



SUMMARY INFORMATION SHEET

April 2010
FSEC # 00396N

MANUFACTURER

Alternate Energy Technologies, LLC
1057 N. Ellis Rd. Unit 4
Jacksonville, Florida 32254

Collector Model
AE-24

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	2.466 meters	8.09 feet
Gross Width	0.893 meters	2.93 feet
Gross Depth	0.079 meters	0.26 feet
Gross Area	2.206 square meters	23.75 square feet
Transparent Frontal Area	2.039 square meters	21.95 square feet
Volumetric Capacity	2.8 liters	0.7 gallons
Weight (empty)	38.6 kilograms	85.0 pounds
Recommended Flow Rate	39 ml/s	0.6 gpm
Test Pressure	552 kPa	80 psig
Number of Cover Plates	One	
Flow Pattern	Parallel	Forced Circulation
Number of Tubes	Seven	

MATERIALS

Enclosure	Aluminum frame, aluminum back
Glazing	Tempered low iron glass, 0.30 cm thick
Absorber	Copper tubes welded to copper fins
Absorber Coating	Selective coating
Insulation	Foil faced polyisocyanurate, 3.2 cm thick

THERMAL PERFORMANCE

Tested per ASHRAE 93-1986

$$\text{Incident Angle Modifier} \quad K_{\tau\alpha} = 1.0 - 0.19 \left(\frac{1}{\cos \theta} - 1 \right)$$

Efficiency Equations

SI Units °C / Watt/m²

$$\eta = 70.7 - 491 (T_f - T_a) / I$$

$$\eta = 69.1 - 339 (T_f - T_a) / I - 1574 [(T_f - T_a) / I]^2$$

English Units °F / Btu/hr·ft²

$$\eta = 70.7 - 86 (T_f - T_a) / I$$

$$\eta = 69.1 - 59 (T_f - T_a) / I - 48 [(T_f - T_a) / I]^2$$

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)	25,900 Kilojoules/day	24,600 Btu/day
Intermediate	50 °C (122 °F)	21,300 Kilojoules/day	20,200 Btu/day
High	100 °C (212 °F)	7,100 Kilojoules/day	6,800 Btu/day

Reference 00081N

