



SLOVENSKI STANDARD
SIST EN 14963:2007

01-marec-2007

Glavni delovi - Nastavci kontinuiranih krovova od plastike s i bez nastavaka -
Klasifikacija, zahtjevi i metode ispitivanja

Roof coverings - Continuous rooflights of plastics with or without upstands -
Classification, requirements and test methods

Dachdeckungen - Dachlichtbänder aus Kunststoff mit oder ohne Aufsetzkränzen -
Klassifizierung, Anforderungen und Prüfverfahren

Éléments de couverture - Lanterneaux continus en matière plastique avec et sans
costière - Classification, spécifications et méthodes d'essais

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Ta slovenski standard je istoveten z: EN 14963:2006

ICS:

91.060.20 Strehe Roofs

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English Version

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This European Standard was approved by CEN on 4 September 2006.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document (EN 14963:2006) has been prepared by Technical Committee CEN/TC 128 "Roof covering products for discontinuous laying and products for wall cladding", the secretariat of which is held by IBN/BIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2007, and conflicting national standards shall be withdrawn at the latest by July 2008.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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1 Scope

This European Standard specifies requirements for continuous rooflights made of plastic materials (e.g. GF-UP, PC, PMMA, PVC) with or without bearing profiles to be used with upstands made of e.g. GF-UP, PVC, steel, aluminium, wood or concrete, for laying in roofs, which serve the purpose of lighting by means of daylight and, possibly, of ventilating interior spaces by means of opening devices.

This European Standard applies to continuous rooflights without upstand and to continuous rooflights, where a single manufacturer provides all components of the rooflight with upstand, which are bought in a single purchase. Products covered by this European Standard may be supplied as continuous rooflights with and without upstand and rooflights intended to be used with an upstand, for which the upstand is specified, but not supplied.

It applies to continuous rooflights when mounted with an inclination δ in the longitudinal direction not more than 10° to the horizontal and not more than 10° in the transversal direction (see Figure 1):

a) with bearing profiles:

- symmetrical, angled, curved (see Figure 2) or flat (see Figure 3);
- constructed with bearing profiles parallel to the span and with a rectangular ground plan;

b) without bearing profiles:

- symmetrical, angled or curved with an α angle not more than 45° (measured to the horizontal at the line of fixing, see Figure 4);
- constructed with a span (width) lower than or equal 2,5 m and with a rectangular ground plan.

This European Standard applies to continuous rooflights, including barrel vault rooflights, with a rectangular ground plan of plastic glazing laying in roofs having in addition a minimum distance of $b/3$ (b = effective span of rooflights, corresponding to the light opening). The upstands may be self-supporting or non self-supporting.

The design of the upstand is not part of this European Standard. Upstands can be prefabricated or site fabricated. Prefabricated upstands are to be considered as part of the continuous rooflight. Site fabricated upstands are not covered by this European Standard.

This European Standard does not include calculation with regard to works, design requirements and installation techniques.

The possible additional functions of smoke and heat ventilation in case of fire, and/or roof access are outside the scope of this European Standard.

NOTE 1 Continuous rooflights outside of the scope of this European Standard will be covered by European Technical Approvals based on EOTA ETA-Guideline 010 "Self supporting translucent roof kits". Individual rooflights are covered by EN 1873.

NOTE 2 Guidelines for safety, application, use and maintenance of continuous rooflights are presented in Annex A.

