

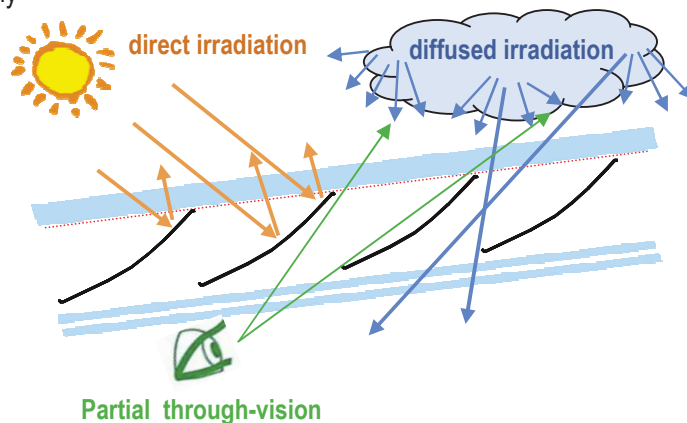
OKASOLAR S

Glazing with Integral Sun Control Louvres

OKASOLAR S is an insulating glass with fixed louvres in the cavity between the glass panes and is ideal for use in roofs. We recommend our products OKASOLAR W, OKASOLAR F and OKASOLAR RETRO O/U for façade glazing.

With its three-dimensionally shaped, highly reflective profile, OKASOLAR S offers:

- Efficient directionally selective solar control
- Use of diffuse day-lights
- Partial through-vision
- Can be easily recycled
- Visibility for birds



Physical properties

Thermal insulation

OKASOLAR S is available as a 2-pane make-up with a space between the panes of 24 mm. Depending on the gas filling and coating U_g values $\geq 1.1 \text{ W}/(\text{m}^2\text{K})$ 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 function of OKASOLAR S depends on the current radiation conditions. Partial through-vision is always given, despite the solar protection which differs depending on the season and time of day. The flat louvre cross-section permits through-vision on a proportional area of up to 80% depending on the viewing direction. In general OKASOLAR S is installed such that direct solar radiation from the south is largely avoided, while the diffuse daylight from the northern sky can be used.

In roof applications, OKASOLAR S functions as follows:

1. Shaded range (general direction: south)
 - thermal solar protection with total solar energy transmittance values of as low as $\geq 9\%$, in particular secondary heat transfer without solar radiation transmission
 - glare protection

2. Penetration range (general direction: north)
 - partial transmission of the direct sunlight
 - diffused irradiation of daylight
 - partial through-vision

Technical values of standard types

The following information applies to 2-pane make-up consisting of one 6 mm thick external pane with a solar functional coating at face #2 and an inner pane of 8 mm thermally treated glass.

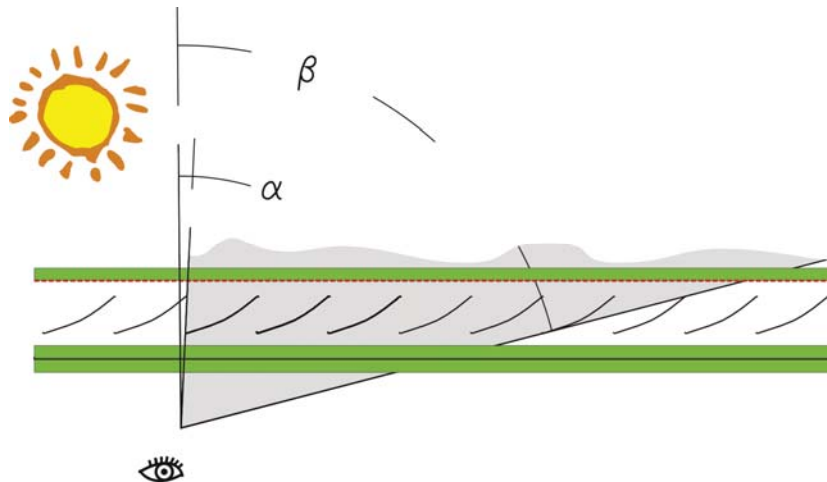


Table 1: Geometry of the different OKASOLAR S types

| Type | Angle of louvre [°] | Distance of louvre [mm] | Maximal through-vision % | Trough-vision | |
|------------|---------------------|-------------------------|--------------------------|-------------------|----------------|
| | | | | from α [°] | to β [°] |
| OKASOLAR S | 27 | 24.7 | 80 | 3 | 75 |

Table 2: Technical values for the 2-pane make-up with low-e coating as well as solar control coating 69/37

| Type | Functional coating | T _v % min. ¹⁾ | T _v % max. ²⁾ | g value % min. ¹⁾ | g value % max. ²⁾ | U _g -Wert [W/(m ² K)] / U _g [Btu/(hfr ft ² F)] cavity 24 mm | | |
|------------|--------------------|-------------------------------------|-------------------------------------|------------------------------|------------------------------|---|------------|------------|
| | | | | | | Krypton | Argon | Air |
| OKASOLAR S | low-e | 1 | 46 | 12 | 42 | 1.1 / 0.19 | 1.3 / 0.23 | 1.9 / 0.33 |
| OKASOLAR S | solar | 1 | 40 | 9 | 31 | 1.1 / 0.19 | 1.3 / 0.23 | 1.9 / 0.33 |

¹⁾ for angle of incidence $\gamma = 60^\circ$

²⁾ for angle of incidence $\gamma = -30^\circ$

Legend and related values:

| | unit | standard | technical term |
|-------------|----------------------|--------------------------|---|
| U_g | W/(m ² K) | 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 OKASOLAR S is that the louvres for solar protection 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 OKASOLAR element can be treated like conventional insulating glass. The glass thickness and type are based on the structural needs and constructional requirements.

