

OG-100 ICC-SRCC™ CERTIFIED SOLAR COLLECTOR # 2007032B


Supplier:
SunEarth, Inc.
 8425 Almeria Avenue
 Fontana, CA 92335 USA
 www.sunearthinc.com
 Reference Standard:
SRCC Standard 100-2008-02

Brand: Empire
 Model: EP-21
 Collector Type: Glazed Flat Plate
 Certification #: 2007032B
 Original Certification: June 25, 2009
 Renewal Expiration Date: October 01, 2022
 Certifications must be renewed annually.

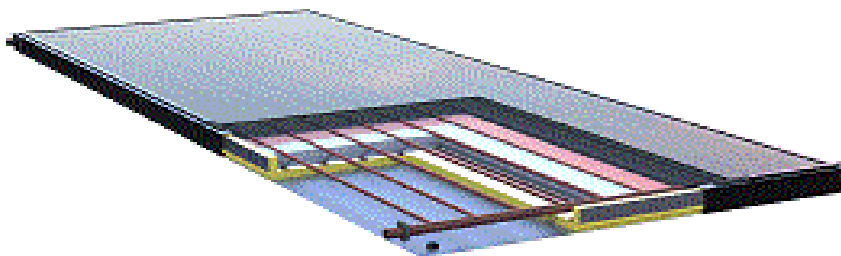
This solar collector has been evaluated and certified by the Solar Rating & Certification Corporation™ (ICC-SRCC™), an ISO/IEC 17065 accredited and EPA recognized Certification Body, in accordance with the SRCC OG-100 Certification Program, as defined in SRCC OG-100, Operating Guidelines and Minimum 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)	7.8	5.9	3.9	A (-9 °F)	26.7	20.0	13.4
B (5 °C)	7.3	5.4	3.4	B (9 °F)	25.0	18.4	11.7
C (20 °C)	6.3	4.4	2.5	C (36 °F)	21.4	14.9	8.4
D (50 °C)	3.6	1.9	0.4	D (90 °F)	12.4	6.4	1.3
E (80 °C)	0.9	0.0	0.0	E (144 °F)	3.0	0.0	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 9806:1994			
ISO Efficiency Equation [NOTE: Based on gross area and (P)=Ti-Ta]							
SI UNITS:	$\eta = 0.701 - 2.27770(P/G) - 0.04287(P^2/G)$			Y Intercept:	0.726	Slope:	-5.067 W/m².°C
IP UNITS:	$\eta = 0.701 - 0.40143(P/G) - 0.00419(P^2/G)$			Y Intercept:	0.726	Slope:	-0.893 Btu/hr.ft².°F
Incident Angle Modifier							
θ	10°	20°	30°	40°	50°	60°	70°
K α	1.00	0.98	0.96	0.91	0.84	0.71	0.44
Impact Safety Rating:							

COLLECTOR SPECIFICATIONS					
Gross Area:	1.961 m²	21.11 ft²	Dry Weight:	31.8 kg	70.1 lb
Net Aperture Area:	1.737 m²	18.70 ft²	Fluid Capacity:	2.7 liter	0.7 gal
REMARKS:					



Shawn Martin

Technical Director

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Please verify certification is active on the SRCC website www.solar-rating.org.
 © Solar Rating & Certification Corporation™ (ICC-SRCC) 3060 Saturn Street, Suite 100, Brea, CA 92821

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

COLLECTOR TESTING INFORMATION

Test Lab:	Bodycote	Test Date:	January 05, 2009
Test Report Number:	07-08-0532	Test Location:	
Test Fluid:	Water		
Test Mass Flow Rate:	0.0200 kg/(s m²)	14.75 lb/(hr ft²)	Test Pressure: 1103 kPa 160 psi

SOLAR COLLECTOR CONSTRUCTION DETAILS

Gross Length:	0.000 m	Gross Width:	0.000 m	Gross Depth:	0.000 mm
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COLLECTOR MATERIALS

Outer Cover:	Other	Enclosure back:	Aluminum	Back Insulation:	, Foam
Inner Cover:	None	Enclosure side:	Aluminum	Side Insulation:	Foam, None
Absorber Description:		Flow Pattern:			
Riser Tube:	Copper	Fin:			
Absorber Coating:	Moderately selective	Tube to fin connection			

GLAZING	Outer Cover	Inner Cover
Material:	Other	None
Surface Characteristics:		
Thickness:	0.0 mm	N/A
Transmissivity:		
Length:	0.000 m	
Width:	0.000 m	
Tube Glazing to Header Enclosure Seal:		

ABSORBER:	Absorber Coating:	Moderately selective
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Header Material:		Header OD:		Header Wall:	
Riser Tube Material:	Copper	Riser Tube OD:		Riser Tube Wall Thickness:	
Fin Material:		Fin Thickness:	0.00 mm		

Flow Pattern:					
Number of Riser Tubes:	0	Tube Spacing:		Number of times each riser crosses the absorber:	0
Length of Flow Path:	0.00 m	Riser to Fin/Plate Bond:			

INSULATION:					
Location	Type	Thickness	Location	Type	Thickness
Back – Top Layer:			Sides – Inner Layer:	Foam	
Back – Bottom Layer:	Foam		Sides – Outer Layer:	None	
Enclosure Fastening Methods:					

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

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



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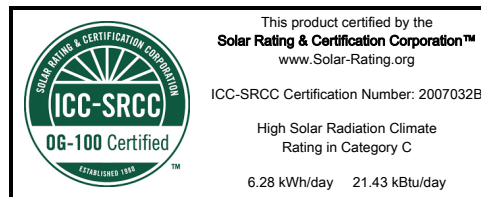
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ICC-SRCC OG-100 Certification Label

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.



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