

AKRIPOL Alux

Skydomes

AKRIPOL





ALUX Skydomes

Alux skylights are **lightweight and durable**. They provide optimal solutions for: **natural lighting with daylight, natural ventilation**, function as important **fire protection systems**. They simultaneously protect rooms from external influences: precipitation, noise, dust and others.

Skylights improve the atmosphere and fire safety in residential, work or public spaces and save a great deal of cost by using natural sustainable energy sources.



Natural Light



Natural Ventilation



Natural Smoke and Heat Exhaust



Energy Efficiency



Spatial Solutions



Engineering



Protection



Technical Solutions



Safety

The Importance of Natural Light, Ventilation and NSHE

Natural light plays a key role in well-being and effectiveness at work. Transparent-coloured skydomes and light bands create intensive, but simultaneously homogenous lighting that has a pleasant effect on health and activity of the users in the room.

Lighting the room with skydomes and light bands also reduces lighting costs and, compared to artificial light sources, simultaneously has a more positive effect on the health and activity of the people in the room.

The Alux skylights are intended for:

- illumination of rooms,
- natural ventilation of rooms by opening them,
- smoke and heat exhaust by opening them in the event of a fire (NSHE).

A wide range of options, innovation and support are the advantages of the Alux programme.

AKRIPOL Alux Skydomes

ALUX skylights are certified in accordance with EN 1873 and the systems for natural smoke and heat exhaust (NSHE) according to EN 12101-2.



Skydomes by Type of Materials Used

Skydomes made of cast acrylic sheets (cast PMMA of opal and transparent colour)- top quality UV resistance

Akripol skylights are mostly made of cast AKRIPOL Aglas acrylic sheets of various colours and thickness. The manufacturing process gives the cast acrylic certain properties that are the best among similar materials (e.g. the XT PMMA extruded acrylic glass). Acrylic is also a good alternative to other materials, for example, glass.

Durability

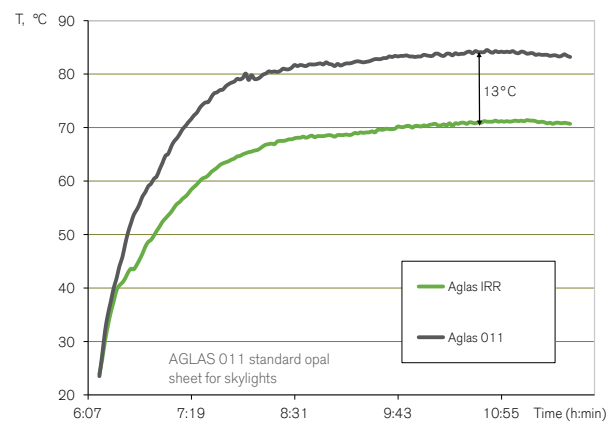
- The durability of skylights made of cast acrylic (Aglas) is characterised by their resistance to environmental effects (UV, temperature effects). These properties can be much better, compared to XT PMMA.
- Even after a longer exposure to poor weather conditions, they retain their colour and firmness.
- Compared to other plastic materials, it has a relatively high surface hardness.



Skydomes made of IRR (heat stop) acrylic glass - reduced solar gains or g-values

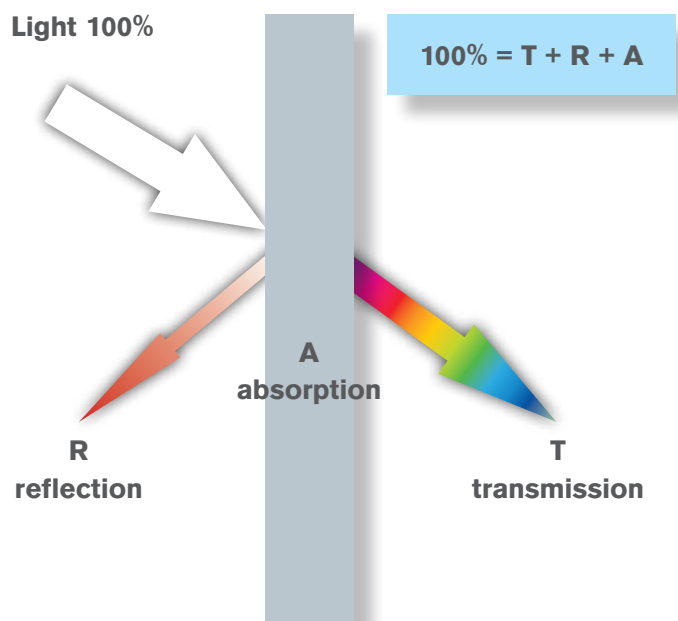
With Alux Heatstop skylights, the room is illuminated with natural light which consequently reduces energy costs. Alux Heatstop skylights are made of Aglas IRR cast acrylic sheets of OPAL colour that are Akripol's own product. Their speciality is that they reduce the heating of interior spaces and prevent the incursion of heat into the room and simultaneously still enable the natural sunlight to enter the room. These properties of the skylights made of such sheets help reduce energy consumption for cooling and illuminating rooms.

