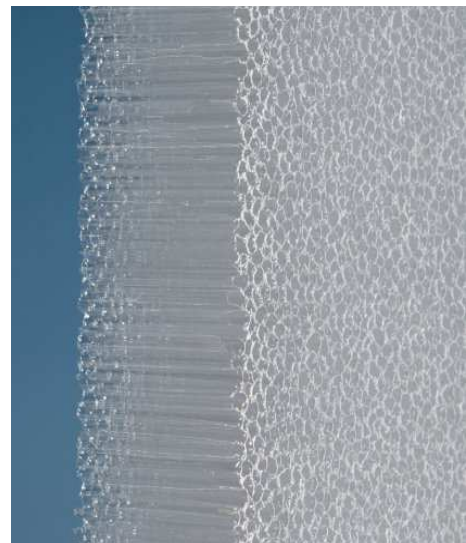


KAPILUX Capillary System

KAPILUX is an insulating glass with an integrated capillary slab. The type designation "-T" refers to a capillary slab made of transparent material, "-W" refers to white-tinted material (other colours on request). Type "WS" is a white-tinted material with an inclined capillary axis. The capillaries do not only reduce heat losses resulting, with their forward-directed light diffusion, they also improve the in-depth illumination of the room. This effect is particularly valuable on overcast days and in rooms with side illumination.

KAPILUX offers

- 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
- very good heat insulation
- sound insulation as required
- UV protection as required
- Attractive appearance in daylight and in artificial light
- Partial troughvision, effect of depth
- bird friendly glazing



