

# TEXAS DEPARTMENT OF INSURANCE

Engineering Services Program / MC 103-3A 333 Guadalupe Street P.O. Box 149104 Austin, Texas 78714-9104  
Phone No. (512) 322-2212 Fax No. (512) 463-6693

---

## PRODUCT EVALUATION SK-19

Effective August 1, 2013

The following product has been evaluated for compliance with the wind loads specified in the **International Residential Code (IRC)** and the **International Building Code (IBC)**. This product shall be subject to reevaluation **December 2014**.

This product evaluation is not an endorsement of this product or a recommendation that this product be used. The Texas Department of Insurance has not authorized the use of any information contained in the product evaluation for advertising, or other commercial or promotional purpose.

This product evaluation is intended for use by those individuals who are following the design wind load criteria in Chapter 3 of the IRC and Section 1609 of the IBC. The design loads determined for the building or structure shall not exceed the design load rating specified for the products shown in the limitations section of this product evaluation. This product evaluation does not relieve a Texas licensed engineer of his responsibilities as outlined in the Texas Insurance Code, the Texas Administrative Code and the Texas Engineering Practice Act.

**Model 160 DS and Model 290 DS Daylighting System, Impact Resistant**, manufactured by

**Solatube International, Inc.**  
2210 Oak Ridge Way  
VISTA, CALIFORNIA 92081-8341  
Telephone: (760) 597-4400  
www.solatube.com

will be acceptable in designated catastrophe areas along the Texas Gulf Coast when installed in accordance with the manufacturer's installation instructions and this product evaluation.

## PRODUCT DESCRIPTION

The Model 160 DS and Model 290 DS are double dome tubular daylighting devices (TDD). The Model 160 DS has an approximate 10" diameter tube size. The Model 290 DS has an approximate 14" diameter tube size. The TDD consists of a light transmitting outer dome, a smooth inner dome, an adjustable reflective tube, a diffuser assembly, and a roof mounted support flashing with an integral curb.

### General Description:

Description	Label Rating
Model 160 DS / 290 DS Daylighting System	CW-PG70 (14") Dia – Type TDD ASTM E 1886 / ASTM E 1996 DP +/- 70 psf, 10" & 14" Diameter

### Product Dimensions:

	Model 160 DS	Model 290 DS
Dome Size	11 $\frac{7}{8}$ "	15 $\frac{7}{8}$ "
Dome Height	5 $\frac{7}{8}$ "	6 $\frac{15}{16}$ "
Dome Thickness	0.125"	0.125"
Dome Material	Inner Dome: Acrylic by Arkema (DR101) Outer Dome: Acrylic by Cyro (ZK5)	Inner Dome: Acrylic by Arkema (DR101) Outer Dome: Acrylic by Cyro (ZK5)

**Dome Ring:** A dome ring is utilized to connect the top of the reflective tubing to the curb of the flashing and to secure the domes. Both the inner dome and the outer dome are snapped onto the dome ring. The dome ring is attached to the flashing curb and to the top tube with four (4) No. 8 x 1" truss washer head screws and plastic spacers equally spaced on the perimeter. The screws are dipped in roofing sealant prior to installation. The outer circumference of the top reflective tube is sealed to the inner circumference of the dome ring with a rubber gasket. One  $\frac{1}{4}$ " diameter weep hole is located at the mid-span between the dome ring clips.

**Ceiling Ring / Diffuser Construction:** The closed ceiling diffuser assembly is constructed of an acrylic ceiling ring, an acrylic dress ring, and a single glazed diffuser. The diffuser is exterior glazed onto the dress ring using a plastic welding solvent. The dress ring is held in place using twelve (12) clips molded into the dress ring and clipped to the ceiling ring. The ceiling ring includes a dual durometer seal between the dress ring circumference and the extension tube. The ceiling ring is connected to the extension tube using four (4) equally spaced tabs on the inside perimeter which are snapped into slots located in the extension tube.

**Flashing Construction:** The flashing is made of aluminized formed steel and has conical sides to create a curb with an octagonal mounting flange  $25\frac{5}{16}$ " wide at the flats.

**Product Identification:** A certification program label (Keystone) will be affixed to the TDD. The certification program label includes the manufacturer's name; the product name: **Model 160 DS / 290 DS Daylighting System**; the CAR numbers (110-201; 110-110); performance characteristics; the approved inspection agency (Keystone); and the applicable standards: AAMA/WDMA/CSA 101/I.S.2/A440-08, ASTM E 1886-05, and ASTM E 1996-05.

## LIMITATIONS

### Design pressures:

System	Maximum Diameter	Design Pressures (psf)
1	14"	$\pm 70$

**Impact Resistance:** These TDD assemblies satisfy the Texas Department of Insurance's criteria for protection from windborne debris in both the **Inland I zone** and the **Seaward zone**. The TDD assemblies passed Missile Level D specified in ASTM E 1996-05. The TDD assemblies may be installed at any height on the structure as long as the design pressure rating for the assembly is not exceeded. These TDD assemblies will not need to be protected with an impact protective system.

**Acceptance of Smaller Assemblies:** TDD assemblies with dimensions equal to or smaller than those specified in this evaluation report are acceptable within the limitations specified in this report.

## INSTALLATION INSTRUCTIONS

**General Requirements:** The TDD shall be installed in accordance with the manufacturer's installation instructions and this product evaluation report. Detailed installation instructions and drawings are available from the product manufacturer.

**Installation:** The TDD shall be secured to a minimum nominal  $\frac{3}{4}$ " thick plywood roof deck. Center the roof flashing over the location where the TDD is to be installed. Mark the inside circumference onto the roof covering with a lumber crayon. Cut a hole  $\frac{1}{2}$ " outside of the marked line to expose the roof deck. Avoid cutting the roof framing members. Remove or loosen enough roof covering material along the

perimeter of the roof hole to allow for the installation of the flashing. Apply a continuous  $\frac{3}{8}$ " bead of roofing sealant to the underside of the flashing along the line of the screw holes. Turn the flashing upright and center over the roof hole. The flashing is attached to the plywood roof deck with eight (8) No. 10 x 2" screws through equally spaced pre-drilled holes in the flashing. The fasteners shall be long enough to penetrate into and through the roof deck material. The TDD is assembled as described in this evaluation report and in the manufacturer's installation instructions.

**Note:** The manufacturer's installation instructions shall be available on the job site during installation. All fasteners shall be corrosion resistant as specified in the International Residential Code (IRC); the International Building Code (IBC); and the Texas Revisions.