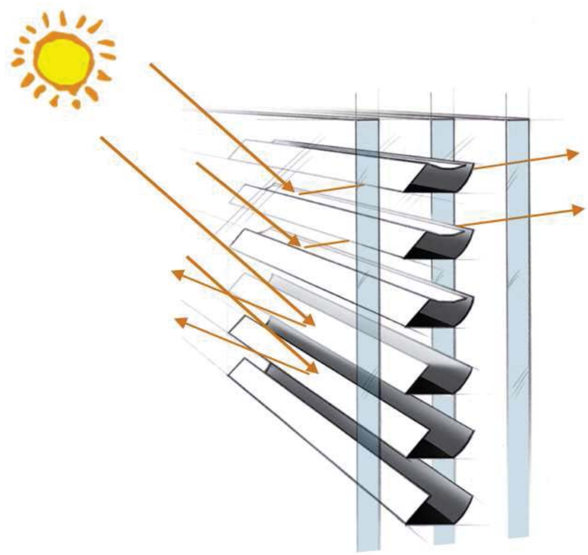
INFOTEXT

We take architectural glass a step ahead.

OKA*SOLAR* F

Glazing with Integral Sun Control Louvres

OKA*SOLAR* F is an insulating glass with fixed louvres in the cavity between the glass panes. OKA*SOLAR* F enables both the use of daylight as well as an effective solar control, and has been optimised for use in the façade. For roof glazing, we recommend our product OKA*SOLAR* S.



With its three-dimensionally shaped, highly reflective profile, OKA*SOLAR* F offers:

- Efficient directionally selective solar control
- Directionally selective light transmission
- Partial through-vision
- Two different louvre types (O and U), which can be combined in one element.
- Can be easily recycled
- Visibility for birds

Physical properties

Thermal insulation

OKA*SOLAR* F is available as a 2-pane make-up with cavity between the panes of 16 mm, and also as a 3-pane make-up with an additional cavity between the panes.
Depending on the gas filling and coating, the 2-pane make-up achieves U_g values ≥ 1.1 W/(m²K). As a 3-pane make-up, U_g values ≥ 0.6 W/(m²K) are possible.

Sound insulation

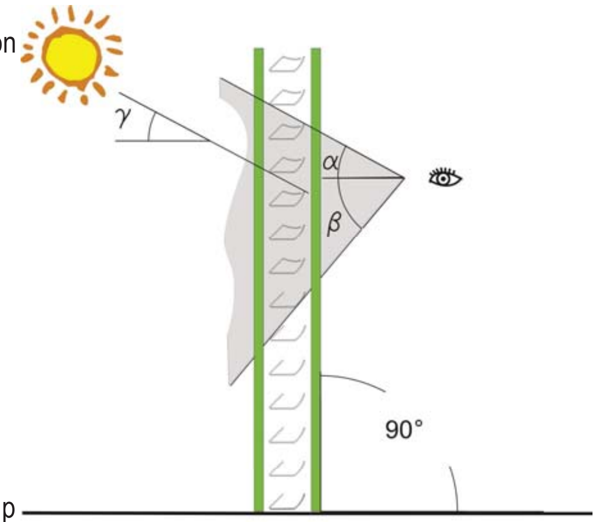
The integrated louvres have no significant effect on the sound insulation. The achievable values depend on the glass assembly.

Spectral properties

The compact louvre cross-section permits horizontal through-vision on a proportional area of approx. 57%. Type U has been primarily optimized for glare protection and reflection of light outwards (retro-reflection). Type O has a special profile shape, which deflects daylight into the room. Therefore, O type is especially suited for skylights in vertical facades and for the area above approx. 1800 mm from the finished floor level in ceiling-high glazing, in order to avoid glare from the light deflected inwards.
The function of OKA*SOLAR* F depends on the current radiation conditions. Partial trough-vision is always given, despite the solar control which differs depending on the season and time of day.

Integrated in a vertical façade, OKA*SOLAR* F functions as follows:

1. direct irradiation from high and medium solar altitude
    - thermal solar control with a low total solar energy transmittance as ≥ 9 %, in particular secondary heat transfer with low solar radiation transmission
    - glare protection
    - light deflected into the room with type O
2. direct irradiation from low solar altitude
    - partial transmission of the direct sunlight
    - light deflected into the room with type O
3. diffused irradiation (overcast sky)
    - preferred light transmission flat in every part of the room



Technical values of standard types

The following information applies to 2-pane make-up consisting a external pane with a thickness of 6 mm with a functional coating at face #2 and an inner pane with a thickness of 6 mm.

