Daylight systems

Rooflight systems
Smoke and heat vents
Flat roof windows
Daylight systems are part of the proven alwitra waterproofing system. This system comprises:

- Waterproofing membranes
- Roof edge trim profiles incl. colour coating
- Wall capping profiles incl. colour coating
- Wall flashing profiles incl. colour coating
- Colour coating
- Coated metal sheets
- Snow guard profiles
- Daylight systems
- Rainwater outlets
- Flat roof vents
- Paving slab supports

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Light is playing an ever-increasing role in modern architecture, forming part of the design and aesthetics of a building. In particular, natural daylight offers many advantages: It is verified to have a positive physiological impact, it increases our well-being and thus enhances our productivity.

In Germany, sufficient daylight for natural lighting is available between 8 am and 5 pm on 85 % of all days. For optimal daylight integration into architectural structures, specially developed constructional elements are required combining both technical and aesthetic aspects. Flat roofs provide ideal conditions for the installation of rooflights or flat roof windows. They capture the natural zenith light and provide for sufficient and even lighting inside the building, requiring relatively little space. alwitra daylight systems shed the light where it is needed. For example, on a well-lit and comfortable working place.

Many living and working areas do not get enough daylight and, thus, give an oppressive feeling. Natural daylight creates a free and open atmosphere, practically at no operating costs. Along with the sustainable lighting of rooms, daylight systems still offer a “free-of-charge” co-benefit, i.e. room ventilation. Due to the thermal lift and the optimal installation place, i.e. the roof, depleted air is efficiently vented to the atmosphere.

alwitra daylight systems come with numerous advantages:

- pleasant natural light
- if desired, excellent natural ventilation
- additional usages, e.g. access to the roof or natural smoke vent

With the new alwitra daylight systems, you will be on the safe side:

- comprehensive product range providing high flexibility
- outstanding thermal insulation characteristics
- easy and reliable installation
- comprehensive range of accessories
- system-compatible connection to alwitra waterproofing membranes by means of kerbs with optional EVALON® or EVALASTIC® collars
alwitra kerbs are made of white impact-resistant "window quality" extruded polyvinyl chloride profiles. A special feature is the cellular system created by ribs that are formed already during the extrusion process of the profiles.

This sophisticated technology gives you several advantages:

- The cellular system itself ensures outstanding thermal insulation - without any additional "fillings".
- When welding the corners, welding also includes the ribs. This results in a very large welded area providing high stability of the corners as well as continuous "thermal insulation", in particular, in the critical corner area.

Flashing to EVALON® waterproofing membranes or PVC type waterproofing membranes can be done by direct welding to the kerb. For flashing, bituminous waterproofing sheets or other types of high polymeric waterproofing membranes, as usual, these are taken up the kerb and fixed accordingly. As a special feature, the alwitra kerbs can be fitted with an optional EVALON® or EVALASTIC® collar for reliable homogeneous flashing to the corresponding roof waterproofings.

**Advantages of alwitra kerbs:**

- Suitable for installing all types of alwitra rooflights and the alwitra DayLuxe window
- The special cellular insulation structure ensures excellent stability and outstanding continuous thermal insulation right into the corners
- Suitable for installing various opening systems and connecting profiles due to special internal reinforcements
- Completely recyclable
- With optional EVALON® or EVALASTIC® collar for reliable homogeneous flashing to corresponding roof waterproofing.

**Please see also the chapter “Factory-fitted collar”!**
# Technical data

**Kerbs of all types**

**Construction:**
cellular system made of window-quality extruded impact-resistant polyvinyl chloride (PVC)

**Colour:**
white, through pigmentation

**Fire class:**
E (EN 13501-1)
CE according to DIN EN 1873 in combination with alwitra rooflight

### alwitra kerb 1620

The kerb 1620 is also 16 cm high, however, it is tapered to the top by 20 cm as is usually the case for classic rooflights. This means an inclined inner wall, with the light opening size being 20 cm smaller than the required roof opening size.