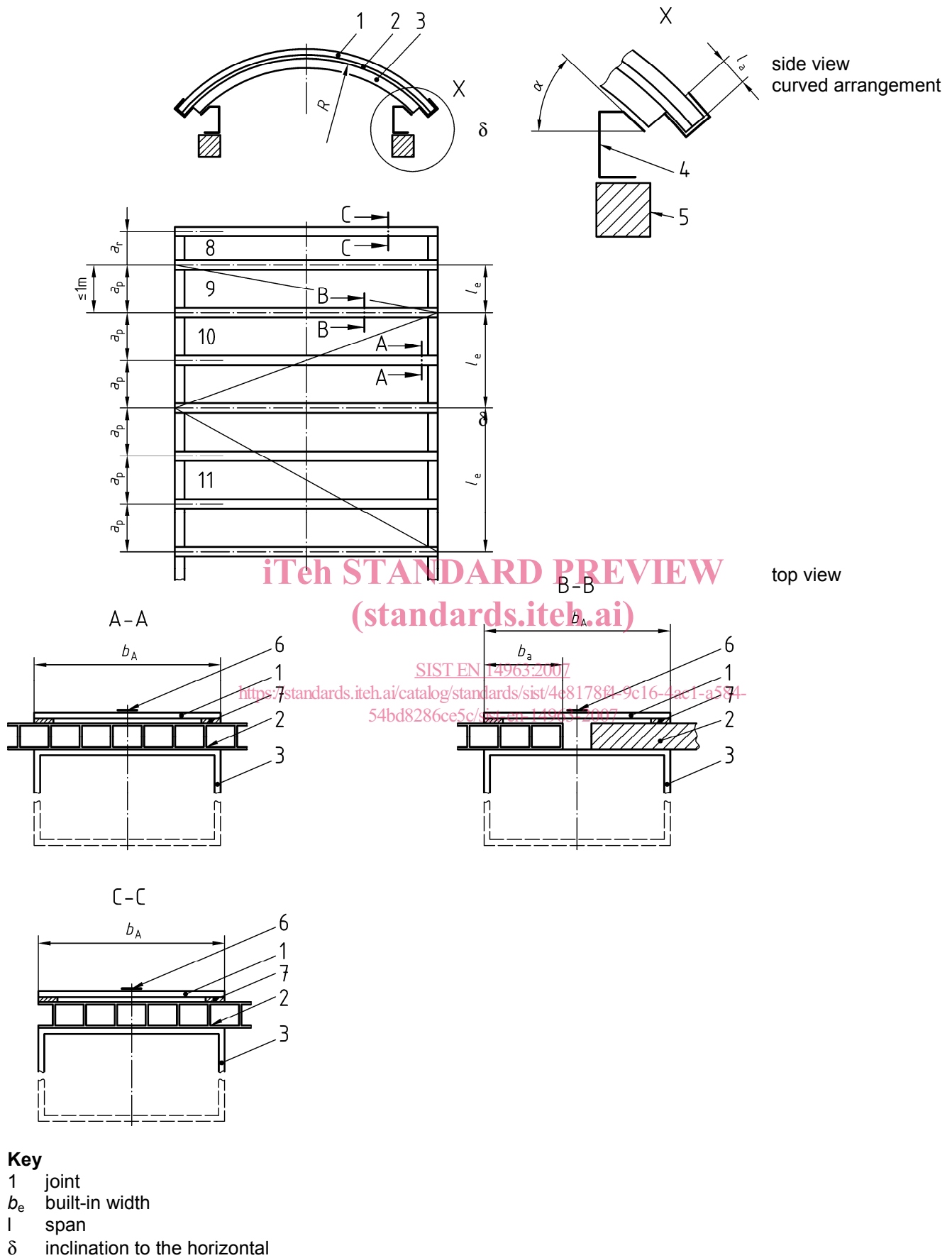
