SLOVENSKI STANDARD

SIST EN 1873:2006

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Montaģna oprema za prekrivanje streh - Plastiļ ne svetlobne kupole ï Specifikacija za izdelek in preskusne metode

Prefabricated accessories for roofing - Individual roof lights of plastics - Product specification and test methods

Vorgefertigte Zubehörteile für Dacheindeckungen - Lichtkuppeln aus Kunststoff - Produktfestlegungen und Prüfverfahren

Accessoires préfabriqués pour couverture - Lanterneaux ponctuels en matiere plastique - Spécifications des produits et méthodes d'essais

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Accessoires préfabriqués pour couverture - Lanterneaux ponctuels en matière plastique - Spécifications des produits et méthodes d'essais

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COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This European Standard (EN 1873:2005) 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of an identical text or by endorsement, at the latest by June 2006, and conflicting national standards shall be withdrawn at the latest by June 2006.

This European Standard 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 European Standard.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This European Standard specifies requirements for roof lights made of plastic materials (e.g. GF-UP, PC, PMMA, PVC) with and without upstands made of e.g. GF-UP, PVC, steel, aluminium or wood for installation in roofs. These roof lights serve the purpose of lighting by means of daylight and of ventilating interior spaces by means of opening devices.

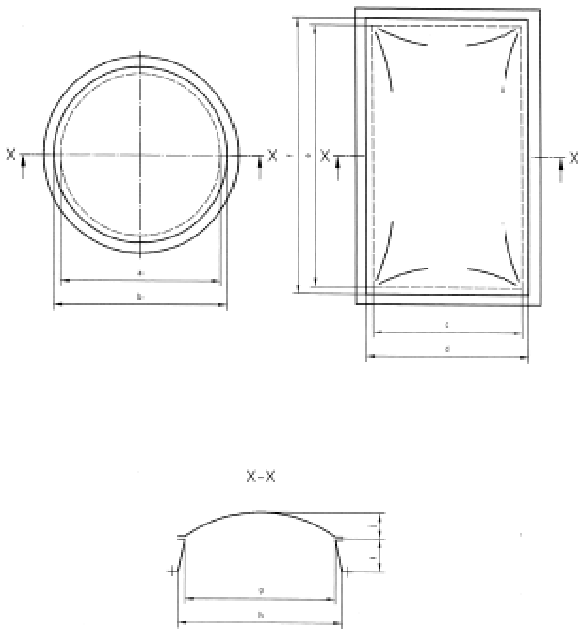
This European Standard applies to roof lights with a rectangular or circular ground plan (see Figures 1 and 2), with an opening span (width) or diameter not larger than 2,5 m and an opening length not larger than 3,0 m in roof pitches up to 25°. This document does not cover roof lights which contribute to the load-bearing or stiffness of the roof itself.

This European Standard applies to roof lights without upstand and to roof lights, where a single manufacturer provides all components of the roof light with upstand, which are bought in a single purchase.

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.

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

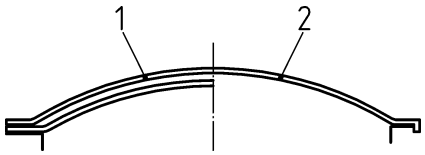
NOTE Guidelines for safety, application, use and maintenance of individual roof lights are presented in Annex A.



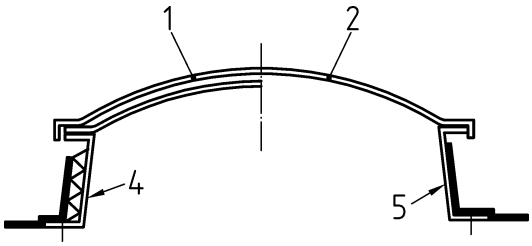
Key

a daylight diameter
b roof opening diameter
c daylight width
d roof opening width
e daylight length
f roof opening length
g daylight size
h roof opening size
i upstand height
j roof light height

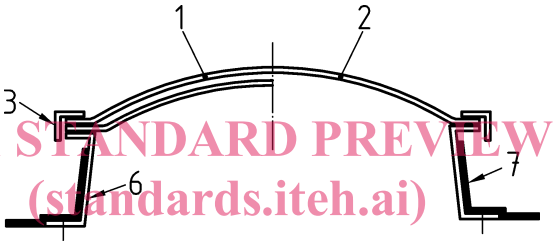
Figure 1 — Typical individual roof lights



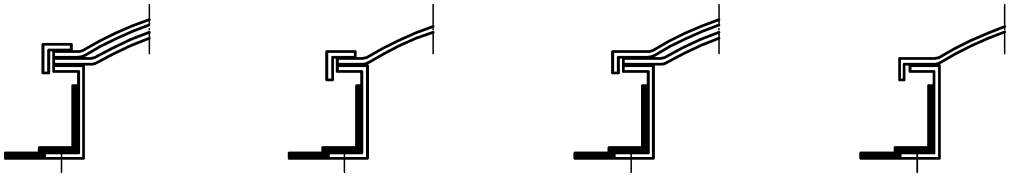
2a) Individual roof light without upstand



