


<p align="center">SOLAR COLLECTOR CERTIFICATION AND RATING</p>  <p align="center">SRCC OG-100</p>	<p align="center"><u>CERTIFIED SOLAR COLLECTOR(S)</u></p> <p>SUPPLIER: Solar Panels Plus 533 Byron Street Suite E Chesapeake, VA 23320</p> <p>MODEL: Solar Panels Plus SPP-410 COLLECTOR TYPE: Unglazed Flat-Plate CERTIFICATION #: 100-2008-023A</p>
--	--

ALL SIZES OF THIS COLLECTOR MODEL ARE CERTIFIED.

COLLECTOR THERMAL PERFORMANCE RATING							
Megajoules Per Square Meter Per Day				Thousands of Btu Per Square Foot Per Day			
CATEGORY (Ti-Ta)	CLEAR DAY 23 MJ/m ² ·d	MILDLY CLOUDY 17 MJ/m ² ·d	CLOUDY DAY 11 MJ/m ² ·d	CATEGORY (Ti-Ta)	CLEAR DAY 2000 Btu/ft ² ·d	MILDLY CLOUDY 1500 Btu/ft ² ·d	CLOUDY DAY 1000 Btu/ft ² ·d
A (-5 °C)	21.0	16.5	12.0	A (-9 °F)	1.8	1.4	1.1
B (5 °C)	14.5	10.1	5.7	B (9 °F)	1.3	0.9	0.5
C (20 °C)	6.8	2.9	0.2	C (36 °F)	0.6	0.3	0.0
D (50 °C)				D (90 °F)			
E (80 °C)				E (144 °F)			

A-Pool Heating (Warm Climate) B-Pool Heating (Cool Climate) C-Water Heating (Warm Climate) D-Water Heating (Cool Climate) E-Air Conditioning

Original Certification Date: July 28, 2008

TECHNICAL INFORMATION

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

					<u>Y Intercept</u>	<u>Slope</u>	
S I Units:	$\eta = 0.8230$	-16.3625	$(P)/I$	-0.0133	$(P)^2/I$	0.8240	-16.7256 W/m ² ·°C
I P Units:	$\eta = 0.8230$	-2.8835	$(P)/I$	-0.0013	$(P)^2/I$	0.8240	-2.9475 Btu/hr·ft ² ·°F

Incident Angle Modifier [(S) = 1/cos θ - 1, 0° ≤ θ ≤ 60°]

K_{ατ} =	1.0	-0.0111 (S)	-0.0604 (S) ²
K_{ατ} =	1.0	-0.07 (S)	(Linear Fit)

Model Tested: 100-2006-017A

Test Fluid: Water

Test Flow Rate: 39 ml/s-m² 0.06 gpm/ft²

TESTED COLLECTOR SPECIFICATIONS

Gross Area:	3.672 m ²	39.53 ft ²
Dry Weight:	11.1 kg	24 lb
Test Pressure:	365 kPa	53 psig

Fluid Capacity: 17.5 l 4.6 gal

COLLECTOR MATERIALS

Frame:	None
Absorber	Tube - Co-polymer plastic
Material:	Plate - Co-polymer plastic
Absorber Coating:	None
Insulation:	None

TESTED MODEL PRESSURE DROP

Flow		Δ P	
ml/s	gpm	Pa	in H ₂ O

REMARKS: Thermal performance tests were done indoors with a solar irradiance simulator.

March 2009

Certification must be renewed annually. For current status contact:

SOLAR RATING & CERTIFICATION CORPORATION

c/o FSEC ♦ 1679 Clearlake Road ♦ Cocoa, FL 32922 ♦ (321) 638-1537 ♦ Fax (321) 638-1010