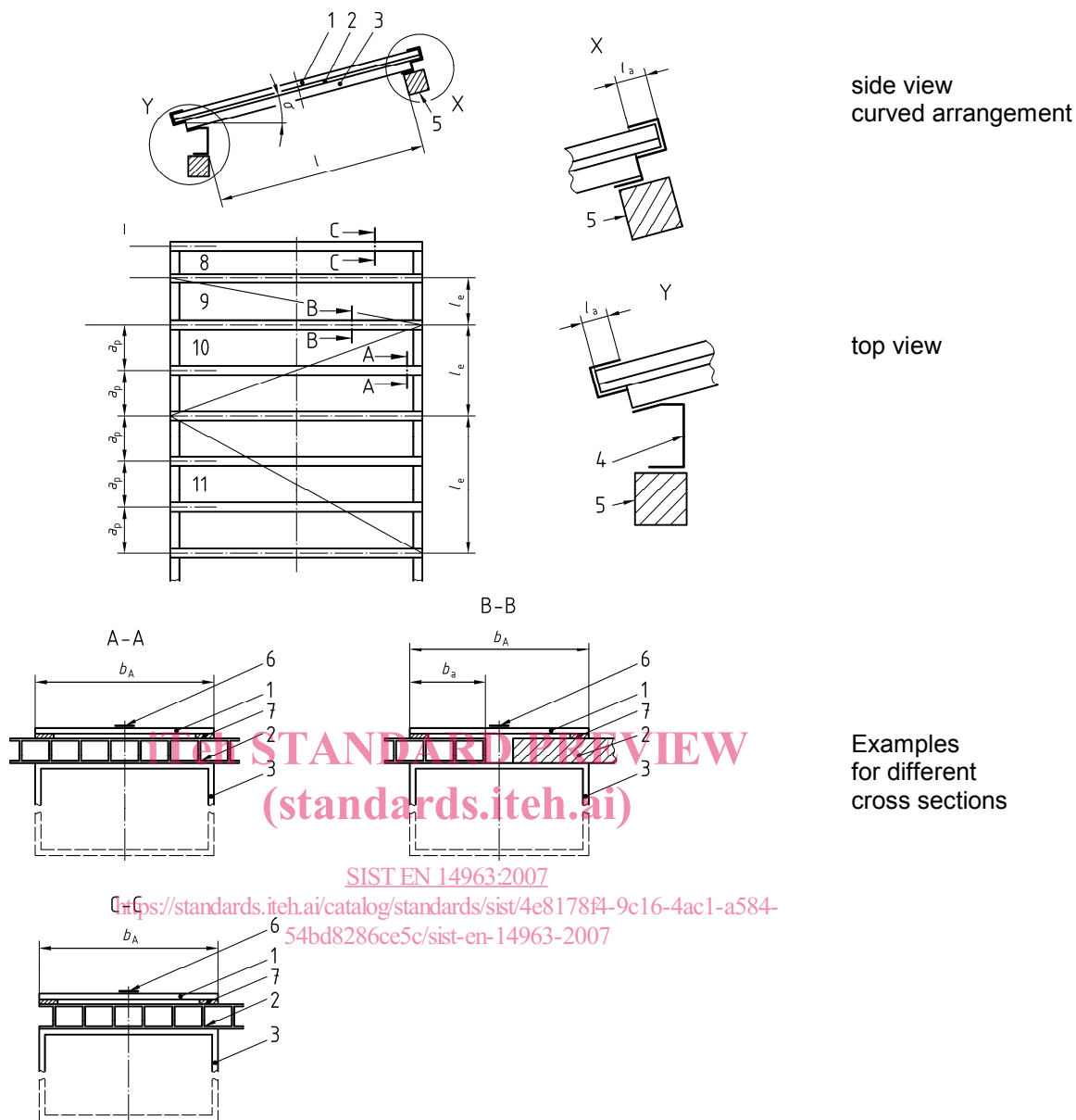