Comparison of the Heating Effect of the Opal 011 and IRR



Conditions: Thermally-insulated, closed box, 30 x 30 x 30 cm, covered on top with an acrylic sheet, above which (20 cm) there is an IR lamp (Osram Siccaterm IR1, 250 W). The air temperature is measured 4 cm from the bottom of the box, in the centre.

Transmission, Reflection, Absorption



Advantages of Alux Heatstop Skylights

- Strong and uniformly-dispersed natural light in rooms
- Reduced heating and lower temperatures in interior spaces
- Lower energy costs, especially for cooling spaces
- Excellent insulation and excellent UV protection
- Option to design skylights into various shapes
- Reflective properties (IR) are stable, as they are integrated into the cast acrylic itself
- Smooth and glossy surface
- Blue-purple reflection
- 10-year warranty for the material

Examples of Use or Installation on a Roof, Projecting Roof, etc.



Comparison of Thermal Effects of the Acrylic Glass Standard Opal Colour and the IRR Heat Stop

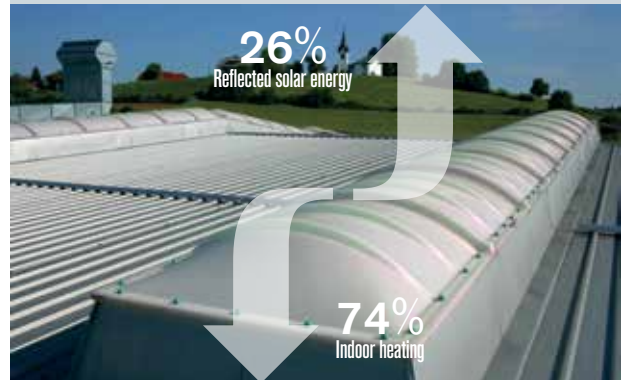
Before

Outer layer: standard acrylic sheet

Inner layer: standard acrylic sheet

Reflected solar energy: 26 %

Indoor heating: 74 %



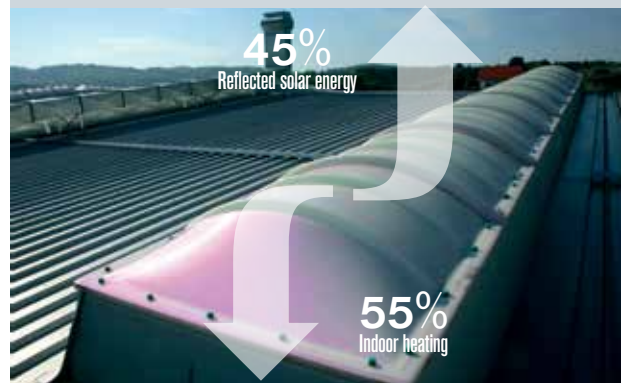
After

Outer layer: Aglas IRR acrylic sheet

Inner layer: standard acrylic sheet

Reflected solar energy: 45 %

Indoor heating: 55 %



**Skydomes made of solid polycarbonate
(solid PC) - resistant to hail**

Hail often damages buildings and materials or products installed on the buildings. This can result in huge costs of renovation and replacement of damaged elements. This is why we also use solid polycarbonate (solid PC) and implement it into our lighting systems and thus meet higher resistance criteria.

