

## OKAPANE light diffusing insulating panels

The challenge for OKAPANE light diffusing insulating panels: to make daylight usable and considerably reduce heat losses. With the use of a translucent light diffusing capillary slab both sides covered with additional glass fibre tissue inserts in the cavity between panes, OKAPANE 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
- very good heat insulation
- noise insulation as required
- UV protection 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.

#### 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 because the inserts are thicker, but without any notable reduction in light transmission.

#### UV protection

Very low UV transmission possible on request.

#### Technical values of standard types

The following details apply to a double shell channel glass wall with padded sections. The OKAPANE usually is applied to the outer glass.

Glass type	Build-up	T <sub>v</sub> %	TSET %	U <sub>g</sub> [W/(m <sup>2</sup> K)]	U <sub>g</sub> [Btu/(hr ft <sup>2</sup> °F)]
26/60/7	Air 56 mm	70	62	2.8	0.49
26/60/7	OKAPANE with glass fibre tissue, 12 mm, air 44 mm	38	39	1.8	0.32
26/60/7	OKAPANE with glass fibre tissue, 16 mm, air 40 mm	38	39	1.6	0.28
26/60/7	OKAPANE with glass fibre tissue, 24 mm, air 32 mm	38	38	1.4	0.25
26/60/7	OKAPANE with glass fibre tissue, 32 mm, air 24 mm	38	38	1.2	0.21
26/60/7	OKAPANE with glass fibre tissue, 40 mm, air 16 mm	38	38	1.1	0.19
26/60/7	OKAPANE with glass fibre tissue, 2*16 mm, air 27 mm	29	32	1.1	0.19
26/60/7	OKAPANE with glass fibre tissue, 2*16 mm and 2* tissue 90, air 27 mm	21	23	1.1	0.19
33/41/6	OKAPANE with glass fibre tissue, 16 mm, air 22 mm	41	42	1.6	0.28

With a low-e coating on the inner glass, the following data are achieved:

Glass type	Build-up	T <sub>v</sub> %	TSET %	U <sub>g</sub> [W/(m <sup>2</sup> K)]	U <sub>g</sub> [Btu/(hr ft <sup>2</sup> °F)]
26/60/7	air 56 mm	65	59	1.8	0.32
26/60/7	OKAPANE with glass fibre tissue, 12 mm, air 44 mm	35	37	1.3	0.23
26/60/7	OKAPANE with glass fibre tissue, 16 mm, air 40 mm	35	37	1.2	0.21
26/60/7	OKAPANE with glass fibre tissue, 24 mm, air 32 mm	35	36	1.0	0.18
26/60/7	OKAPANE with glass fibre tissue, 32 mm, air 24 mm	35	36	0.9	0.16
26/60/7	OKAPANE with glass fibre tissue, 40 mm, air 16 mm	35	36	0.9	0.16

By considering the influence of the web, the U<sub>g</sub>-value is increased by 0.2 to 0.3 W/(m<sup>2</sup>K).

Legend and related values:

	unit	standard	technical term
U <sub>g</sub>	W/m <sup>2</sup> K	DIN EN 673 DIN EN 674	Thermal transmittance
TSET	%	DIN EN 410	Total solar energy transmittance or solar heat gain coefficient
T <sub>v</sub>	%	DIN EN 410	Light transmission (direct/hemispheric resp. diffuse/hemispheric)
F <sub>c</sub>	%	DIN 4108	Reduction factor of a solar control system, F <sub>c</sub> =TSET/TSET <sub>reference</sub>
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.

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

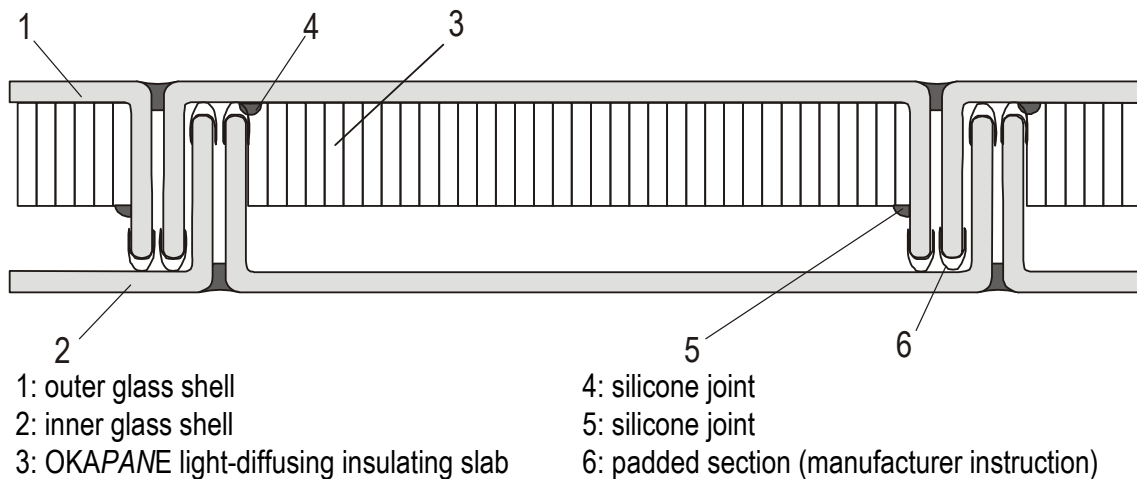
OKAPANE consists of a honeycombed arrangement of fine, highly transparent tubes made of acrylic (PMMA) which are connected to a slab by a glass fibre mat clad on both sides. The materials are naturally light fast and dimensionally stable.

According to experience, the total thickness of the OKAPANE after the cladding with glass fibre mat is approx. 1.5 mm less than the nominal thickness. With the dimensions, calculations and values given here, this has already been taken into consideration.

The width depends on the type of section, the joint dimensions and whether installation is with or without padded section.

The following specified widths are based on assuming a **joint width of 3 mm** and installing OKAPANE **without padded section**.

Section type	Width in mm	Section type	Width in mm
<b>LINIT</b>		<b>Profilit</b>	
P 23	200	K 22	200
P 26	230	K 25	230
P 33	299	K 32	299
P 50	466	K 50	466
P 23/60/7	196	K 22/60/7	196
P 26/60/7	226	K 25/60/7	226
P 33/60/7	295	K 32/60/7	295



The width recommendations are non-binding and must be checked by the glazier. If other widths are necessary because the joint distances are different or a padded profile is being used, this must be noted down on the order. If a padded section is used the above mentioned OKAPANE with ha to be reduced by 2 mm. We recommend using a padded section without protruding lips since these can lead to problems during assembly.

In Germany, the use of a padded section is stipulated for sports halls and all other buildings with glass heights > 2700 mm.

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 OKAPANE are not adversely affected by the above.

## Ordering instructions

The following information must be provided:

- Required thickness of OKAPANE (12, 16, 24, 32 or 40 mm)
- Required length: up to 5000 mm, other sizes available on enquiry
- Required width
- Number of units

## 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 quotient (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

For instructions and recommendations on assembling the OKAPANE, please refer to our form „assembly instructions for OKAPANE in U-profiled glass“.

OKALUX insulating glazing can be installed in the same way as any other insulating glazing.

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".