Deutsches Institut für Bautechnik

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Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments

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European Technical Assessment

ETA-20/1110 of 24 March 2021

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	Solatube Skylights DS: Brighten Up Series - Solatube 160DS Skylight Brighten Up Series - Solatube 290DS Skylight SolaMaster Series - Solatube 330DS Skylight SolaMaster Series - Solatube 750DS Skylight Sky Vault M74DS Daylighting System
Product family to which the construction product belongs	Tubular daylighting devices
Manufacturer	Solatube International, Inc. 2210 Oak Ridge Way Vista, CA 92081-8341 USA
Manufacturing plant	Solatube International, Inc. 2210 Oak Ridge Way Vista, CA 92081-8341 USA
This European Technical Assessment contains	11 pages including 5 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 220021-01-0402, Edition July 2015

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Specific part

1 Technical description of the product

Object of this European Technical Assessment (ETA) are the kits of Solatube Tubular Daylighting Devices:

– Brighten Up Series - Solatube 160DS Skylight
– Brighten Up Series - Solatube 290DS Skylight
– SolaMaster Series - Solatube 330DS Skylight
– SolaMaster Series - Solatube 750DS Skylight
– Sky Vault M74DS Daylighting System.

Solatube Tubular Daylighting Devices direct daylight from the roof via a reflecting light pipe, into a room. Every Tubular Daylighting Device consists of several elements:

– a light collector, which is a roof module with a transparent cover
– a rigid light pipe, which can be supplied with bends and telescopic features for extension. The rigid pipe is made of aluminium with a light-reflecting film
– a light diffuser kit, including insulating diffuser and ceiling trim. The light diffuser is made of transparent polymer.

The skylights are manufactured in a range of sizes:

– 160DS of 250 mm diameter light collector
– 290DS of 350 mm diameter light collector
– 330DS of 530 mm diameter light collector
– 750DS of 530 mm diameter light collector
– Sky Vault M74DS of 740 mm diameter light collector.

The kit also includes various accessories, such as tapes, roof flashing, fasteners, ventilation units etc. The components, accessories and product parts are listed in Annex 1.

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

The skylights are intended to transmit natural daylight into rooms traversing through both warm and cold roof spaces. They are not intended to have a load-bearing, load transferring or stiffening function.

The skylights are not intended to transmit natural daylight into refrigerated storage rooms and refrigerated storage buildings.

A sample of the system setup of the product is given in Annex 2.

3 Performance of the product and references to the methods used for its assessment

3.1 Safety in case of fire (BWR 2)

Characteristic	Method	Performance[1]
Reaction to fire	classified to EN13501-1	light collector (polycarbonate): C-s3,d0 light collector(acrylic): NPD light pipe: NPD Optview diffuser (polycarbonate): B-s1,d0 natural lens (PET): B-s1,d0 prismatic diffuser (polycarbonate): B-s2,d0 prismatic diffuser (acrylic): E
Resistance to fire	classified to EN13501-2	light collector: NPD light diffuser: NPD light pipe: NPD
External fire performance of roofs	classified to EN13501-5	light collector (polycarbonate): B_{ROOF}(t4) light collector (acrylic): NPD

3.2 Hygiene, health and the environment (BWR 3)

Characteristic	Method	Performance[1]
watertightness – flat roofs – sloped roofs	 EN 1873 EN 14351-1	 No leakage occurred NPD
Content, emission and/or realease of dangerous substances[2]	declaration[3]	NPD

3.3 Safety and accessibility in use (BWR 4)

Characteristic	Method	Performance[1]
upward load – flat roofs – sloped roofs	 EN 1873 EN 14351-1	 UL 3352 NPD
downward load – flat roofs – sloped roofs	 EN 1873	 DL 7182 NPD
resistance to impact	EN 1873	(polycarbonate) SB 1350 (acrylic) SB 1350

1 NPD: no performance determined
2 Regulation (EC) N° 1272/2008 of 16/12/2008, published: Official Journal of the EU N° L 353 of 31/12/2008, p 1
3 The manufacturer made a declaration that the product does not contain any dangerous substances in accordance with Regulation (EC) N° 1272/2008

3.4 Protection against noise (BWR 5)

Characteristic	Method	Performance[1]
Airborn sound insullation	rated in accordance with EN ISO 717-1	160DS: $D_{n,e,w}(C;C_{tr})$ = 64(-1;-5) dB 290DS: $D_{n,e,w}(C;C_{tr})$ = 62(-2;-4) dB 330DS-0: $D_{n,e,w}(C;C_{tr})$ = 53(0;-2) dB 330DS-C*: $D_{n,e,w}(C;C_{tr})$ = 48(0;-1) dB 750DS-0: $D_{n,e,w}(C;C_{tr})$ = 58(-1;-5) dB 750DS-C*: $D_{n,e,w}(C;C_{tr})$ = 52(-1;-2) dB Sky Vault M74DS: NPD