Tested according to FM Approvals no. 4473

Results:

- PMMA 4 mm: class 1 or suitable HW3 classification

- Diameter of the ice pellet 32 mm
- Pellet velocity (incoming speed): 28 m/s
- Nominal incoming energy 10.4 J

- Solid PC 3 mm: class 4 or suitable HW6 classification
 - Diameter of ice pellet: 63.5 mm
 - Pellet velocity (incoming speed): 35.7 m/s
 - Nominal incoming energy: 71.9 J

The appearance of the polycarbonate is very similar to acrylic. The same applies to the UV stable material. Its advantage over acrylic is mainly its higher toughness, higher impact resistance and fire resistance. The shortcoming of the PC is the surface UV coating.



Alux VISS Skylights

The main characteristic of highly-insulating Alux VISS skylights is that their high level of insulation can significantly reduce the costs of energy consumption for heating, cooling and illuminating rooms.

Advantages of Alux VISS Skylights

- Uniformly-dispersed natural light in spaces
- Reduced heating and lower temperatures in internal spaces and thus lower energy costs.
- Thermal conductivity – U_t from 1.10 W/m^2K
- High insulation and UV resistance depth
- A large selection of shapes and sizes
- Reflective properties are integrated into the acrylic
- 10-year warranty for the material



Types of VISS Skylights

VISS triple-layered dome with top/lower layer made of cast acrylic (transparent, opal or IRR-heatstop) or single-wall polycarbonate and the medium polycarbonate multi-wall 16 mm layer of transparent colour.

VISS

$U_t = 1,10 W/m^2K$



VISS double-layered dome with top layer made of cast acrylic (transparent, opal or IRR-heatstop) or single-wall polycarbonate and two variants of lower layers of 10 mm or 16 mm thickness made of multi-wall polycarbonate of transparent colour.

VISS 10

$U_t = 1,70 W/m^2K$



VISS 16

$U_t = 1,30 W/m^2K$



Alux Skyglass Skylights

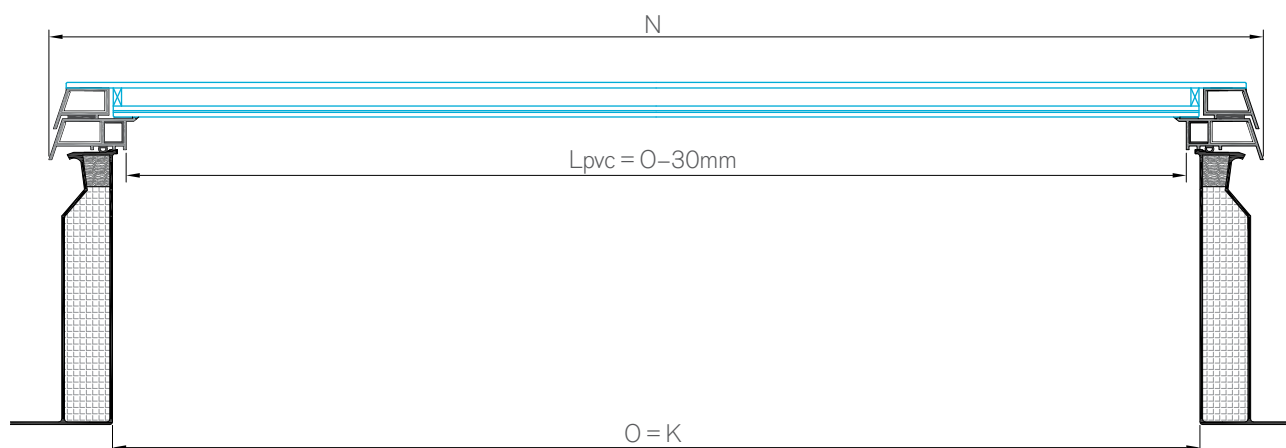
A wide spectrum of standard sizes is also available, as well as tailor-made sizes. Skyglass skylights for flat roofs have a minimalist clean shape on the outside as well as inside.

These skylights are made of white PVC profiles with inserted glass filler.

The design and shape of these skylights enables effective draining.