**Thermal properties:**
U value: 0.92 [W/m²K]

**Dimensions:**
- Height: 160 mm
- Light opening size = roof opening size - 20 cm
  - Tapering 2 x 100 mm
  - Inclined inner wall

### alwitra kerb 3020

The kerb 3020 is 30 cm high, making it particularly suitable for roofs with ballast (e.g. ballasted or green roof), without needing any further modifications regarding the flashing height. It is tapered to the top by 20 cm, so because of the inclined inner wall, the light opening size is 20 cm smaller than the required roof opening size.

**Thermal properties:**
U value: 1.0 [W/m²K]

**Dimensions:**
- Height: 300 mm
- Light opening size = roof opening size - 20 cm
  - Tapering 2 x 100 mm
  - Inclined inner wall

### alwitra kerb 1600

The kerb 1600 is 16 cm high, no tapering. This means a vertical inner wall, with the light opening size being the same as the roof opening size. Ensuring maximum daylight intake with a modern design.

**Thermal properties:**
U value: 1.0 [W/m²K]

**Dimensions:**
- Height: 160 mm
- Light opening size = roof opening size
  - Tapering 00 mm
  - Vertical inner wall
alwitra kerbs - as part of the alwitra flat roof system - can be supplied with a factory-fitted EVALON® or EVALASTIC® collar. This means that alwitra kerbs are already completely watertight and, after having been screwed to the substrate, need only to be welded to the installed waterproofing membrane on site. Absolutely no need for labour and time consuming detail work on site like exact cutting-to-size of tapes, forming corners or installing cappings.

You will benefit from shorter installation time and maximum reliability, as the required auxiliary parts have already been factory-fitted.

Technical data:

**Material:** cut-to-size EVALON® or EVALASTIC® waterproofing membranes and preformed details, fully bonded to the kerbs over the entire height

**Thickness:** 1.5 mm

**Colour:** all standard waterproofing membrane colours

**Top fixing:** special aluminium profile and stainless steel screws with sealing washer

For further information, in particular on the version with factory-fitted collar, please refer to www.alwitra.de/en/videos-english/
As standard, alwitra rooflights are available in single-skin, double-skin, triple-skin or multi-skin versions with additional thermal insulation properties. The thermally insulating version provides optimum thermal protection as well as outstanding lighting of the room through efficient light dispersion and low light loss. alwitra rooflights are equipped with a anti-vandal screw system.

**Acrylic glass rooflight 2S (U value: 2.68 [W/m²K])**

The double-skin version consists of two domed extruded polymethyl methacrylate skins (PMMA). Acrylic glass is a highly transparent, impact-proof and UV resistant plastic. The standard version consists of two opaque skins; a version with two transparent skins is available on request.

**Acrylic glass rooflight 3S (U value: 1.70 [W/m²K])**

The triple-skin version consists of three domed extruded polymethyl methacrylate skins (PMMA). The standard version consists of two opaque skins and a transparent middle skin; a version with three transparent skins is available on request.

**Acrylic glass rooflight 2S WD (U value: 1.23 [W/m²K])**

The multi-skin rooflight 2S WD consists of a transparent domed outer acrylic glass skin (PMMA), a 10 mm domed transparent SPC sheet and an opaque inner acrylic glass skin. Due to their outstanding thermal insulation characteristics, these rooflights are the ideal solution for buildings with increased thermal protection requirements.
## Technical data