* fitted with transition box

3.5 Energy economy and heat retention (BWR 6)

characteristic	method	performance[1]
air permeability – flat roofs – sloped roofs	 EN 1873, clause 5.8 EN 14351-1	 - NPD - NPD
solar energy transmittance	EAD clause 2.2.10	160DS: g-value = 0,61 290DS: g-value = 0,62 330DS: g-value = 0,58 750DS: g-value = 0,46 Sky Vault M74DS: NPD
light transmittance of the assembled system	CIE 173, section 3	160DS: NPD 290DS: NPD 330DS: NPD 750DS: NPD Sky Vault M74DS: NPD
light properties of light collector, light pipe and light diffuser	EN 410	NPD
thermal transmittance of the assembled system	French Règles Th-Bât, Fascicule 3/5, § 2.2.7	NPD
thermal transmittance of the light diffuser	EN 673, EN ISO 10077-1, -2	NPD
loss in light due to bending of the light pipe	CIE 173, section 3	NPD
durability	EAD, clause 2.2.16	NPD

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

In accordance with the Decision of the European Commission N° 98/436/EC amended by Decision 2001/596/EC, the system of assessment and verification of the constancy of performance (AVCP) [see Annex V to Regulation (EU) N° 305/2011] is as follows:

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 at the Deutsches Institut für Bautechnik.

The manufavcturer must make a Declaration of Conformity, stating that the construction product referring to this ETA is in conformity with the provisions of this European Technical Assessment.

Issued in Berlin on 24 March 2021 by Deutsches Institut für Bautechnik

Otto Fechner
Head of Department

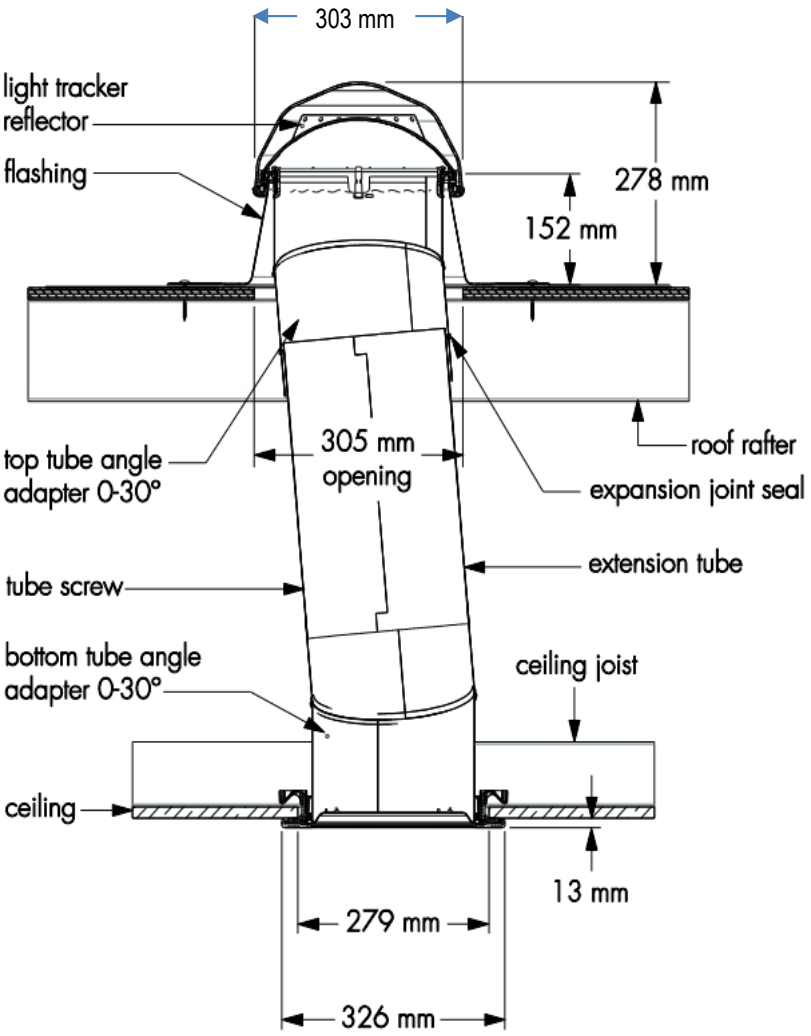
beglaubigt:
Dr.-Ing. Dierke

Deutsches Institut für Bautechnik DIBt

ANNEX 1

A 1 Example of the assembled kit "SOLATUBE Tubular Daylighting Device"

Figure 1: Solatube 160DS Skylight (assembled)



Full section

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ANNEX 2

A 2 Accessories for the tubular daylighting device kits

This annex applies to the following Brighten Up Series as described in the European Technical Assessment documents:

Brighten Up Series - Solatube 160DS Skylight,

Brighten Up Series - Solatube 290DS Skylight,

SolaMaster Series - Solatube 330DS Skylight,

SolaMaster Series - Solatube 750DS Skylight and

Sky Vault M74DS Daylighting System

A 2.1 Brighten Up Series - Solatube 160DS Skylight

Roof domes: size: 250 mm tube diameter

- transparent injection moulded polycarbonate with an ultraviolet (UV) stabiliser or acrylic dome

Reflector:

- reflector unit positioned at the back of the dome to reflect more low-level light into the device.

