



CERTIFIED SOLAR COLLECTOR

SUPPLIER:
Techno-Solis, Inc.
 301 20th Street South
 St. Petersburg, FL 33712 USA
 www.techno-solis.com
 In Accordance with:
SRCC Standard 100-1995-10

BRAND: Swimmaster
 MODEL: C20TS10
 COLLECTOR TYPE: Unglazed Flat Plate
 CERTIFICATION #: 2006017A
 Original Certification: February 28, 2008
 Expiration Date: December 11, 2014

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

COLLECTOR THERMAL PERFORMANCE RATING (Collector Tested per ASHRAE 96)							
Kilowatt-hours (thermal) Per m ² Per Day				Thousands of Btu Per ft ² Per Day			
Climate ->	High Radiation (6.3 kWh/m ² .day)	Medium Radiation (4.7 kWh/m ² .day)	Low Radiation (3.1 kWh/m ² .day)	Climate ->	High Radiation (2000 Btu/ft ² .day)	Medium Radiation (1500 Btu/ft ² .day)	Low Radiation (1000 Btu/ft ² .day)
Category (Ti-Ta)				Category (Ti-Ta)			
A (-5 °C)	5.8	4.6	3.3	A (-9 °F)	1.8	1.4	1.1
B (5 °C)	4.0	2.8	1.6	B (9 °F)	1.3	0.9	0.5
C (20 °C)	1.9	0.8	0.1	C (36 °F)	0.6	0.3	0.0
D (50 °C)	0.0	0.0	0.0	D (90 °F)	0.0	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

COLLECTOR SPECIFICATIONS					
Gross Area:	3.672 m ²	39.53 ft ²	Dry Weight:	11 kg	24 lb
Net Aperture Area:	3.672 m ²	39.53 ft ²	Fluid Capacity:	17.5 liter	4.6 gal
Absorber Area:	0.000 m ²	0.00 ft ²	Test Pressure:	365 kPa	53 psi

TECHNICAL INFORMATION		Tested in accordance with: ASHRAE 96
ISO Efficiency Equation [NOTE: Based on gross area and (P)=Ti-Ta]		
SI UNITS:	Wind speed (u) in m/s, Temperature (Ti – Ta) in °C, Radiation (G) in W/m ² $\eta = 0.823 - 16.36250(P/G) - 0.01331(P^2/G)$	
IP UNITS:	Wind speed (u) in mph, Temperature (Ti – Ta) in °F, Radiation (G) in Btu/hr-ft ² $\eta = 0.823 - 2.88377(P/G) - 0.00130(P^2/G)$	

Incident Angle Modifier								Test Fluid:	Water
θ	10	20	30	40	50	60	70	Test Mass Flow Rate:	0.0394 kg/(s m ²) 29.05 lb/(hr ft ²)
K_{ra}	1.00	1.00	1.00	0.99	0.98	0.93	0.76	Impact Safety Rating:	

REMARKS:All sizes of this collector are certified.

Jen Higgins

Technical Director





SOLAR RATING & CERTIFICATION CORPORATION

AWARD OF COLLECTOR CERTIFICATION

The solar collector listed below has been evaluated by the Solar Rating and Certification Corporation (SRCC) in accordance with SRCC Document OG-100, *Operating Guidelines and Minimum Standards for Certifying Solar Collectors*, and has been certified by the SRCC as specified in SRCC Standard 100-94, *Test Methods and Minimum Standards for Certifying Solar Collectors*. Certification and thermal performance ratings are based on the successful durability and performance testing of a sample unit where said tests have been conducted by an independent laboratory accredited by the SRCC.

Collector Certification Number: 100-2006017A

Date Certified: February 28, 2008

Expiration Date: **December** 11, 2014

Test Laboratory: **Bodycote**

Report Number: 02-08-9072-4

Report Date: **12/11/2002**

Product: Unglazed Flat Plate

Certified Model: **C20TS10**

Model Tested: **C20TS10**

Supplier: Techno-Solis, Inc.
301 20th Street South
St. Petersburg, FL 33712 USA
(727) 823-6766

Description: Co-polymer plastic absorber tube. Water was the fluid for performance tests. Gross Area: 3.67 m² (39.53 ft²). Aperture Area: 3.67 m² (39.53 ft²)

UNGLAZED COLLECTOR THERMAL PERFORMANCE RATING							
Megajoules Per Square Meter Per Day			Thousands of Btu Per Square Foot Per Day				
Category (Ti-Ta)	CLEAR	MILDLY CLOUDY	CLOUDY	Category (Ti-Ta)	CLEAR	MILDLY CLOUDY2	CLOUDY
	23 MJ/m ² -d	17 MJ/m ² -d	11 MJ/m ² -d		2 kBtu/ft ² -d	1.5 kBtu/ft ² -d	1 kBtu/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

Efficiency Equation [NOTE: (P) = Ti-Ta]

S I Units: $\eta = 0.823 - 16.3625 (P)/I - 0.0133 (P)^2/I$ **Y Intercept** 0.824 **Slope** -16.73 W/m²·°C

I P Units: $\eta = 0.823 - 2.8835 (P)/I - 0.0013 (P)^2/I$ 0.824 -2.948 Btu/hr-ft²·°F

Incident Angle Modifier [NOTE: (S) = 1/cos θ · I]

$K_{at} = 1.0 - 0.0111 (S) - 0.0604 (S)^2$ $K_{at} = 1.0 - 6.67 (S)$ (Linear Fit)

This award of certification is subject to all terms and conditions of the Program Agreement and the documents incorporated therein by reference. It must be renewed annually. Any change in collector design, materials, specifications, parts, or construction must be reported to SRCC for evaluation of continued certification


Technical Director

March 10, 2008



OG-100 SRCC COLLECTOR CERTIFICATION