<table>
<thead>
<tr>
<th>Material</th>
<th>Build-up</th>
<th>U value [W/m²K]</th>
<th>Light transmittance [%]</th>
<th>g value</th>
<th>Rₜ value [dB]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acrylic (PMMA)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1S clear</td>
<td>5.36</td>
<td>90%</td>
<td></td>
<td>0.87</td>
<td>12</td>
</tr>
<tr>
<td>1S opaque</td>
<td>5.36</td>
<td>83%</td>
<td></td>
<td>0.76</td>
<td>12</td>
</tr>
<tr>
<td>2S clear</td>
<td>2.68</td>
<td>81%</td>
<td></td>
<td>0.75</td>
<td>20</td>
</tr>
<tr>
<td>2S opaque</td>
<td>2.68</td>
<td>69%</td>
<td></td>
<td>0.58</td>
<td>20</td>
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<tr>
<td>3S clear</td>
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<td>73%</td>
<td></td>
<td>0.65</td>
<td>22</td>
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<tr>
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<td>62%</td>
<td></td>
<td>0.51</td>
<td>22</td>
</tr>
<tr>
<td>4S clear</td>
<td>1.24</td>
<td>64%</td>
<td></td>
<td>0.54</td>
<td>23</td>
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<tr>
<td>4S opaque</td>
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<td>59%</td>
<td></td>
<td>0.48</td>
<td>23</td>
</tr>
<tr>
<td>5S clear</td>
<td>1.03</td>
<td>58%</td>
<td></td>
<td>0.47</td>
<td>23</td>
</tr>
<tr>
<td>5S opaque</td>
<td>1.03</td>
<td>53%</td>
<td></td>
<td>0.41</td>
<td>23</td>
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<tr>
<td><strong>Polycarbonate (PC)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1S clear</td>
<td>5.36</td>
<td>88%</td>
<td></td>
<td>0.87</td>
<td>12</td>
</tr>
<tr>
<td>2S clear</td>
<td>2.68</td>
<td>79%</td>
<td></td>
<td>0.75</td>
<td>20</td>
</tr>
<tr>
<td>2S opaque</td>
<td>2.68</td>
<td>73%</td>
<td></td>
<td>0.63</td>
<td>20</td>
</tr>
<tr>
<td>3S clear</td>
<td>1.70</td>
<td>71%</td>
<td></td>
<td>0.65</td>
<td>22</td>
</tr>
<tr>
<td>3S opaque</td>
<td>1.70</td>
<td>61%</td>
<td></td>
<td>0.48</td>
<td>22</td>
</tr>
<tr>
<td>4S clear</td>
<td>1.24</td>
<td>63%</td>
<td></td>
<td>0.54</td>
<td>23</td>
</tr>
<tr>
<td>4S opaque</td>
<td>1.24</td>
<td>58%</td>
<td></td>
<td>0.46</td>
<td>23</td>
</tr>
<tr>
<td><strong>Polycarbonate Heatstop</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1S opaque</td>
<td>5.36</td>
<td>49%</td>
<td></td>
<td>0.59</td>
<td>12</td>
</tr>
<tr>
<td>2S opaque</td>
<td>2.68</td>
<td>41%</td>
<td></td>
<td>0.45</td>
<td>20</td>
</tr>
<tr>
<td>3S opaque</td>
<td>1.70</td>
<td>37%</td>
<td></td>
<td>0.39</td>
<td>22</td>
</tr>
<tr>
<td>4S opaque</td>
<td>1.24</td>
<td>32%</td>
<td></td>
<td>0.32</td>
<td>23</td>
</tr>
<tr>
<td>2SWD PMMA</td>
<td>opaque</td>
<td>1.23</td>
<td>51%</td>
<td>0.42</td>
<td>21</td>
</tr>
<tr>
<td>2SWD PC</td>
<td>opaque</td>
<td>1.23</td>
<td>50%</td>
<td>0.41</td>
<td>21</td>
</tr>
</tbody>
</table>

Reaction to fire PMMA: Euroclass E

Reaction to fire PC: Euroclass B-s1, do

CE marking DIN EN 1873
Opening and ventilation systems for alwitra rooflights

Rooflights can also be used for room ventilation, as a natural smoke vent with geometric cross-section or for providing access to the roof. For all types of opening, in general, a vent frame is required where all necessary parts are included and pre-fitted. For available standard configurations and combinations please refer to our current price list. Further configuration versions on request.

