CERTIFIED SOLAR COLLECTOR

SUPPLIER:
Apricus Inc.
1150 S. Milliken Ave.
Ontario, CA 91761 USA
www.apricus.com

In Accordance with:
SRCC Standard 100-2013-01

BRAND:	Apricus
MODEL:	ETC-20
COLLECTOR TYPE:	Tubular
CERTIFICATION #:	10001911
Original Certification:	March 03, 2014
Expiration Date:	January 13, 2026

The solar collector listed below has been evaluated by the Solar Rating & Certification Corporation™ (SRCC™), an ISO/IEC 17065 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

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)	9.0	6.8	4.6	A (-9 °F)	30.9	23.3	15.7
B (5 °C)	8.7	6.5	4.3	B (9 °F)	29.8	22.2	14.6
C (20 °C)	8.2	5.9	3.7	C (36 °F)	27.9	20.3	12.7
D (50 °C)	6.9	4.7	2.5	D (90 °F)	23.4	16.0	8.5
E (80 °C)	5.3	3.1	1.2	E (144 °F)	18.2	10.7	4.0

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:	2.994 m²	32.23 ft²	**Dry Weight:**	64 kg	141 lb
Net Aperture Area:	1.906 m²	20.52 ft²	**Fluid Capacity:**	0.5 liter	0.1 gal
Absorber Area:	1.645 m²	17.71 ft²	**Test Pressure:**	1264 kPa	183 psi

TECHNICAL INFORMATION						
			Tested in accordance with: ISO 9806:1994			
ISO Efficiency Equation [NOTE: Based on gross area and (P)=Ti-Ta]						
SI UNITS:	η= 0.437 - 0.95850(P/G) - 0.00730(P²/G)		**Y Intercept:**	0.441	**Slope:**	-1.506 W/m².°C
IP UNITS:	η= 0.437 - 0.16893(P/G) - 0.00071(P²/G)		**Y Intercept:**	0.441	**Slope:**	-0.265 Btu/hr.ft².°F

Transverse Incident Angle Modifier								Longitudinal Incident Angle Modifier at 50°:	0.91
θ	10	20	30	40	50	60	70	**Test Fluid:**	Water
Kτα	1.02	1.07	1.17	1.30	1.43	1.43		**Test Mass Flow Rate:**	0.0200 kg/(s m²)	14.75 lb/(hr ft²)

REMARKS:

Jim Huggins
Technical Director

Please verify certification is active on the SRCC website.

www.solar-rating.org ♦ 400 High Point Drive, Suite 400 ♦ Cocoa, Florida 32926 ♦ (321) 213-6037 ♦ Fax (321) 821-0910

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ADDITIONAL INFORMATION (click here to return to the rating page)			
Test Lab:	Solar Water Heater Laboratory of TUV Rheinland (Shanghai) Co., Ltd.	Test Date:	January 13, 2014
Test Report Number:	154027353_SRCC_ETC-30_Report_Gao	Test Location:	outdoors

SOLAR COLLECTOR CONSTRUCTION DETAILS					
Header Enclosure:					
Gross Length:	2.004 m	**Gross Width:**	1.494 m	**Gross Depth:**	0.140 m
Tube Bank:					
Gross Length:	0.129 m	**Gross Width:**	1.494 m		

COLLECTOR MATERIALS					
Outer Cover:	Glass Tube	**Enclosure back:**	Aluminum	**Back Insulation:**	Vacuum,
Inner Cover:	Glass Tube	**Enclosure side:**	Aluminum	**Side Insulation:**	,
Absorber Description:	Glass Tubes		**Flow Pattern:**	Mixed	
Riser Tube:	Copper		**Fin:**	Glass	
Absorber Coating:	Selective		**Tube to fin connection**	Mechanical	

GLAZING	Outer Cover	Inner Cover
Material:	Glass Tube	Glass Tube
Surface Characteristics:	Smooth	Smooth
Thickness:	1.8 mm	1.6 mm
Transmissivity:	High (equal to or greater than 90%)	Low (below 87%)
Gross Tube Length (uninstalled):	1.828 m	
Diameter:	58.600 m	47.000 m
Tube Glazing to Header Enclosure Seal:	EPDM gasket	
Reflector Shape:		**Reflector Material:**

ABSORBER

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Header Material:	Copper	**Header OD:**	21.2 mm	**Header Wall:**	0.6 mm
Riser Tube Material:	Copper	**Riser Tube OD:**	8.0 mm	**Riser Tube Wall Thickness:**	1.0 mm
Fin Material:	Glass	**Fin Thickness:**	0.20 mm		

Flow Pattern:	Mixed	**Number of Flow Tubes / Heat Pipes:**	20	**Tube / Heat Pipe Spacing:**	70.0 mm
Number of absorber tubes:	1	**Flow Tube to Fin Bond:**	Mechanical	**Length of Flow Path:**	
Length of Flow Path:		**Riser to Fin/Plate Bond:**	Mechanical		

INSULATION:					
Location	**Type**	**Thickness**	**Location**	**Type**	**Thickness**
Back – Top Layer:	Vacuum	4.0 mm	**Sides – Inner Layer:**		
Back – Bottom Layer:			**Sides – Outer Layer:**		
Enclosure Fastening Methods:	Rivets		**Header Enclosure:**	Aluminum with plastic ends	

Power Output per Collector(W)
[Ti-Ta, G = 1000 W/m²]

0	10	30	50	70
1307	1276	1201	1109	1000

PRESSURE DROP

Flow	ΔP		Flow	ΔP
ml/s	Pa		gpm	in H_20
20	0		0.32	0.0
50	0		0.79	0.0
80	0		1.27	0.0

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