



Solar Thermal Flat Plate Collectors

SOLAR THERMAL FLAT PLATE COLLECTORS

A. O. Smith is proudly partnered with Chromagen™ Solar Water Solutions to provide solar thermal collectors. Backed by over 40 years of manufacturing and design expertise Chromagen™ solar thermal collectors are assembled using high quality materials and advanced techniques which results in a highly efficient, durable product. These top-of-the-line collectors reduce monthly utility costs and carbon emissions by harnessing the sun's energy to heat water. These collectors are energy efficient and versatile providing high performance even in extreme environments. Count on A. O. Smith for innovative products that provide hot water solutions for residential renewable-energy applications.

FEATURES

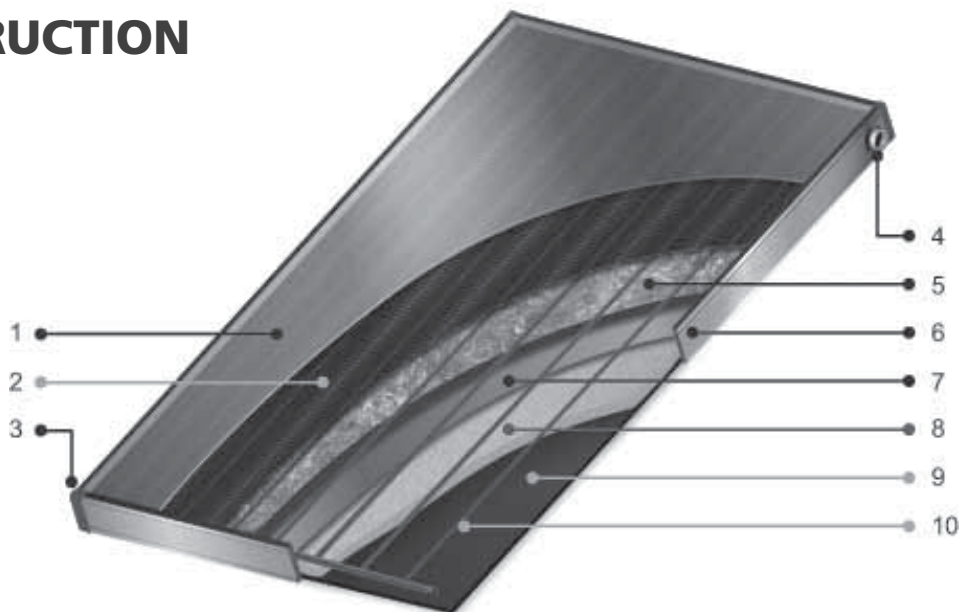
- SRCC certified OG-100
- Collectors available individually or in bulk
- Solid durable construction provides years of trouble-free service
- Glazing - single pane 1/8 inch (3.2mm) low-iron patterned and tempered glass provides excellent strength, anti-glare surface with 91% solar transmittance
- Type 6063 T5 black anodized extruded aluminum collector casing
- Interlocking collector casing construction - does not require fasteners that loosen over time allowing moisture infiltration
- Rugged nylon glass fiber moldings on all four corners protect collectors and adjacent property from damage during transport and installation
- Absorber plate – 1050 aluminum sheet with spectrally selective black coating provides more than 90% solar absorption and less than 40% IR emission for high performance even in cooler climates
- Parallel tube configuration ensures optimal flow and low pressure drop. Collectors may be installed in portrait or landscape orientation.
- Type M copper tube brazed construction - 5/8 inch risers and 1-1/8 inch manifolds
- Riser Tubes laser welded to absorber plate to ensure high efficiency and long life
- Three layers of insulation retain heat, prevent out-gassing and provide a cumulative thermal resistance value of R-8
 - Glass wool (0.8 inch)
 - Integrated aluminum foil barrier
 - Injected rigid polyurethane foam (0.9 inch).
- Durable black Polypropylene backsheet that resists punctures and damage during installation - resists corrosion for the life of the system.
- 10 year limited warranty. For complete information, consult written warranty or contact A. O. Smith.



