

Approval body for construction products  
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and  
Laender Governments



## European Technical Assessment

**ETA-20/0333**  
**of 7 June 2022**

English translation prepared by DIBt - Original version in German language

### General Part

Technical Assessment Body issuing the  
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

Barrel Vault Skylight PC16 and PC16+ PC 16

Product family  
to which the construction product belongs

Self supporting translucent roof kit

Manufacturer

ARCOLUX B. V.  
Newtonstraat 3  
1704 SB HEERHUGOWAARD  
NIEDERLANDE

Manufacturing plant

ARCOLUX B. V.  
Newtonstraat 3  
1704 SB HEERHUGOWAARD  
NIEDERLANDE

This European Technical Assessment  
contains

31 pages including 25 annexes which form an integral  
part of this assessment

This European Technical Assessment is  
issued in accordance with Regulation (EU)  
No 305/2011, on the basis of

EAD 220089-00-0401

**European Technical Assessment**

**ETA-20/0333**

English translation prepared by DIBt

**Page 2 of 31 | 7 June 2022**

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**Specific part****1 Technical description of the product****1.1 Kit description and setup**

The "Barrel Vault Skylight PC16 and PC16+ PC 16" is a self-supporting translucent roof kit made up of components which are factory-made and assembled on site.

The static system of the "Barrel Vault Skylight PC16 and PC16+ PC 16" complies with the category "Curved roof systems with additional bearing profiles" as listed in section 2.2.5.1 a) of the EAD 22089-00-0401<sup>1</sup>.

The roof kit comprises up to 2.10 m-wide arched translucent PC multi-wall sheets which are positioned on curved bearing profiles and protected against uplift loads by covering profiles. The sheets are mounted on the eaves side in an impost profile. The multi-wall sheets are abutted along their longitudinal edges via a bearing profile.

The following components may be part of the curved self-supporting translucent roof kit:

- translucent polycarbonate (PC) multi-wall sheets of thickness 16 mm (PC 16); they can also be used in stacks of two identical sheets (PC 16 + 16)
- 1,0 mm glass fibre-reinforced unsaturated polyester resin (GRP) sheet (optionally arranged under the 16 mm multi-wall sheet or between two 16 mm multi-wall sheets),
- bearing and covering profiles made of aluminium,
- glazing and impost profiles made of aluminium,
- sealing profiles,
- connecting devices.

The components and the system setup of the product are given in Annexes A 1 to A 4.

The material values, dimensions and tolerances of the roof kit not indicated in the annexes shall correspond to the values laid down in the technical documentation<sup>2</sup> of this European technical assessment.

**1.1.1 Multi-wall sheets**

The following multi-wall sheets made from polycarbonate (PC) in accordance with the harmonised European standard EN 16153<sup>3</sup> may be used.

Table 1: PC-sheets

| Manufacturer                        | Trade name                    | Sheet height [mm] | Annex |
|-------------------------------------|-------------------------------|-------------------|-------|
| Exolon Group S.p.A. IT–Nera Montoro | Makrolon multi UV 7/16-14     | 16                | A 4.1 |
| dott.gallina s.r.l. IT – La Loggia  | Polcarb 16mm 6W               | 16                | A 4.2 |
| dott.gallina s.r.l. IT – La Loggia  | Polcarb 16mm 7W               | 16                | A 4.3 |
| CORPLEX, F–Kaysersberg              | Akyver Sun Type 16/7w-12 2600 | 16                | A 4.4 |

<sup>1</sup> EAD 22089 00-0401 Self supporting translucent roof kits with covering made of plastic sheets; edition march 2019

<sup>2</sup> The technical documentation comprises all information of the holder of this ETA necessary for the production, installation and maintenance of the roof kit; these are in particular the structural analysis, design drawings and the manufacturer's installation instructions. The part to be treated confidentially is deposited with Deutsches Institut für Bautechnik

<sup>3</sup> EN 16153:2015-05 Light transmitting flat multiwall polycarbonate (PC) sheets for internal and external use in roofs, walls and ceilings - Requirements and test methods

| Manufacturer  | Trade name                             | Sheet height [mm] | Annex |
|---|--|-------------------|-------|
| Stabilit Suisse S.A. CH – Stabio                      | Makrolux Multiwall LL 7W-16 mm         | 16                | A 4.5 |
| SABIC Innovative Plastics B.V.<br>NL - Bergen op Zoom | Lexan Thermoclear Sheet<br>LT2UV165X26 | 16                | A 4.6 |
| Rodeca GmbH D – Mülheim-Ruhr                          | Hohlkammerscheibe PC 16-7              | 16                | A 4.7 |

The multi-wall sheets have unfilled hollow chambers and weatherproofing on the outer surfaces which are unmistakably identified.

#### 1.1.2 Optional (full-surface) covering supplement: GRP sheet

Sheet made from glass fibre-reinforced unsaturated polyester resin with a thickness of 1.0 mm, a minimum area weight of 600 g/m<sup>2</sup> and with a glass content of at least 25 % by mass. It corresponds to the specifications deposited with Deutsches Institut für Bautechnik.

#### 1.1.3 Bearing profiles and covering profiles

The aluminium profiles are (see Annex A 2.1.1, 2.1.2, 2.3.1 and 2.3.2) are made from the aluminium alloy EN AW-6063 T66 (bearing profiles) or EN AW-6060 T66 (covering profiles) in accordance with EN 755-2<sup>4</sup> and have the dimensions given in Annex A 3.1 of the ETA.

#### 1.1.4 Glazing and impost profiles

The glazing profiles as well the impost profiles (see Annex A 2.2.1 to 2.3.2) at the eaves are made from the aluminium alloy EN AW-6060 T66 in accordance with EN 755-2 and have the dimensions given in Annex A 3.2 of the ETA.

#### 1.1.5 Sealing profiles

The sealing profiles (see Annex A 2.1.1 to 2.3.2) are made from Ethylen/ Propylen-Terpolymer EPDM in accordance with DIN 7863<sup>5</sup> with Shore hardness of 67° ± 5 Shore A in accordance with EN ISO 868<sup>6</sup>. The sealing profiles have the dimensions given in Annex A 3.3 of the ETA.

#### 1.1.6 Connecting devices

The connection between the covering profile and bearing profile (see Annex A 2.1.1, 2.1.2, 2.3.1 and 2.3.2) as well the connection between the bearing profile and the impost profile (see Annex A 2.3.1 and 2.3.2). is made with self-tapping screws made of stainless steel A 2-EN ISO 3506<sup>7</sup>. Type FBS Ø 6,5 Type A with vulcanized EPDM (washer) in accordance with ETA-12/0086 or equivalent. The screw distance in the cover profile is 100mm from the edge of the impost profile and 340mm or less between each other (see Annex A 2.4.1).

#### 1.1.7 "Barrel Vault Skylight PC16 and PC16+ PC 16"roof kit

The roof kit is made up of the components described in Sections 1.1.1 and 1.1.3 to 1.1.6. The component according to section 1.1.2 may be used in addition.

The support system is a single-span-system for single and double identical covering sheets.

- 4 EN 755-2:2016 Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles - Part 2: Mechanical properties
- 5 DIN 7863-1:2022-02 Elastomer glazing and panel gaskets for windows and claddings - Material requirements - Part 1: Non cellular elastomer glazing and panel gaskets
- 6 EN ISO 868:2003 Plastics and ebonite - Determination of indentation hardness by means of a durometer (Shore hardness)
- 7 EN ISO 3506-1:2020 Fasteners - Mechanical properties of corrosion-resistant stainless steel fasteners - Part 1: Bolts, screws and studs with specified grades and property classes

Table 2: Reaction to fire of the components

| Component                     | Reaction to fire   |
|-------------------------------|--|
| Multi-wall sheets/ coverings  | Class in accordance with the DoP of EN 16153/ s. Annex A 4   |
| GRP sheet                     | Class E in accordance with the DoP of EN 1013 <sup>8</sup>   |
| Sealing profile               | No contribution to fire spread in accordance with EOTA TR 021 (Version June 2005)  |
| Bearing and covering profiles | Class A1 as per EN 13501-1<br>(without further testing as per Commission Decision 96/603/EC, as amended by Commission Decisions 2000/605/EC and 2003/424/EC) |
| Glazing and impost profiles   |  |
| Connecting devices            |  |

## 2 Specification of the intended use in accordance with the applicable European Assessment Document

The self-supporting translucent roof kit may be used in the roof area for open or closed building structures. The multi-wall sheets may be combined to form continuous rooflights of any length with When installed, the roof kit is not walkable and it may not be used for bracing of the roof support structure.

The performance data given in Section 3 are only valid if the roof kit is used in compliance with the specifications and the conditions given in Annex A, B and C.

The verifications and assessment methods on which this European Technical Assessment (hereinafter referred to as 'ETA') is based lead to the assumption of a working life of the roof kit of at least ten years. The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer, but are to be regarded only as means for choosing the right products in relation to the expected economically reasonable working life of the structure.

## 3 Performance of the product

### 3.1 Safety in case of fire (BWR 2)

| Essential characteristic                           | Performance             |
|--|-------------------------|
| Fire performance in case of external fire exposure | No performance assessed |
| Reaction to fire                                   | Class E                 |
| Resistance to fire                                 | No performance assessed |

### 3.2 Hygiene, health and the environment (BWR 3)

| Essential characteristic        | Performance  |
|---------------------------------|--|
| Watertightness and condensation | Category 1 (no leaks with no differential air pressure) up to inclination of the substructure from the horizontal: 5°<br>Design details as per information deposited with DIBt |

<sup>8</sup>

EN 1013:2012+A1:2014 Light transmitting single skin profiled plastics sheets for internal and external roofs, walls and ceilings - Requirements and test methods

### 3.3 Safety and accessibility (BWR 4)

| Essential characteristic  | Performance  |
|---|--|
| Characteristic structural resistance of the multi-wall sheets to forces (actions) resulting from downward loads and uplift loads [kN/m <sup>2</sup> ] | See Annex B 2  |
| Consideration of the effect of load duration  | See Annex B 1  |
| Consideration of ageing and environmental effects   | See Annex B 1  |
| Consideration of thermal effects  | See Annex B 1  |
| Values for characteristic structural resistance of aluminium bearing and covering profiles  | In accordance with structural calculation.           |
| Resistance to damage by impact loads with a soft object (50 kg)   | SB 1200  |
| Resistance to impact loads from a hard object (250 g)   | See declaration of performance according to EN 16153 |

### 3.4 Protection against noise (BWR 5)

No performance assessed

### 3.5 Energy economy and heat retention (BWR 6)

| Essential characteristic   | Performance  |
|--|--|
| Thermal resistance   | No performance assessed                              |
| Air permeability   |  |
| Radiation Properties <ul style="list-style-type: none"> <li>– Light transmittance</li> <li>– Solar direct transmittance</li> <li>– Total solar energy transmittance</li> </ul> | See declaration of performance according to EN 16153 |

## 4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

According to the European Assessment Document (EAD) 220072-00-0401, the legal basis is as follows: 98/600/EC

The system to be applied is: 3

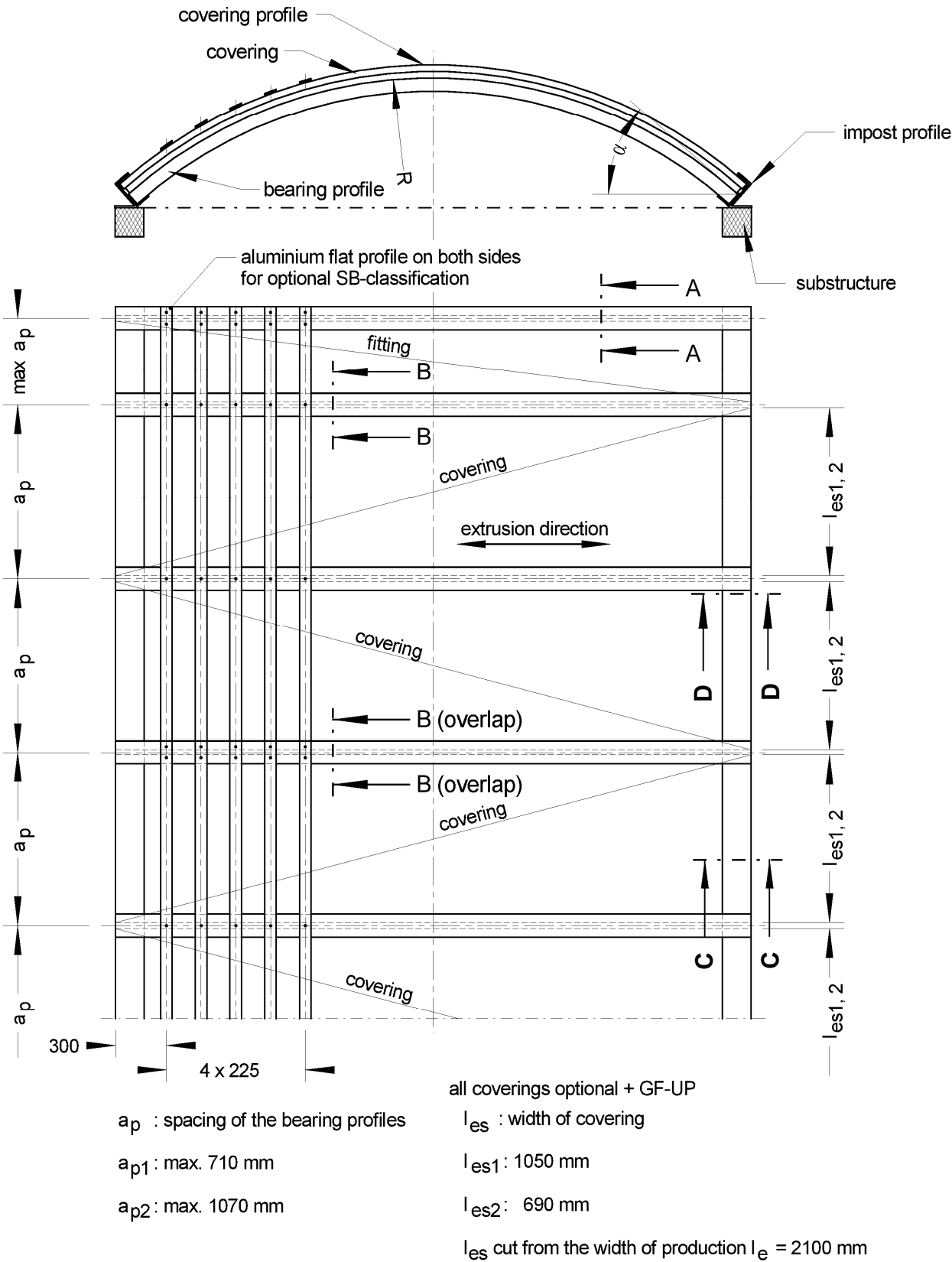
## 5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 7 June 2020 by Deutsches Institut für Bautechnik

