

## OKALUX Light Diffusing Insulating Glass

The challenge for OKALUX Light Diffusing Insulating Glass: to make daylight useful. With the use of a translucent light diffusing capillary slab both sides covered with additional glass fibre tissues in the cavity, OKALUX achieves

- optimum, uniform light transmittance into the room, irrespective of irradiation conditions
- light transmission and total solar energy transmittance as required
- very good colour rendering index
- good heat insulation
- UV protection as required
- sound insulation as required
- vision protection and glare protection
- attractive appearance in daylight and in artificial light
- bird friendly glazing



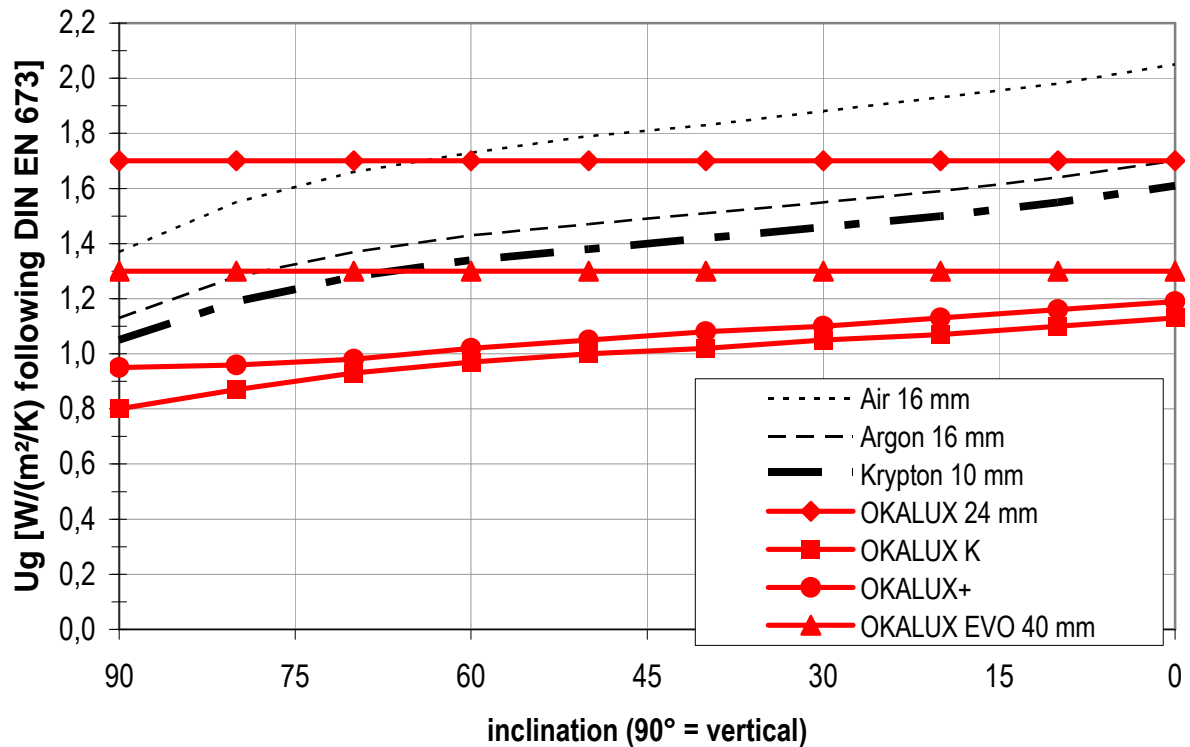
### Physical properties

#### Thermal insulation

The capillaries reduce the heat transfer in the cavity between panes in terms of convection and heat radiation. The thicker the OKAPANE insert, therefore, the better the  $U_g$  value. For OKAPANE thicknesses of 24 mm and over, we recommend the use of our OKALUX EVO product, which enables  $U_g$  values of up to 1.3 W/(m<sup>2</sup>K) to be achieved. With the triple pane make (OKALUX K product variant) it is possible to achieve  $U_g$  values of up to 0.8 W/(m<sup>2</sup>K).

The  $U_g$  value of insulating glass in accordance with DIN EN 673 or DIN EN 674 always relates to vertical installation. If the insulating glass is at an angle, e.g. as in roof glazing, the  $U_g$  value increases, because the rising convection level in the cavity. Insulating glass with a standard value of  $U_g = 1.1$  W/(m<sup>2</sup>K) has an actual value of approx. 1.7 W/(m<sup>2</sup>K) if used for horizontal roof glazing.

