



## Product Evaluation Report

Date:	August 2, 2023
PTC Report No.:	2398-PER
Report Revision No.:	3
PTC Project No.:	422-0615
Product Mfg.:	Solatube International, Inc. 2210 Oak Ridge Way Vista, CA 92081
Product Name:	M74 DS Collector Raybender HD with Curb Flashing
Product Category:	Sky Lights
Product Sub-Category:	Products Introduced as a Result of New Technology
Compliance Method:	Product Approval Rule 61G20-3.005 (2)(b) – Product Evaluation Report by a Licensed Professional Engineer
Prepared By:	Robert J. Amoruso, P.E. Florida P.E. License Number 49752 PTC Product Design Group, LLC FBPE Certification of Authorization No. 25935

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Evaluated by:  
Robert J. Amoruso, P.E.  
Florida P.E. License Number 49752

# Project Scope

Evaluate Solatube M74 DS Collector Raybender HD with Curb Flashing for conformance to the 8th Edition (2023) Florida Building Code – Building and Residential Volumes including the High Velocity Hurricane Zone (HVHZ)

The engineering analysis (Reference 3.a) determines the anchorage of the product to the supporting substrate and the product evaluation report (this document) summarizes 8th Edition (2023) FBC compliance verification and appropriate Limitations and Conditions of Use.

## Description of Product – Installation Requirements

See Reference 1 for a description of the product, its installation and other pertinent data related to its approved use.

## Limitations and Conditions of Use

This product evaluation report contains or makes reference to specifications, technical details and installation details and/or methods that pertain to the proper use and/or installation of the product specified herein. Specific limitations and conditions of its use including but not limited to the following are contained in Reference 1 and are the subject of Product Approval in accordance with the State of Florida Product Approval Rule 61G20-3.

- Design Pressure Rating (psf)
- Installation substrate requirements.
- Installation anchor requirements.
- Installation restrictions.
- Product description.
- Product components.

# Code Conformance – Air, Water and Structural Performance, Impact & Cyclic Loading

Reference 2.a conducted testing to the following. See Reference 3.b for Code Conformance Evaluation to the 8th Edition (2023) FBC for these testing methods as applicable.

- Test Plan prepared by Tyler Westerling, P.E. in accordance with Section 1715.3 of the 2010 Florida Building Code titled "ATI Load Test Procedure for Wind Load Testing on a Solar Collecting Turret" signed and sealed under cover and located in Appendix A of ATI test report D8292.01-301-44

## DESIGN PRESSURE LIMITATIONS

From Reference 2.a (structural only) on M74 DS Daylight Collector:

- Load Applied on polycarbonate on half of circumference
  - 1450 lbs. (73.5) psf, including safety factor of 2.5
- Load applied on seam of metal and polycarbonate
  - 1375 lbs. (69.7 psf), including safety factor of 2.5
- Load Applied on metal half of circumference
  - 1550 lbs (78.6 psf), including safety factor of 2.5

# Code Conformance – Plastics

The 8th Edition (2023) Florida Building Code, Chapter 26 define requirements for Approved Plastics.

The table below summarizes BOM components and requisite test report/evaluation report/NOA references demonstrating compliance. The tables on the following pages summarize plastics testing results for applicable components. See Reference 3.b for Code Conformance Evaluation to the 8th Edition (2023) FBC for the testing standards mentioned below. BOM Item No. in parenthesis ().

BILL OF MATERIALS					Plastics Test Report No. (* ASTM E84 or D2843 required for Smoke Density, not both)				
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	MATERIAL	ASTM G155/D638	ASTM D635	ASTM D1929	ASTM E84*	ASTM D2843*
1	508005	OUTER DOME M74 DS	1	Plaskolite / TUFFAK SL	TUFFAK NOA	TUFFAK NOA	TUFFAK NOA	NA	TUFFAK NOA
17	504015	Dome Cylinder Plastic M74 DS	1	Plaskolite / TUFFAK SL	TUFFAK NOA	TUFFAK NOA	TUFFAK NOA	NA	TUFFAK NOA

(1) OUTER DOME M74 DS – Plaskolite / TUFFAK SL (17) Dome Cylinder Plastic M74 DS – Plaskolite / TUFFAK SL					
Attribute	Report Reference	ASTM	Result	Acceptance Criteria	Code Section
Outdoor Exposure	TUFFAK NOA	ASTM G155 and D638	1%	+/- 10% difference in tensile strength	2614.2
Rate of Burning	TUFFAK NOA	ASTM D635	CC1	CC1 or CC2	2606.4, 2614.2
Self-Ignition Temperature		ASTM D1929	1022°F (NOA)	≥ 650°F	
Smoke Density		ASTM D2843	57.7 % (NOA)	≤ 75	
<b>Conclusion: ACCEPTABLE</b> TUFFAK NOA confirms testing meets 8th Edition (2023) Florida Building Code – See Reference 3.b for Equivalency Evaluation.					

## Performance and Testing Standards

Reference 2.a conducted testing to the following. See Reference 3.b for Code Conformance Evaluation to the 8th Edition (2023) FBC for these testing methods as applicable.

- Test Plan prepared by Tyler Westerling, P.E. in accordance with Section 1715.3 of the 2010 Florida Building Code titled "ATI Load Test Procedure for Wind Load Testing on a Solar Collecting Turret" signed and sealed under cover and located in Appendix A of ATI test report D8292.01-301-44

Reference 2.b conducted plastics testing to the following standard(s) in which Plaskolite TUFFAK NOA confirms testing meets 8th Edition (2023) FBC based on this evaluator's review of the currently issued NOA.

1. ASTM D638, Standard Test Method for Tensile Properties of Plastics
2. ASTM D1929, Standard Test Method for Determining Ignition Temperature of Plastics.
3. ASTM D2843, Standard Test Method for Density of Smoke from the Burning or Decomposition of Plastics.

# References and Supporting Documents

## 1) Drawings

- a. M74 DS-O-C-FC-REG, signed and sealed by Robert J. Amoruso, P.E. on 10/19/15, *Solatube M74 DS Collector Raybender HD w/Curb Flashing*

## 2) Testing

- a. Performance Testing
  - i. Architectural Testing Inc. (Fresno, CA) Test Report No. D8292.01-301-44, dated 7/17/14, *Solatube HD Daylight Collection Device, M74 DS-O-C-FC*, signed and sealed by Tyler Westerling, P.E.
- b. Plastics Testing
  - i. Miami-Dade Product Control Notice of Acceptance (NOA)
    - 1. Plaskolite, LLC TUFFAK Polycarbonate Sheet (formally Covestro MAKROLON Polycarbonate Sheet) NOA can be found [here](http://www.miamidade.gov/building/pc-result_detail_app.asp?app_alias=100477). ([http://www.miamidade.gov/building/pc-result\\_detail\\_app.asp?app\\_alias=100477](http://www.miamidade.gov/building/pc-result_detail_app.asp?app_alias=100477)).

## 3) Reports

- a. Solatube M74 DS Collector Raybender HD w/Curb Flashing - Anchorage Engineering, signed and sealed by Robert J. Amoruso, P.E.
- b. PTC Report No. 2398-EER, Rev. 3, *Solatube M74 DS Collector Raybender HD w/Curb Flashing – Equivalency Evaluation to the 8th Edition (2023) FBC*, signed and sealed by Robert J. Amoruso, P.E.