**Eligible for a 30% federal
tax credit when installed
as part of a complete
Cirrex® solar
water heating system.**

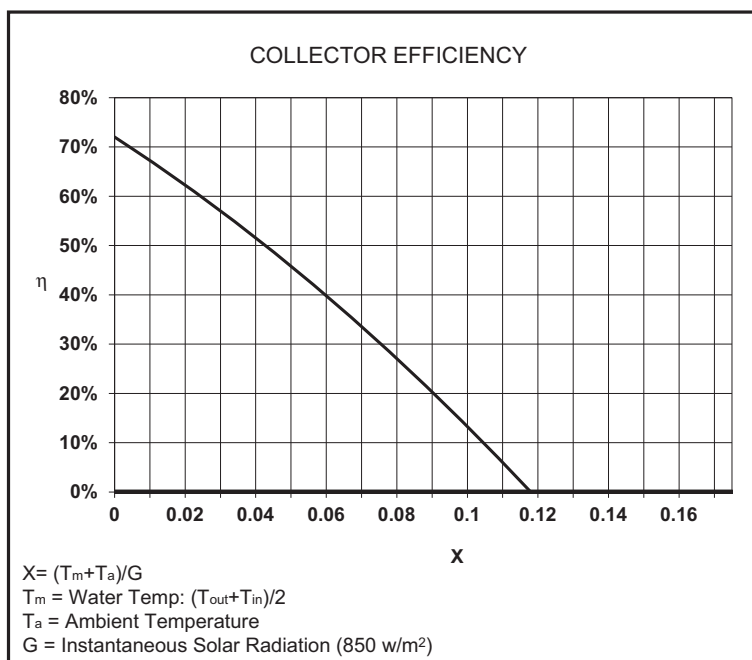
**For more information
visit www.hotwater.com**

CONSTRUCTION



1. Low-iron patterned and tempered glazing.
2. Aluminum absorber plate with selective black coating.
3. Protective nylon corner moldings.
4. One inch female copper sweat inlet/outlet connections.
5. Glass wool insulation layer.
6. Black anodized extruded aluminum casing - interlocking construction.
7. Integrated aluminum foil insulation barrier.
8. Injected rigid polyurethane foam.
9. Black Polypropylene backsheet.
10. Type M copper risers and manifolds – parallel tube configuration.

EFFICIENCY





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PERFORMANCE

SRCC COLLECTOR THERMAL PERFORMANCE RATING

Model CR-110-AP

Thousands of BTU Per Panel Per Day

CATEGORY (Ti-Ta)	CLEAR DAY	MILDLY CLOUDY	CLOUDY DAY
A (-9°F)	33.6	25.3	17.2
B (9°F)	30.2	21.9	13.8
C (36°F)	25.1	17.0	9.0
D (90°F)	15.5	8.1	1.7
E (144°F)	6.9	1.3	0.0

Model CR-130-AP

Thousands of BTU Per Panel Per Day

CATEGORY (Ti-Ta)	CLEAR DAY	MILDLY CLOUDY	CLOUDY DAY
A (-9°F)	42.6	32.1	21.8
B (9°F)	38.3	27.8	17.5
C (36°F)	31.9	21.6	11.4
D (90°F)	19.8	10.3	2.2
E (144°F)	8.9	1.7	0.0

Model CR-140-AP

Thousands of BTU Per Panel Per Day

CATEGORY (Ti-Ta)	CLEAR DAY	MILDLY CLOUDY	CLOUDY DAY
A (-9°F)	53.6	40.4	27.4
B (9°F)	48.2	35.0	22.0
C (36°F)	40.1	27.2	14.4
D (90°F)	24.9	13.1	2.9
E (144°F)	11.2	2.1	0.0

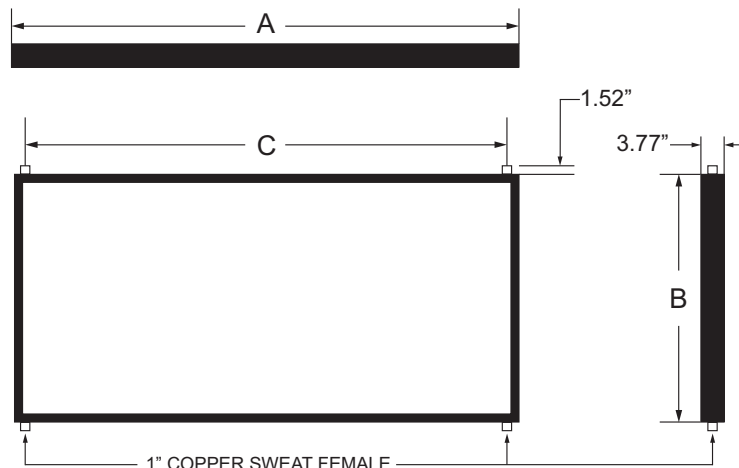
A-Pool Heating (Warm Climate) B-Pool Heating (Cool Climate) C-Water Heating (Warm Climate) D-Water Heating (Cool Climate) E-Air Conditioning

*COLLECTOR AREA		OPERATIONAL CHARACTERISTICS					
Square Feet	Square Meters	Solar Transmittance	Maximum Operating Pressure	Minimum Flow Rate (gpm)	Maximum Flow Rate (gpm)	Design Flow Rate (gpm)	Pressure Drop at Design Flow Rate (psi)
25.5	2.37	91%	145 psig	0.3	1.0	0.7	0.03
32	2.96	91%	145 psig	0.4	1.3	0.8	0.04
40	3.71	91%	145 psig	0.5	1.6	1.0	0.05

