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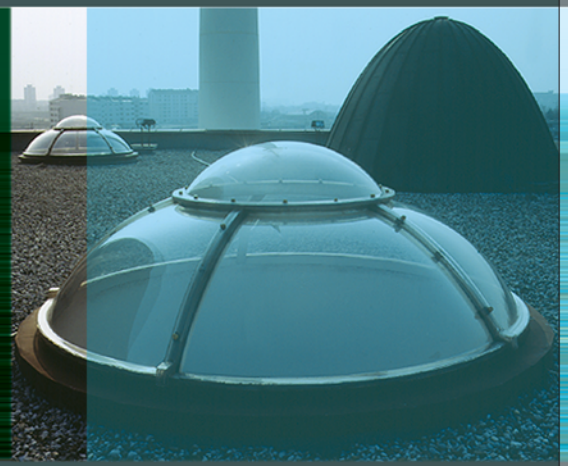
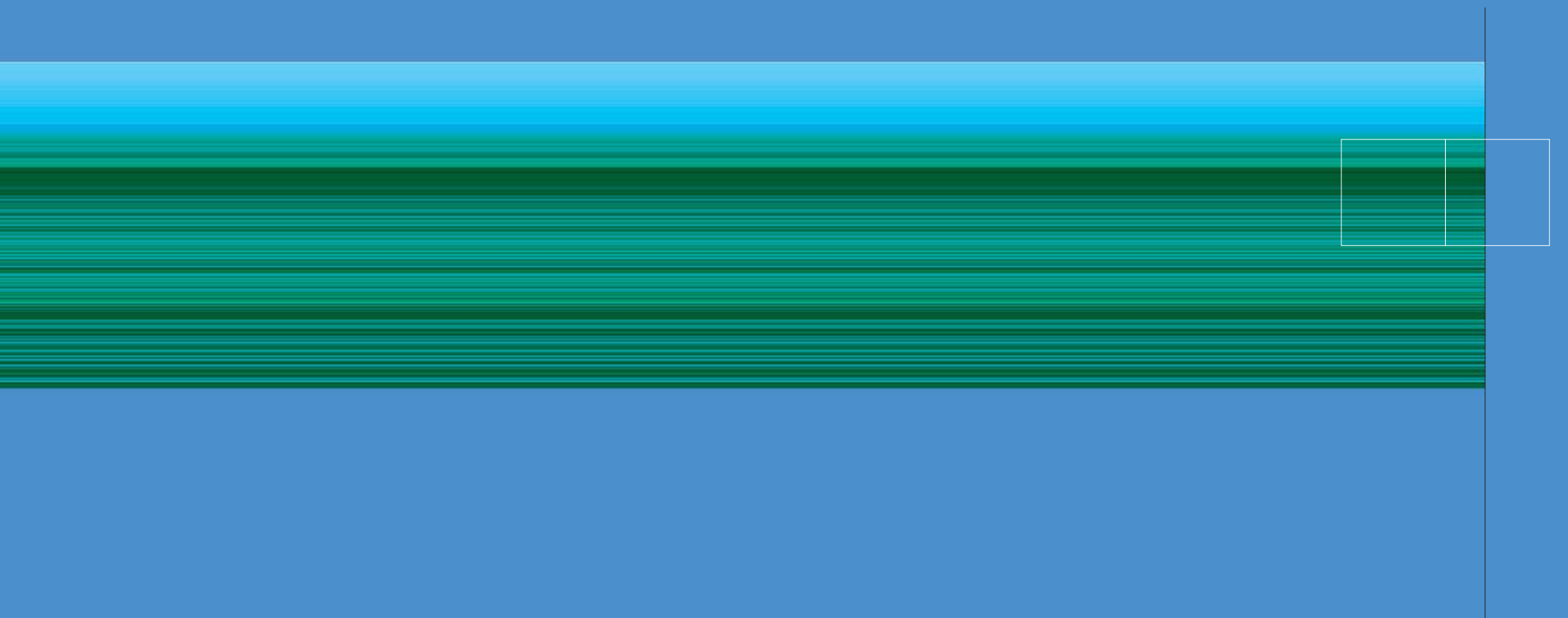
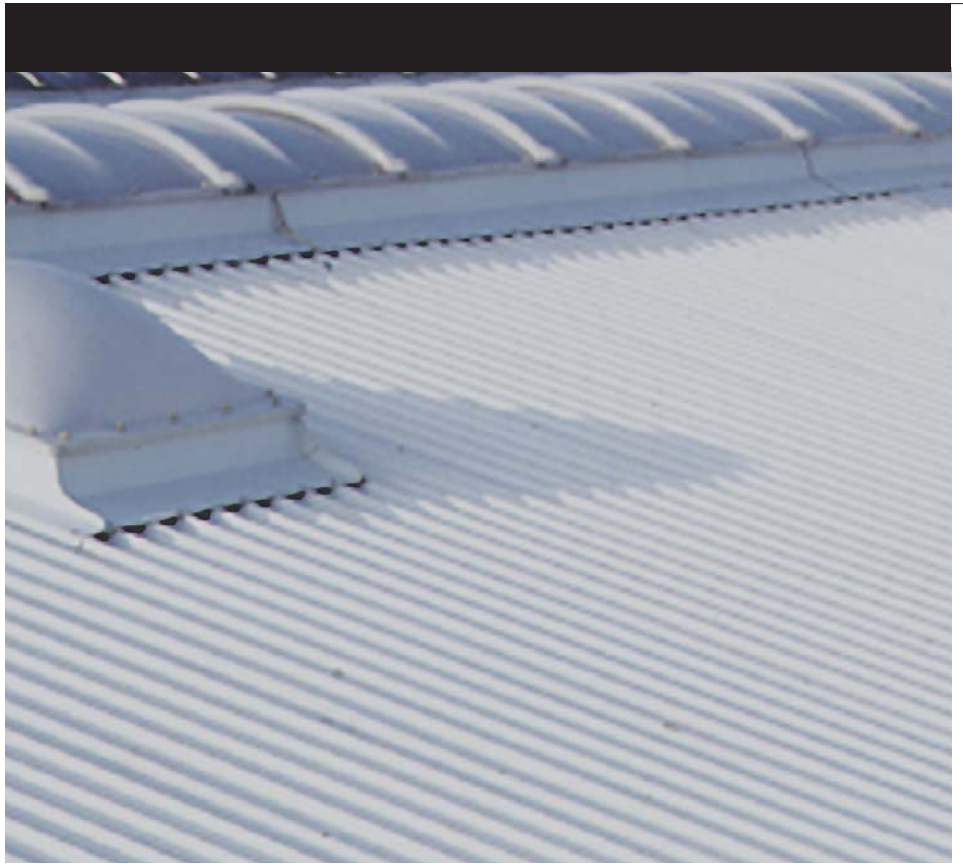