Advantages

- Good thermal and sound insulation
- Pre-assembled at the factory
- Available as a fixed skylight or for ventilation
- The optional combination with vertical insulation polyester coronas



Sizes

Nominal size N [cm]		Light size O=K [cm]		Options	
66	66	50	50	Fixed	/
76	76	60	60	Fixed	Ventilation only 24V, opening 350mm
76	96	60	80	Fixed	Ventilation 230/24V, opening 350 mm
76	106	60	90	Fixed	Ventilation 230/24V, opening 350 mm
76	116	60	100	Fixed	Ventilation 230/24V, opening 350 mm
86	86	70	70	Fixed	Ventilation 230/24V, opening 350 mm
96	96	80	80	Fixed	Ventilation 230/24V, opening 350 mm
96	116	80	100	Fixed	Ventilation 230/24V, opening 350 mm
96	146	80	130	Fixed	Ventilation 230/24V, opening 350 mm
106	106	90	90	Fixed	Ventilation 230/24V, opening 350 mm
116	116	100	100	Fixed	Ventilation 230/24V, opening 350 mm
116	146	100	130	Fixed	Ventilation 230/24V, opening 350 mm
116	166	100	150	Fixed	Ventilation 230/24V, opening 350 mm
116	196	100	180	Fixed	Ventilation 230/24V, opening 350 mm
136	136	120	120	Fixed	Ventilation 230/24V, opening 350 mm



Standard Sizes and Shapes of Domes

Skydomes are made in various shapes and sizes:

- round,
- square or rectangular,
- pyramid.



Table of Standard Sizes and Designations

N	K	L	O	V
56 x 56	60 x 60	40 x 40	41 x 41	46 x 46
56 x 86	60 x 90	40 x 70	41 x 71	46 x 76
76 x 76	80 x 80	60 x 60	61 x 61	66 x 66
86 x 86	90 x 90	70 x 70	71 x 71	76 x 76
86 x 116	90 x 120	70 x 100	71 x 101	76 x 106
96 x 96	100 x 100	80 x 80	81 x 81	86 x 86
96 x 116	100 x 120	80 x 100	81 x 101	86 x 106
96 x 146	100 x 150	80 x 130	81 x 131	86 x 136
96 x 176	100 x 180	80 x 160	81 x 161	86 x 166
96 x 196	100 x 200	80 x 180	81 x 181	86 x 186
96 x 206	100 x 210	80 x 190	81 x 191	86 x 196
96 x 216	100 x 220	80 x 200	81 x 201	86 x 206
96 x 236	100 x 240	80 x 220	81 x 221	86 x 226
96 x 246	100 x 250	80 x 230	81 x 231	86 x 236
96 x 266	100 x 270	80 x 250	81 x 251	86 x 256
96 x 296	100 x 300	80 x 280	81 x 281	86 x 286
116 x 116	120 x 120	100 x 100	101 x 101	106 x 106
116 x 146	120 x 150	100 x 130	101 x 131	106 x 136
116 x 176	120 x 180	100 x 160	101 x 161	106 x 166
116 x 196	120 x 200	100 x 180	101 x 181	106 x 186
116 x 206	120 x 210	100 x 190	101 x 191	106 x 196
116 x 236	120 x 240	100 x 220	101 x 221	106 x 226
116 x 296	120 x 300	100 x 280	101 x 281	106 x 286
146 x 146	150 x 150	130 x 130	131 x 131	136 x 136
146 x 176	150 x 180	130 x 160	131 x 161	136 x 166
146 x 206	150 x 210	130 x 190	131 x 191	136 x 196
146 x 236	150 x 240	130 x 220	131 x 221	136 x 226
146 x 296	150 x 300	130 x 280	131 x 281	136 x 286
176 x 176	180 x 180	160 x 160	161 x 161	166 x 166
176 x 206	180 x 210	160 x 190	161 x 191	166 x 196
176 x 236	180 x 240	160 x 220	161 x 221	166 x 226
176 x 296	180 x 300	160 x 280	161 x 281	166 x 286
196 x 196	200 x 200	180 x 180	181 x 181	186 x 186
196 x 296	200 x 300	180 x 280	181 x 281	186 x 286
206 x 206	210 x 210	190 x 190	191 x 191	196 x 196
216 x 216	220 x 220	200 x 200	201 x 201	206 x 206
φ 56	φ 60	φ 40	φ 41	φ 46
φ 86	φ 90	φ 70	φ 71	φ 76
φ 96	φ 100	φ 80	φ 81	φ 86
φ 116	φ 120	φ 100	φ 101	φ 106
φ 146	φ 150	φ 130	φ 131	φ 136
φ 176	φ 180	φ 160	φ 161	φ 166
φ 196	φ 200	φ 180	φ 181	φ 186

* Other non-standard or intermediate sizes, not included in the table, available on demand

N = nominal size of the dome
L = Light size of the dome
V = Screw size of the dome

K = Construction size (lower edge of the corona)
O = upper edge of the corona

Dome Options by the Type of Material, Opening, Shape, etc.