Renée Kamanzi-Fechner  
Head of Section

*beglaubigt:*  
Wachner

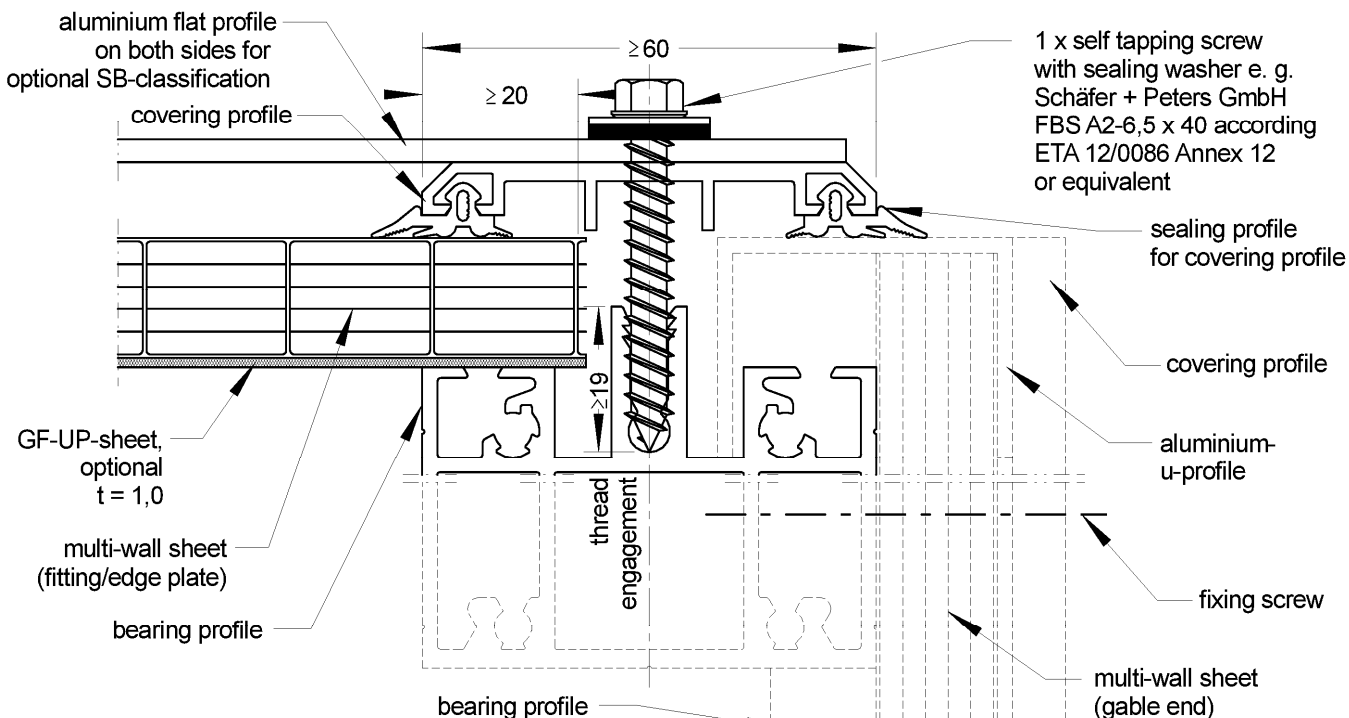


Barrel Vault Skylight PC16 and PC16+ PC 16

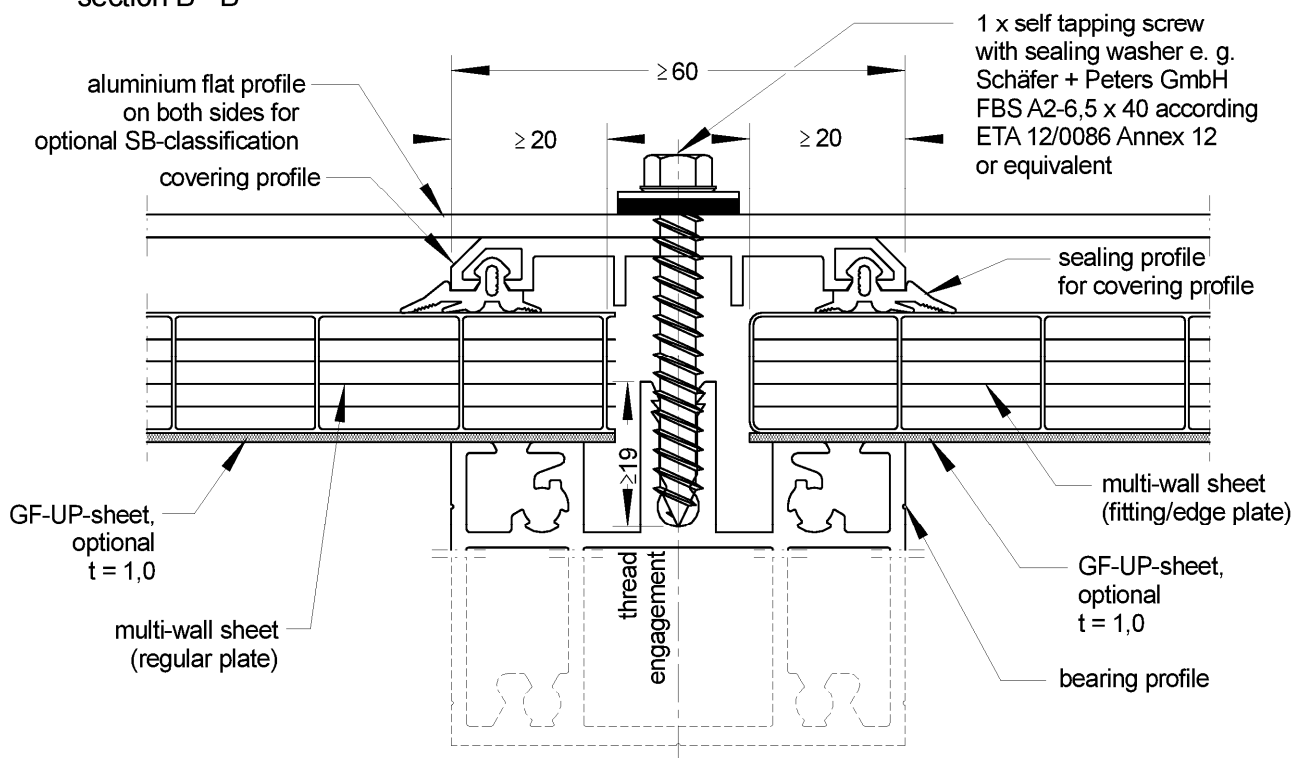
System overview  
Single-span-system

Annex A 1

### section A - A



### section B - B



schematic drawing  
all dimensions in mm

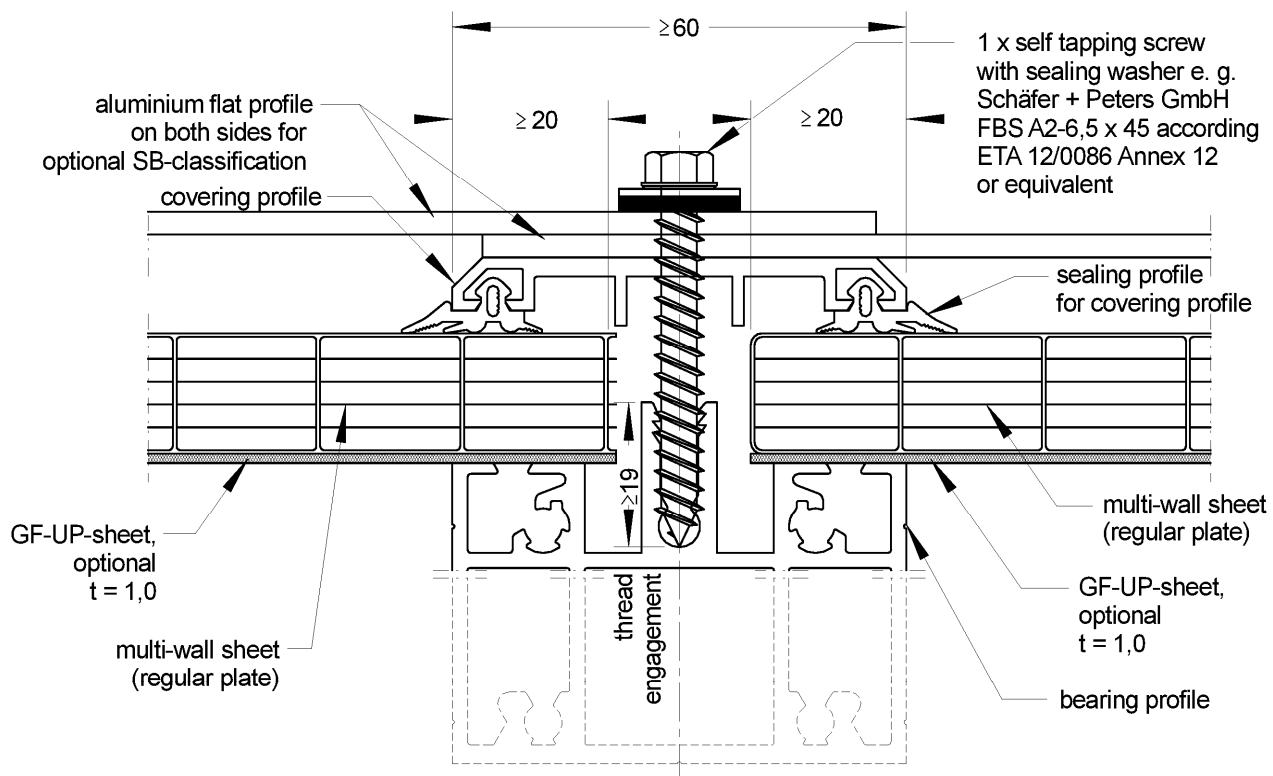
Barrel Vault Skylight PC16 and PC16+ PC 16

Combinations of arch profiles, single-span-system  
Sections A-A and B-B for the type:  
"PC 16"

Annex A 2.1.1



section B - B (overlap)



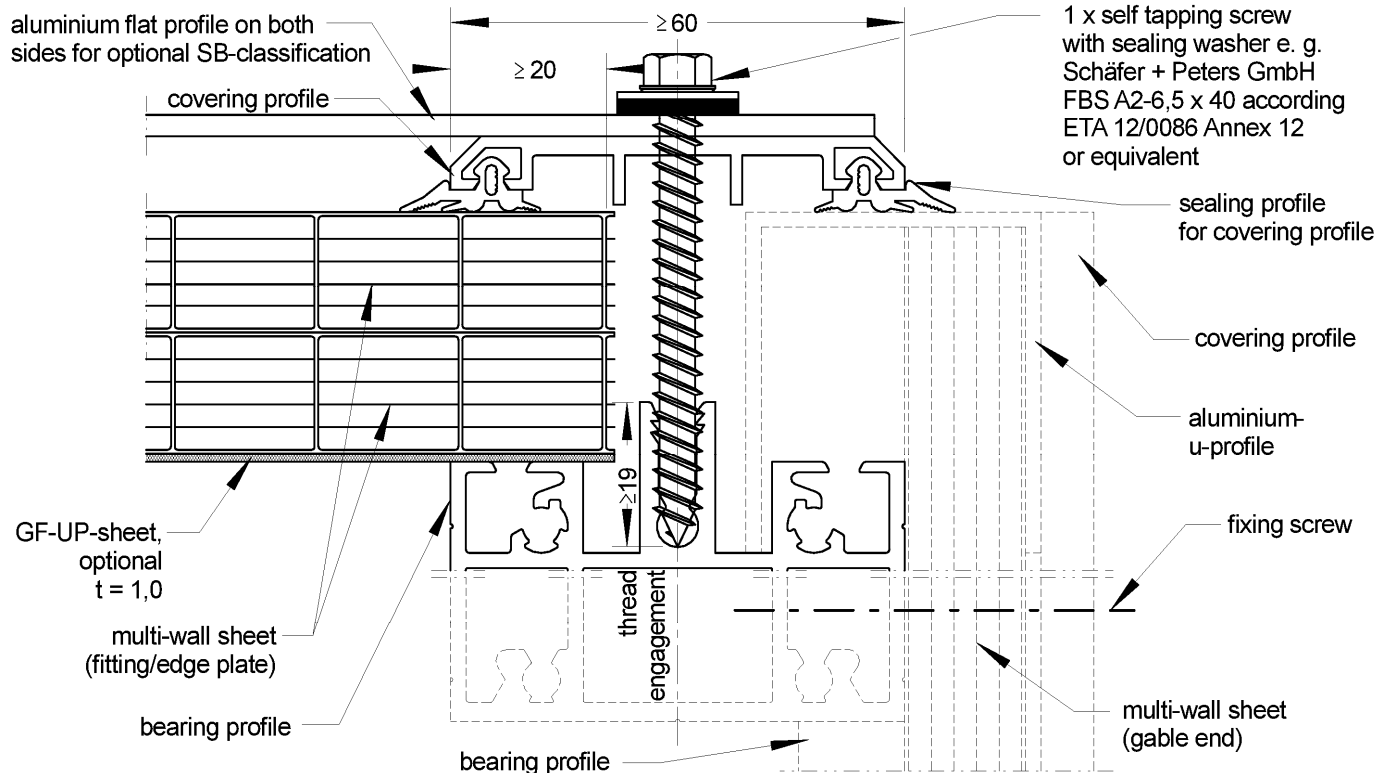
schematic drawing  
all dimensions in mm