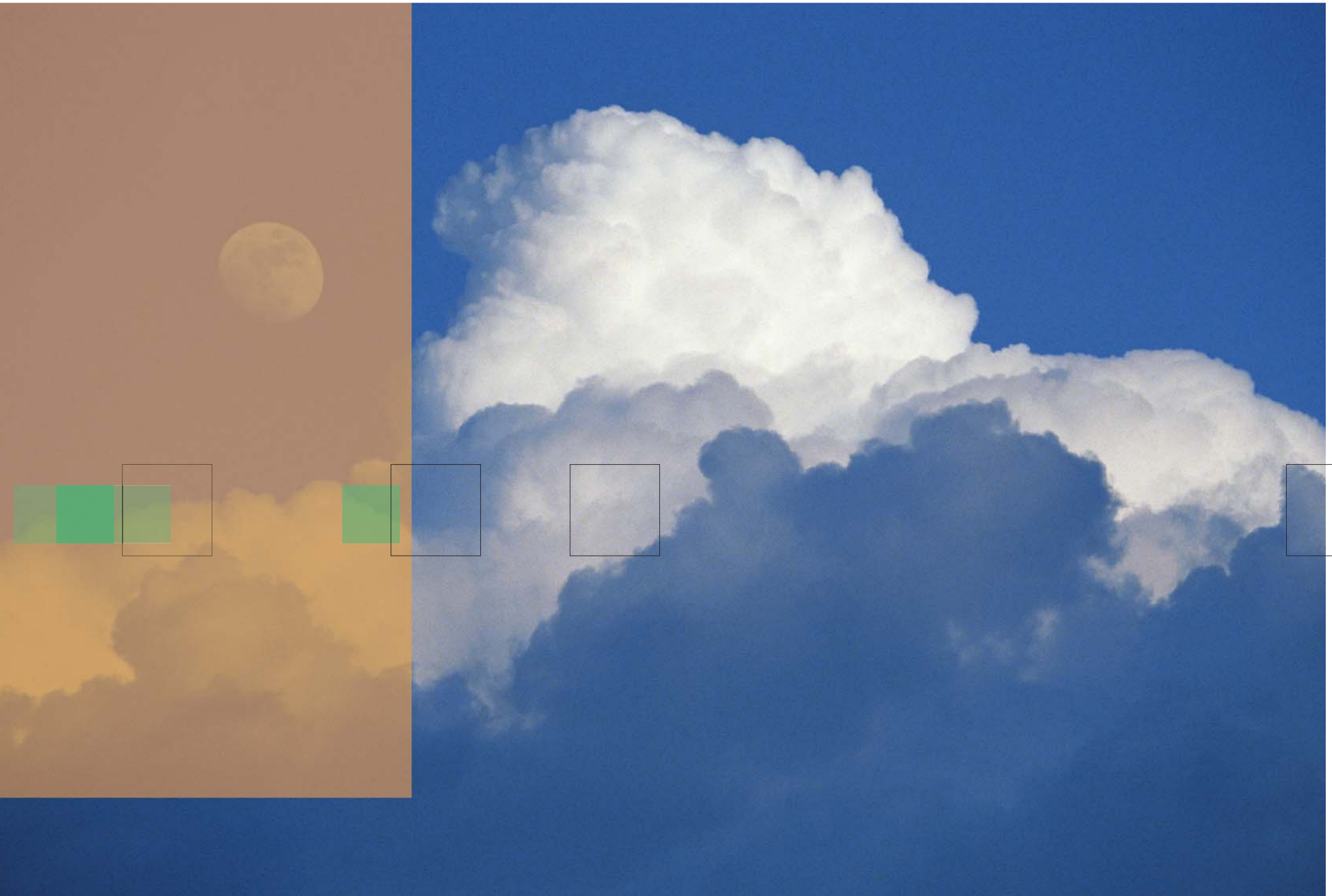
# alux.

