reserves the right to make amendments and changes to product specifications. MicroShade A/S cannot be held responsible for the correctness of the information.

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