Barrel Vault Skylight PC16 and PC16+ PC 16

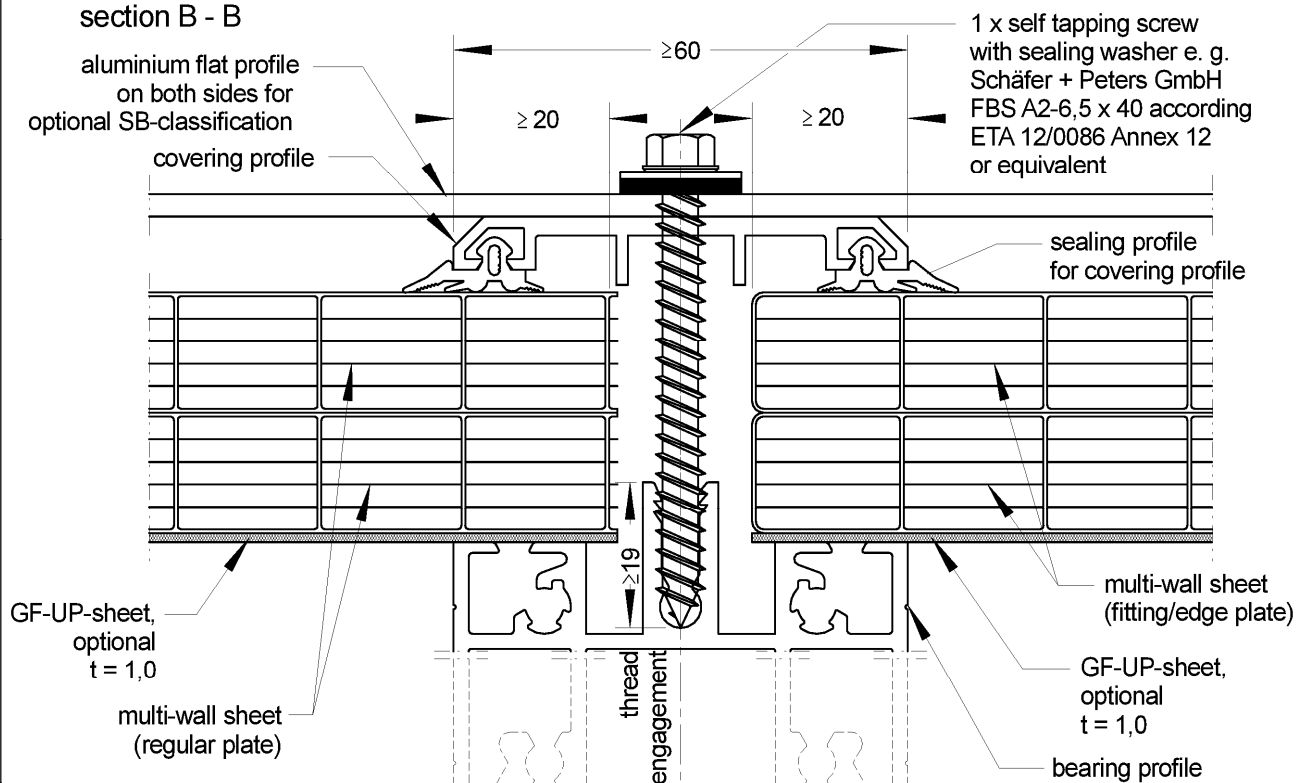
Combinations of arch profiles, single-span-system  
Section B-B (overlap) for the type:  
"PC 16"

Annex A 2.1.2

### section A - A



### section B - B



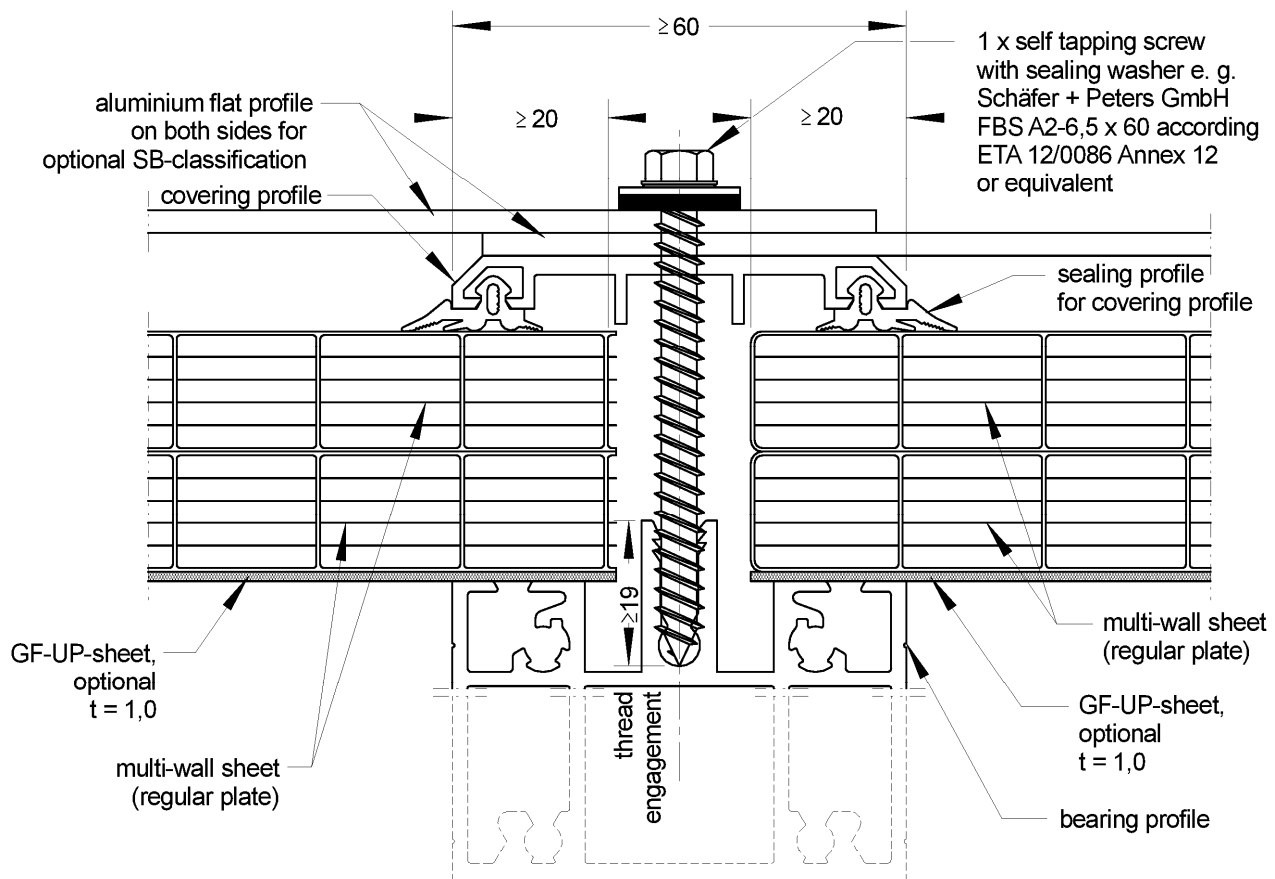
schematic drawing  
all dimensions in mm

Barrel Vault Skylight PC16 and PC16+ PC 16

Combinations of arch profiles, single-span-system  
Sections A-A and B-B for the type:  
"PC 16 + PC 16"

Annex A 2.2.1

section B - B (overlap)

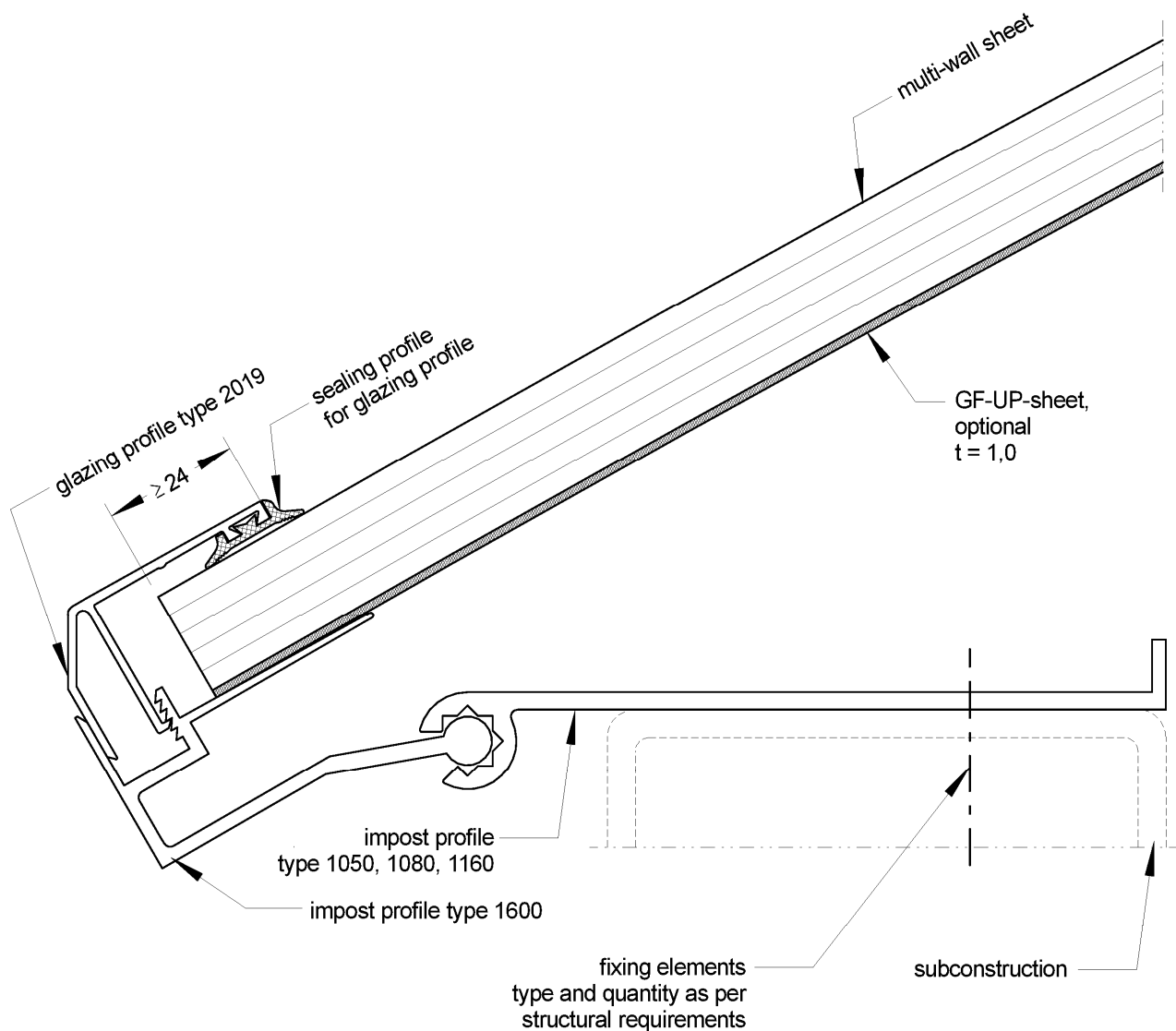


schematic drawing  
all dimensions in mm

Barrel Vault Skylight PC16 and PC16+ PC 16

Combinations of arch profiles, single-span-system  
Section B-B (overlap) for the type:  
"PC 16 + PC 16"

Annex A 2.2.2

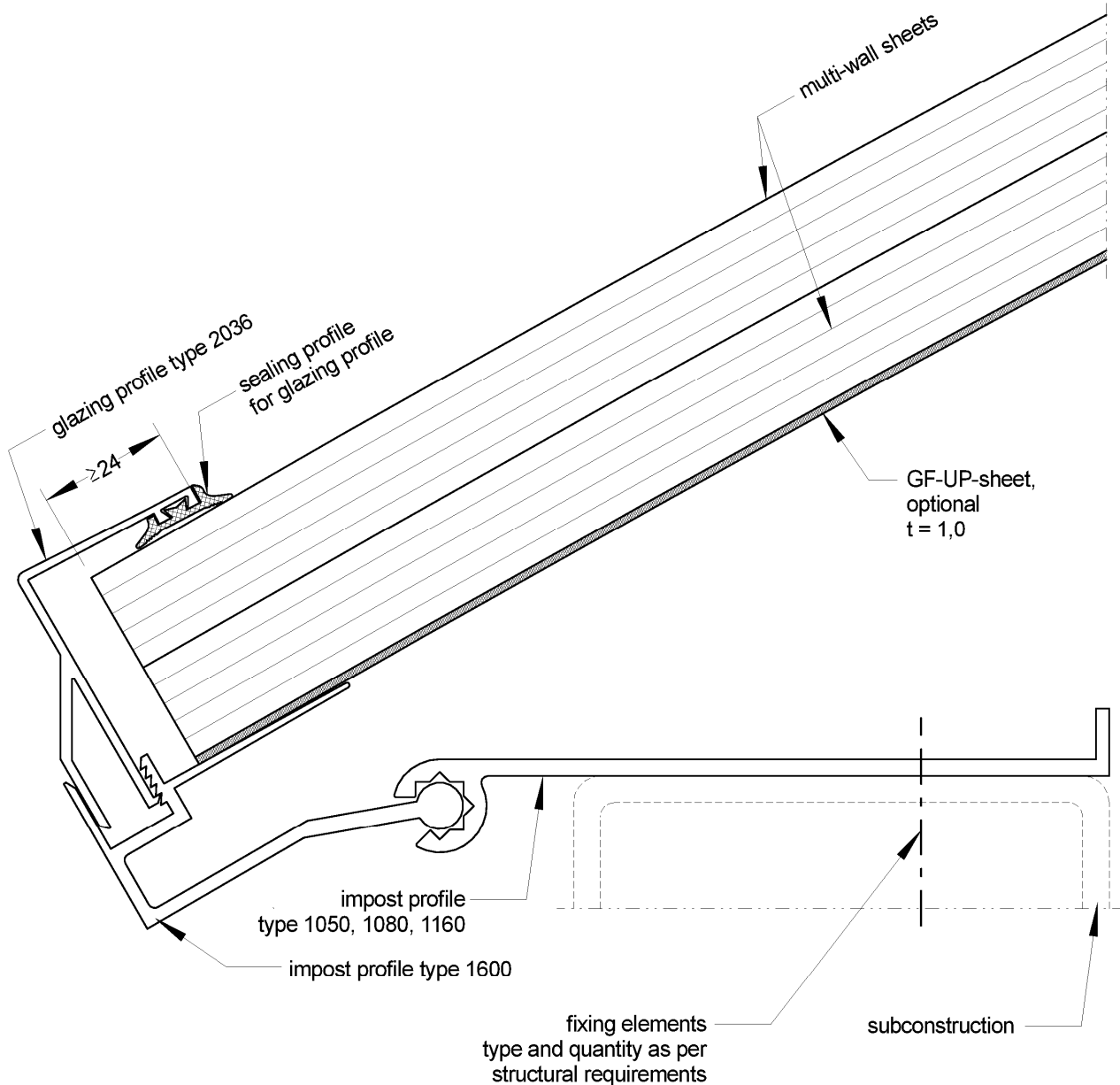


schematic drawing  
all dimensions in mm

Barrel Vault Skylight PC16 and PC16+ PC 16

Impost, single-span-system  
Section C-C for the type: "PC 16"