## Skydome and lightband





Natural light is essential to man's well-being and efficient work. The use of skydomes and lightbands helps create an intense, yet uniform lighting in a room that has favourable effects on the health and activity of the people using the room.



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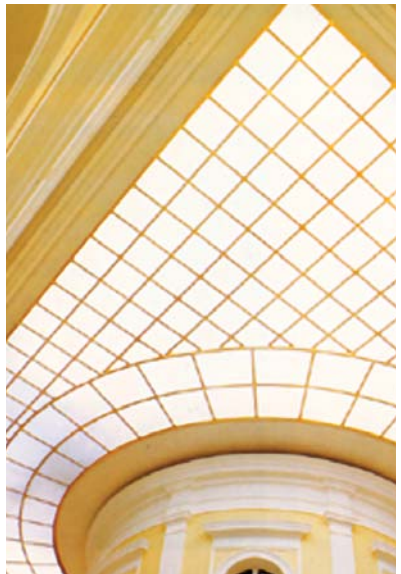
## Noble properties

Alux glass elements are made of Aglas cast acrylic sheets that are owing to their superior technical and chemical characteristics a challenge to both architects and designers.

Like all acrylic materials, Aglas is distinguished for its durability. Even when exposed to unfavourable weather conditions over a longer period of time, Aglas retains its colour and strength. Compared to other plastic materials, Aglas also has a high surface hardness.

Aglas has a higher transparency than ordinary glass. It also has a lower weight and does not break easily. The standard colour range includes transparent, translucent and non-translucent colour sheets. On request, Aglas products are also available in other colours.





## Skydomes

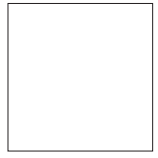
Lighting a room with glass skydomes can considerably reduce the lighting costs. Compared to artificial light sources, skydomes also have more favourable effects on the health and activity of the people using the room.

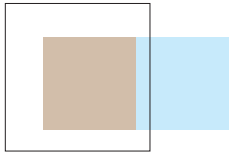


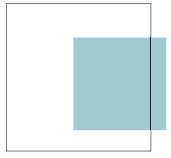
## Designs, colours and applications

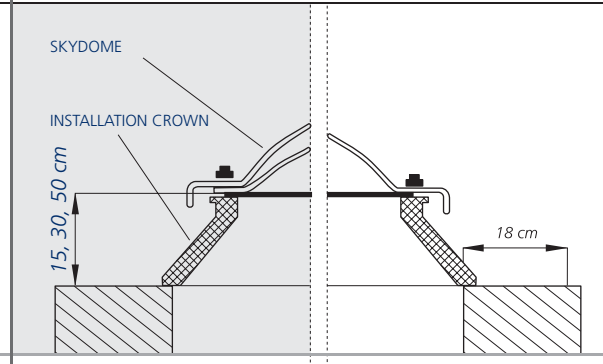
Skydomes are available in different colours and designs. Based on the customer's requirements, they are made as single-, double- or triple-layer domes, with each additional layer providing a lower thermal permeability (K factor).

The standard colour range includes translucent, transparent and stained brown but glass cupolas are also available in all transparent and opaque colours of the colour range used by Akripol.







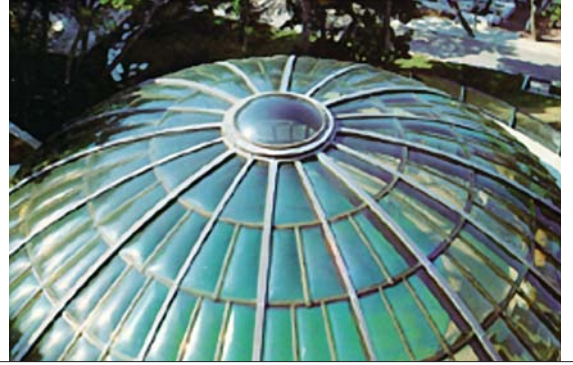



*Cross-section of a double-layer skydome*

*Cross-section of a single-layer skydome*

| | Thermal conductivity heatt W/m²K |
|---|---|
| Single-layer skydome | ca 4,5 |
| Double-layer skydome | ca 2,7 |
| Three-layer skydome | ca 2,0 |

| | Transparency |
|---|---|
| Single-layer skydome / clear | 92% |
| Single-layer skydome / opal | 88% |
| Double-layer skydome / clear -clear | 85% |
| Double-layer skydome / opal - clear | 80% |
| Double-layer skydome / opal - opal | 77% |

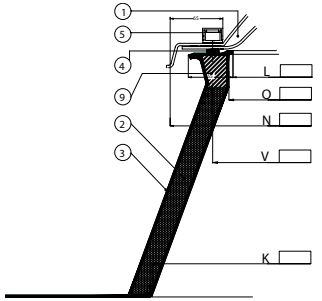


In addition to the standard specifications in the chart on the following page, skydomes are also available in the shape of a pyramid, as circular and, in case of larger orders, as segment cupolas as well. The latter are composed of several sections that are joined together by a circular dome at the top.

