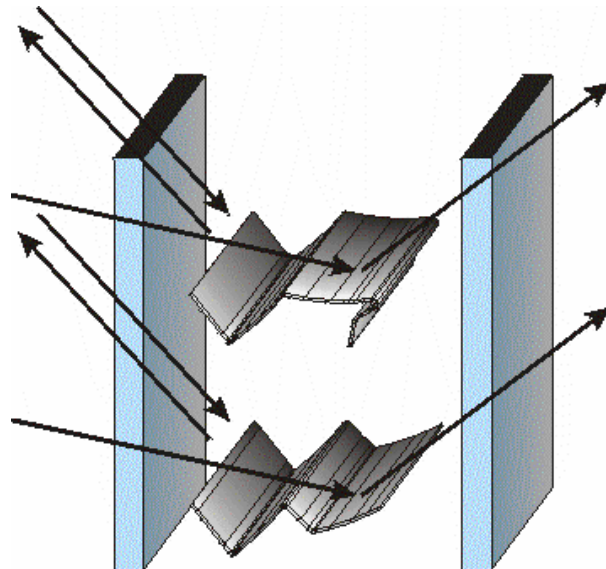


## OKASOLAR RETRO O/U

### Glazing with Integral Sun Control Louvres

OKASOLAR RETRO insulating glass is a new daylighting system without any moving components. Thanks to its direction-selective mirror profiles, OKASOLAR RETRO offers a convincing compromise between protection and provision requirements.

- efficient direction-selective sun protection
- indirect illumination by directing the light towards the ceiling
- partial through-vision



OKASOLAR RETRO O (top) and RETRO U (below)

In a vertical façade, OKASOLAR RETRO functions as follows:

1. Direct irradiation from high and medium solar profile (sun) angles
  - thermal solar protection with total solar transmittances of up to 0.07 % for high angles of incidence, in particular secondary heat transfer without solar radiation transmission
  - glare protection
2. Direct irradiation from low solar profile (sun) angles
  - partial transmission of direct sunlight
  - partial light deflection into the depths of the room
  - indirect illumination through deflected direct daylight
3. Diffuse irradiation
  - preferred light emission upwards in the direction of the ceiling for diffused redirection into the depth of the room

On account of its increased light deflection, type O is particularly suitable for skylights in vertical façades (from an effective floor height of 1800 mm), while type U is more suitable for glare protection.

The flat cross section of the louvres allows a horizontal view onto a surface area of approx. 56%.

## Technical Data

	TSET min.	SC min.	TSET max.	SC max.	T <sub>v</sub> min.	T <sub>v</sub> max.	U-value	U-value	Cavity
	%	%	%	%	%	%	W/(m <sup>2</sup> K)	Btu/hr/ft <sup>2</sup> /°F	mm
OKASOLAR RETRO	10	12	34	40	2	39	1.2- 1.4- 2.0	0.21-0.24- 0.35	30

TSET: Total solar energy transmittance or solar heat gain coefficient (dependent on angle of incidence)

T<sub>v</sub>: Light transmission (dependent on angle of incidence)

U-values refer to European Standard EN 673. Please contact our sales department for values according to ASHRAE conditions.

TSET (total solar energy transmittance or solar heat gain coefficient) and transmission values refer to European Standard EN 410. Values according to ISO 9050 may differ by 1-2%.

The values specified for OKASOLAR RETRO apply for type OKASOLAR RETRO U.

The values may be changed in either direction by using other coatings. For example, even lower total solar energy transmittances can be achieved in conjunction with a standard thermal and solar control coating:

	TSET min.	SC min.	TSET max.	SC max.	T <sub>v</sub> min.	T <sub>v</sub> max.
	%	%	%	%	%	%
OKASOLAR RETRO	8	9	25	29	2	35

Legend and related values:

	unit	standard	technical term
<b>U</b>	W/(m <sup>2</sup> K) or Btu/hr/ft <sup>2</sup> / °F	DIN EN 673 DIN EN 674	Thermal transmittance, (ΔT=10°C)
<b>TSET</b>	%	DIN EN 410	Total solar energy transmittance or solar heat gain coefficient
<b>T<sub>v</sub></b>	%	DIN EN 410	Light transmission (direct/hemispheric)
<b>R<sub>w</sub></b>	dB	DIN EN 20140	Sound reduction coefficient
<b>F<sub>c</sub></b>	%	DIN 4108	Reduction factor of a solar control system, F <sub>c</sub> =TSET/TSET <sub>reference</sub>
<b>SC</b>	%	GAN Manual	Shading coefficient, SC=TSET/0.86

The above data are approximate data. They are based on measurements of recognized test institutes and calculations derived from these measurements.

At the moment, not all suppliers have adapted their key data to the currently applicable regulations. When making comparisons, please pay attention to the relevant manufacturer's notes. On the basis of the old standards, total solar energy transmittances as well as shading coefficient values are each 1-3% lower.

Lower U-values can only be achieved in combination with thermal control gases (Kr, Ar). If thermal control gases are used, a gastight perimeter seal is required. It must be protected against solar radiation by means of covering profiles or a black edge screen print and is normally not compatible with jointing silicone.