Figure 1 — Range of inclination of continuous rooflights without bearing profiles



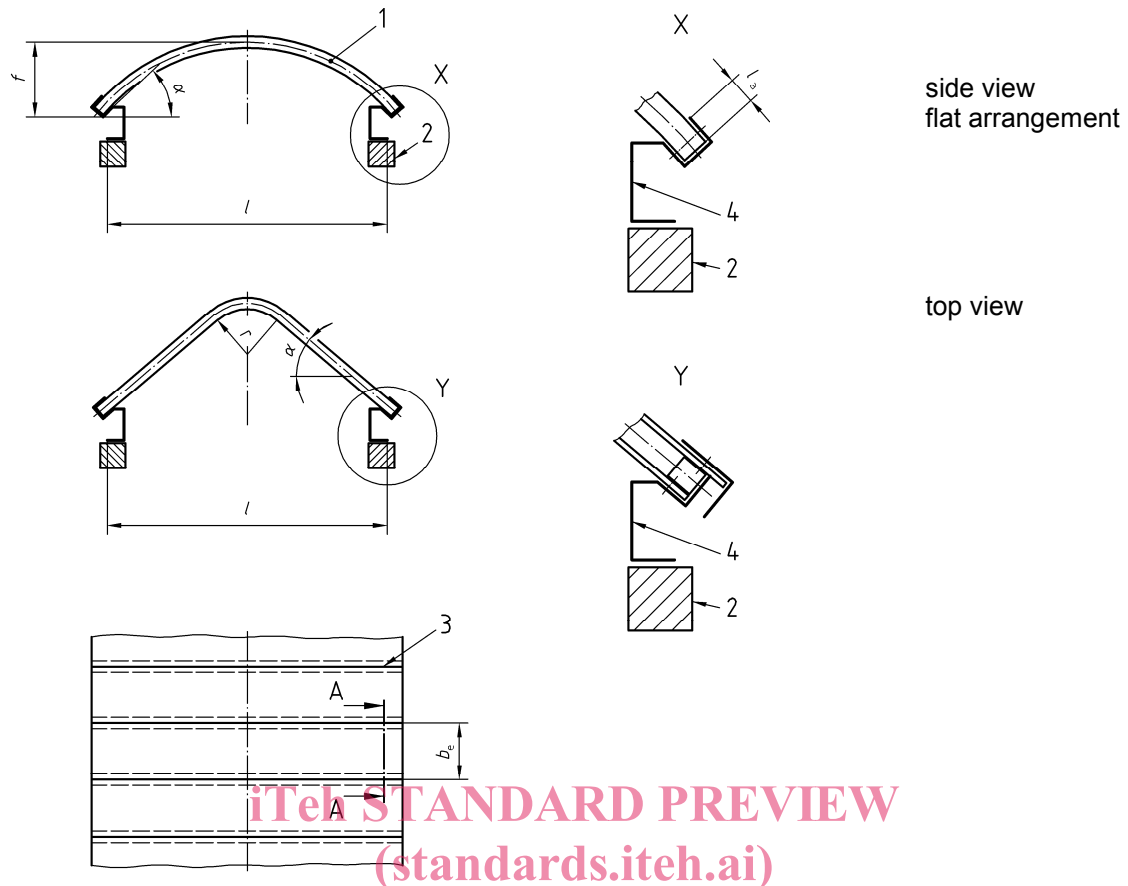
Key

- 1 covering profile
- 2 solid or multi-wall sheet
- 3 bearing profile
- 4 upstand
- 5 support
- 6 screw
- 7 sealing profile
- 8 marginal sheet
- 9 single span sheet
- 10 double span sheet
- 11 triple span sheet

- a inclination measured to the horizontal at the line of fixing
- a_p spacing of the bearing profiles
- a_r spacing of the bearing profiles for marginal sheets
- b_A width of the bearing profiles
- b_a supported width of the sheet
- l_a supported length of the sheet
- l_e sheet width
- R radius

NOTE If drilled profiles should be avoided, e.g. in PMMA-sheets, the covering profiles in curved systems can be alternatively fixed at their end (similar to a tie member).

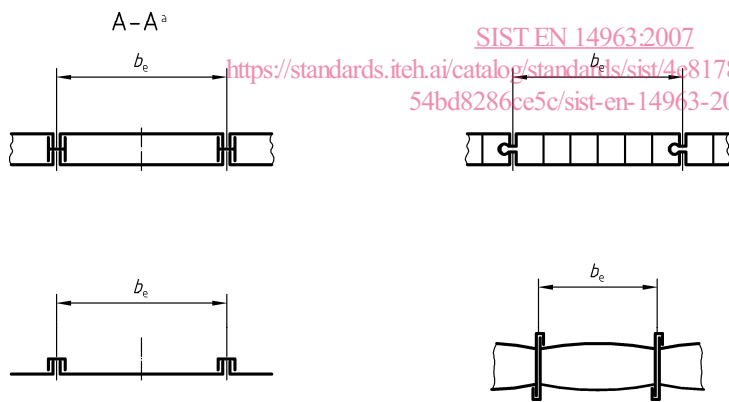
Figure 2 — Example for curved continuous rooflights with bearing profiles, for single, double and triple span systems