Size N	Size K	Opening		Skylight types					Shape options	
		NSHE	Ventilation	Material combinations					round	Pyramid / prism*
				PMMA	IRR	PC	VISS, VISS10/16	Skyglass		
560x560	600x600		•	•	•	•	•		•	•
560x860	600x900		•	•	•	•	•			•
760x760	800x800		•	•	•	•	•	•	•	•
860x860	900x900		•	•	•	•	•	•	•	•
860x1160	900x1200		•	•	•	•	•			•
860x1460	900x1500		•	•	•	•	•			•
960x960	1000x1000	•	•	•	•	•	•	•	•	•
960x1160	1000x1200	•	•	•	•	•	•	•		ⓘ
960x1460	1000x1500	•	•	•	•	•	•	•		•
960x1760	1000x1800	•	•	•	•	•	•			ⓘ
960x1960	1000x2000	•	•	•	•	•	•			ⓘ
960x2060	1000x2100	•	•	•	•	•	•			ⓘ
960x2160	1000x2200	•	•	•	•	•	•			ⓘ
960x2360	1000x2400	•	•	•	•	•	•			ⓘ
960x2460	1000x2500	•	•	•	•	•	•			ⓘ
960x2660	1000x2700	•	•	•	•	•	•			ⓘ
960x2760	1000x2800	•	•	•	•	•	•			ⓘ
960x2960	1000x3000	•	•	•	•	•	•			ⓘ
1160x1160	1200x1200	•	•	•	•	•	•	•	•	•
1160x1460	1200x1500	•	•	•	•	•	•	•		•
1160x1760	1200x1800	•	•	•	•	•	•	•		•
1160x1960	1200x2000	•	•	•	•	•	•	•		ⓘ
1160x2060	1200x2100	•	•	•	•	•	•			ⓘ
1160x2160	1200x2200	•	•	•	•	•	•			ⓘ
1160x2360	1200x2400	•	•	•	•	•	•			ⓘ
1160x2460	1200x2500	•	•	•	•	•	•			ⓘ
1160x2660	1200x2700	•	•	•	•	•	•			ⓘ
1160x2760	1200x2800	•	•	•	•	•	•			ⓘ
1160x2960	1200x3000	•	•	•	•	•	•			ⓘ
1460x1460	1500x1500	•	•	•	•	•	•		•	•
1460x1760	1500x1800	•	•	•	•	•	•			ⓘ
1460x1960	1500x2000	•	•	•	•	•	•			ⓘ
1460x2060	1500x2100	•	•	•	•	•	•			ⓘ
1460x2160	1500x2200	•	•	•	•	•	•			ⓘ
1460x2360	1500x2400	•	•	•	•	•	•			ⓘ
1460x2460	1500x2500	•	•	•	•	•	•			•
1460x2660	1500x2700	•	•	•	•	•	•			ⓘ
1460x2760	1500x2800	•	•	•	•	•	•			ⓘ
1460x2960	1500x3000	•	•	•	•	•	•			ⓘ
1760x1760	1800x1800	•	•	•	•	•	•		•	•
1760x2060	1800x2100	•	•	•	•	•	•			
1760x2160	1800x2200	•	•	•	•	•	•			
1760x2360	1800x2400	•	•	•	•	•	•			
1760x2460	1800x2500	•	•	•	•	•	•			
1760x2660	1800x2700	•	•	•	•	•	•			
1960x1960	2000x2000	•	•	•	•	•	•		•	•
1960x2160	2000x2200	•	•	•	•	•	•			
1960x2360	2000x2400	•	•	•	•	•	•			
1960x2460	2000x2500	•	•	•	•	•	•			
1960x2660	2000x2700		•	•	•					
1960x2960	2000x3000		•	•	•					
2060x2060	2100x2100		•	•	•				•	
2160x2160	2200x2200		•	•	•				•	

Legend

Domes made of PMMA, IRR, PC

Available options for 1-layered, 2-layered, 3-layered or 4-layered:

- **PMMA**; cast acrylic glass in transparent or opal colour. Other colours available according to agreement. PMMA can be any layer in the dome options. Other layers can be IRR, PC or PPC (VISS).
- **IRR**; cast acrylic glass IRR-HEATSTOP in opal colour. IRR is always the top layer of the skydome.