The capillary slab in the cavity between panes prevents convection, which means that the  $U_g$  value of OKALUX is constant whatever the installation position. For roof glazing, OKALUX glass with a 24 mm capillary slab achieves the same  $U_g$  value as insulating glass with a  $U_g$  of 1.1 W/(m<sup>2</sup>K).



## Sound insulation

Capillary slabs decouple the panes of the insulating glazing and provide improved sound insulation.

## Spectral properties

The special light diffusing properties of the OKAPANE insert provide an optimised, uniform distribution of light in the room, regardless of irradiation conditions. The special geometry of the "OKAPANE" capillary material results in improved heat insulation with an increased thickness, but without any notable reduction in light transmission.

The g value and the light transmission are dependent on the make-up of the light diffusing inserts. Other g values and light transmission values can be provided on request with the use of special make-ups.

## UV protection

Very low UV transmission possible on request.

## Technical values of standard types

The following details apply to glass make-ups with a 6 mm outer pane and a 8 mm laminated safety glass as inner glass pane (0.76 PVB foil).

**Table 1.** Spectral properties

<b>OKALUX Type</b>	<b>T<sub>v</sub> direct %</b>	<b>T<sub>v</sub> diffuse %</b>	<b>TSET direct %</b>	<b>TSET diffuse %</b>	<b>SC %</b>
45/46	45	34	46	35	53
37/39	37	29	39	31	46
32/35	32	25	35	27	41
28/31	28	21	31	25	36
24/28	24	19	28	22	31
21/25	21	17	25	20	29

**Table 2.** U<sub>g</sub> value and R<sub>w</sub> value

<b>Capillary slab [mm]</b>	<b>8</b>	<b>12</b>	<b>16</b>	<b>20</b>	<b>24</b>	<b>32</b>	<b>40</b>
U <sub>g</sub> [W/(m <sup>2</sup> K)]	2.7	2.5	2.2	1.9	1.7	1.5	1.3
U <sub>g</sub> [Btu/(hr ft <sup>2</sup> °F)]	0.48	0.44	0.39	0.34	0.30	0.26	0.23
R <sub>w</sub> [dB]	38	40	41	42	43	44	45

Legend and related values:

	<b>unit</b>	<b>standard</b>	<b>technical term</b>
<b>U<sub>g</sub></b>	W/(m <sup>2</sup> K)	DIN EN 673 DIN EN 674	Thermal transmittance
<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 resp. diffuse/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>	%	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.

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).

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

## Make-up

What makes OKALUX light diffusing insulating glass so special is the capillary slab inserted in the cavity between the panes. The glass type and thickness vary according to static requirements and design requirements.

## Standard make-up:

- Outer pane
- additional glass fibre tissues
- Capillary slab 8 - 24 mm
- additional glass fibre tissues
- Inner pane

Variations in the density of the capillary slab and the diameters of the capillaries may be visible, as can joints which are necessary for production reasons. Under certain light conditions it may also be possible that fine lines, also the result of the production process, can be seen within the capillary slab. The physical characteristics of OKALUX are not adversely affected by the above.

## Dimensions

larger glass dimension	up to 4500 mm	no restrictions
smaller glass dimension	smaller than 1300 mm	no restrictions
	1300 mm to 2000 mm	light transmission not more than 33 %
	Larger than 2000 mm	subdivision by joint with aluminium profile

Due to tolerance justification and different thermal expansions factors the inlay may be trimmed back at the edge by up to 2.0 mm. Therefore a gap may become visible between the inlay and the spacer bar. For this reason the glazing channel in the rebate must be at least 15 mm. If the edge sealant is increased, a larger cover may be necessary. In the case of a frameless glazing system, it is recommended that the edge seal is covered by a screen print.

## Planning instructions

Builder-owners and architects must be able to technically assess the effect of glazing in daylight terms. Okalux offers such calculations as a voluntary extra service without obligation. The daylight-relevant properties of the room to be examined must be known; in particular, these are:

- room geometry, window dimensions
- approximate degree of reflection of the surfaces forming the room boundaries

The so-called daylight coefficient (D) in accordance with DIN 5034, Part 3, is relevant for the evaluation of the ambient daylight. This gives the ratio between the horizontal luminous intensity indoors and out of doors, under a completely overcast sky. This value can be calculated for different glazing variants using the existing simulation tools. The customer can thus assess the light-directing effects of special products, in comparison with normal glazing as well. In addition to the assessment in accordance with DIN, virtual images can visualise the light distribution in the rooms.

## Installation instructions

OKALUX light diffusing insulating glass is used for glazing like normal insulating glass. 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".