



SUMMARY INFORMATION SHEET

August 2009
FSEC # 00344N

MANUFACTURER

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

Collector Model
ESP-48

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	3.658 meters	12.00 feet
Gross Width	1.210 meters	3.97 feet
Gross Depth	0.006 meters	0.02 feet
Gross Area	4.434 square meters	47.72 square feet
Transparent Frontal Area	4.434 square meters	47.72 square feet
Volumetric Capacity	15.6 liters	4.1 gallons
Weight (empty)	13.6 kilograms	30.0 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 $K\tau\alpha = 1.0 - 0.07 \left(\frac{1}{\cos \theta} - 1 \right)$

Efficiency Equations

SI Units °C / Watt/m²

$\eta = 82.3 - 1670 (T_i - T_a)/I$

$\eta = 82.2 - 1634 (T_i - T_a)/I - 1076 [(T_i - T_a)/I]^2$

English Units °F / Btu/hr•ft²

$\eta = 82.3 - 294 (T_i - T_a)/I$

$\eta = 82.2 - 287 (T_i - T_a)/I - 33 [(T_i - T_a)/I]^2$

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/m² (1600 Btu/ft²) 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)	50,600 Kilojoules/day	48,000 Btu/day
Intermediate	50 °C (122 °F)	22,400 Kilojoules/day	21,200 Btu/day
High	100 °C (212 °F)	0 Kilojoules/day	0 Btu/day

Reference 00060N