Annex A 2.3.1

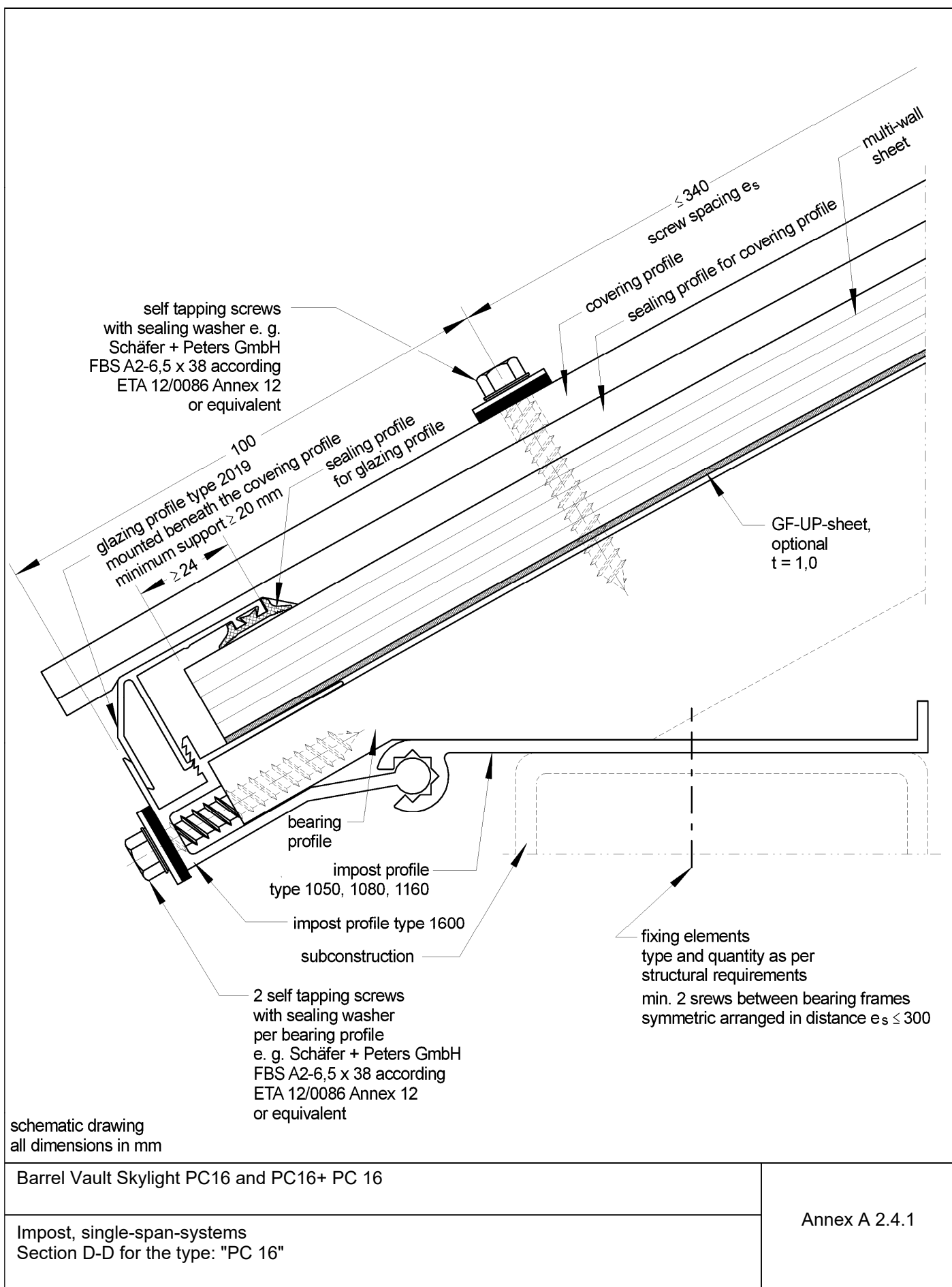


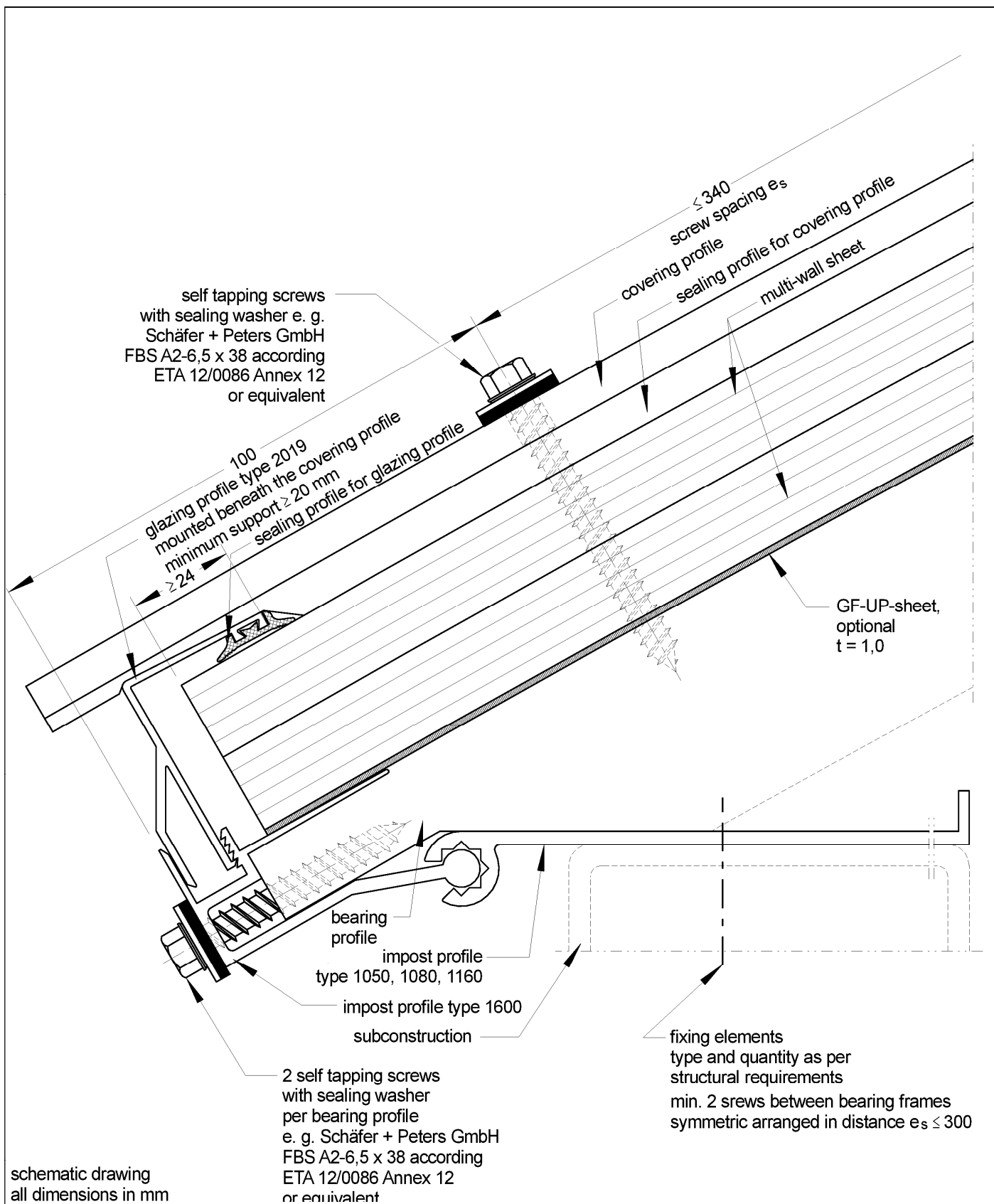
schematic drawing  
all dimensions in mm

Barrel Vault Skylight PC16 and PC16+ PC 16

Impost, single-span-systems  
Section C-C for the type: "PC 16 + PC 16"

Annex A 2.3.2



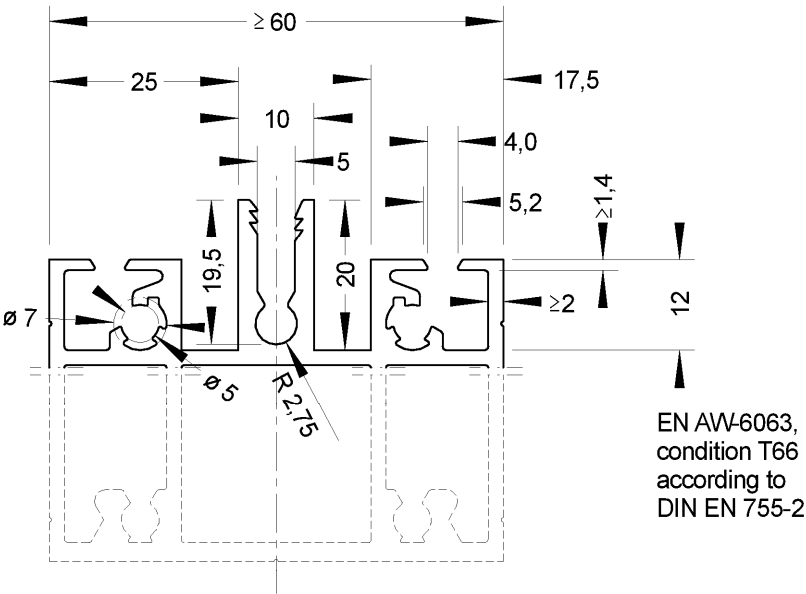


Barrel Vault Skylight PC16 and PC16+ PC 16

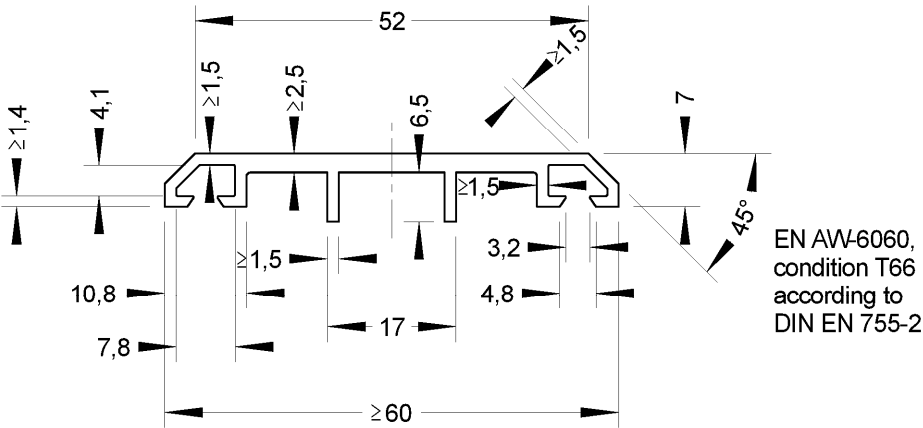
impost, single-span-systems  
Section D-D for the type: "PC 16 + 16"

Annex A 2.4.2

bearing profile



covering profile type 4000



dimensions without tolerances:  
tolerances as per EN 755-9  
all dimensions in mm

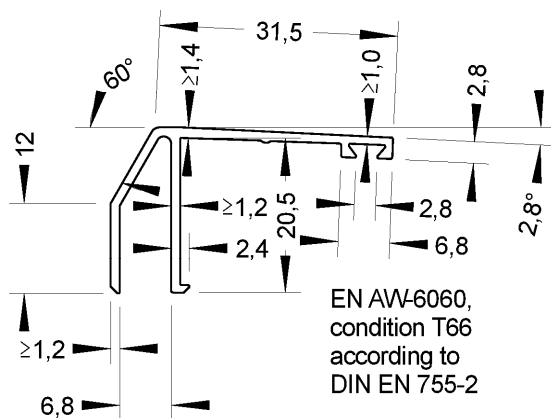
Barrel Vault Skylight PC16 and PC16+ PC 16

