FLORIDA SOLAR ENERGY CENTER®

SUMMARY INFORMATION SHEET

August 2009
FSEC # 00343N

MANUFACTURER

Collector Model

Alternate Energy Technologies, LLC
1057 N. Ellis Road, Suite 4
Jacksonville, Florida 32254

ESP-40

This solar collector was evaluated by the Florida Solar Energy Center (FSEC) in accordance with prescribed methods and was found to meet the minimum standards established by FSEC. This evaluation was based on solar collector tests performed at Bodycote Materials Testing Canada Inc., Mississauga, Ontario, Canada. The purpose of the tests is to verify initial performance conditions and quality of construction only. The resulting certification is not a guarantee of long term performance or durability.

DESCRIPTION

Gross Length	3.048	meters	10.00	feet
Gross Width	1.210	meters	3.97	feet
Gross Depth	0.006	meters	0.02	feet
Gross Area	3.672	square meters	39.52	square feet
Transparent Frontal Area	3.672	square meters	39.52	square feet
Volumetric Capacity	13.9	liters	3.7	gallons
Weight (empty)	11.3	kilograms	25.0	pounds
Recommended Flow Rate	147	ml/s	2.3	gpm
Test Pressure	241	kPa	35	psig
Number of Cover Plate		None		
Flow Pattern		Parallel	Forced circulation	
Number of Tubes		104		

MATERIALS

Enclosure	None
Glazing	None
Absorber	Co-polymer plastic with UV stabilization
Absorber Coating	None
Insulation	None

THERMAL PERFORMANCE

Testing per ISO 9806-3

Test Flow Rate 147.0 ml/s 2.33 gpm

Incident Angle Modifier $K\tau\alpha = 1.0 - 0.07\ ([1/\cos\theta] - 1)$

Efficiency Equations

SI Units °C / Watt/m²	English Units °F / Btu/hr·ft²
$\eta = 82.3 - 1670\ (T_i-T_a)/I$	$\eta = 82.3 - 294\ (T_i-T_a)/I$
$\eta = 82.2 - 1634\ (T_i-T_a)/I - 1076\ [(T_i-T_a)/I]^2$	$\eta = 82.2 - 287\ (T_i-T_a)/I - 33\ [(T_i-T_a)/I]^2$

RATING

This collector has been rated for energy output on measured performance and an assumed standard day. Total solar energy available for the standard day is 5045 Watt-hour/m^2 (1600 Btu/ft^2) distributed over a 10 hour period.

Output energy rating for this collector based on the second-order efficiency curve are:

Collector Temperature		ENERGY OUTPUT			
Low	35 °C (95 °F)	41,900	Kilojoules/day	39,700	Btu/day
Intermediate	50 °C (122 °F)	18,500	Kilojoules/day	17,600	Btu/day
High	100 °C (212 °F)	0	Kilojoules/day	0	Btu/day

Reference 00060N