Lower layers can be PMMA, PC or PPC (VISS).

- **PC**; single-wall polycarbonate in transparent or opal colour. PC can be any layer in the dome options. Other layers can be PMMA, IRR or PPC (VISS).

VISS domes

- **2-layered VISS 10**; Top layer PMMA, IRR or PC, bottom layer multi-wall polycarbonate layer PPC with 10 mm thickness of transparent colour
- **2-layered VISS 16**; Top layer PMMA, IRR or PC, bottom layer multi-wall polycarbonate layer PPC with 16 mm thickness of transparent colour
- **3-layered VISS 10**; Top layer PMMA, IRR or PC, middle layer is multi-wall polycarbonate layer PPC with 16 mm thickness of transparent colour, bottom layer PMMA or PC

Pyramid / prism*

- **pyramid/prism** made of PC and is not available for VISS / VISS10 / VISS16. Pyramid/prism only available in PMMA or IRR
- ⓘ; available based on demand / supply

Dome Thermal Conductivities

Thermal conductivity U_t according to standard EN 1873		
Single-layered	5,0	W/m ² K
Double-layered	2,7	W/m ² K
Triple-layered	1,4	W/m ² K
Four-layered	1,1	W/m ² K
Double-layered VISS 10	1,7	W/m ² K
Double-layered VISS 16	1,3	W/m ² K
Triple-layered VISS	1,1	W/m ² K

Cross-sections of Skydome Types

VISS dome



DOUBLE layered dome



TRIPLE layered dome



FOUR layered dome



Special Skydome Variants - round SEGMENTED domes

Non-standard skydome variants are the so-called segmented domes. These domes are suitable for larger round openings (up to size of approx. ϕ 1200 cm).

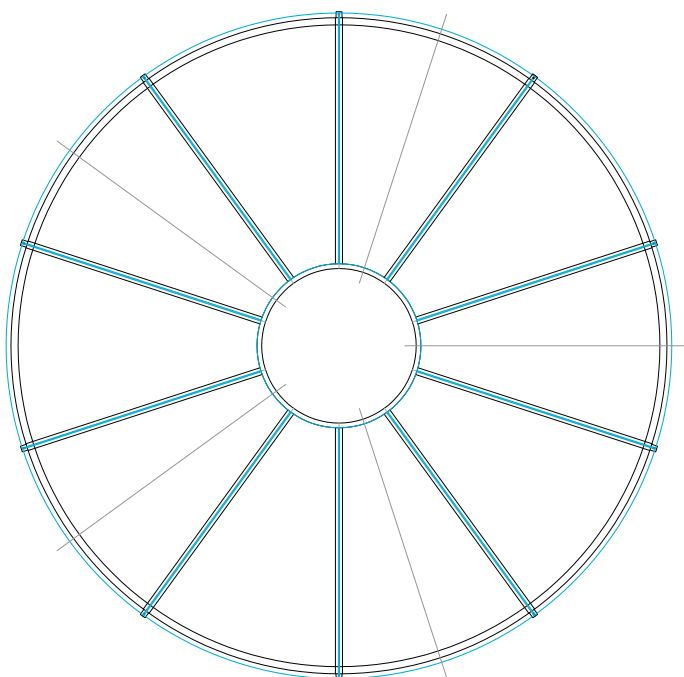
To make such domes, a metal structure is prepared, onto which the acrylic elements are fastened - the segments. The segments can be double-layered, triple-layered or quadruple-layered. The segments can only be fixed. On the top the whole dome is connected by a smaller round dome that can be opened for ventilation.



Segmented domes in the shape of a semi-circle



Segmented dome with a transparent-blue shade



Example of the top view of the segmented dome



Segmented dome of transparent colour

References





Certificates

- EN 12101-2
- EN 1873

More information

Akripol, d.o.o.

+386 7 34 81 600 | info@akripol.si | www.akripol.si