side view
flat arrangement

top view

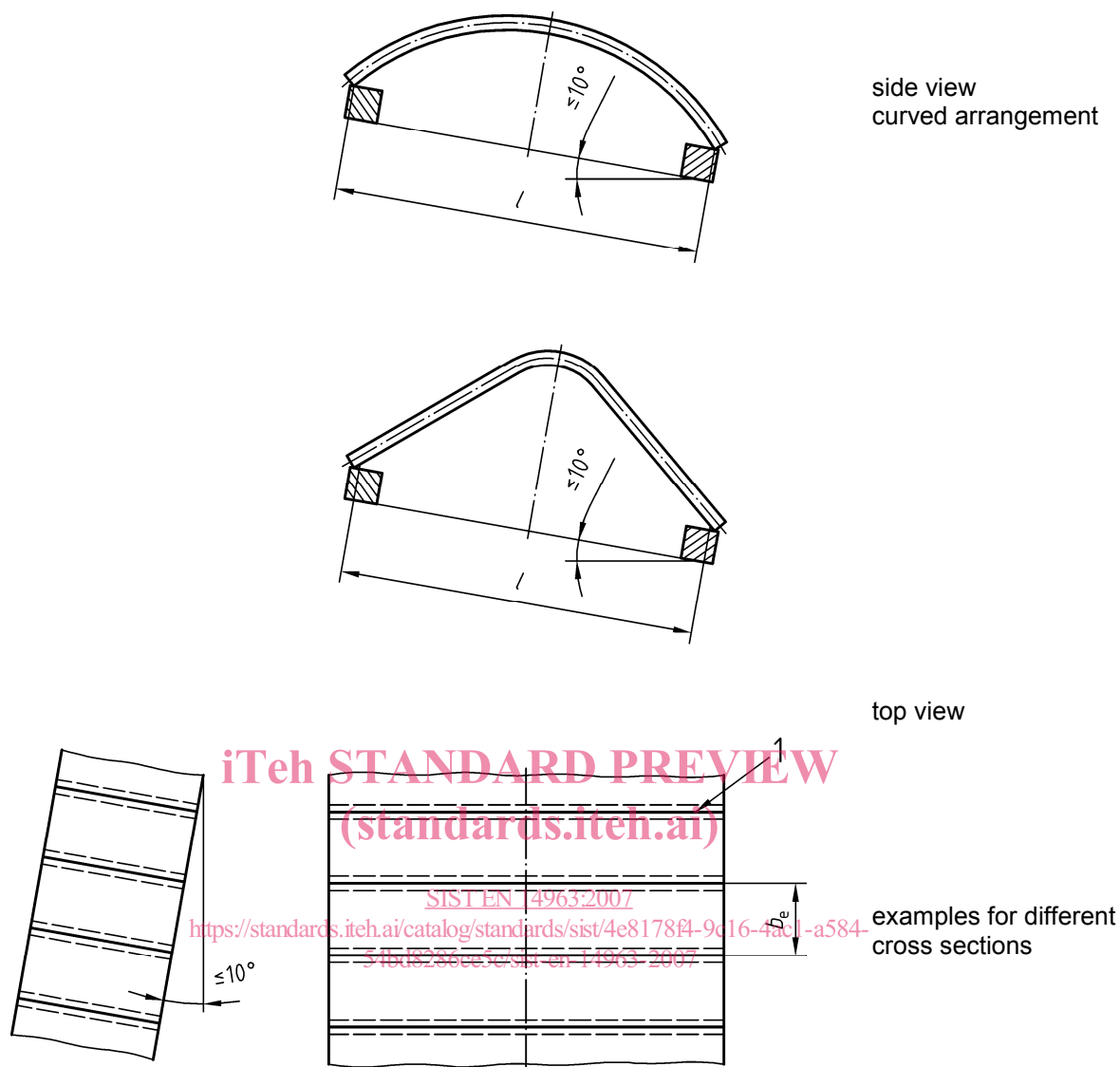
examples for different
cross sections



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- Key**
- | | | | |
|----|---------------------------|----------|--|
| 1 | covering profile | a_p | spacing of the bearing profiles |
| 2 | solid or multi-wall sheet | a_r | spacing of the bearing profiles for marginal sheet |
| 3 | bearing profile | b_A | width of the bearing profiles |
| 4 | upstand | b_a | supported width of the sheet |
| 5 | support | l_a | supported length of the sheet |
| 6 | screw | l_e | sheet width |
| 7 | sealing profile | σ | inclination to the horizontal |
| 8 | marginal sheet | | |
| 9 | single span sheet | | |
| 10 | double span sheet | | |
| 11 | triple span sheet | | |

Figure 3 — Example for flat continuous rooflights with bearing profiles, for single, double and triple span systems

**Key**

- 1 single or multi-layer sheets with joints parallel to the span
- 2 support
- 3 joint
- 4 upstand

- a inclination measured to the horizontal at the line of fixing
- b_e built-in width
- f height
- l span
- l_a supported length of the sheet
- r radius of fillet