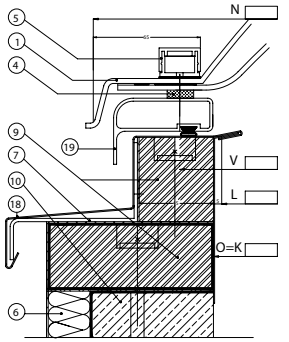
The installation crown (the base) is made of fibreglass reinforced polyester. Hard polyurethane foam that is injected between the two polyester layers is used to provide the required thermal insulation. On the inside, the crown surface is white and smooth. Installation crowns are available in a height of 15, 30 or 50 cm, by order also in wood or steel. They are supplied with a flange by which the dome is fixed to the roof. The flange may feature an extra polyurethane foam insulation.



| | N cm | L cm | V cm | m² | O cm | K cm |
|---|---|---|---|---|---|---|
| | 56 x 56 | 40 x 40 | 46 x 46 | 0,16 | 41 x 41 | 60 x 60 |
| | 56 x 86 | 40 x 70 | 46 x 76 | 0,28 | 41 x 71 | 60 x 90 |
| | 76 x 76 | 60 x 60 | 66 x 66 | 0,36 | 61 x 61 | 80 x 80 |
| | 86 x 86 | 70 x 70 | 76 x 76 | 0,49 | 71 x 71 | 90 x 90 |
| | 86 x 116 | 70 x 100 | 76 x 106 | 0,70 | 71 x 101 | 90 x 120 |
| | 96 x 96 | 80 x 80 | 86 x 86 | 0,64 | 81 x 81 | 100 x 100 |
| | 96 x 116 | 80 x 100 | 86 x 106 | 0,80 | 81 x 101 | 100 x 120 |
| | 96 x 146 | 80 x 130 | 86 x 136 | 1,04 | 81 x 131 | 100 x 150 |
| | 96 x 176 | 80 x 160 | 86 x 166 | 1,28 | 81 x 161 | 100 x 180 |
| | 96 x 196 | 80 x 180 | 86 x 186 | 1,44 | 81 x 181 | 100 x 200 |
| | 96 x 206 | 80 x 190 | 86 x 196 | 1,52 | 81 x 191 | 100 x 210 |
| | 96 x 216 | 80 x 200 | 86 x 206 | 1,60 | 81 x 201 | 100 x 210 |
| | 96 x 236 | 80 x 220 | 86 x 226 | 1,76 | 81 x 221 | 100 x 240 |
| | 96 x 246 | 80 x 230 | 86 x 236 | 1,84 | 81 x 231 | 100 x 250 |
| | 96 x 266 | 80 x 250 | 86 x 256 | 2,00 | 81 x 251 | 100 x 270 |
| | 96 x 296 | 80 x 280 | 86 x 286 | 2,24 | 81 x 281 | 100 x 300 |
| | 116 x 116 | 100 x 100 | 106 x 106 | 1,00 | 101 x 101 | 120 x 120 |

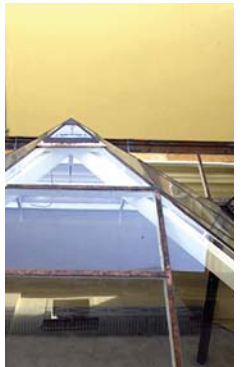



*Skydome on a standard installation crown*




*Skydome installed on a wood base with an opening mechanism*

1. *Skydome made of cast acrylic (PMMA)*
2. *Hard polyurethane foam (PUR)*
3. *Fibreglass reinforced polyester laminate*
4. *Insulation tape*
5. *Fixing mechanism with a cover*
6. *Thermal insulation*
7. *Bituminized cardboard*
8. *Hydroinsulation*
9. *Wood*
10. *Reinforced concrete*
18. *Steel sheet trimming*
19. *Opening frame*



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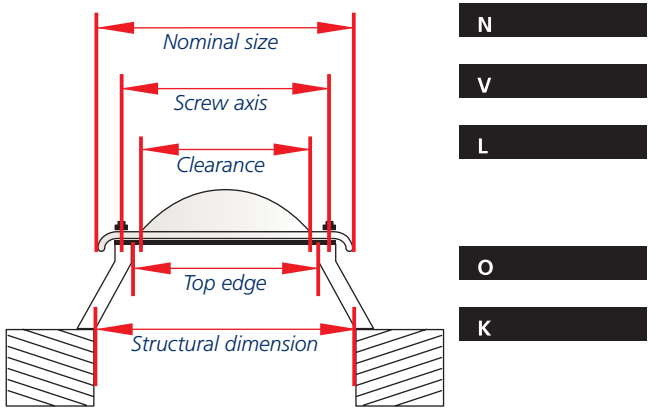
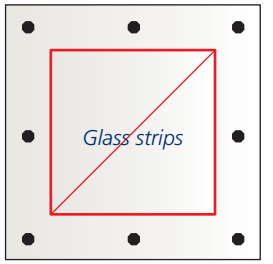
## *Chart of standard specifications*