Bearing profiles and covering profiles  
Sections

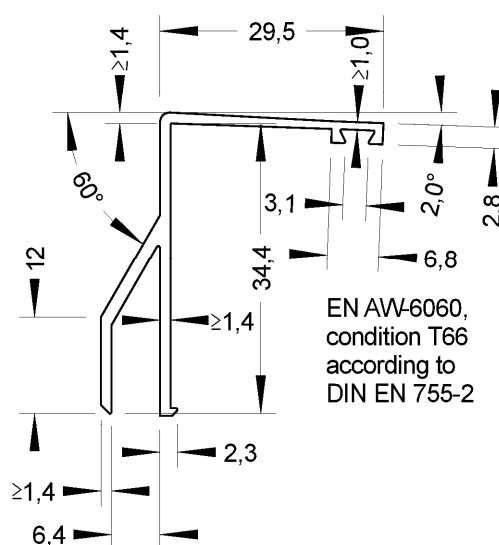
Annex A 3.1



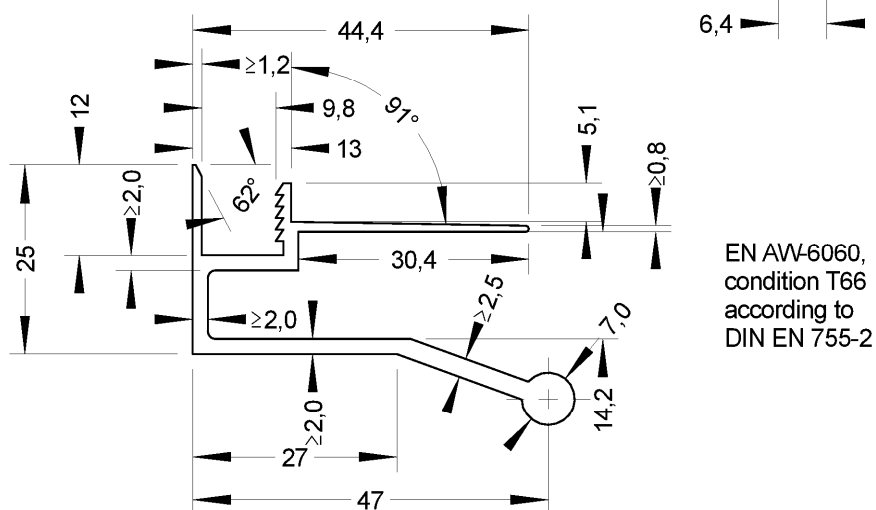
glazing profile type 2019



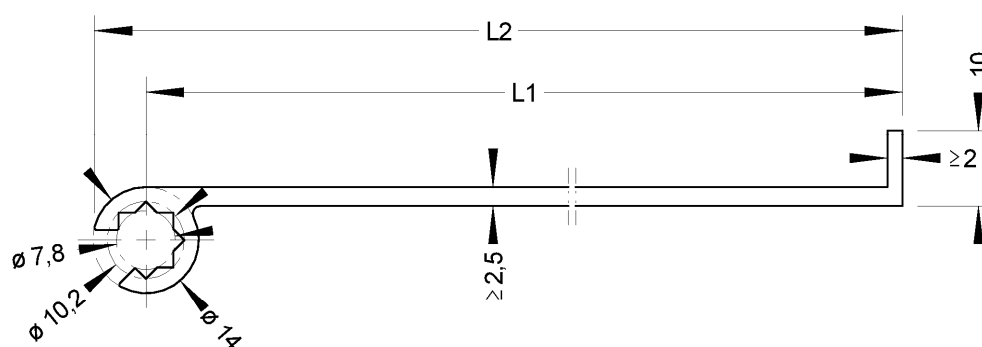
glazing profile type 2036



impost profile type 1600



impost profile type 1050, 1080, 1160

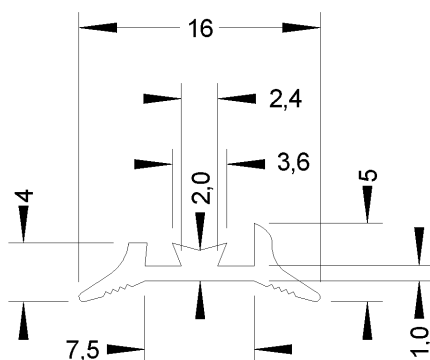


dimensions without tolerances:  
tolerances as per EN 755-9

all dimensions in mm

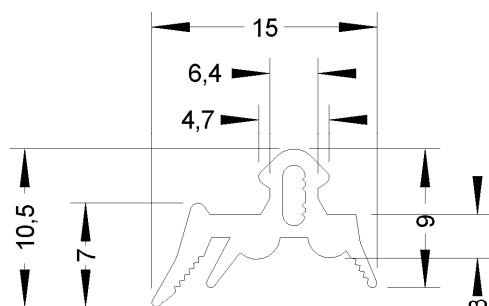
| Typ  | L1  | L2  |
|------|-----|-----|
| 1050 | 70  | 77  |
| 1080 | 100 | 107 |
| 1160 | 180 | 187 |

sealing profile  
for glazing profile



EPDM according to DIN 7863  
hardness (67±5) Shore A  
according to EN ISO 868

sealing profile  
for covering profile



EPDM according to DIN 7863  
hardness (67±5) Shore A  
according to EN ISO 868

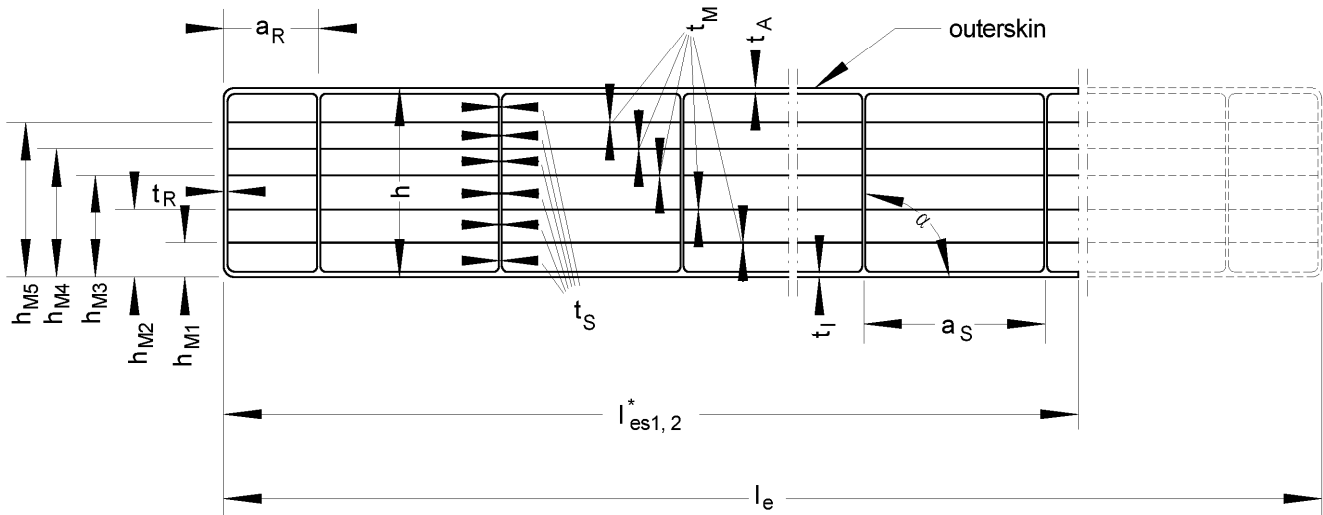
all dimensions in mm

Barrel Vault Skylight PC16 and PC16+ PC 16

Sealing profiles  
Sections

Annex A 3.3

Sheet: Exolon multi UV 7/16-14  
Manufacturer: Exolon Group, Nera Montoro  
Resin: ISO 21305-PC,X,EGL,03-09



$l_{es}^*$  cut from the width of production  $l_e = 2100$  mm

| $l_e$<br>mm | $l_{es1}^*$<br>mm | $l_{es2}^*$<br>mm | $h$<br>mm | $h_{M1}$<br>mm | $h_{M2}$<br>mm | $h_{M3}$<br>mm | $h_{M4}$<br>mm | $h_{M5}$<br>mm | $a_S$<br>mm | $a_{R1}$<br>mm | $a_{R2}$<br>mm |
|-------------|-------------------|-------------------|-----------|----------------|----------------|----------------|----------------|----------------|-------------|----------------|----------------|
| 2100        | 1050              | 690               | 16,0      | 3,2            | 5,7            | 8,2            | 10,7           | 13,2           | 13,9        | 7,4            | 9,6            |
|             | +6<br>-2          |                   | $\pm 0,5$ | + 0,5<br>- 0,4 | + 0,5<br>- 0,6 | + 0,6<br>- 0,6 | + 0,6<br>- 0,5 | + 0,5<br>- 0,3 | + 0,2       | + 1,7          | + 1,5          |

| $t_A$<br>mm | $t_I$<br>mm | $t_S$<br>mm | $t_M$<br>mm | $t_R$<br>mm | weight<br>per area<br>kg/m <sup>2</sup> | difference<br>$ \Delta\alpha $<br>to 90° |
|-------------|-------------|-------------|-------------|-------------|---|--|
| 0,59        | 0,61        | 0,39        | 0,08        | 0,67        | 2,63                                    |  |
| - 0,07      | - 0,10      | - 0,14      | - 0,02      | - 0,30      | + 0,13<br>- 0,05                        | $\leq 8^\circ$                           |

Minimum performance levels or classes for the sheets  
(as declared in the DoP in accordance with EN 16153:2015)

| mechanical resistance (deformation behavior) |                         |          |             |             |
|--|-------------------------|----------|-------------|-------------|
| $B_x$  | $B_y$                   | $S_y$    | $M_{b,pos}$ | $M_{b,neg}$ |
| 176,9 Nm <sup>2</sup> /m                     | 45,7 Nm <sup>2</sup> /m | 2254 N/m | 64,6 Nm/m   | 62,9 Nm/m   |

$M_{b,pos}$  : outer skin under pressure

$M_{b,neg}$  : inner skin under pressure

| Durability, as variation (after ageing) |                            |                                    |                     |
|---|----------------------------|------------------------------------|---------------------|
| of yellowness<br>index                  | of the light transmittance | of deformation flexural<br>modulus | of tensile strength |
| 10 ( $\Delta A$ )                       | 5 % ( $\Delta A$ )         | Cu 1                               | Ku 1                |

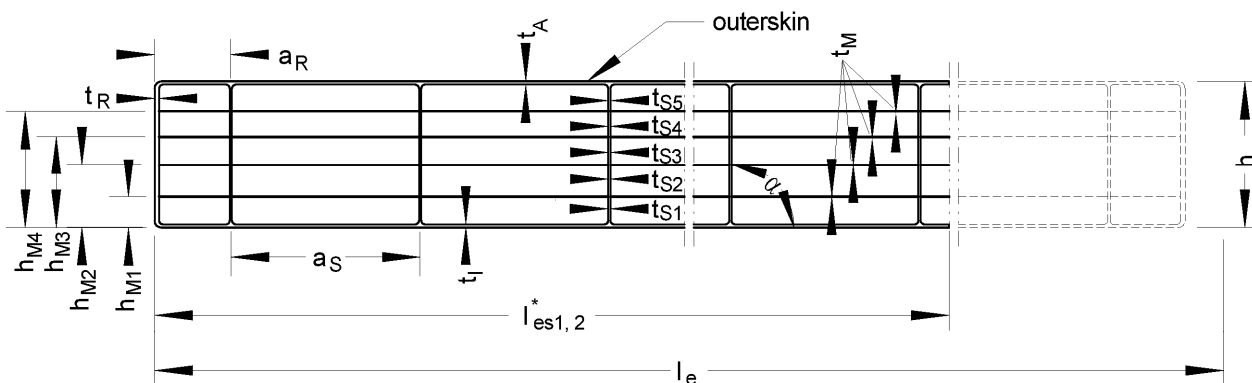
Reaction to fire: Class B-s1,d0 in accordance with EN13501-1

Barrel Vault Skylight PC16 and PC16+ PC 16

Geometry/ weight per area, Minimum performance levels or classes for the sheets in  
accordance with EN 16153:2015  
"Exolon multi UV 7/16-14"

Annex A 4.1

Sheet: Polycarb 16 mm 6W  
Manufacturer: dott.gallina, La Loggia  
Resin: ISO 21305-PC,X,EGL,03-09



$l_{es}^*$  cut from the width of production  $l_e = 2100$  mm

| $l_e$<br>mm | $l_{es1}^*$<br>mm | $l_{es2}^*$<br>mm | $h$<br>mm | $h_{M1}$<br>mm | $h_{M2}$<br>mm  | $h_{M3}$<br>mm  | $h_{M4}$<br>mm   | $a_S$<br>mm | $a_R$<br>mm | $t_A$<br>mm | $t_I$<br>mm |
|-------------|-------------------|-------------------|-----------|----------------|-----------------|-----------------|------------------|-------------|-------------|-------------|-------------|
| 2100        | 1050              | 690               | 15,9      | 3,6            | 6,5             | 9,5             | 12,2             | 19,5        | 14,0        | 0,80        | 0,75        |
|             | +6<br>-2          |                   | $\pm 0,5$ | + 0,4<br>- 0,3 | + 0,3<br>- 0,35 | + 0,35<br>- 0,4 | + 0,45<br>- 0,65 | + 0,5       | + 1,4       | - 0,07      | - 0,07      |

| $t_{S1}$<br>mm | $t_{S2}$<br>mm | $t_{S3}$<br>mm | $t_{S4}$<br>mm | $t_{S5}$<br>mm | $t_M$<br>mm | $t_R$<br>mm | weight<br>per area<br>kg/m <sup>2</sup> | difference<br>$ \Delta\alpha $<br>to 90° |
|----------------|----------------|----------------|----------------|----------------|-------------|-------------|---|--|
| 0,52           | 0,40           | 0,38           | 0,51           | 0,64           | 0,09        | 0,67        | 2,86                                    |  |
| - 0,08         | - 0,07         | - 0,08         | - 0,11         | - 0,12         | - 0,02      | - 0,16      | + 0,24<br>- 0,17                        | $\leq 5^\circ$                           |

Minimum performance levels or classes for the sheets  
(as declared in the DoP in accordance with EN 16153:2015)

| mechanical resistance (deformation behavior) |                         |          |             |             |
|--|-------------------------|----------|-------------|-------------|
| $B_x$  | $B_y$                   | $S_y$    | $M_{b,pos}$ | $M_{b,neg}$ |
| 191,0 Nm <sup>2</sup> /m                     | 43,7 Nm <sup>2</sup> /m | 2683 N/m | 84,0 Nm/m   | 80,3 Nm/m   |

$M_{b,pos}$  : outer skin under pressure

$M_{b,neg}$  : inner skin under pressure

| Durability, as variation (after ageing) |                            |                                    |                     |
|---|----------------------------|------------------------------------|---------------------|
| of yellowness<br>index                  | of the light transmittance | of deformation flexural<br>modulus | of tensile strength |
| 10 ( $\Delta A$ )                       | 5 % ( $\Delta A$ )         | Cu 1                               | Ku 1                |