Figure 4 — Examples for curved continuous rooflights without bearing profiles

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 410, *Glass in building — Determination of luminous and solar characteristics of glazing*

EN 596, *Timber structures — Test methods — Soft body impact test of timber framed walls*

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- EN 673, *Glass in building — Determination of thermal transmittance (U value) — Calculation method*
- EN 674, *Glass in building — Determination of thermal transmittance (U value) — Guarded hot plate method*
- EN 675, *Glass in building — Determination of thermal transmittance (U value) — Heat flow meter method*
- EN 1013-1, *Light transmitting profiled plastic sheeting for single skin roofing — Part 1: General requirements and test methods*
- EN 1013-3, *Light transmitting profiled plastic sheeting for single skin roofing — Part 3: Specific requirements and test methods for sheets of polyvinyl chloride (PVC)*
- EN 1013-5, *Light transmitting profiled plastic sheeting for single skin roofing — Part 5: Specific requirements, test methods and performance of polymethylmethacrylate (PMMA) sheets*
- EN 1026, *Windows and doors — Air permeability — Test method*
- EN 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using test data from reaction to fire tests*
- EN 13501-2, *Fire classification of construction products and building elements — Part 2: Classification using data from fire resistance tests, excluding ventilation services*
- EN 13501-5, *Fire classification of construction products and building elements — Part 5: Classification using data from external fire exposure to roof tests*
- EN ISO 140-3, *Acoustics — Measurement of sound insulation in buildings and of building elements — Part 3: Laboratory measurements of airborne sound insulation of building elements*
- EN ISO 178, *Plastics — Determination of flexural properties (ISO 178:2001)*
<https://standards.iteh.ai/catalog/standards/sist/4e8178f4-9c16-4ac1-a584-540000000000/iso-178-2001>
- EN ISO 527-1, *Plastics — Determination of tensile properties — Part 1: General principles (ISO 527-1:1993 including Corr 1:1994)*
<https://standards.iteh.ai/catalog/standards/sist/4e8178f4-9c16-4ac1-a584-540000000000/iso-527-1-1993>
- EN ISO 527-2, *Plastics — Determination of tensile properties — Part 2: Test conditions for moulding and extrusion plastics (ISO 527-2:1993 including Corr 1:1994)*
- EN ISO 717-1, *Acoustics — Rating of sound insulation in buildings and of building elements — Part 1: Airborne sound insulation (ISO 717-1:1996)*
- EN ISO 4892-1, *Plastics — Methods of exposure to laboratory light sources — Part 1: General guidance (ISO 4892-1:1999)*
- EN ISO 4892-2, *Plastics — Methods of exposure to laboratory light sources — Part 2: Xenon-arc lamps (ISO 4892-2:2006)*
- EN ISO 6946, *Building components and building elements — Thermal resistance and thermal transmittance - Calculation method (ISO 6946:1996)*
- EN ISO 10077-2, *Thermal performance of windows, doors and shutters — Calculation of thermal transmittance – Part 2: Numerical method for frames (ISO 10077-2:2003)*
- EN ISO 10211-1, *Thermal bridges in building construction — Heat flows and surface temperatures — Part 1: General calculation methods (ISO 10211-1:1995)*
- EN ISO 10211-2, *Thermal bridges in building construction — Calculation of heat flows and surface temperatures — Part 2: Linear thermal bridges (ISO 10211-2:2001)*

EN ISO 10456, *Building materials and products — Procedures for determining declared and design thermal values (ISO 10456:1999)*

EN ISO 12017:1996, *Plastics — Poly(methyl methacrylate) double- and triple-skin sheets — Test methods (ISO 12017:1995)*

EN ISO 12567-2, *Thermal performance of windows and doors — Determination of thermal transmittance by hot box method — Part 2: Roof windows and other projecting windows (ISO 12567-2:2005)*

EN ISO 13468-1, *Plastics — Determination of total luminous transmittance of transparent materials — Part 1: Single-beam instrument (ISO 13468-1:1996)*

EN ISO 13468-2, *Plastics — Determination of the total luminous transmittance of transparent materials — Part 2: Double-beam instrument (ISO 13468-2:1999)*

EN ISO 14125, *Fibre-reinforced plastic composites — Determination of flexural properties (ISO 14125:1998)*

