

**OG-100 ICC-SRCC™ CERTIFIED SOLAR COLLECTOR # 2010037A**


Supplier:  
**Universal Solar Products, Inc.**  
 P.O. Box 2407  
 Toa Baja, PUERTO RICO 00951-2407 USA  
<http://www.universalsolar.com>  
 Reference Standard:  
**SRCC Standard 100-2006-09**

Brand: Universal Solar Products, Inc.  
 Model: USP-519  
 Collector Type: Glazed Flat Plate  
 Certification #: 2010037A  
 Original Certification: December 10, 2010  
 Renewal Expiration Date: February 28, 2021  
 Certifications must be renewed annually.

This solar collector has been evaluated and certified by the Solar Rating & Certification Corporation™ (ICC-SRCC™), an ISO/IEC 17065 accredited and EPA recognized Certification Body, in accordance with the SRCC OG-100 Certification Program, as defined in SRCC OG-100, Operating Guidelines and Minimum Standards for Certifying Solar Collectors. This award of certification is subject to all terms and conditions of the current OG-100 Program Agreement and the documents incorporated therein by reference. This document must be reproduced in its entirety.

**COLLECTOR THERMAL PERFORMANCE RATINGS**

Kilowatt-hours (thermal) Per Panel Per Day				Thousands of Btu Per Panel Per Day			
Climate -> Category (Ti-Ta)	High Radiation (6.3 kWh/m².day)	Medium Radiation (4.7 kWh/m².day)	Low Radiation (3.1 kWh/m².day)	Climate -> Category (Ti-Ta)	High Radiation (2000 Btu/ft².day)	Medium Radiation (1500 Btu/ft².day)	Low Radiation (1000 Btu/ft².day)
A (-5 °C)	6.4	4.9	3.3	A (-9 °F)	22.0	16.6	11.4
B (5 °C)	5.7	4.1	2.6	B (9 °F)	19.5	14.2	8.9
C (20 °C)	4.6	3.1	1.6	C (36 °F)	15.8	10.6	5.4
D (50 °C)	2.6	1.2	0.1	D (90 °F)	8.7	4.0	0.5
E (80 °C)	0.8	0.0	0.0	E (144 °F)	2.8	0.1	0.0

A- Pool Heating (Warm Climate) B- Pool Heating (Cool Climate) C- Water Heating (Warm Climate) D- Space & Water Heating (Cool Climate) E- Commercial Hot Water & Cooling

**TECHNICAL RESULTS**

Tested in accordance with:

ISO Efficiency Equation [NOTE: Based on gross area and (P)=Ti-Ta]

SI UNITS:	$\eta = 0.641 - 3.92620(P/G) - 0.01419(P^2/G)$			Y Intercept:	0.646	Slope:	-4.772 W/m².°C
IP UNITS:	$\eta = 0.641 - 0.69196(P/G) - 0.00139(P^2/G)$			Y Intercept:	0.646	Slope:	-0.841 Btu/hr.ft².°F
Incident Angle Modifier							
$\theta$	10°	20°	30°	40°	50°	60°	70°
K $\tau_\alpha$	1.00	0.99	0.97	0.93	0.88	0.77	0.54
Impact Safety Rating:							

Impact Safety Rating:

**COLLECTOR SPECIFICATIONS**

Gross Area:	1.685 m²	18.14 ft²	Dry Weight:	29.3 kg	64.5 lb
Net Aperture Area:	1.545 m²	16.63 ft²	Fluid Capacity:	1.9 liter	0.5 gal
REMARKS:					

*Shawn Martin*

Technical Director

Print Date: January 28, 2021 Page 1 of 4

 Please verify certification is active on the SRCC website [www.solar-rating.org](http://www.solar-rating.org).

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**ADDITIONAL INFORMATION** ([click here to return to the rating page](#))

**COLLECTOR TESTING INFORMATION**

<b>Test Lab:</b>	Pacific Energy Testing, LLC	<b>Test Date:</b>	October 21, 2010
<b>Test Report Number:</b>	07-2010-001	<b>Test Location:</b>	
<b>Test Fluid:</b>	Water		
<b>Test Mass Flow Rate:</b>	0.0178 kg/(s m²)	13.13 lb/(hr ft²)	<b>Test Pressure:</b> 1103 kPa 160 psi

**SOLAR COLLECTOR CONSTRUCTION DETAILS**

<b>Gross Length:</b>	1.937 m	<b>Gross Width:</b>	0.870 m	<b>Gross Depth:</b>	89.000 mm
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**COLLECTOR MATERIALS**

<b>Outer Cover:</b>	Glass sheet	<b>Enclosure back:</b>	Aluminum	<b>Back Insulation:</b>	Foam, None
<b>Inner Cover:</b>	None	<b>Enclosure side:</b>	Aluminum	<b>Side Insulation:</b>	Foam, None
<b>Absorber Description:</b>		<b>Flow Pattern:</b>			
<b>Riser Tube:</b>	Copper	<b>Fin:</b>			
<b>Absorber Coating:</b>	Selective	<b>Tube to fin connection</b>			

GLAZING	Outer Cover	Inner Cover
<b>Material:</b>	Glass sheet	None
<b>Surface Characteristics:</b>		
<b>Thickness:</b>	3.2 mm	N/A
<b>Transmissivity:</b>		
<b>Length:</b>	1.930 m	
<b>Width:</b>	0.864 m	
<b>Tube Glazing to Header Enclosure Seal:</b>	Silicone bead	

<b>ABSORBER:</b>	<b>Absorber Coating:</b>	Selective
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<b>Header Material:</b>		<b>Header OD:</b>		<b>Header Wall:</b>	
<b>Riser Tube Material:</b>	Copper	<b>Riser Tube OD:</b>		<b>Riser Tube Wall Thickness:</b>	
<b>Fin Material:</b>		<b>Fin Thickness:</b>	0.20 mm		

<b>Flow Pattern:</b>					
<b>Number of Riser Tubes:</b>	7	<b>Tube Spacing:</b>		<b>Number of times each riser crosses the absorber:</b>	7
<b>Length of Flow Path:</b>	1.77 m	<b>Riser to Fin/Plate Bond:</b>			

<b>INSULATION:</b>					
Location	Type	Thickness	Location	Type	Thickness
<b>Back – Top Layer:</b>	Foam		<b>Sides – Inner Layer:</b>	Foam	
<b>Back – Bottom Layer:</b>	None		<b>Sides – Outer Layer:</b>	None	
<b>Enclosure Fastening Methods:</b>		Rivets			

<b>Power Output per Collector(W)</b> [ Ti-Ta, G = 1000 W/m² ]				
0	10	30	50	70

<b>PRESSURE DROP</b>				
Flow	ΔP		Flow	ΔP
ml/s	Pa		gpm	in H <sub>2</sub> O
20			0.32	
50			0.79	
80			1.27	





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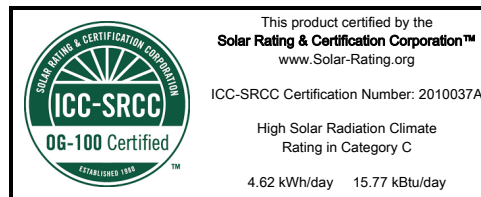
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### ICC-SRCC OG-100 Certification Label

The collectors listed in this certification must display the label below.

The certification label must be permanently affixed to each collector in accordance with SRCC OG-100 program requirements.



Print Date: January 28, 2021 Page 4 of 4

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