

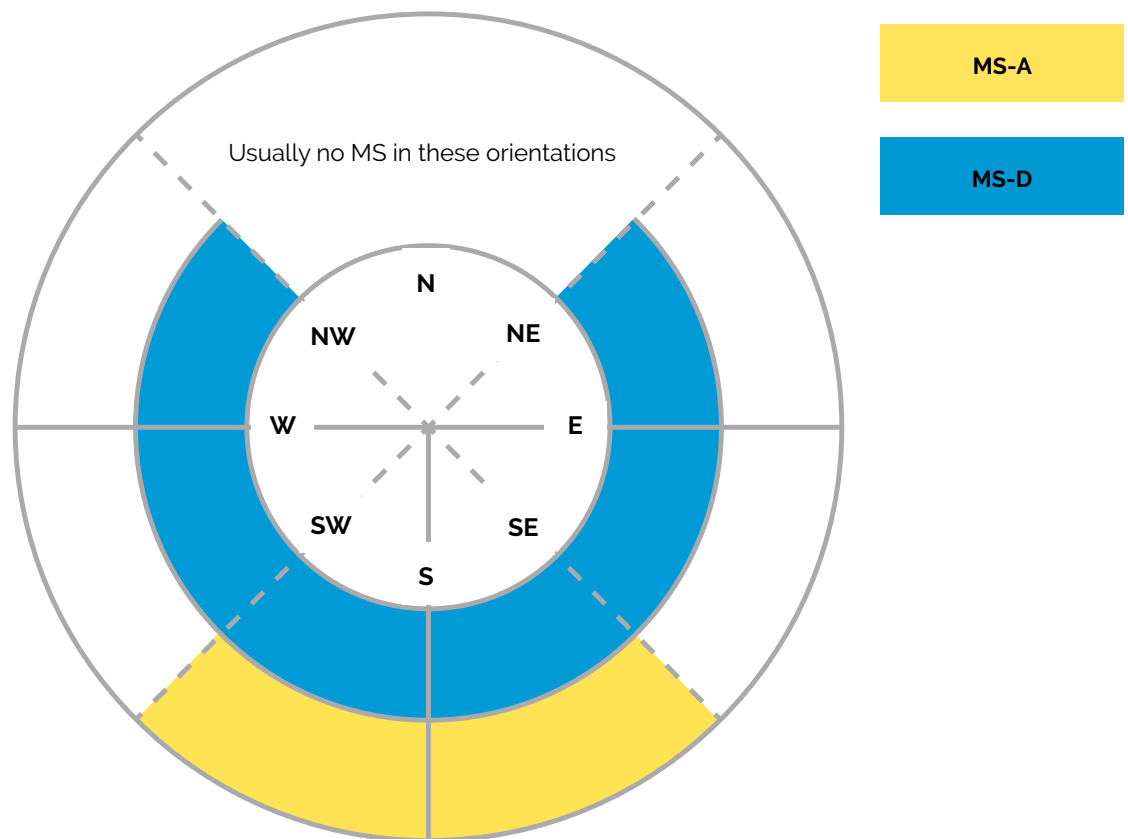
# Selection Guideline for MicroShade® products

## Scandinavia – façade applications

MicroShade® is a highly effective shading product containing microscopic shading lamellas. The shading efficiency depends on the incidence angle of the sun on the lamellas. When the sun is high in the sky during the summer, MicroShade® provides the strongest shading and during winter when the sun is low more heat is allowed into the building. Similarly, the shading efficiency also varies during the course of the day due to the different positions of the sun morning, noon and evening.

For façade applications two MicroShade® product types are commonly used – the MicroShade® MS-A and MS-D. Aesthetically, these are similar, only the MS-D provides a stronger shading whilst the MS-A allows more daylight inside.

The obtained shading is best expressed using the effective g-value – and with MicroShade® MS-A or MS-D glazing, this value depends on the orientation of the façade. The figure below shows which MicroShade® product is suitable at given façade directions.