EN ISO 14683, *Thermal bridges in building construction — Linear thermal transmittance — Simplified methods and default values (ISO 14683:1999)*

ISO 10526, *CIE standard illuminants for colorimetry*

ISO 10527, *CIE standard colorimetric observers*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

continuous plastic rooflight element

glazing element, coloured or not, which is manufactured to be self-supporting or non-self-supporting. It consists of one or several, translucent or transparent, flat or profiled skins made of solid or structured sheets, cold curved or not. It may require junction profiles for water tightness

3.2

self-supporting glazing element

element in accordance with 3.1 which does not require any bearing profile. It transmits the applied loads to the upstand

3.3

non-self-supporting glazing element

element in accordance with 3.1 which requires two or more bearing profiles

3.4

bearing profile

element which consists of single or several profiles on which the glazing elements are fitted and which transmits the applied loads to the upstand

3.5

gable end

end of a continuous rooflight, which can be vertical, curved or pitched

3.6

upstand

element which is single or multi-walled or composite with vertical and/or pitched walls; with or without thermal insulation, providing an area for the fastening of plastic rooflights and/or bearing profiles and for connection to

the substructure, the roof covering or the roof sealing. The upstand transmits into the substructure the loads acting upon the continuous rooflight elements. Upstands may include ventilation devices

3.7

material description

chemical composition of the product, geometry, mass per unit area and supplier's/manufacturer's name

3.8

ventilation panel

unit integrated into a continuous rooflight which enables its opening for ventilation purposes

3.9

accessories

connections, opening and locking devices and seals for the assembly of the elements according to 3.1 to 3.6 and 3.8

3.10

batch

quantity of material made in a single operation, or in the case of continuous production for a defined quantity, which need to be demonstrated by the producer to have a uniform composition

4 Symbols and abbreviations

C_c	Change in light transmittance expressed in %
ΔYI	Change in the yellowness index
g	Total solar energy transmittance (solar factor)
H_c	Energy applied during the ageing procedure
L_s	Light transmittance of a test piece
L_{sn}	Light transmittance of the n th test piece
τ_A	Light transmittance for the CIE-standard illuminant A expressed in %
τ_V	Light transmittance for the CIE-standard illuminant D ₆₅ expressed in %
τ_e	Solar direct transmittance expressed in %
M_s	Mean of R_1 and R_3
M_v	Light transmittance of the sample
R	Thermal resistance in m ² ·K/W
R_1 and R_3	Reading of galvanometer without any test piece
R_2	Reading of galvanometer with the test piece
R_w	Airborne sound index in dB
U	Heat transmittance W/(m ² ·K)
YI	Value of the yellowness index of an aged test piece

Y_{l_0}	Value of the yellowness index of an un-aged test piece
ΔE	Variation of E-modulus expressed in %
$\Delta\sigma$	Variation of strength expressed in %
$X_{CIE}, Y_{CIE}, Z_{CIE}$	Colourimetric coordinates

5 Requirements

5.1 Radiation transmittance

5.1.1 Degrees of total luminous transmittance (τ_V) and total solar energy transmittance (τ_e)

The degrees of light transmittance τ_V and direct radiant transmittance τ_e for solar radiation of each glazing element as defined in 3.1 in new continuous plastic rooflights shall be stated by the manufacturer when measured with a photometer according to 6.1.1 either on a flat specimen and/or a finished product. In factory production control the recorded τ_V value of total luminous transmittance shall be within ± 5 % of the stated value.

5.1.2 Solar factor (g)

The total solar energy transmittance g (solar factor) according to 6.1.2 of new continuous rooflights shall be stated by the manufacturer (see Annex C).

5.2 Durability

5.2.1 General

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Durability of the product is evaluated by measuring the variation of total luminous transmittance, yellowness index and mechanical properties after an ageing procedure of the rooflight material with the same energy level for the three following characteristics either on flat sheets and/or finished product. The ageing procedure shall be conducted in accordance with 6.2.

NOTE For the most common materials (GF-UP, PC, PMMA and PVC) types have been indicated in EN 1013-1, -2, -3, -4 and -5.

5.2.2 Variation of light transmittance τ_V and yellowness index $YI(\Delta Y)$

Continuous rooflights shall be classified into one of the nine types given in Table 1.