## Build-up

- Panes made of toughened or heat strengthened glass, coating on surface 2
- Cavity 30 mm, gas
- Louvre width 20 mm, louvre interval 12.5 mm
- surfaces of louvers: upper  $\Rightarrow$  highly reflective; lower  $\Rightarrow$  "pure white" similar to RAL 9010.

## Dimensions and installation

OKASOLAR Insulating Glass is installed like normal insulating glass. The temperature-dependent movements of the OKASOLAR louvre panel requires a small space between the panel and the spacers. To avoid direct light penetrating through the gap between the louvre panel and the adjoining spacer bar of the insulating glass, the unit edge cover has to be a minimum of 15 mm. With widths and heights exceeding 1,5 m, the coverage has to be increased to at least 20 mm. The table and drawing below show maximum dimensions and visible widths.

glass dimension parallel to louvre	max. 2000 mm
glass dimension perpendicular to louvre direction	max. 2000 mm
louvre lengths according to glass dimension	
unsupported span of louvres	max. 1000 mm
visible width edge profile	ca. 15.0 mm
visible width support profile	7.2 mm
visible width of punched out area of louvre at support profile	7.2+1 mm

Shapes are not possible at the moment.

## Planning instructions

On the basis of the planning data, in particular

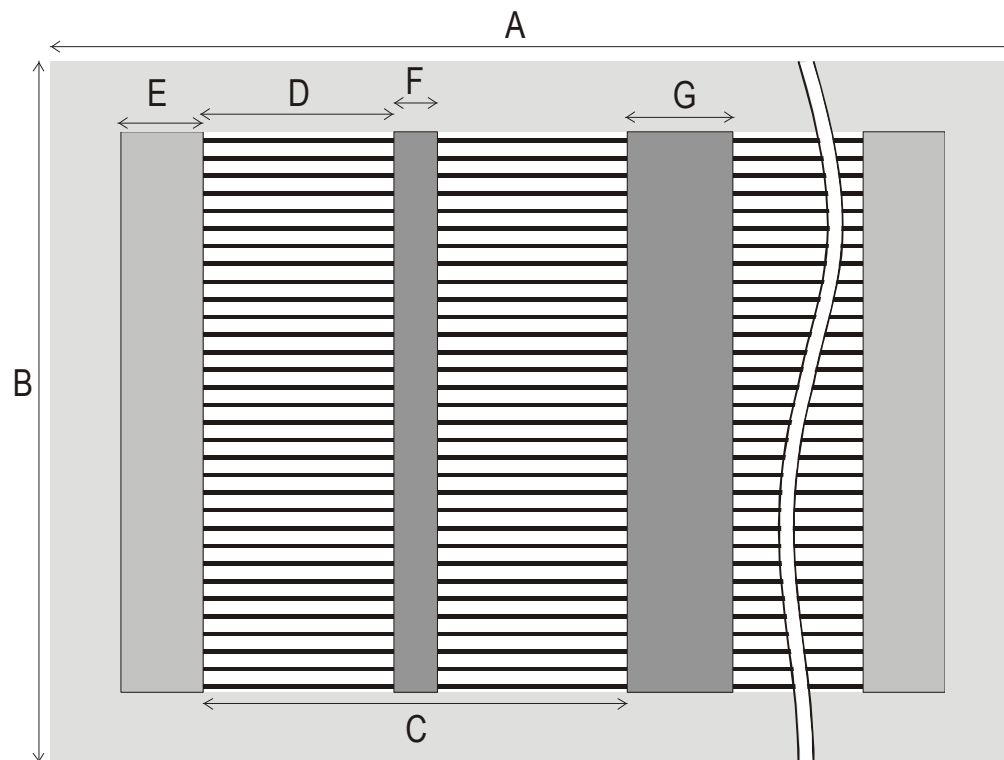
- geographical latitude of the project
- façade orientation
- roof inclination, if required
- room utilisation

We can provide an OKASOLAR assessment. This will explain the functional operation in detail, and furthermore we recommend the OKASOLAR type that best meets the project-specific requirements.

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.

## OKASOLAR dimensions



A: glass dimension towards louvre axis

B: glass dimension perpendicular to louvre axis

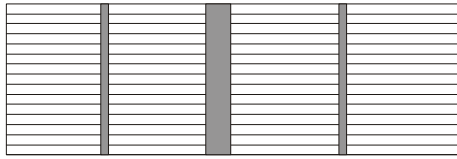
C: louvre length

D: unsupported span of louvres

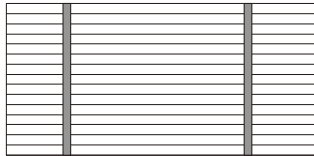
E: visible width edge profile

F: visible width tooth profile

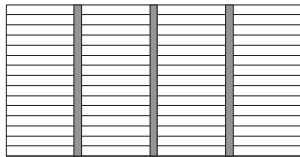
G: visible width of joint profile



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



Example 2:  
asymmetric division with 2 tooth profiles



Example 3:  
symmetric division with 3 tooth profiles