| N | L | V | | O | K |
|---|---|---|---|---|---|
| cm | cm | cm | m² | cm | cm |
| 116 x 146 | 100 x 130 | 106 x 136 | 1,30 | 101 x 131 | 120 x 150 |
| 116 x 176 | 100 x 160 | 106 x 166 | 1,60 | 101 x 161 | 120 x 180 |
| 116 x 196 | 100 x 180 | 106 x 186 | 1,80 | 101 x 181 | 120 x 200 |
| 116 x 206 | 100 x 190 | 106 x 196 | 1,90 | 101 x 191 | 120 x 210 |
| 116 x 236 | 100 x 220 | 106 x 226 | 2,20 | 101 x 221 | 120 x 240 |
| 116 x 296 | 100 x 280 | 106 x 286 | 2,80 | 101 x 281 | 120 x 300 |
| 146 x 146 | 130 x 130 | 136 x 136 | 1,69 | 131 x 131 | 150 x 150 |
| 146 x 176 | 130 x 160 | 136 x 166 | 2,08 | 131 x 161 | 150 x 180 |
| 146 x 206 | 130 x 190 | 136 x 196 | 2,47 | 131 x 191 | 150 x 210 |
| 146 x 236 | 130 x 220 | 136 x 226 | 2,86 | 131 x 221 | 150 x 240 |
| 146 x 296 | 130 x 280 | 136 x 286 | 3,64 | 131 x 281 | 150 x 300 |
| 176 x 176 | 160 x 160 | 166 x 166 | 2,56 | 161 x 161 | 180 x 180 |
| 176 x 206 | 160 x 190 | 166 x 196 | 3,04 | 161 x 191 | 180 x 210 |
| 176 x 236 | 160 x 220 | 166 x 226 | 3,52 | 161 x 221 | 180 x 240 |
| 176 x 296 | 160 x 280 | 166 x 286 | 4,48 | 161 x 281 | 180 x 300 |
| 196 x 196 | 180 x 180 | 186 x 186 | 3,24 | 181 x 181 | 200 x 200 |
| 196 x 296 | 180 x 280 | 186 x 286 | 5,04 | 181 x 281 | 200 x 300 |
| 206 x 206 | 190 x 190 | 196 x 196 | 3,61 | 191 x 191 | 210 x 210 |
| 216 x 216 | 200 x 200 | 206 x 206 | 4,00 | 201 x 201 | 220 x 220 |
| ø 56 | ø 40 | ø 46 | 0,12 | ø 41 | ø 60 |
| ø 86 | ø 70 | ø 76 | 0,38 | ø 71 | ø 90 |
| ø 96 | ø 80 | ø 86 | 0,50 | ø 81 | ø 100 |
| ø 116 | ø 100 | ø 106 | 0,78 | ø 101 | ø 120 |
| ø 146 | ø 130 | ø 136 | 1,33 | ø 131 | ø 150 |
| ø 176 | ø 160 | ø 166 | 2,00 | ø 161 | ø 180 |
| ø 196 | ø 180 | ø 186 | 2,54 | ø 181 | ø 200 |

*Also available in the pyramid design.*



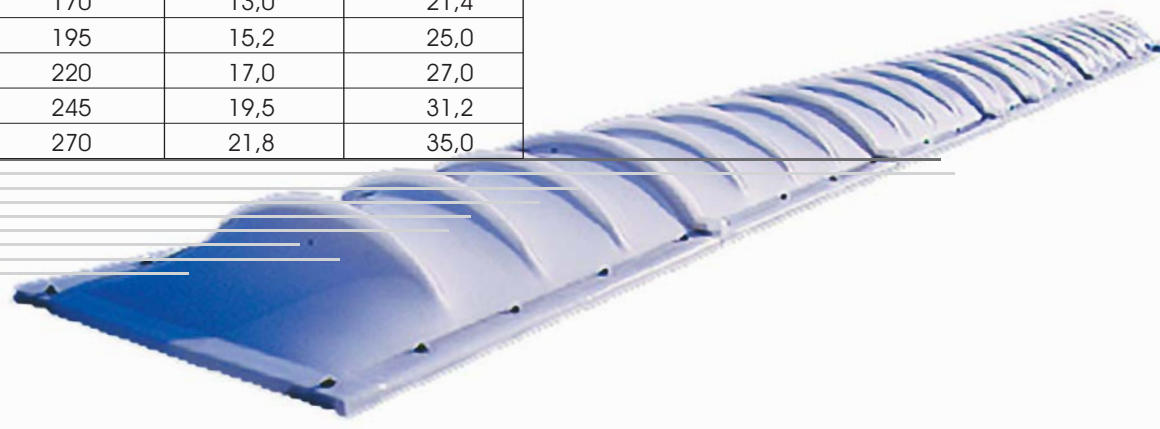

## Light band

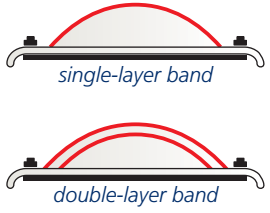
Like sky domes, light bands have also been designed to save energy and provide natural lighting. Several light bands can be combined in order to let as much light into a room as possible. Light bands are particularly suited for installation in industrial facilities in which more light is required because of the large ground plan area.