Roof flashing (tile roof and flat roof flashing):

- galvanized steel, powder coated
- corrugated aluminium sheet with zincalume, powder-coated rigid galvanized steel upstand.

Flashing insulator

Top tube assembly:

- reflective 300 mm long aluminium tubing with laminated coating incorporating 0° to 30° adjustable angle. The top of the tube has an acrylic or polycarbonate dome ring with snap-fit fixings.

Extension tube:

- reflective 406 mm and 619 mm long aluminium tubing laminated coating, incorporating slots.
- 0° to 90° angle section, 580 mm long aluminium tubing with laminated coating incorporating 3x 0° to 30° variable joints, which can be arranged to provide a variety of angels and configurations.

Bottom tube assembly:

- reflective 305 mm long aluminium tubing with laminated coating incorporating 0° to 30° adjustable angle. The base unit is fitted with a white acrylic ceiling ring and integral twist-lock ceiling-fixing mechanism.

Double glazed ceiling diffuser (Optiview and Vusion diffusers and Just Frost decorative fixture)

Lower glazing:

- injection-moulded, acrylic dress ring and polycarbonate Fresnel lens or acrylic lens.

Upper glazing:

- PET GAG (Polyester-Polyethylen Terephthalate, glycol modified) plastic with EPDM seal.

Fixings:

- dome screws;
- flashing screws;
- flashing fixings;
- drywall mounting screws;
- tube screws;
- expansion joint seal or self-adhesive nylon brush seal;
- aluminium joint-sealing tape,
- flashing sealant.

- 160DS dimmer
- 160DS ventilation unit
- 160DS electric light kit

A 2.2 Brighten Up Series - Solatube Model 290DS featuring

Roof domes: size: 350 mm tube diameter
- transparent injection moulded polycarbonate with an (UV) stabiliser or acrylic dome

Reflector:
- reflector unit positioned at the back of the dome to reflect more low-level light into the device.

Roof flashing (tile roof and flat roof flashing):
- galvanized steel, powder coated
- corrugated aluminium sheet with zincalume, powder-coated rigid galvanized steel upstand.

Flashing insulator

Top tube assembly:
- reflective 300 mm long aluminium tubing with laminated coating incorporating 0° to 30° adjustable angle. The top of the tube has an acrylic or polycarbonate dome ring with snap-fit fixings.

Extension tube:
- reflective 406 mm and 619 mm long aluminium tubing laminated coating, incorporating slots for parallel or taped assembly
- 0° to 90° angle section, 580 mm long aluminium tubing with laminated coating incorporating 3x 0° to 30° variable joints, which can be arranged to provide a variety of angels and configurations.

Bottom tube assembly:
- reflective 305 mm long aluminium tubing with laminated coating incorporating 0° to 30° adjustable angle. The base unit is fitted with a white acrylic ceiling ring with four integral twist-lock ceiling-fixing mechanisms.

Double glazed ceiling diffuser (Optiview and Vusion diffusers and Just Frost decorative fixture)

Lower glazing: - injection-moulded, acrylic dress ring and polycarbonate Fresnel lens or acrylic lens.

Fixings:
- dome screws;
- flashing screws;
- flashing fixings;
- drywall mounting screws;
- tube screws;
- expansion joint seal or self-adhesive nylon brush seal;
- aluminium joint-sealing tape,
- flashing sealant.

290DS dimmer

290DS electric light kit

A 2.3 SolaMaster Series - Solatube Model 330DS featuring

Roof domes: size: 530 mm tube diameter
- transparent injection moulded polycarbonate with an (UV) stabiliser or acrylic dome

Reflector:
- reflector unit positioned at the back of the dome to reflect more low-level light into the device.

Roof flashing (flat roof flashing and curb mount flashing):
- aluminium/steel alloy
- pressed galvanized steel zincalume, powder-coated.

Flashing insulator

Curb insulator:
- nominal 25 mm thick thermal insulation pad
- rated R-6 insulation, polyisocyanurate foam utilising a CFC-, HCFC- and HFH-free blowing agent.

Top tube assembly:
- reflective 390 mm long aluminium tubing with laminated coating, incorporating 0° to 30° adjustable angle and PVC dome ring with fixing points to accommodate the roof dome.