Table 1: Geometry of the different OKA*SOLAR* F types

Type OKA*SOLAR*	Angle of louvre [°]	Distance of louvre [mm]	Horizontal trough-vision %	Trough-vision to		Lock out angle γ [°]
				above α [°]	lower β [°]	
F O	0	9.5	57	28	50	28
F U	0	9.5	57	28	50	28

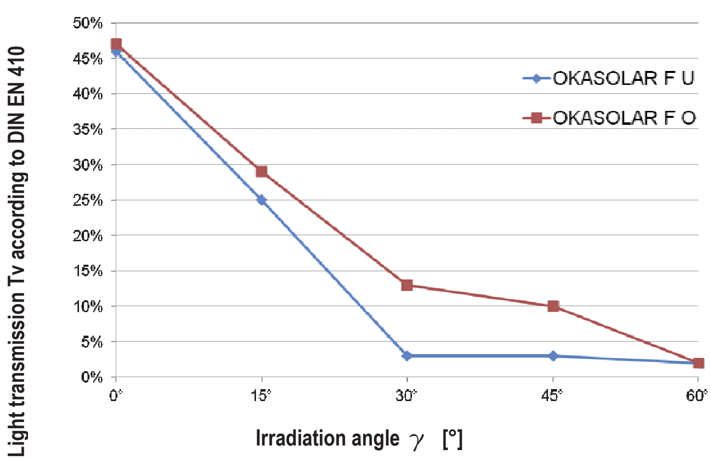


Figure 1: Angle-selective light transmission T_v of the different OKA*SOLAR* F types in the 2-pane make-up with low-e coating

Table 2: Technical values for the 2-pane make-up with low-e coating as well as solar control coating 70/39

Type OKA*SOLAR*	Functional coating	T_v % min. 1)	T_v % max. 2)	g value % min. 1)	g value % max. 2)	U_g value [W/(m²K)] U_g [Btu/[hfr ft²F)] cavity 16 mm		
						Krypton	Argon	Air
F O F U	low-e	2 2	47 46	17 17	42 41	**1.1** (0.19)	**1.7** (0.30)	**2.1** (0.37)
F O FU	solar	2 2	41 41	15 15	32 32	**1.1** (0.19)	**1.7** (0.30)	**2.1** (0,37)

The following information applies to 3-pane make-up consisting of a external pane with a thickness of 6 mm functional coating at face #2, a middle pane with a thickness of 6 mm and a inner pane with a thermal control coating at face #5.

Table 3: Technical values for the 3-pane make-up with low-e coating as well as solar control coating 70/39

Typ OKA*SOLAR*	Functional coating	T_v % min. 1)	T_v % max. 2)	g value % min. 1)	g value % max. 2)	U_g value [W/(m²K)] U_g[Btu/[hfr ft²F)] cavity 16 mm/10 mm		
						Krypton	Argon	Air
F O F U	low-e	2 2	41 40	10 10	32 32	**0.6** (0.11)	**0.9** (0.16)	**1.2** (0.21)
F O F U	solar	2 2	36 36	9 9	25 26	**0.6** (0.11)	**0.9** (0.16)	**1.1** (0.19)

1) for angle of incidence γ = 60°

2) for angle of incidence γ = 0° (vertical to the glass surface)

Legend and related values:

	unit	standard	technical term
U_g	W/(m²K)	DIN EN 673 DIN EN 674	Thermal transmittance
TSET	%	DIN EN 410	Total solar energy transmittance or solar heat gain coefficient
T_v	%	DIN EN 410	Light transmission (direct/hemispheric resp. diffuse/ hemispheric)
R_w	dB	DIN EN 20140	Sound reduction coefficient
F_C	%	DIN 4108	Reduction factor of a solar control system, $F_C = TSET/TSET_{reference}$
SC	%	GANA Manual	Shading coefficient, SC=TSET/0.86

The above data are approximate data. They are based on measurements of approved test institutes and calculations derived from these measurements. Values determined on a project-specific basis may vary from the above values. The values continue to vary if other coatings are used.

Direct transmission relates to direct incidence of light, generally vertical (model situation for direct sunlight). Diffuse transmission applies to homogeneous, diffuse incidence of light from the outer hemisphere (model situation for an overcast sky).

A low-e coating or a combined solar and low-e coating at face #2 changes the colour appearance when viewed from outside.

The specified values may change as a result of technical developments. No guarantee is therefore given for their correctness.

Make-up

The special feature of OKA*SOLAR* F is that the louvres for solar control and use of daylight are integrated in the cavity between the glass and therefore pose no special requirements concerning the installation, maintenance and cleaning. In fact, the OKA*SOLAR* element can be treated like conventional insulating glass. The glass thickness and type are based on the structural needs and constructional requirements.