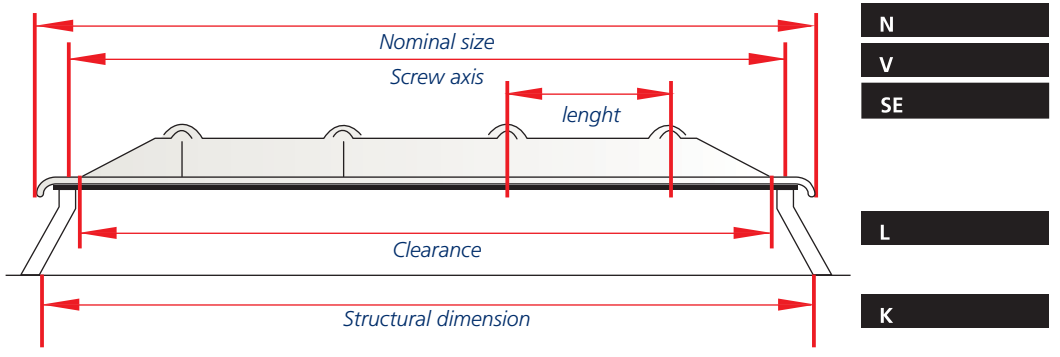


## Chart of standard dimensions of light bands

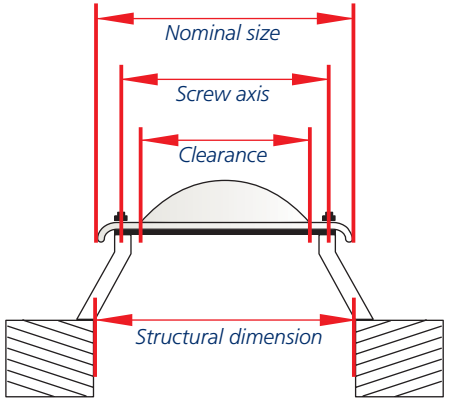
| N | L | V | SE | K | weight single-layer band | weight double-layer band |
|---|---|---|---|---|---|---|
| cm | cm | cm | cm | cm | kg / m | kg / m |
| 100 | 80 | 86 | 130 | 100 | 5,4 | 10,8 |
| 120 | 100 | 106 | 210 | 120 | 7,1 | 11,8 |
| 145 | 125 | 131 | 210 | 145 | 10,9 | 16,8 |
| 170 | 150 | 156 | 150 | 170 | 13,0 | 21,4 |
| 195 | 175 | 181 | 130 | 195 | 15,2 | 25,0 |
| 220 | 200 | 206 | 150 | 220 | 17,0 | 27,0 |
| 245 | 225 | 231 | 150 | 245 | 19,5 | 31,2 |
| 270 | 250 | 256 | 170 | 270 | 21,8 | 35,0 |