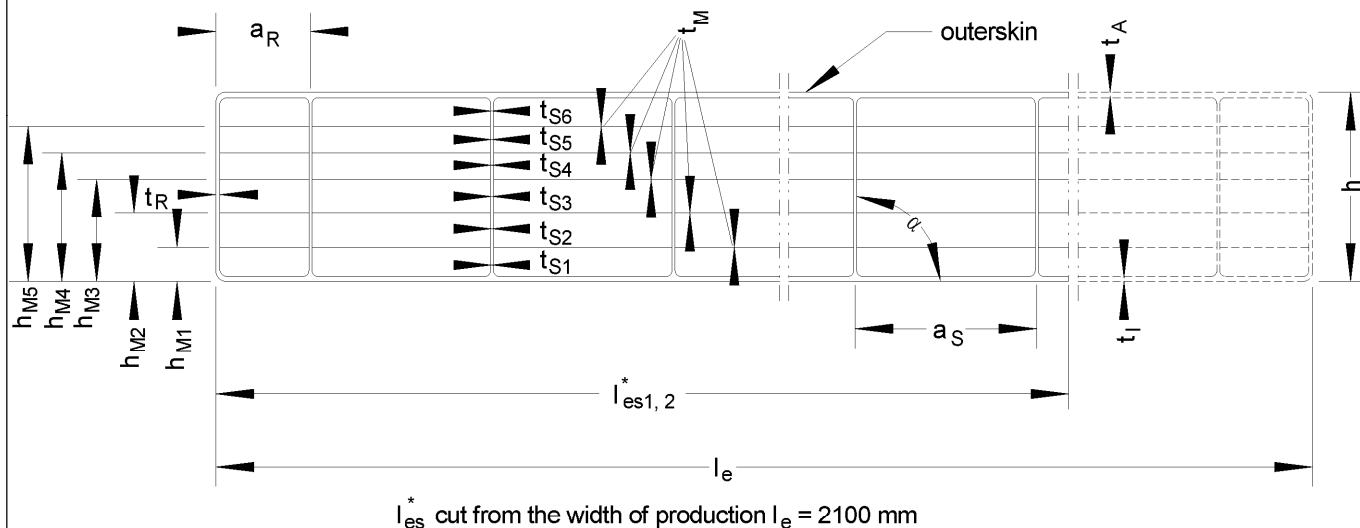
Reaction to fire: Class B-s1,d0 in accordance with EN13501-1

Barrel Vault Skylight PC16 and PC16+ PC 16

Geometry/ weight per area, Minimum performance levels or classes for the sheets in  
accordance with EN 16153:2015  
"Polycarb 16 mm 6W"

Annex A 4.2

Sheet: Polcarb 16 mm 7W  
Manufacturer: dott.gallina, La Loggia  
Resin: ISO 21305-PC,X,EGL,03-09



| $l_e$<br>mm | $l_{es1}^*$<br>mm | $l_{es2}^*$<br>mm | $h$<br>mm      | $h_{M1}$<br>mm | $h_{M2}$<br>mm | $h_{M3}$<br>mm | $h_{M4}$<br>mm | $h_{M5}$<br>mm | $a_S$<br>mm | $a_R$<br>mm |
|-------------|-------------------|-------------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------|-------------|
| 2100        | 1050              | 690               | 15,9           | 2,7            | 5,5            | 8,0            | 10,7           | 13,4           | 13,8        | 10,8        |
|             | +6<br>-2          |                   | + 0,6<br>- 0,4 | + 0,4<br>- 0,5 | + 0,6<br>- 0,3 | + 0,2<br>- 0,4 | + 0,3<br>- 0,2 | + 0,2<br>- 0,3 | + 0,2       | + 1,1       |

| $t_A$<br>mm | $t_I$<br>mm | $t_{S1}$<br>mm | $t_{S2}$<br>mm | $t_{S3}$<br>mm | $t_{S4}$<br>mm | $t_{S5}$<br>mm | $t_{S6}$<br>mm | $t_M$<br>mm | $t_R$<br>mm | difference<br>$ \Delta\alpha $<br>to 90° | weight<br>per area<br>kg/m <sup>2</sup> |
|-------------|-------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------|-------------|--|---|
| 0,63        | 0,61        | 0,39           | 0,41           | 0,34           | 0,29           | 0,30           | 0,36           | 0,09        | 0,46        | $\leq 9^\circ$                           | 2,64                                    |
| - 0,04      | - 0,03      | - 0,06         | - 0,05         | - 0,03         | - 0,04         | - 0,03         | - 0,05         | - 0,01      | - 0,11      |  | + 0,09<br>- 0,17                        |

Minimum performance levels or classes for the sheets  
(as declared in the DoP in accordance with EN 16153:2015)

| mechanical resistance (deformation behavior) |                         |          |             |             |
|--|-------------------------|----------|-------------|-------------|
| $B_x$  | $B_y$                   | $S_y$    | $M_{b,pos}$ | $M_{b,neg}$ |
| 169,9 Nm <sup>2</sup> /m                     | 48,4 Nm <sup>2</sup> /m | 2195 N/m | 69,7 Nm/m   | 58,7 Nm/m   |

$M_{b,pos}$  : outer skin under pressure  
 $M_{b,neg}$  : inner skin under pressure

| Durability, as variation (after ageing) |                            |                                    |                     |
|---|----------------------------|------------------------------------|---------------------|
| of yellowness<br>index                  | of the light transmittance | of deformation flexural<br>modulus | of tensile strength |
| 10 ( $\Delta A$ )                       | 5 % ( $\Delta A$ )         | Cu 1                               | Ku 1                |

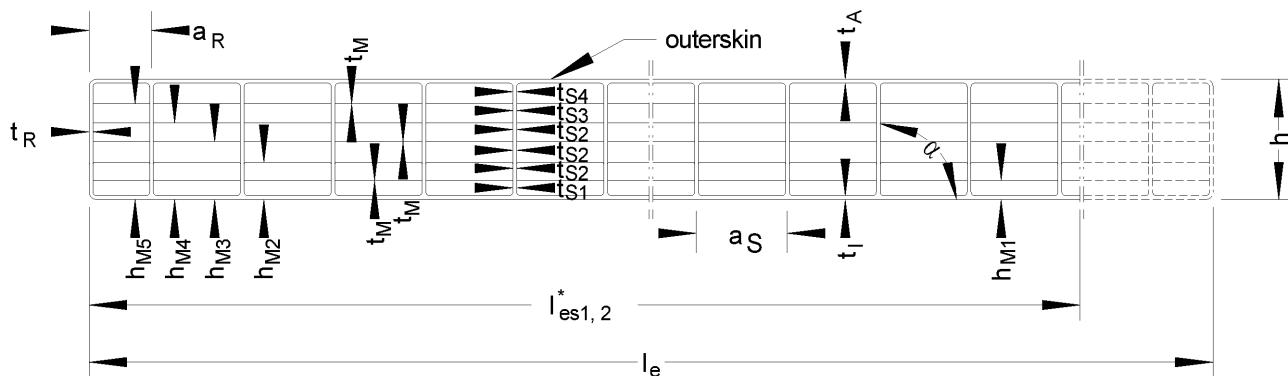
Reaction to fire: Class B-s1,d0 in accordance with EN13501-1

Barrel Vault Skylight PC16 and PC16+ PC 16

Geometry/ weight per area, Minimum performance levels or classes for the sheets in  
accordance with EN 16153:2015  
"Polcarb 16 mm 7W"

Annex A 4.3

Sheet: Akyver Sun Type 16/7w-12 2600  
Manufacturer: CORPLEX FRANCE KAYSERSBERG, Kayzersberg  
Resin: ISO 21305-PC,X,EGL,03-09



$l_{es}^*$  cut from the width of production  $l_e = 2100$  mm

| $l_e$<br>mm | $l_{es1}^*$<br>mm | $l_{es2}^*$<br>mm | $h$<br>mm | $h_{M1}$<br>mm  | $h_{M2}$<br>mm  | $h_{M3}$<br>mm  | $h_{M4}$<br>mm  | $h_{M5}$<br>mm | $a_S$<br>mm | $a_R$<br>mm |
|-------------|-------------------|-------------------|-----------|-----------------|-----------------|-----------------|-----------------|----------------|-------------|-------------|
| 2100        | 1050              | 690               | 16,0      | 2,4             | 4,9             | 7,7             | 10,4            | 12,9           | 12,0        | 6,5         |
|             | +6<br>-2          |                   | $\pm 0,5$ | + 0,5<br>- 0,25 | + 0,45<br>- 0,4 | + 0,4<br>- 0,55 | + 0,25<br>- 0,3 | + 0,3<br>- 0,3 | + 0,40      | + 2,5       |

| $t_A$<br>mm | $t_I$<br>mm | $t_{S1}$<br>mm | $t_{S2}$<br>mm | $t_{S3}$<br>mm | $t_{S4}$<br>mm | $t_M$<br>mm | $t_R$<br>mm | weight<br>per area<br>kg/m <sup>2</sup> | difference<br>$ \Delta\alpha $<br>to 90° |
|-------------|-------------|----------------|----------------|----------------|----------------|-------------|-------------|---|--|
| 0,56        | 0,52        | 0,41           | 0,39           | 0,44           | 0,44           | 0,06        | 0,58        | 2,56                                    |  |
| - 0,10      | - 0,08      | - 0,10         | - 0,12         | - 0,09         | - 0,10         | - 0,02      | - 0,27      | + 0,15<br>- 0,09                        | $\leq 4^\circ$                           |

Minimum performance levels or classes for the sheets  
(as declared in the DoP in accordance with EN 16153:2015)

| mechanical resistance (deformation behavior) |                         |          |             |             |
|--|-------------------------|----------|-------------|-------------|
| $B_x$  | $B_y$                   | $S_y$    | $M_{b,pos}$ | $M_{b,neg}$ |
| 176,5 Nm <sup>2</sup> /m                     | 58,8 Nm <sup>2</sup> /m | 2703 N/m | 68,8 Nm/m   | 59,1 Nm/m   |

$M_{b,pos}$  : outer skin under pressure

$M_{b,neg}$  : inner skin under pressure

| Durability, as variation (after ageing) |                            |                                    |                     |
|---|----------------------------|------------------------------------|---------------------|
| of yellowness<br>index                  | of the light transmittance | of deformation flexural<br>modulus | of tensile strength |
| 10 ( $\Delta A$ )                       | 5 % ( $\Delta A$ )         | Cu 1                               | Ku 1                |

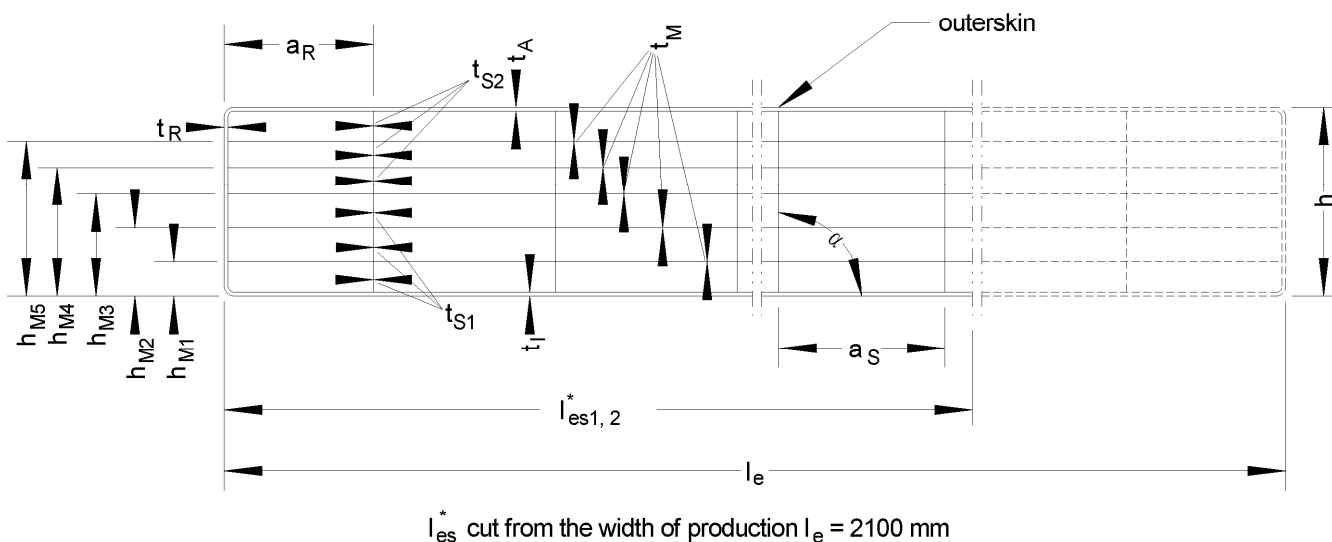
Reaction to fire: Class B-s1,d0 in accordance with EN13501-1

Barrel Vault Skylight PC16 and PC16+ PC 16

Geometry/ weight per area, Minimum performance levels or classes for the sheets in  
accordance with EN 16153:2015  
"Akyver Sun Type 16/7w-12 2600"

Annex A 4.4

**Sheet:** Macrolux Multiwall LL 7W - 16 mm - 2,6 kg/m²  
**Manufacturer:** Stabilit Suisse, Stabio  
**Resin:** ISO 21305-PC,X,EGL,03-09



| l <sub>e</sub><br>mm | l <sub>es1</sub><br>mm | l <sub>es2</sub><br>mm | h<br>mm | h <sub>M1</sub><br>mm | h <sub>M2</sub><br>mm | h <sub>M3</sub><br>mm | h <sub>M4</sub><br>mm | h <sub>M5</sub><br>mm | a <sub>S</sub><br>mm | a <sub>R</sub><br>mm |
|----------------------|------------------------|------------------------|---------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------|----------------------|
| 2100                 | 1050                   | 690                    | 15,9    | 2,9                   | 5,1                   | 7,6                   | 10,8                  | 13,2                  | 15,8                 | 11,9                 |
| +6<br>-2             |                        |                        | ± 0,5   | + 0,35<br>- 0,3       | + 0,45<br>- 0,55      | + 0,65<br>- 0,65      | + 0,7<br>- 0,65       | + 0,25<br>- 0,4       | + 0,3                | + 2,0                |

| t <sub>A</sub><br>mm | t <sub>I</sub><br>mm | t <sub>S1</sub><br>mm | t <sub>S2</sub><br>mm | t <sub>S3</sub><br>mm | t <sub>S4</sub><br>mm | t <sub>S5</sub><br>mm | t <sub>S6</sub><br>mm | t <sub>M</sub><br>mm | t <sub>R</sub><br>mm | weight<br>per area<br>kg/m <sup>2</sup> | difference<br>$ \Delta\alpha $ |
|----------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------|----------------------|---|--------------------------------|
| 0,67                 | 0,69                 | 0,46                  | 0,47                  | 0,40                  | 0,33                  | 0,39                  | 0,38                  | 0,06                 | 0,54                 | 2,58                                    | to 90°                         |
| - 0,16               | - 0,13               | - 0,08                | - 0,10                | - 0,07                | - 0,06                | - 0,06                | - 0,05                | - 0,02               | - 0,21               | - 0,13                                  | ≤ 9°                           |