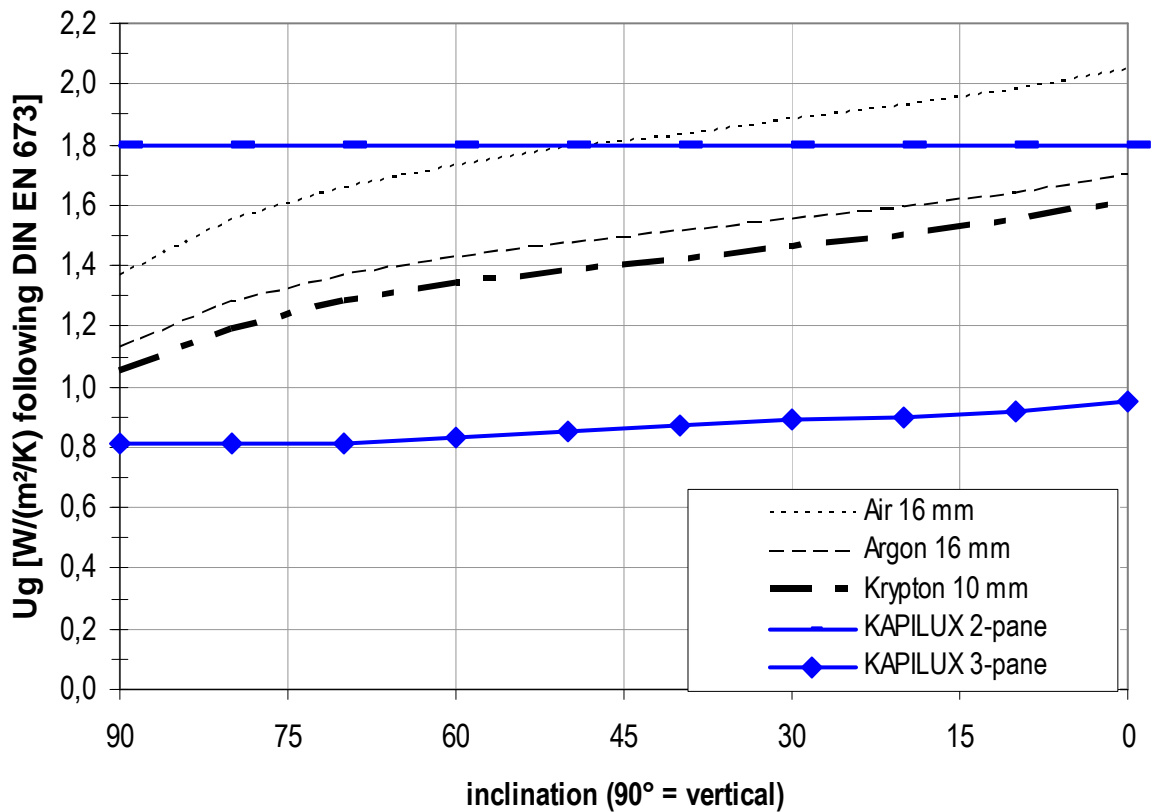
Physical properties

Thermal insulation

The capillaries reduce the heat transfer in the cavity between panes in terms of convection and heat radiation. The thicker the KAPIPANE insert, therefore, the better the U_g value. With the triple pane make it is possible to achieve U_g values of up to $0.8 \text{ W}/(\text{m}^2\text{K})$.

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 $U_g = 1.1 \text{ W}/(\text{m}^2\text{K})$ has an actual value of approx. $1.7 \text{ W}/(\text{m}^2\text{K})$ 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 nearly constant whatever the installation position.



Sound insulation

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

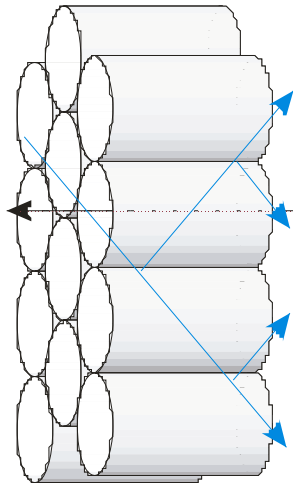
Spectral properties

Energy transmission, light transmission and light diffusion can be adapted to the façade orientation and the use of the room behind the façade. Especially with KAPILUX W the g-Value decreases in case of higher inclination angles. Stricter glare protection requirements can also be taken into consideration by using white-tinted capillary material (type -W).

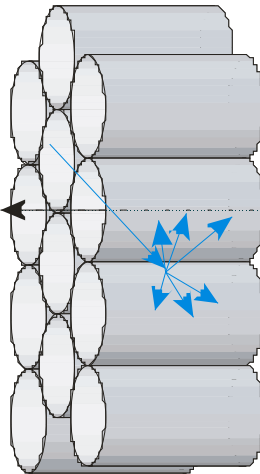
Along the capillary axis, partial through vision is possible with characteristic visual effects, especially if viewing from a considerable distance away.

The capillary axis of the standard product KAPILUX W is perpendicular to the glass. In certain cases it makes sense to have the capillary axis at an angle to the glass. This can prevent radiation coming in at a right angle from entering the room through the capillaries. KAPILUX WS is the appropriate product for such cases.

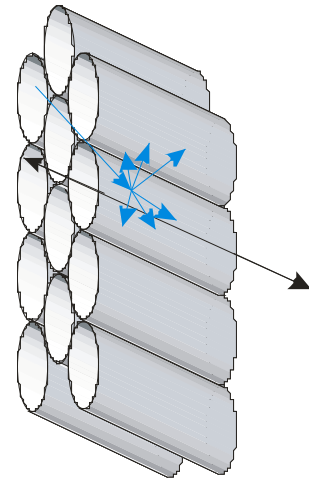
KAPILUX T



KAPILUX W



KAPILUX WS



UV protection

Very low UV transmission possible on request.

Technical values of standard types

The following details apply to a two-pane glass make up with a 6 mm outer pane, with a functional coating on face #2, a 4 mm middle pane and a 4 mm inner pane.