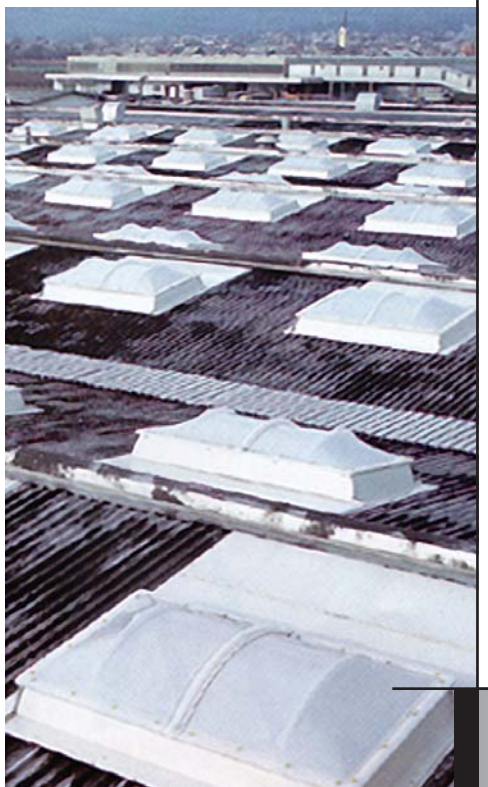



N
V
SE
L
K




N
V
L
K

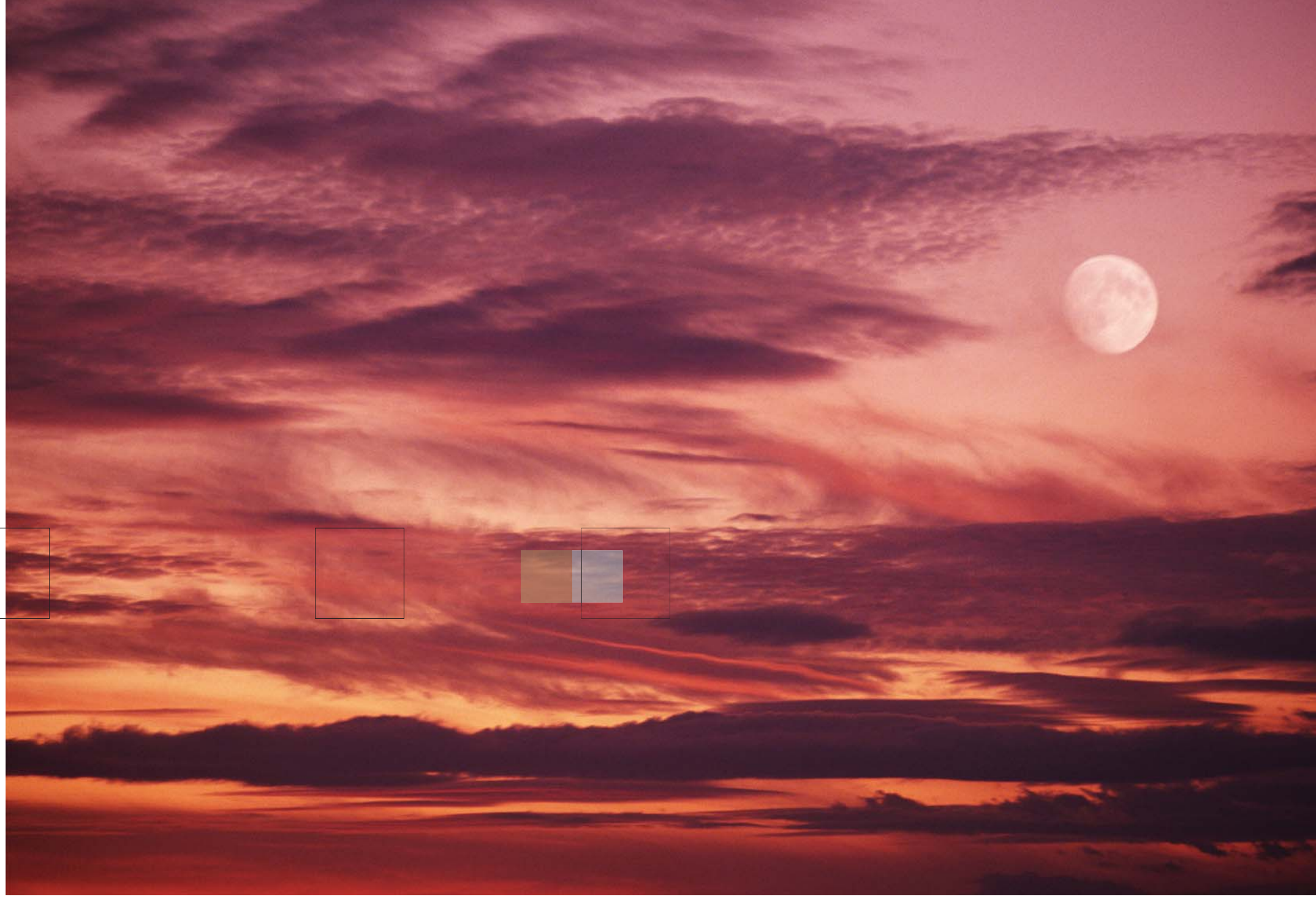


## Designs, colours and options

Light bands are available as single- and double-layer light bands. Single-layer light bands are frequently used to build simple shelters.

Light band are available in translucent, transparent and stained brown colours but also in all transparent and opaque colour tones of the colour range used by Akripol

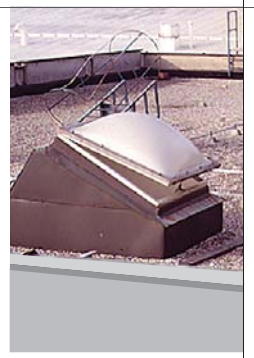
Light band can be laid along the ridge of the roof, over the ridge or as a part of a roof covering. Very simple is the installation on flat roofs. In this case, the band is made of standard intermediate elements and in most cases two end elements. In case the opening width in a building corresponds the band width in our technical specifications chart, the length can be chosen to meet the customer's requirements.



## Opening Systems

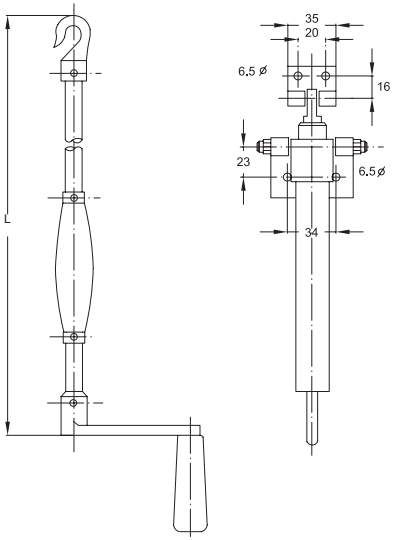
Sky domes and light bands are available with two types of opening systems, the first one intended in particular for air-conditioning, the second for evacuation of heat or smoke in case of fire, with a combination of the two systems being used in most cases.





### Manual mechanism

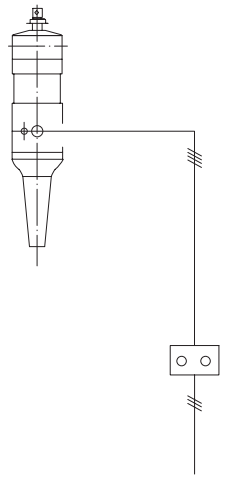
The manual mechanism is the simplest system available. It consists of a telescopic spindle and a 2 to 4 metres handle. The sky dome or light band is opened or closed by turning of the handle. At the side, the dome or band opens 300 mm. The manual mechanism can be used in combination with a mechanism designed for evacuation of heat and smoke. When used alone, it is only suitable for use as an air-conditioning system.




### Power-driven systems

that use a power-driven opening system are available in several designs. The most frequently used system utilizes a 230 V electric motor that makes it possible to open the dome or band up to 300 mm and is intended for air-conditioning only. 24 V electric motors with a 350, 550, 750 or 1000 mm tooth gauge are used for larger opening angles.

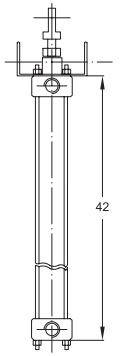
In order for a mechanism to be suitable for use as a fire escape, it needs to be equipped with additional bridge supports for the motor that permit a proper installation, at the same time allowing the opening angle to be increased up to 105°. 24 V electric motors can be connected to the existing fire alarm system and other safety equipment installed in the facility. The motor is operated via an equivalent circuit switch by which the window can be opened, closed or stopped in the required position. The closing and stopping in the end position are automatic.



## Pneumatic opening systems

are designed using 32/320 or 50/320 pneumatic cylinders, with the number 32 and 50 indicating the cylinder diameter, the number 320 the cylinder length. The use of different diameters depends on the weight and size of the light element to be operated.