2b) Individual roof light with upstand



2c) Individual roof light with upstand and edge profile



with edge profile — without edge profile

2d) Vertical upstands

Key

1	multi skin	4	insulated upstand	7	roof finish
2	single skin	5	non insulated upstand		
3	edge profile	6	splayed upstand		

Figure 2 — Cross sections of typical individual roof lights and upstands

2 Normative references

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

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

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 1013-3, *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*

ENV 1187:2002, *Test methods for external fire exposure to roofs*

EN 12153, *Curtain walling – 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*

prEN 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 measurement of airborne sound insulation of building elements (ISO 140-3:1995)*

EN ISO 178, *Plastics – Determination of flexural properties (ISO 178:2001)*

EN ISO 527-1, *Plastics – Determination of tensile properties – Part 1: General principles (ISO 527-1:1993 including Corr 1:1994)*

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 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 sources (ISO 4892-2:1994)*

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)*

prEN 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/DIS 12576-2:2005)*

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

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

ISO 10526, *CIE standard illuminants for colorimetry*

ISO/IEC 10527:1991, *CIE standard colorimetric observers*

ISO 13468-2, *Plastics – Determination of the total luminous transmittance of transparent materials – Part 2: Double-beam instrument*

3 Terms and definitions

For the purposes of this European Standard, the following definitions apply.

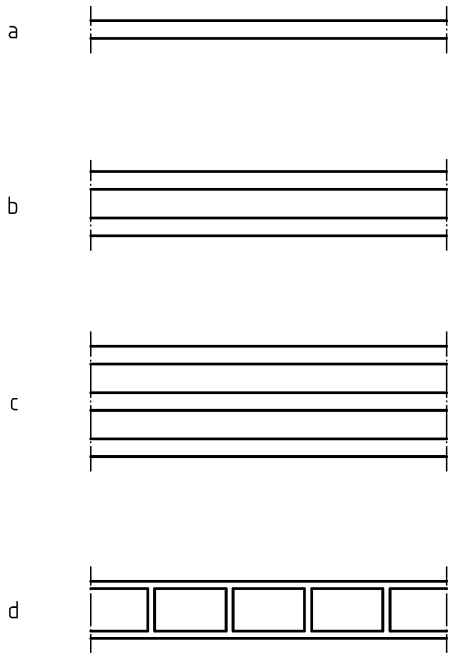
3.1
plastic roof light
building element which consists of one or several light transmitting (translucent or transparent) skins. The translucent part of the roof light is one single element (see Figure 3)

3.2
upstand
element which is single- or multi-walled or composite with vertical and/or pitched walls; with or without thermal insulation and having the two-fold purpose of providing an area for the fixture of plastic roof lights and for connection to the substructure, the roof covering or the roof sealing. The upstand transmits into the substructure the loads acting upon the plastic roof lights. Upstands may include ventilation devices

3.3
accessories
connections, opening and locking devices and seals for the assembly of the elements according to 3.1 and 3.2

3.4
plastic rooflight with upstand
building element which consists of at least the separate elements in accordance with 3.1, 3.2 and 3.3

3.5
batch
quantity of material made in a single operation, or in the case of continuous production for a defined quantity which shall be demonstrated by the producer to have a uniform composition



Key

a single skin, solid sheet
b double skin, solid sheet
c triple skin, solid sheet
d structured sheet

Figure 3 — Cross sections of typical plastic sheets

4 Symbols and abbreviations

C_c	Change in light transmission in %
ΔYI	Change in the yellowness index
H_c	Energy applied during ageing procedure
L_s	Light transmission of a test piece
L_{sn}	Light transmission of the *n*th test piece
τ_{D65}	Total luminous transmittance for the CIE-standard illuminant D_{65} in %
M_s	Average (see B.5.1) of R_1 and R_3
M_v	Light transmission of the sample
R	Thermal resistance in $m^2 \cdot K/W$
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 in W/(m²·K)

YI Value of the yellowness index of aged test piece

YI_0 Value of the yellowness index of unaged test piece

ΔE Variation of E-modulus in %

$\Delta\sigma$ Variation of strength in %

X_{CIE}, Y_{CIE}, Z_{CIE} Colourimetric coordinates

5 Requirements

5.1 Degree of total luminous transmittance (τ_{D65})

This characteristic shall be assessed when subject to regulatory requirements and may be assessed otherwise. The degree of total luminous transmittance of each skin and possible combinations of skins in new plastic roof lights shall be stated by the manufacturer when measured with a spectrophotometer according to 6.1 either on a flat specimen and/or a finished product. The recorded τ_{D65} value of the total luminous transmittance shall be within ± 5 % of the stated value.

NOTE Annex C presents information regarding the calculation of radiation related to energy consumption.

5.2 Durability

5.2.1 General

Durability of the product is evaluated by measuring the variation of total luminous transmittance, yellowness index and mechanical properties after ageing procedure of the roof light 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.

5.2.2 Variation of total luminous transmittance τ_{D65} and yellowness index YI (ΔYI)

Plastic roof lights are classified in 9 types as given in Table 1.