

OKASTONE - Insulating glass with translucent thin stone veneer

OKASTONE represents a synthesis of classic and modern building materials: stone and glass. In OKASTONE, a 0.8 to 3.0 mm thin veneer of stone is laminated onto glass and integrated into the space between the panes of an insulated glazing system. This permanently protects the stone from weathering effects and maintains its aesthetic and high-quality looks. Every OKASTONE element is unique, created by nature over millions of years.

OKASTONE offers:

- Translucency depending on the thickness and type of stone
- natural, vivid appearance of the façade
- more than 1,000 different types of stone
- various possible finishes for the surface of the stone
- all glass types and thicknesses suitable as the substrate for the stone
- partial coverage, cut-out sections and curved panes possible
- Thermal insulation and solar protection
- Privacy protection
- Visibility for birds



Physical properties

Thermal insulation

OKASTONE is available as a 2-pane make-up and also as a 3-pane make-up with an additional cavity between the panes.

Depending on the gas filling and coating, the 2-pane make-up achieves U_g values ≥ 1.1 W/(m²K). As a 3-pane make-up, U_g values ≥ 0.6 W/(m²K) are possible.

Sound insulation

The achievable values depend on the make-up of the glass.

Spectral properties

The light and energy transmission of OKASTONE depends on the on the thickness and type of stone.

The following details apply for two-pane assemblies comprised of a 6 mm outer pane and a 6 mm inner pane with a heat-reflective coating in position #3.

Table 2: Technical values for a double-glazed assembly with a heat-reflective layer in position 3 (vertical glazing)

Type	Make-up	T _v % min.	T _v % max.	g value %	U _g value [W/(m ² K)] / U _g [Btu/[hfr ft ² F]]		
		depending on the thickness and type of stone			cavity 12 mm Krypton	cavity 16 mm Argon	cavity 16 mm Air
OKASTONE	2pane	0	30	acc. to measurement	1.1 / 0.19	1.1 / 0.19	1.4 / 0.25

The following details apply for three-pane assemblies comprised of a 6 mm outer pane, a centre pane with a heat-reflective layer in position #3 and a 6 mm inner pane with a heat-reflective layer in position #5.

Table 3: Technical values for a triple-glazed assembly with heat-reflective layers in positions 3 and 5 (vertical glazing)

Type	Make-up	T _v % min.	T _v % max.	g value %	U _g value [W/(m ² K)] / U _g [Btu/[hfr ft ² F]]		
		depending on the thickness and type of stone			cavity 12/12 mm Krypton	cavity 16/12 mm Argon	cavity 16/12 mm Air
OKASTONE	3pane	0	25	acc. to measurement	0.5 / 0.09	0.6 / 0.11	0.8 / 0.14

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). All values were measured hemispherically.

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 OKASTONE is that the thin stone veneer is laminated onto the carrier glass with a surrounding stepped edge. This means that the thin stone veneer is fully integrated into the hermetically sealed cavity of the insulated glazing system. Consequently there are no special requirements in terms of installation, maintenance or cleaning, and the OKASTONE element can be handled just like standard insulating glass. The thickness and type of glass depend on structural and building requirements.

Table 4: Example of quartzite



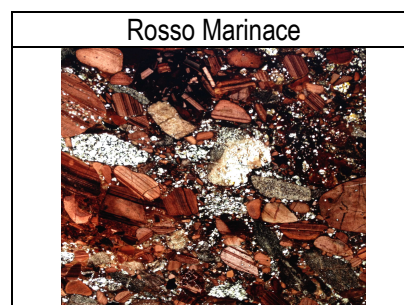
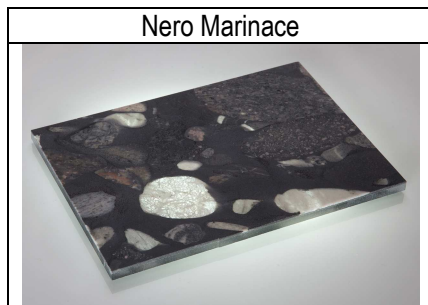
Table 5: Example of granite



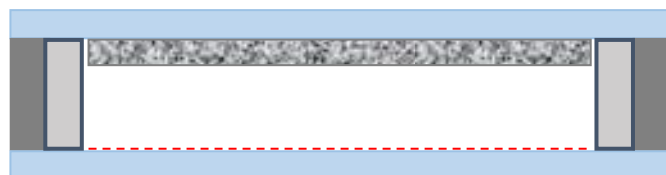
Table 6: Example of marble



Table 7: Example of conglomerates



Standard make-up:



2-pane make-up

Outer pane made of thermally pretensioned glass or VSG made of thermally pretensioned glass with a thin stone veneer, with a 0.8 to 3 mm margin in position #2

Cavity: 8 to 16 mm gas filling plus 0.8 to 3 mm stone thickness

Inner pane, heat reflective layer #3

3-pane make up

Outer pane made of thermally pretensioned glass or VSG made of thermally pretensioned glass with a thin stone veneer, with a 0.8 to 3 mm margin in position #2

Cavity 1: 8 to 16 mm gas filling plus 0.8 to 3 mm stone thickness

Centre pane made of thermally pretensioned glass, heat-reflective layer #3

Cavity 2: 8 to 12 mm with gas filling

Inner pane made of thermally pretensioned glass, heat-reflective layer #5

Dimensions

The table show maximum dimensions and visible widths.

Depending on stone, without joint, up to	3060 mm x 1560 mm
With thin stone panels placed side by side	On request

Special shapes are possible. 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.

There may be traces of the lamination process, transparent gaps or an untidy edge to the stone in the margin zone, as a result of the way the stone is cut back. This can lead to visible gaps of up to 4.0 mm between the stone veneer 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 8 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 an 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.

Stone displays natural variations in structure, colour, brightness, roughness and transparency, both between different stone panels and within a single element. This is also the case with the stone veneers used for OKASTONE. Veins, cracks, breaks and other imperfections may also be visible in the stone veneer. The aforementioned phenomena are product-related and do not represent product defects.

The availability of a particular stone, its delivery times and the time required to complete any project must be clarified in advance with OKALUX.

Installation instructions

OKASTONE is glazed like standard insulating glass. We are to be informed in advance in writing of any unusual stresses (shocks/vibrations) during shipping.

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 printed 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 OKAWOOD tolerances
Cleaning instructions for OKALUX gen.
Cleaning instructions OKACOLOR
Guideline for visual quality