Manual opening (manual telescopic spindle)
This is the most simple way of opening. The manual telescopic spindle is hooked to the brackets at the kerb and the vent frame. The rooflight is opened by turning the optionally available crank handle. If the side length (light opening size) exceeds 1400 mm, a tandem version with two interconnected spindles is installed. For some versions, manual opening can be combined with a roof hatch function.

Electric opening (motor opener)
An electric actuator 230 VAC provides significantly more comfort. You can control the actuator with a switch or an optional remote control. As with the manual opening, if the side length (light opening size) exceeds 1400 mm, a tandem version with two electrically interconnected actuators is installed. For some versions, electric opening can be combined with a roof hatch function.

Roof hatch
alwitra rooflights can be installed as roof hatches with manual opening to provide access to the roof e.g. for the chimney sweep or for maintenance and repair works. Gas springs on both sides facilitate the opening and closing of the rooflight. Along with the roof hatch function, the system can also be combined with the options of a manual spindle, electric opening or natural smoke vent.
Natural smoke extraction in stairwells

alwitra natural smoke vents for stairwells: reliable and safe.

The electronically controlled smoke vent system, along with its lighting and daily ventilation function, provides a geometric smoke extraction area and thus safe escape and rescue routes, pursuant to the federal state building regulations (Landesbauordnung - LBO).

With maintenance-free 24 V DC motor openers with 400 mm or 500 mm lift, virtually all alwitra rooflights can be equipped with this additional feature. A great combination of all positive characteristics: bright stairwells through optimal natural lighting, fresh air through daily ventilation, and, if necessary, the safety of a low-smoke stairwell.

Optionally, depending on the size, the rooflights can be fitted with a lifting mechanism (with gas springs) for roof hatch function. A simple unlocking mechanism allows exit to the roof.

<table>
<thead>
<tr>
<th>Nominal width = roof opening size [cm]</th>
<th>Kerb 1620 / 3020 geometric opening area [m²]</th>
<th>Kerb 1600 geometric opening area [m²]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Type of drive</td>
<td>Type of drive</td>
</tr>
<tr>
<td></td>
<td>400 mm lifting height (Chain feed drive)</td>
<td>500 mm lifting height (Rack and pinion drive)</td>
</tr>
<tr>
<td></td>
<td>400 mm lifting height (Chain feed drive)</td>
<td></td>
</tr>
<tr>
<td>60 x 60</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>60 x 90</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>80 x 80</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>90 x 90</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>90 x 120</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>0.70</td>
<td></td>
</tr>
<tr>
<td>100 x 100</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>100 x 150</td>
<td>S</td>
<td>T</td>
</tr>
<tr>
<td>120 x 120</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>150 x 150</td>
<td>S</td>
<td>T</td>
</tr>
</tbody>
</table>

Further sizes on request

**Bold:** ≥ 1.0 m² geometric opening area (Minimum requirement according to LBO)

- = not available

S = solo drive 24 V DC

T = tandem drive 24 V DC
Natural smoke extraction in stairwells

At a glance!
Critical data – 24 hours a day:
If the green LED is on, you can be certain that:
• mains, battery
• motor connection
• signal lines are ready and fully operational.
Also in the case of power failure:
The emergency power supply system will ensure operational availability up to 72 hours.
Release buttons are available in the following colours:
orange / red / yellow / blue / grey

Control unit NRA 24
Connecting options:
• Motor 24 V DC depending on the version:
  max. 5 A (1 drive circuit and 1 ventilation circuit)
  max. 10 A (1 drive circuit and 1 ventilation circuit)
  max. 20 A (2 drive circuits and ventilation circuits)
• Release button: max. 10 pcs.
• Smoke detector: max. 10 pcs.
• Ventilation switch: max. 10 pcs.
• Signal contacts (error or emergency opening) through potential-free relay contact (optional accessories "relay board")
• Optional wind and rain sensors can be directly connected, without electronic evaluation system
• Connection to external bus systems (LON, KNX) possible via auxiliary module
Monitoring functions:
• Mains, battery and charging circuit
• Drive circuit
• 2 signal circuits:
  circuit a: manual release
  circuit b: automatic release
Cabinet
• For surface mounting: steel
  Colour: RAL 7035 (light grey)
• For flush mounting: steel with flush mounting frame, optionally available (5 A version only)
The high-quality flat roof alwitra DayLuxe window is another component of the alwitra daylight system. Instead of the standard vent frame, it features a high-performance multi-cell frame with a laminated safety glass pane (HR++). In combination with an alwitra kerb and an alwitra rooflight, you get a flat roof window, absolutely suitable for living spaces, with optimum characteristics:

- Compatible with all alwitra rooflights
- Compatible with all alwitra kerbs
- Thermal insulation U value approx. 1.00 W/m²K
- Airborne sound insulation $R_w = 40$ dB (for 1S)
- Fall-through resistance 1,200 J
## Technical data and available sizes

<table>
<thead>
<tr>
<th>Light opening size [cm x cm]</th>
<th>Light opening size [m²]</th>
<th>AK 1620</th>
<th>AK 3020</th>
<th>AK 1600</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 x 70</td>
<td>0.23</td>
<td>60/90</td>
<td>60/90</td>
<td>40/70</td>
</tr>
<tr>
<td>60 x 60</td>
<td>0.30</td>
<td>80/80</td>
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<td>110/110</td>
<td>110/110</td>
<td>90/90</td>
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<tr>
<td>100 x 100</td>
<td>0.90</td>
<td>120/120</td>
<td>120/120</td>
<td>100/100</td>
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<tr>
<td>100 x 150</td>
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<td>140 x 140</td>
<td>1.82</td>
<td>160/160</td>
<td>160/160</td>
<td>140/140</td>
</tr>
</tbody>
</table>

**Bold** = stock sizes

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### Technical data of the alwitra DayLuxe window (with 1S PMMA transparent)

- **U value:** \( \sim 1.00 \text{ [W/m\textsuperscript{2}K]} \)
- **Light transmittance:** 78 %
- **Airborne sound insulation:** \( R_w = 40 \text{ dB} \)
- **Air tightness:** class 2
- **Fall-through resistance:** 1,200 J
- **Fire class:** Euroclass E
- **CE marking:** DIN EN 1873 in combination with alwitra rooflight and alwitra kerb
Accessories for alwitra daylight systems

Electrical sun protection

The electrical sun protection can be installed in every alwitra kerb. The sun protection is mounted directly under the rooflight or the glazing of rigid rooflights. Alternatively, an installation in the roof opening is possible.

- multi-layer plissé made of white polyester
- perfect fit of the white coated aluminium profiles with the profile of the frame or the kerb
- almost noiseless operation
- power supply from integrated solar cells; an electrical connection is not required
- incl. remote control

<table>
<thead>
<tr>
<th>Available sizes (daylight sizes)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>50 x 50</td>
<td>40 x 70</td>
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<tr>
<td>60 x 60</td>
<td>60 x 90</td>
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<td>130 x 130</td>
<td>100 x 160</td>
</tr>
<tr>
<td>140 x 140</td>
<td>100 x 200</td>
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</tbody>
</table>

alwitra fall-through protection grating

Square and rectangular alwitra rooflights can be equipped with galvanized white (RAL 9016) fall-through protection grating according to GS-18.

Due to the universal installation options

- underneath the kerb
- in the kerb
- in the vent frame directly underneath the rooflight
fall-through protection can be ensured in virtually every installation situation - even later

alwitra fall-through protection gratings are available for all square and rectangular alwitra rooflights. For the size of the grating please note the place of installation (roof opening size or daylight size).
Overview of alwitra daylight systems

Kerb 1600 with collar

Kerb 3020 with collar

Kerb 1620 with collar

Acrylic glass rooflight, single- to triple-skin

Multi-skin acrylic glass rooflight 2S WD

Acrylic glass rooflight with alwitra DayLuxe window

Further information is available at