Standard make-up:

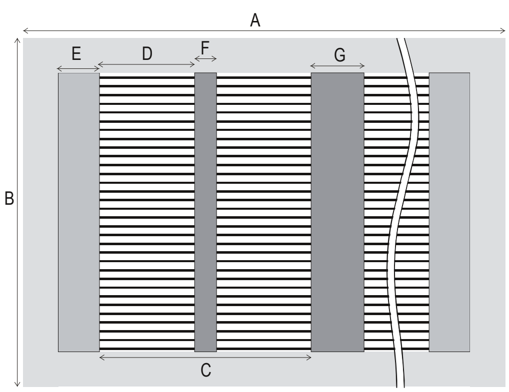
2-pane make-up
External pane made of thermally treated glass, low-e/solar control coating face #2
Cavity: 16 mm with integrated louvres and gas filling
Inner pane made of thermally treated glass

3-pane make-up
External pane made of thermally treated glass, low-e/solar control coating face #2
Cavity 1: 16 mm with integrated louvres and gas filling
Intermediate pane made of thermally treated glass
Cavity 2: 8 to 12 mm with gas filling
Inner pane made of thermally treated glass, low-e coating face #5

Dimensions

The table and drawing below show maximum dimensions and visible widths.

glass dimension parallel to louvre direction	A	max. 3000 mm
glass dimension perpendicular to louvre direction	B	max. 4000 mm
louvre length	C	max. 1000 mm
unsupported span of louvres	D	max. 1000 mm
visible width edge profile	E	17,5 mm
visible width of joint profile	G	17,5 mm



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The maximum area is 7 m^2. Special shapes are possible. The feasibility and divisions must be discussed with OKALUX beforehand. It may be necessary to use an increased secondary sealant in the case of smaller dimensions and/or greater thickness of glass. The required edge seal width must be discussed with OKALUX beforehand. In the case of over sized units, joints could occur at the edge and joint profiles. OKALUX will specify the location of the joints.

For tolerance reasons and due to differing temperature expansion, the insert may be exhibit an expansion gap of up to 2.0 mm on each side. This can lead to a visible gap between the insert and the spacer bar. For this reason, the depths of the glazing rebate must amount to at least the required overall sealant (spacer bar + secondary seal) plus 5 mm. Otherwise the edge area has to be covered by a screen print.
In the case of a polysulphide as secondary seal, it may be necessary to use a exceed cover in order to provide sufficient UV control. In the case of a frameless glazing system, it is generally recommended that the edge areas are covered using a screen print. Depending on loading, the required sealant width can be considerably greater than that of “conventional” insulating glazing.

Depending on the insulating glass formats, joint profiles may be required to support the louvres. If we do not receive any specifications, we will provide a symmetrical division of the louvres for each individual insulating glass unit. Please consult us in good time if a different division is required.

Edge and joint profiles have a matt, eloxal finish in black colour. Profiles can be powder-coated in RAL colours upon request.

Planning instructions

On the basis of the planning data, in particular

- geographical latitude of the project
- possible façade inclination
- façade orientation
- room utilisation

we develop a project-specific OKA*SOLAR* assessment. The shading times of the respective OKA*SOLAR* type are evident in the OKA*SOLAR* assessment.

On account of the occasional penetration of the sun through the louvres and of the light deflection by OKA*SOLAR*, additional internal glare control may be required for particularly critical applications (e.g. computer workstations).

The louvres have a highly reflective coating, which contributes to an effective redirection of solar radiation. For this reason, certain lighting conditions and viewing angles may already make slight deviations in the positions of some of the louvres visible. These deviations are unavoidable and do not affect the function of the insulating glass.

If the OKA*SOLAR* insulating glazing is being installed at temperatures < 0°C in an unheated building (winter construction site), we must be notified of this in writing beforehand.

Installation instructions

OKA*SOLAR* insulating glass is glazed as per normal insulating glass. During transportation, the insert may slide to the side, creating a greater visible slit between the spacer and the insert or the support profiles could become inclined. We must be notified in writing beforehand of any special loads which may occur during transportation (vibrations/shaking).
For instructions and recommendations for the installation of our insulating glazing, please refer to our information and instructions for customers contained in "Delivery of OKA*LUX* Glass Products" and "General Information on Glazing".

Other printed matter

If you do not have the following printer matter, please request it directly from OKALUX or download it from the Internet at www.okalux.com:

General terms and conditions of business
Product-specific information texts

As well as these, there are the following customer notes:

Customer notes on offers
Customer notes on delivery
Customer notes alarm glass
Customer notes screen printing
Customer notes Structural Glazing / Edge deletion
Customer notes on heat-soak test
Customer notes on glazing
Customer notes SIGNAPUR®
Customer notes installation of OKA*FLEX*
Customer notes installation of OKA*PANE*
Customer notes OKA*WOOD* tolerances
Customer notes OKA*CELL* product specification
Cleaning instructions for OKA*LUX* gen.
Cleaning instructions OKA*COLOR*
Guideline for visual quality