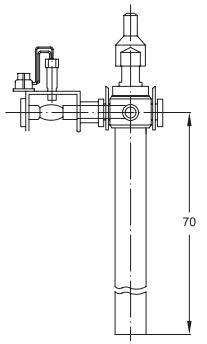
Opening systems can be operated individually or by groups of five. They are mounted by means of polyethylene tubes with the required distributors. Since the cylinder stroke is limited to 300 mm, that is the maximum opening angle of the dome. The mechanism is again operated via an equivalent circuit switch, with the opening and closing positions being available only. Pneumatic opening systems are intended for air-conditioning only and are not used for evacuation of heat and smoke.




## Fire prevention system

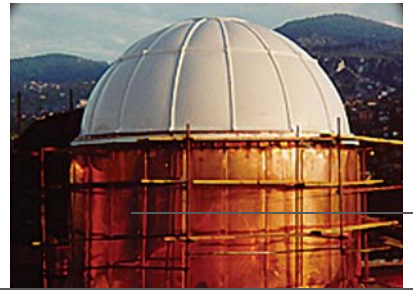
The systems designed for use in case of fire when heat and smoke need to be evacuated are based on temperature increase. The mechanism comprises a spring and a special temperature ampoule that serves as a pin. When the temperature in a room increases to 70 or 90°C, the ampoule breaks and activates the spring that pushes the piston rod that opens the glass dome to an angle of 105 degrees.

The mechanism is mounted on a bridge support that serves as a base for the cylinder and, when properly mounted, makes it possible for the glass element to open at the right angle. Different cylinder lengths are used for different sizes of acrylic elements.




For added safety, a special detonator can be installed on the ampoule support that is then connected to the fire alarm system in the facility. In case of fire, the opening is then started manually. Bridge supports make it possible for a combination of an air-conditioning system and a system for evacuation of heat and smoke to be mounted on the same acrylic element.





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## Maintenance of sky domes, light bands and their components

Akripol sky domes, light bands and opening systems are made of high quality materials that are extremely durable and resistant to wear and tear and different weather conditions They are also easy to maintain. It is recommended:

1) To carry out a visual inspection of the system every six months. Check for any visible damage on the parts and make sure that all the fixing elements are clean and in their place.

2) If necessary, wash the sky domes and ligh bands using a non-abrasive detergent intended for cleaning plastic materials.

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## Akripol: Experience, quality and environment-friendliness

The long years of experience and development in the field of natural lighting have made Akripol one of the largest producers of this kind of products in Slovenia, with considerable exports to the international market as well. Akripol endeavours to deliver high quality services and products that help save energy, money and make the architectural design of the facility in question even more impressive.

Akripol light elements have been tested and awarded all the required certificates and licences. Light elements made of cast acrylic sheets are produced in compliance with the international quality standard ISO 9001/2000 that is a guarantee of traceability in development, production, treatment and marketing of polymer products. Our production also satisfies the requirements of the ISO 14001/1997 environment protection certificate.

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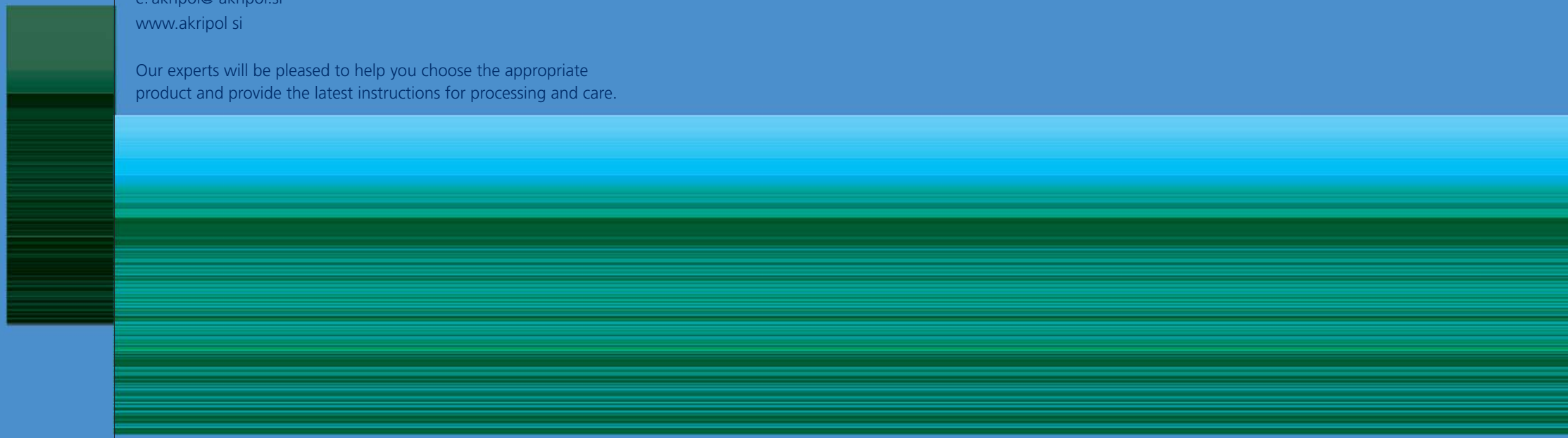
Our experts will be pleased to help you choose the appropriate product and provide the latest instructions for processing and care.



production: Innovatif, January 2005