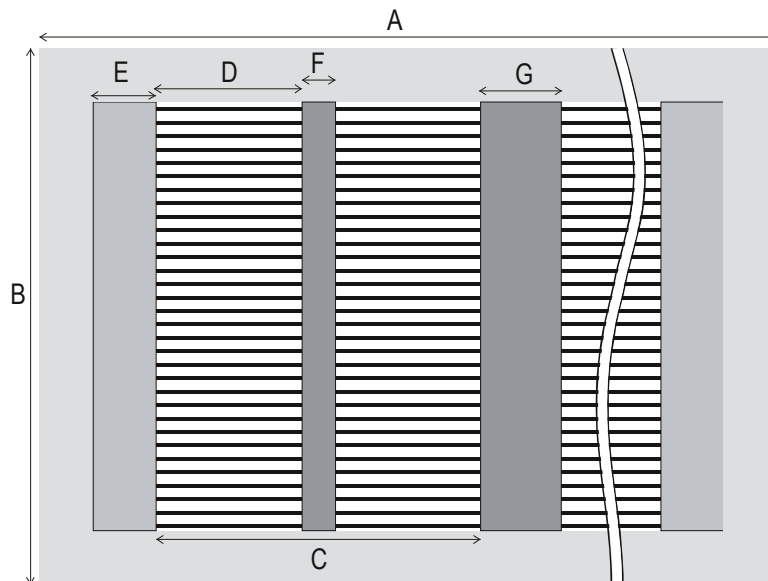
Standard make-up:

External pane made of thermally treated glass, low-e/solar protection coating face #2
 Cavity: 24 mm with integrated louvres and gas filling
 Inner pane made of thermally treated laminated safety glass

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 without supporting profile with supporting profile | B | max. 4500 mm max. 4000 mm |
| louvre length | C | max. 1500 mm |
| unsupported span of louvres | D | max. 500 mm |
| visible width edge profile | E | 15.0 mm |
| visible width supporting profile | F | 7.2 mm |
| visible width of punched out area of louvre at supporting profile | F | 7.2+1 mm |
| visible width of joint profile | G | 29.3 mm |



The maximum area is 7 m². 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, tooth and joint profiles. OKALUX will specify the location of the joints.

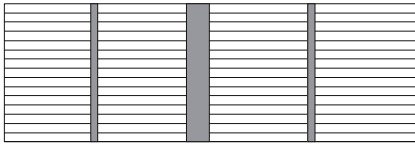
For visual reasons, we may finish the louvre insert by placing an edge profile all round it. Pressure on the thin surface of the pane can permanently damage the louvre insert. It is only permitted to walk on the panes, even when sized appropriately, in consultation with the manufacturer. When affixing boards, the load must be applied over the edge of the pane.

For tolerance reasons and due to differing temperature expansion, the insert may exhibit an expansion gap of up to 2 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.

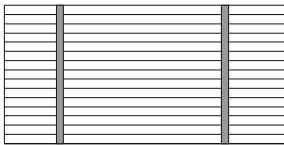
In the case of a polysulphide as secondary seal, it may be necessary to use a exceed cover in order to provide sufficient UV protection. In the case of a frameless glazing system, it is generally recommended that the edge areas are covered using a screen print. Depending on loading, the required sealant width can be considerably greater than that of “conventional” insulating glazing.

Depending on the insulating glass formats, tooth and junction 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.

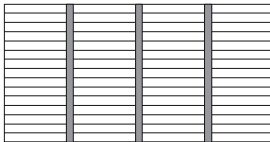
Edge and junction profiles have a matt, eloxal finish in a natural aluminium (EV1) colour. Profiles can be powder-coated in RAL colours upon request.



Example 1:
regular division with 1 joint profile
and 2 tooth profiles



Example 2:
symmetrical division with 2 tooth profiles



Example 3:
regular division Example 1:

Planning instructions

On the basis of the planning data, in particular

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

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

On account of the occasional penetration of the sun through the louvres and of the light deflection by OKASOLAR, additional internal glare protection 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 OKASOLAR insulating glazing is being installed at temperatures $<0^{\circ}\text{C}$ in an unheated building (winter construction site), we must be notified of this in writing beforehand.

Installation instructions

OKASOLAR 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 OKALUX 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 OKAFLEX

Customer notes installation of OKAPANE

Customer notes OKAWOOD tolerances

Customer notes OKACELL product specification

Cleaning instructions for OKALUX gen.

Cleaning instructions OKACOLOR

Guideline for visual quality