*Collector aperture area

DIMENSIONS

MODEL NUMBER	DIMENSIONS-FEET (INCHES)			CHARACTERISTICS			
	A	B	C	Riser Tubes Diameter O.D. Inches (mm)	Manifold Tubes Diameter O. D. Inches (mm)	Fluid Capacity Gallons (liters)	Weight Empty lbs (kg)
CR-110-AP	7' (86.06")	3.5' (42.16")	6.9' (82.28")	5/8" (15.9)	1-1/8" (28.6)	0.9 (3.4)	84 (38.1)
CR-130-AP	8' (96.93")	4' (46.85")	7.8' (93.19")	5/8" (15.9)	1-1/8" (28.6)	1.4 (5.3)	108 (49.0)
CR-140-AP	10' (121.5")	4' (46.85")	9.8' (117.4")	5/8" (15.9)	1-1/8" (28.6)	1.7 (6.4)	132 (59.9)





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ORDER INFORMATION

Solar Collectors (Bulk)				
Model Number	Part Number	Collectors Per Pallet	Collector Size (ft)	Approximate Shipping Weight (lbs)
CR-110-AP	9910007000	11	3.5' x 7'	1003
CR-130-AP	9910008000	7	4'x 8'	864
CR-140-AP	9910009000	7	4'x 10'	1087

Solar Collectors (Individual)					
Model Number	Part Number	Collectors Per Pallet	Approximate Shipping Weight (lbs)		
			1 Collector Pkg	2 Collector Pkg	3 Collector Pkg
CR-110-AP	9910010000 (1-Collector)	1 - 3	200		
	9910011000 (2-Collector)			284	
	9910056000 (3-Collector)				369
CR-130-AP	9910012000 (1-Collector)	1 - 2	220		
	9910013000 (2-Collector)			340	
CR-140-AP	9910014000 (1-Collector)	1 - 2	275		
	9910015000 (2-Collector)			425	

Collectors ordered in bulk or individually do not include required mounting hardware. Solar Collector Fastener Kits (one per collector - part number 9910052000) are required to mount collectors to Unistrut, fat metal, or angel iron racking systems. These kits are available individually or in bulk. Contact your local sales representative for more information.

SUGGESTED SPECIFICATION

The solar thermal collectors shall be model number _____ as manufactured by Chromagen™ Solar Water Solutions. The solar thermal collectors shall be glazed, flat plate type, parallel tube design. The collectors shall be tested by the Solar Rating and Certification Corporation (SRCC) and be SRCC certified OG-100. The collectors shall be tested in accordance with SRCC Standard 100 and their thermal performance rated according to SRCC Document RM1.

The dimensions of the collector shall be _____ inches in length, _____ inches in width and 3.77 inches (95.8mm) in depth. The collector casing shall be an anodized aluminum extrusion (alloy 6063 T5), minimum thickness of 0.05 inches (1.2mm). The collector casing shall be of an interlocking construction design. There shall be no screws or fasteners penetrating the collector casing used to join casing sections together. The collector casings shall have integral mounting channels along the entire length of all four sides that accept mounting clips with the same channeling configuration for ease of installation and removal without penetration of the collector casing. Two solid and two vented plugs shall be installed in the sides of the collector casing that can be easily moved from one opening to another to facilitate portrait or landscape installation while preventing moisture infiltration and allowing moisture exfiltration in either orientation. The collector casing shall be fitted with four protective nylon moldings, one on each corner, to prevent damage to the collectors or adjacent property during transport and installation.

The collector glazing shall be low-iron patterned and tempered glass with a minimum thickness of 1/8 inch (3.2mm) and a minimum solar transmittance of 91%. The glazing shall be thermally isolated from the casing by a continuous EPDM gasket with MS polymer sealant applied to minimize moisture infiltration. There shall be no screws or fasteners penetrating the collector casing used to hold the glazing in place.

The collector insulation shall consist of one layer of injected rigid polyurethane foam with a minimum thickness of 0.9 inches (23mm). There shall be a second layer of glass wool insulation with a minimum thickness of 0.8 inch (20mm). There shall be an integrated aluminum foil barrier between the glass wool and foam insulation layers to retain heat and prevent out-gassing. The collector backsheets shall be black Polypropylene material. The cumulative total thermal resistance of the collector insulation shall be a minimum of R-8.

The absorber plate shall be 1050 aluminum sheet with a minimum thickness of 0.016 inches (0.4mm). The absorber plate shall be coated with a spectrally selective black coating that achieves a minimum solar absorption of 90% and a maximum IR emission of 40%. The risers shall be a minimum of 5/8 inch (15.9mm) O.D. Type M copper. The manifolds shall be a minimum of 1-1/8 inch (28.6mm) O.D. Type M copper. The risers shall be brazed to the manifolds using a copper phosphorus braze alloy conforming to American Welding Society (AWS) classification L-CuP6. The internal riser and manifold tube construction shall be designed to withstand a maximum working pressure of 145 psig. The risers shall be laser welded to the absorber plate to maximize heat transfer and permanence of the bond. EPDM grommets shall isolate the manifold tubes from the collector's aluminum casing.

For Technical Information and Automated Fax Service, call 800-527-1953. A. O. Smith Corporation reserves the right to make product changes or improvements without prior notice.