Minimum performance levels or classes for the sheets  
(as declared in the DoP in accordance with EN 16153:2015)

| mechanical resistance (deformation behavior) |                         |                |                    |                    |
|--|-------------------------|----------------|--------------------|--------------------|
| B <sub>x</sub>                               | B <sub>y</sub>          | S <sub>y</sub> | M <sub>b,pos</sub> | M <sub>b,neg</sub> |
| 170,3 Nm <sup>2</sup> /m                     | 36,0 Nm <sup>2</sup> /m | 2404 N/m       | 70,8 Nm/m          | 63,1 Nm/m          |

$M_{b\text{ pos}}$  : outer skin under pressure

$M_{b,neg}$  : inner skin under pressure

| Durability, as variation (after ageing) |                            |                                 |                     |
|---|----------------------------|---------------------------------|---------------------|
| of yellowness index                     | of the light transmittance | of deformation flexural modulus | of tensile strength |
| 10 ( $\Delta A$ )                       | 5 % ( $\Delta A$ )         | Cu 1                            | Ku 1                |

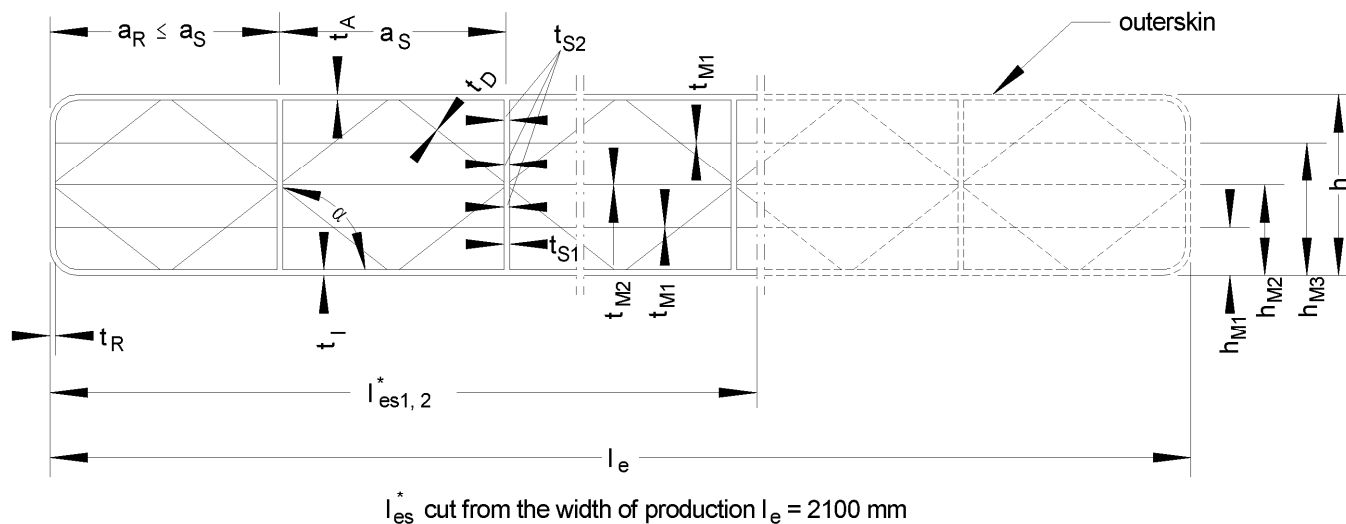
Reaction to fire: Class B-s1,d0 in accordance with EN13501-1

Barrel Vault Skylight PC16 and PC16+ PC 16

Geometry/ weight per area, Minimum performance levels or classes for the sheets in accordance with EN 16153:2015  
"Macrolux Multiwall LL 7W - 16 mm - 2,6 kg/m<sup>2</sup>"

### Annex A.4.5

**Sheet:** Lexan Thermoclear Sheet LT2UV165X26  
**Manufacturer:** SABIC Innovative Plastics, Bergen op Zoom  
**Resin:** ISO 21305-PC,X,EGL,05-09



| $l_e$<br>mm | $l_{es1}^*$<br>mm | $l_{es2}^*$<br>mm | $h$<br>mm | $h_{M1}$<br>mm  | $h_{M2}$<br>mm   | $h_{M3}$<br>mm | $a_S$<br>mm | $t_A$<br>mm | $t_I$<br>mm | $t_{S1}$<br>mm | $t_{S2}$<br>mm |
|-------------|-------------------|-------------------|-----------|-----------------|------------------|----------------|-------------|-------------|-------------|----------------|----------------|
| 2100        | 1050              | 690               | 16,4      | 3,2             | 7,5              | 12,3           | 19,7        | 0,47        | 0,49        | 0,63           | 0,56           |
|             | +6<br>-2          |                   | $\pm 0,5$ | + 0,4<br>- 0,25 | + 0,35<br>- 0,45 | + 0,3<br>- 0,3 | + 0,35      | - 0,05      | - 0,04      | - 0,05         | - 0,04         |

| $t_R$<br>mm | $t_{M1}$<br>mm | $t_{M2}$<br>mm | $t_D$<br>mm | weight<br>per area<br>kg/m <sup>2</sup> | difference<br>$ \Delta\alpha $<br>to 90° |
|-------------|----------------|----------------|-------------|---|--|
| 0,38        | 0,04           | 0,10           | 0,22        | 2,62                                    |  |
| - 0,12      | - 0,01         | - 0,01         | - 0,03      | $\pm 0,04$                              | $\leq 2^\circ$                           |

Minimum performance levels or classes for the sheets  
(as declared in the DoP in accordance with EN 16153:2015)

| mechanical resistance (deformation behavior) |                          |           |             |             |
|--|--------------------------|-----------|-------------|-------------|
| $B_x$  | $B_y$                    | $S_y$     | $M_{b,pos}$ | $M_{b,neg}$ |
| 188,0 Nm <sup>2</sup> /m                     | 140,4 Nm <sup>2</sup> /m | 43297 N/m | 59,4 Nm/m   | 64,4 Nm/m   |

$M_{b,pos}$  : outer skin under pressure

$M_{b,neg}$  : inner skin under pressure

| Durability, as variation (after ageing) |                            |                                    |                     |
|---|----------------------------|------------------------------------|---------------------|
| of yellowness<br>index                  | of the light transmittance | of deformation flexural<br>modulus | of tensile strength |
| 10 ( $\Delta A$ )                       | 5 % ( $\Delta A$ )         | Cu 1                               | Ku 1                |

Reaction to fire: Class B-s1,d0 in accordance with EN13501-1

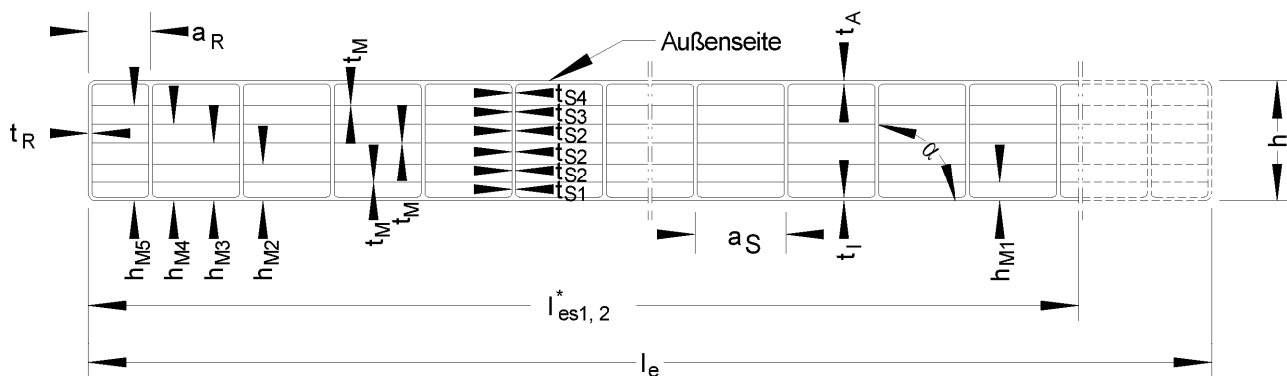
Barrel Vault Skylight PC16 and PC16+ PC 16

Geometry/ weight per area, Minimum performance levels or classes for the sheets in  
accordance with EN 16153:2015  
"Lexan Thermoclear LT2UV165X26"

Annex A 4.6



Sheet: Hohlkammerscheibe PC 16-7  
Manufacturer: Rodeca, Mülheim  
Resin: ISO 21305-PC,X,EGL,05-09



$l_{es}^*$  cut from the width of production  $l_e = 2100$  mm

| $l_e$<br>mm | $l_{es1}^*$<br>mm | $l_{es2}^*$<br>mm | $h$<br>mm | $h_{M1}$<br>mm | $h_{M2}$<br>mm  | $h_{M3}$<br>mm | $h_{M4}$<br>mm  | $h_{M5}$<br>mm | $a_S$<br>mm | $a_R$<br>mm |
|-------------|-------------------|-------------------|-----------|----------------|-----------------|----------------|-----------------|----------------|-------------|-------------|
| 2100        | 1050              | 690               | 16,1      | 3,7            | 6,5             | 9,0            | 11,3            | 13,5           | 11,8        | 8,1         |
|             | +6<br>-2          |                   | $\pm 0,5$ | + 0,3<br>- 0,3 | + 0,65<br>- 0,6 | + 0,5<br>- 0,5 | + 0,3<br>- 0,45 | + 0,3<br>- 0,3 | + 0,40      | + 3,05      |

| $t_A$<br>mm | $t_I$<br>mm | $t_{S1}$<br>mm | $t_{S2}$<br>mm | $t_{S3}$<br>mm | $t_{S4}$<br>mm | $t_{S5}$<br>mm | $t_{S6}$<br>mm | $t_M$<br>mm | $t_R$<br>mm | weight<br>per area<br>kg/m <sup>2</sup> | difference<br>$ \Delta\alpha $<br>to 90° |
|-------------|-------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------|-------------|---|--|
| 0,57        | 0,50        | 0,64           | 0,49           | 0,37           | 0,34           | 0,38           | 0,58           | 0,05        | 0,53        | 2,64                                    |  |
| - 0,14      | - 0,11      | - 0,16         | - 0,15         | - 0,11         | - 0,10         | - 0,09         | - 0,12         | - 0,02      | - 0,33      | + 0,16<br>- 0,09                        | $\leq 4^\circ$                           |

Minimum performance levels or classes for the sheets  
(as declared in the DoP in accordance with EN 16153:2015)

| mechanical resistance (deformation behavior) |                         |          |             |             |
|--|-------------------------|----------|-------------|-------------|
| $B_x$  | $B_y$                   | $S_y$    | $M_{b,pos}$ | $M_{b,neg}$ |
| 187,4 Nm <sup>2</sup> /m                     | 70,4 Nm <sup>2</sup> /m | 4164 N/m | 45,2 Nm/m   | 44,9 Nm/m   |

$M_{b,pos}$  : outer skin under pressure

$M_{b,neg}$  : inner skin under pressure

| Durability, as variation (after ageing) |                            |                                    |                     |
|---|----------------------------|------------------------------------|---------------------|
| of yellowness<br>index                  | of the light transmittance | of deformation flexural<br>modulus | of tensile strength |
| 10 ( $\Delta A$ )                       | 5 % ( $\Delta A$ )         | Cu 1                               | Ku 1                |

Reaction to fire: Class B-s1,d0 in accordance with EN13501-1

Barrel Vault Skylight PC16 and PC16+ PC 16

Geometry/ weight per area, Minimum performance levels or classes for the sheets in  
accordance with EN 16153:2015  
"Hohlkammerscheibe PC 16-7"

Annex A 4.7

## Barrel Vault Skylight PC16 and PC16+ PC 16

## Annex B

### Provisions for design and dimensioning

Dimensioning, installation and execution of the roof kit shall be in compliance with the national technical specifications. These differ in terms of their content as well as their status within the legal frameworks of the member states.

If no national provisions exist, dimensioning can be carried out in accordance with Annexes B 1 and B 2. In case the roof system, in particular the multi-wall sheets are systematically in contact with chemicals, the resistance to these substances shall be checked. Thereby, high concentrations of chemicals in the surrounding air shall be also considered.

Installation, packaging, transport, storage as well as use, maintenance and repair shall be carried out in accordance with the manufacturer's instructions (extract see Annex C).

### B 1 Load-bearing capacity and serviceability of the covering

#### B 1.1 General

The design and arrangement of the multi-wall sheets as described in Section 1.1.1 in the translucent roof kit shall correspond to the specifications given in Annexes A 1 to A 4. The specifications given in Section 2 shall be complied with.

The stability shall be verified for the ultimate limit state (ULS)

$$E_d \leq R_d$$

and for the serviceability limit state (SLS)

$$E_d \leq C_d.$$

$E_d$ : design value of the action

$R_d$ : design value of the structural resistance for verification of the ultimate limit state

$C_d$ : design value of the structural resistance for verification of the serviceability limit state

The multi-wall sheets shall not be used for bracing the aluminium structure.

The multi-wall sheets shall not be walked on.

Assessment pertaining to fall-through protection is not included in this ETA.

#### B 1.2 Design values for actions, $E_d$

The action resulting from the dead weight of the multi-wall sheets may be neglected in the roof kit verifications. Live loads are not permitted.

The design values for the actions shall be determined in accordance with the applicable European specifications.

The actions  $E_k$  shall be increased through multiplication by the factors  $C_t$  in consideration of the action duration and based on load.

| Load action   | Duration of load action    | $C_t$ |
|---|----------------------------|-------|
| Wind  | very short                 | 1.00  |
| Snow as an extraordinary snow load (e.g. in the low-lying plains of northern Germany) | short: up to one week      | 1.15  |
| Snow  | medium: up to three months | 1.20  |

For the wind and temperature effects to be considered in the load case 'summer' the  $\psi$  coefficient defined in EN 1990<sup>1</sup> may be applied. In design situations where the wind is applied as the dominant variable action, the  $\psi$  coefficient may be considered in the design value of the structural resistance  $R_d$  (see Section B.1.3).