Extension tube:
- reflective 610 mm or 1220 mm long aluminium tubing laminated coating, incorporating slots for parallel or tapered assembly.

Bottom tube assembly:
- reflective 395 mm long aluminium tubing with laminated coating incorporating 0° to 30° adjustable angle. The base unit is fitted with a white acrylic ceiling ring.

Open ceiling diffuser (prismatic or prismatic and Optiview diffuser):
- injection-moulded, acrylic dress ring and polycarbonate Fresnel lens diffuser or acrylic diffuser
- tubes penetrating ceilings, using a round to square acrylic transition box with an extruded aluminium diffuser ring and a polycarbonate Fresnel lens diffuser or acrylic diffuser.

Fixings:
- dome screws;
- flashing screws;
- flashing fixings;
- drywall mounting screws;
- tube screws;
- expansion joint seal or self-adhesive nylon brush seal;
- aluminium joint-sealing tape,
- flashing sealant,
- suspension eyebolt.

- 330DS dimmer

A 2.4 SolaMaster Series - Solatube 750DS featuring

Roof domes: Size: 530 mm tube diameter
- outer dome glazing of transparent injection-moulded acrylic dome of 3,5 mm minimum thickness
- inner dome glazing of 3 mm acrylic or 3 mm polycarbonate

Roof flashing (flat roof and curb mount flashing):
- aluminium/steel alloy or
- pressed galvanized steel zincalume, powder-coated.

Flashing insulator

Curb insulator:
- nominal 25 mm thick thermal insulation pad
- Rated R-6 insulation, polyisocyanurate foam utilising a CFC-, HCFC- and HFH-free blowing agent.

Dome seal:
- adhesive backed weather-strip 16 mm high x 7 mm wide.

Top tube assembly:
- reflective 406 mm long aluminium tubing with laminated coating, incorporating a 0° to 30° adjustable angle that twists to the required angle. The top of the tube has a 2,3 mm thick injection-moulded PVC dome ring.

Extension tube:
- reflective 610 mm or 1220 mm long aluminium tubing with laminated coating, incorporating slots for parallel or tapered assembly.
- 0° to 90° angle section, aluminium tubing with laminated coating.

Bottom tube assembly:
- reflective 406 mm long aluminium tubing with laminated coating, incorporating 0° to 30° adjustable angle.

Diffuser assemblies for open ceilings (transition box, prismatic or prismatic and Optiview diffuser):
- injection-moulded, acrylic dress ring and polycarbonate Fresnel lens diffuser or acrylic diffuser;
- diffuser seal: open-cell foam, acrylic adhesive backed 19 mm wide x 3,2 mm thick.

Security bar: type B, stainless steel bar; 9,5 mm.

Wire suspension kit

Local dimmer control:
- butterfly baffle (daylight dimmer) featuring laminated coating provided with dimmer switch and cable.

Security kit: type SK rivets with nylon spacers to replace dome screws

750DS dimmer

A 2.5 Sky Vault M74DS Daylighting System featuring

Roof domes: size: 724 mm tube diameter

- transparent vacuum-formed polycarbonate dome of 3,2 mm minimum thickness, coated with an (UV) stabiliser
- dome seals: adhesive-backed close cell foam (6,3 mm high x 19 mm wide) and 1 mm thick co-polyester polyethylene terephthalate with glycol (PETG)

Roof flashing (curb mount flashing):

- flashing base supporting top of dome and top of tube.

Security guard:

- type SG, welded powder-coated steel or stainless-steel rods 6,4 mm diameter mounted with 203 mm maximum cross section. Assembly fastened with 3 mm diameter blind rivets in six locations to curb-cap assembly,

Curb cap flashing base:

- zincalume, thickness 0,7 ± 0,1 mm;
- insulation: thermal insulation pad nominal 25 mm thick -.
- rated R-6 insulation, polyisocyanurate foam utilizing a CFC-, HCFC- and HFH-free blowing agent;
- curb seal: includes a double bread of adhesive-backed closed-cell foam seal, 4,8 mm high x 9,5 mm wide.

Dome edge protection band:

- galvanized steel, nominal thickness 1 mm.

Tube collar:

- aluminium, 0,45 mm, featuring laminated coating.

Reflective tubes:

- reflective 610 mm and 1220 mm long aluminium tubing with laminated coating with tab-lock tube joint structural connection system.

Diffuser assemblies for open ceilings:

- acrylic 724 mm diameter Prismatic diffuser.

Fixings:

- non-corrosive metal fasteners including e.g. non-magnetic stainless steel, zinc- plated steel, aluminium or injection-moulded nylon.

Amplifier unit

M74 Dimmer

A 2.6 Ancillary items

- Fixings/fasteners
- Suspension wire
- Sealant
- Insulators
- Seals
- Security bars
- LED light fixture
- Sensors
- ventilation kits
- dimmer controls