<sup>1</sup> Façade application means glazing mounted in a near vertical position.

### Key performance data for 2-layer glazing with MicroShade® MS-A or MS-D

The tables below indicate the light transmittance  $L_{T,0}$  and the mean effective g-value in the summer period (June to end of August) for two layer MicroShade® glazing.

MS-A	U-value (W/m <sup>2</sup> K)	$L_{T,0}$	Effective g-value, summer period (June to end of August)						
			315° NW	270° W	225° SW	180° S	135° SE	90° E	45° NE
Orientation									
Tromsø	1.12	0.50	-	-	0,23	0,21	0,23	-	-
Trondheim			-	-	0,22	0,19	0,22	-	-
Oslo			-	-	0,22	0,18	0,22	-	-
Stockholm			-	-	0,21	0,18	0,22	-	-
Copenhagen			-	-	0,21	0,17	0,21	-	-

MS-D	U-value (W/m <sup>2</sup> K)	$L_{T,0}$	Effective g-value, summer period (June to end of August)						
			315° NW	270° W	225° SW	180° S	135° SE	90° E	45° NE
Orientation									
Tromsø	1.12	0.44	0,23	0,23	0,20	0,19	0,21	0,23	0,23
Trondheim			0,22	0,23	0,20	0,17	0,20	0,23	0,22
Oslo			0,21	0,23	0,19	0,16	0,19	0,22	0,21
Stockholm			0,21	0,23	0,19	0,16	0,19	0,23	0,21
Copenhagen			0,21	0,22	0,19	0,15	0,18	0,22	0,21

- 1) The optical and thermal data above are valid for glazing structure: 4 mm Heat tempered float+ MS – 16 mm argon – 4 mm lowE.
- 2) The performance of the MicroShade® system depends on the glazing structure – for exact information about your glazing, please contact MicroShade® support – support@microshade.dk
- 3) U-value is calculated according to EN 673:2011.
- 4) Effective g-value calculated according to EN 410:2011.

### Key performance data for 3-layer glazing with MicroShade® MS-A or MS-D

The tables below indicate the light transmittance  $L_{T,0}$  and the mean effective g-value in the summer period (June to end of August) for three layer MicroShade® glazing.

MS-A	U-value (W/m <sup>2</sup> K)	$L_{T,0}$	Effective g-value, summer period (June to end of August)							
			315° NW	270° W	225° SW	180° S	135° SE	90° E	45° NE	
Orientation										
Tromsø	0.72	0.44	-	-	0,19	0,18	0,19	-	-	
Trondheim			-	-	0,18	0,16	0,18	-	-	
Oslo			-	-	0,18	0,15	0,18	-	-	
Stockholm			-	-	0,18	0,15	0,18	-	-	
Copenhagen			-	-	0,17	0,14	0,17	-	-	

MS-D	U-value (W/m <sup>2</sup> K)	$L_{T,0}$	Effective g-value, summer period (June to end of August)							
			315° NW	270° W	225° SW	180° S	135° SE	90° E	45° NE	
Orientation										
Tromsø	0.72	0.38	0,19	0,19	0,16	0,15	0,17	0,19	0,18	
Trondheim			0,18	0,19	0,16	0,14	0,16	0,19	0,18	
Oslo			0,17	0,19	0,15	0,13	0,16	0,19	0,17	
Stockholm			0,18	0,19	0,16	0,13	0,16	0,19	0,17	
Copenhagen			0,17	0,18	0,15	0,12	0,15	0,18	0,17	

- 1) The optical and thermal data above are valid for glazing structure: 4 mm Heat tempered float+ MS – 12 mm argon – 4 mm lowE – 12 mm argon – 4 mm lowE
- 2) The performance of the MicroShade® system depends on the glazing structure – for exact information about your glazing, please contact MicroShade® support support@microshade.dk
- 3) U-value is calculated according to EN 673:2011.
- 4) Effective g-value calculated according to EN 410:2011.