If the roof kit is installed with a substructure angle  $\alpha \leq 45^\circ$  in roofs with pitches  $\leq 20^\circ$  the negative wind pressure loads (wind suction loads) may be applied in simplified form as acting on the translucent roof kit area with a constant aerodynamic coefficient  $c_p$ .

$$w_e = q_p(z_e) \cdot c_p$$

The gust velocity pressure  $q_p(z_e)$  shall be taken from EN 1991-1-4<sup>2</sup>.

The coefficient  $c_p$  shall be selected in accordance with the roof position and type. For enclosed buildings in which the translucent roof kit is installed in the region H, I or N in accordance with Sections 7.2.3 to 7.2.7 of EN 1991-1-4:2010-12 the external pressure coefficient is  $c_{pe} = -0.7$ .

If the roof kit is installed on the ridge of a mono-gable roof or a hipped end roof in the region J or K in accordance with Section 7.2.5 or 7.2.6 of EN 1991-1-4:2010-12 with a roof pitch  $> 10^\circ$  the factor  $c_{pe} = -1.2$  applies for enclosed buildings and  $c_{p,net} = -2.0$  for freestanding roofs.

In case of conditions deviating from the specified conditions or use of translucent roof kit in region F, G, L or M in accordance with Sections 7.2.3 to 7.2.7 of EN 1991-1-4:2010-12 the verifications shall be done applying special loads (see Section 1.5 of EN 1991-1-4).

### B 1.3 Design values for structural resistance $R_d$ and $C_d$

The design values for structural resistance  $R_d$  and  $C_d$  result from the characteristic value of structural resistance  $R_k$  in consideration of the material safety factor  $\gamma_M$ , the factor taking into account the effects of media  $C_u$  and the temperature factor  $C_\theta$  as follows:

$$R_d = \frac{R_k}{\gamma_{MR} \cdot C_u \cdot C_\theta} \quad C_d = \frac{C_k}{\gamma_{MC} \cdot C_u \cdot C_\theta}$$

The following factors shall be applied:

|  |               |      |
|--|---------------|------|
| Factor taking into account the effects of media and ageing $C_u$ |               | 1.10 |
| Temperature factor $C_\theta$                                    | Summer (70°C) | 1.20 |
|  | Winter        | 1.00 |

The following material safety factors shall be applied as a function of the consequence class (CC) in accordance with EN 1990:

| Consequence class | Material safety factor $\gamma_{MR}$ | Material safety factor $\gamma_{MC}$ |
|-------------------|--------------------------------------|--------------------------------------|
| CC 1              | 1.25                                 | 1.09                                 |
| CC 2              | 1.30                                 | 1.13                                 |

In design situations where wind is considered to be the dominant variable action, the reduction in structural resistance due to temperature may be reduced by means of the  $\psi$  coefficient for the summer load case. For this design situation a reduction factor for temperature of  $C'_\theta = 1 + \psi \cdot (C_\theta - 1.0)$  may be applied.

The characteristic values for structural resistance  $R_k$  and  $C_k$  shall be taken from the tables in Annex B 2 for the given multi-wall sheets and direction of loading.

<sup>1</sup> EN 1990:2010-12 Eurocode: Basis of structural design; German version EN 1990 A1:2005 + A1:2005/AC:2010  
<sup>2</sup> EN 1991-1-4:2010-12 Eurocode 1: Actions on structures - Part 1-4: General actions - Wind actions

## B 2 Characteristic structural resistances of the covering

### Covering "PC 16" – Annexes A 4.1 – A 4.7

| Multi-wall sheet<br>in accordance<br>with Annex               | System | Radius<br>$R \geq 2,40\text{m}$<br>R [m] | $a_p$<br>[m] | Characteristic values of structural<br>resistance [kN/m <sup>2</sup> ] |       |             |       |
|---|--------|--|--------------|--|-------|-------------|-------|
|   |        |  |              | downward load  |       | uplift load |       |
|   |        |  |              | $R_k$  | $C_k$ | $R_k$       | $C_k$ |
| A 4.1<br>Exolon Multi UV<br>7/16-14                           | 1-span | 3,00                                     | 1,065        | 2,77   | 2,73  | 2,44        | 2,23  |
|   |        | 4,50                                     | 1,060        | 2,67   | 2,65  | 1,90        | 1,90  |
|   |        | 7,00                                     | 1,072        | 1,68   | 1,63  | 1,87        | 1,75  |
|   |        |  | 0,712        | 3,49   | 3,40  |             |       |
| A 4.2<br>Polcarb<br>16mm 6W                                   | 1-span | 3,00                                     | 1,065        | 2,77   | 2,73  | 2,38        | 2,24  |
|   |        | 4,50                                     | 1,060        | 2,67   | 2,65  | 1,86        | 1,86  |
|   |        | 7,00                                     | 1,072        | 1,64   | 1,62  | 1,91        | 1,79  |
|   |        |  | 0,712        | 3,49   | 3,40  |             |       |
| A 4.3<br>Polcarb<br>16mm 7W                                   | 1-span | 3,00                                     | 1,065        | 2,62   | 2,58  | 2,33        | 2,10  |
|   |        | 4,50                                     | 1,060        | 2,52   | 2,50  | 1,80        | 1,80  |
|   |        | 7,00                                     | 1,072        | 1,59   | 1,54  | 1,76        | 1,65  |
|   |        |  | 0,712        | 3,30   | 3,21  |             |       |
| A 4.4<br>Akyver Sun Type<br>16/7w-12 2600                     | 1-span | 3,00                                     | 1,065        | 2,77   | 2,73  | 1,75        | 1,75  |
|   |        | 4,50                                     | 1,060        | 2,67   | 2,65  | 1,39        | 1,39  |
|   |        | 7,00                                     | 1,072        | 1,68   | 1,62  | 1,91        | 1,74  |
|   |        |  | 0,712        | 3,49   | 3,40  |             |       |
| A 4.5<br>Makrolux Multiwall<br>LL 7W-16 2,6 kg/m <sup>2</sup> | 1-span | 3,00                                     | 1,065        | 2,66   | 2,62  | 1,96        | 1,96  |
|   |        | 4,50                                     | 1,060        | 2,56   | 2,54  | 1,55        | 1,55  |
|   |        | 7,00                                     | 1,072        | 1,61   | 1,56  | 1,83        | 1,72  |
|   |        |  | 0,712        | 3,35   | 3,26  |             |       |
| A 4.6<br>Lexan Thermoclear<br>Sheet<br>LT2UV165X26            | 1-span | 3,00                                     | 1,065        | 2,62   | 2,58  | 2,24        | 2,20  |
|   |        | 4,50                                     | 1,060        | 2,52   | 2,50  | 1,76        | 1,76  |
|   |        | 7,00                                     | 1,072        | 1,59   | 1,54  | 1,91        | 1,79  |
|   |        |  | 0,712        | 3,30   | 3,21  |             |       |
| A 4.7<br>Rodeca<br>Hohlkammerscheibe<br>PC 16-7               | 1-span | 3,00                                     | 1,065        | 2,29   | 2,29  | 1,57        | 1,57  |
|   |        | 4,50                                     | 1,060        | 2,59   | 2,59  | 1,25        | 1,25  |
|   |        | 7,00                                     | 1,072        | 1,22   | 1,22  | 1,79        | 1,63  |
|   |        |  | 0,712        | 2,64   | 2,64  |             |       |

**Covering "PC 16+16" – Annexes 2x (A 4.1 – A 4.7)**

| Multi-wall sheet<br>in accordance<br>with Annex                  | System | Radius<br>$R \geq 2,40\text{m}$<br>R [m] | $a_p$<br>[m] | Characteristic values of structural<br>resistance [kN/m <sup>2</sup> ] |       |             |       |
|--|--------|--|--------------|--|-------|-------------|-------|
|  |        |  |              | downward load  |       | uplift load |       |
|  |        |  |              | $R_k$  | $C_k$ | $R_k$       | $C_k$ |
| 2x A 4.1<br>Exolon Multi UV<br>7/16-14                           | 1-span | 3,00                                     | 1,065        | 2,77   | 2,73  | 2,44        | 2,23  |
|  |        | 4,50                                     | 1,060        | 2,67   | 2,65  | 1,90        | 1,90  |
|  |        | 7,00                                     | 1,072        | 1,68   | 1,63  | 1,87        | 1,75  |
|  |        |  | 0,712        | 3,49   | 3,40  |             |       |
| 2x A 4.2<br>Polycarb<br>16mm 6W                                  | 1-span | 3,00                                     | 1,065        | 2,77   | 2,73  | 2,38        | 2,24  |
|  |        | 4,50                                     | 1,060        | 2,67   | 2,65  | 1,86        | 1,86  |
|  |        | 7,00                                     | 1,072        | 1,64   | 1,62  | 1,91        | 1,79  |
|  |        |  | 0,712        | 3,49   | 3,40  |             |       |
| 2x A 4.3<br>Polycarb<br>16mm 7W                                  | 1-span | 3,00                                     | 1,065        | 2,62   | 2,58  | 2,33        | 2,10  |
|  |        | 4,50                                     | 1,060        | 2,52   | 2,50  | 1,80        | 1,80  |
|  |        | 7,00                                     | 1,072        | 1,59   | 1,54  | 1,76        | 1,65  |
|  |        |  | 0,712        | 3,30   | 3,21  |             |       |
| 2x A 4.4<br>Akyver Sun Type<br>16/7w-12 2600                     | 1-span | 3,00                                     | 1,065        | 2,77   | 2,73  | 1,75        | 1,75  |
|  |        | 4,50                                     | 1,060        | 2,67   | 2,65  | 1,39        | 1,39  |
|  |        | 7,00                                     | 1,072        | 1,68   | 1,62  | 1,91        | 1,74  |
|  |        |  | 0,712        | 3,49   | 3,40  |             |       |
| 2x A 4.5<br>Makrolux Multiwall<br>LL 7W-16 2,6 kg/m <sup>2</sup> | 1-span | 3,00                                     | 1,065        | 2,66   | 2,62  | 1,96        | 1,96  |
|  |        | 4,50                                     | 1,060        | 2,56   | 2,54  | 1,55        | 1,55  |
|  |        | 7,00                                     | 1,072        | 1,61   | 1,56  | 1,83        | 1,72  |
|  |        |  | 0,712        | 3,35   | 3,26  |             |       |
| 2x A 4.6<br>Lexan Thermoclear<br>Sheet<br>LT2UV165X26            | 1-span | 3,00                                     | 1,065        | 2,62   | 2,58  | 2,24        | 2,20  |
|  |        | 4,50                                     | 1,060        | 2,52   | 2,50  | 1,76        | 1,76  |
|  |        | 7,00                                     | 1,072        | 1,59   | 1,54  | 1,91        | 1,79  |
|  |        |  | 0,712        | 3,30   | 3,21  |             |       |
| 2x A 4.7<br>Rodeca<br>Hohlkammerscheibe<br>PC 16-7               | 1-span | 3,00                                     | 1,065        | 2,29   | 2,29  | 1,57        | 1,57  |
|  |        | 4,50                                     | 1,060        | 2,59   | 2,59  | 1,25        | 1,25  |
|  |        | 7,00                                     | 1,072        | 1,22   | 1,22  | 1,79        | 1,63  |
|  |        |  | 0,712        | 2,64   | 2,64  |             |       |

## Barrel Vault Skylight PC16 and PC16+ PC 16

## Annex C

### Provisions for installation, packaging, transport, storage, use, maintenance and repair

#### C 1 Installation

The fixing of the roof kit on the substructure is not the subject of this ETA. The stability shall be verified for the respective substructure in accordance with the valid European specifications.

Before the roof kit is installed, the dimensional stability of the substructure shall be checked. Particular care shall be taken to ensure that the substructure exhibits a rectangular footprint. The compliance of the existing substructure with the substructure applied during the planning and verification of its load-bearing capacity shall be checked visually.

The installation of the roof kit may only be performed by specialists who are specially trained for this purpose. The installation guidelines of the manufacturer shall be respected. The manufacturer of the roof kit shall inform the specialists that they may only carry out assembly and installation of the roof kit in accordance with his instructions and the provisions of the ETA. The hollow chambers of the multi-wall sheets may not be filled.

If the translucent roof kit can systematically come into contact with chemical substances, the resistance to these substances of the multi-wall sheets in particular shall be checked.

During installation, the multi-wall sheets are placed on the pre-installed bearing profiles and pushed into the impost profiles. Above each bearing profile, the PC sheets are saved against uplift loads by covering profiles.

The multiwall sheets are joined at the longitudinal edges over a bearing profile; the support width must be at least 29 mm both in the bearing profile and in the edge profile (Annex A 2.1 and A 2.2, sections A-A and B-B).

The maximum sheet width is 2100 mm. At the impost the multi-wall sheets shall be kept adjustable in accordance with the specifications given in Annex A 2.3, at least 24 mm.

Components connected to the side of the rooflight system, such as gable connections or head pieces, must not be friction-locked so as not to impede the deformation of the arches. Connection of the translucent roof kit to the substructure shall be carried out in accordance with the structural analysis. The translucent roof kit shall be installed and connected to the adjacent structure in a manner ensuring that no moisture can penetrate into it and avoiding thermal bridges. These details shall be evaluated on a case-by-case basis.

#### C 2 Packaging, transport and storage

The components of the roof kit shall be stored and transported in accordance with the manufacturer's specifications such that the components cannot be damaged. In particular, for multi-wall sheets made from polycarbonate it shall be ensured that only those surfaces with UV protective coatings are exposed to UV radiation. The packaging shall protect the material from moisture and weather effects whilst avoiding heat build-up inside the packaging. It is the responsibility of the manufacturer to ensure that this information is passed on to the people in charge.

### **C 3 Use, maintenance, repair**

The roof kit in installed condition is not a walk-on system. For installation purposes, the roof kit may be walked on by a single person using boards laid across the substructure (at least two bearing profiles) for support; the boards shall run perpendicular to the tensioning direction of the bearing profiles.

Within the scope of maintenance, the installed roof kit shall be visually inspected by a qualified expert once a year. The manufacturer shall be consulted if the PC multi-wall sheets exhibit surface cracks or damage or if they are strongly discoloured. The aluminium components of the roof kit shall be examined for pronounced corrosion within the scope of a visual inspection. Repair shall be arranged where necessary.

Only the components listed in the ETA may be used for replacement of components.

Cleaning agents shall be free of solvents and abrasives. Chemical and biological cleaning additives may only be used if they have been proven to be compatible with polycarbonate; otherwise only water and a soft cloth shall be used to clean the multi-wall sheets.