Table 1. Spectral properties 3-pane make-up

KAPILUX Type T	T _v direct %	T _v diffuse %	TSET direct %	TSET diffuse %	U _g -value [W/(m ² K)] / U _g [Btu/(hr ft ² °F)] cavity 8 mm		
					Krypton	Argon	Air
60/42	60	40	42	31	0.8 / 0.14	1.0 / 0.18	1.2 / 0.21
52/29	52	35	29	21	0.8 / 0.14	1.0 / 0.18	1.1 / 0.19
46/26	46	31	26	19	0.8 / 0.14	1.0 / 0.18	1.2 / 0.21

KAPILUX Type W	T _v direct %	T _v diffuse %	TSET direct %	TSET diffuse %	U _g -value [W/(m ² K)] / U _g [Btu/(hr ft ² °F)] cavity 8 mm		
					Krypton	Argon	Air
34/27	34	17	27	17	0.8 / 0.14	1.0 / 0.18	1.2 / 0.21
30/18	30	15	18	11	0.8 / 0.14	1.0 / 0.18	1.1 / 0.19
26/16	26	14	16	10	0.8 / 0.14	1.0 / 0.18	1.2 / 0.21

The following details apply to a two-pane glass make up with a 6 mm outer pane and a 4 mm inner pane.

Table 2. Spectral properties 2-pane make-up

KAPILUX Type T	T _v direct %	T _v diffuse %	TSET direct %	TSET diffuse %	U _g -value [W/(m ² K)] / U _g [Btu/(hr ft ² °F)] cavity 8 mm
67/62	67	50	62	47	1.8 / 0.32

KAPILUX Type W	T _v direct %	T _v diffuse %	TSET direct %	TSET diffuse %	U _g -value [W/(m ² K)] / U _g [Btu/(hr ft ² °F)] cavity 8 mm
38/36	38	21	36	21	1.8 / 0.32

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.

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 sun-control and low-e coating at position 2 changes the colour appearance when viewed from outside.

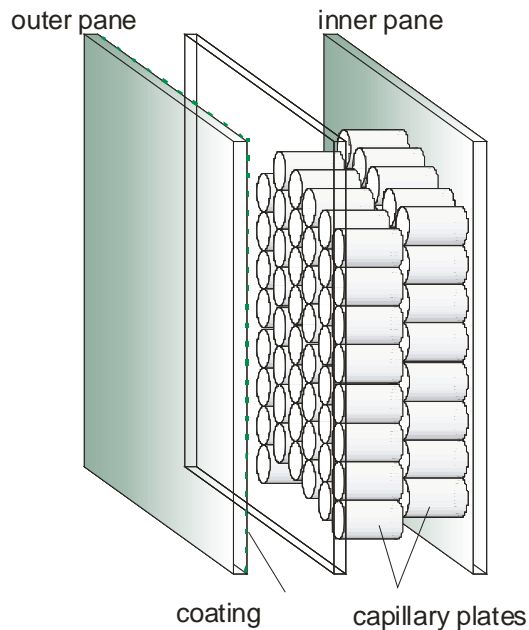
The specified values may change as a result of technical developments. No guarantee is therefore given for their correctness.

Make-up

What makes KAPILUX 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 coated on #2
- cavity 1: 8 mm, with air or gas filling
- Middle pane
- cavity 2: with 2 offset KAPIPANE slabs of 10 mm thickness each
- Inner pane



The 2-pane build-up consists of one 20 mm cavity with capillary slab and covering pane, in general without coating.

Maximum angle of inclination of the capillary axis by KAPILUX WS to the glass normal is 40°.

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. These "variations" in appearance give the product a lively appearance. 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.

Die Kapillareinlage im Produkttyp KAPILUX T streut das einfallende Licht. Direktes Sonnenlicht weitet sich dabei zu einem Lichtring auf. Bei anspruchsvollen Sehaufgaben kann dieser Ring stören. Für erhöhte Anforderungen an den Blendschutz ist deshalb der Typ KAPILUX W vorzuziehen.

Dimensions

	KAPILUX T/W	KAPILUX WS
max. width without joint of capillary slab	1.4 m	1.4 m
max. width with butt joint of capillary slab	2.4 m	2.4 m
max. height without joint	4.0 m	2.2 m
max. height with joint	6.0 m	4.4 m

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 incstuctions

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

KAPILUX 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".