

SUMMARY INFORMATION SHEET

FLORIDA SOLAR ENERGY CENTER

1679 CLEARLAKE ROAD, COCOA, FLORIDA 32922-5703 (321) 638-1000



November 2002

FSEC # 00088N

MANUFACTURER

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

Collector Model

AE-26

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 the 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	1.962 meters	6.44 feet
Gross Width	1.200 meters	3.94 feet
Gross Depth	0.079 meters	0.26 feet
Gross Area	2.355 square meters	25.35 square feet
Transparent Frontal Area	2.197 square meters	23.65 square feet
Volumetric Capacity	3.8 liters	1.0 gallons
Weight (empty)	40.8 kilograms	90.0 pounds
Recommended Flow Rate	76 ml/s	1.2 gpm
Test Pressure	1103 kPag	160 psig
Number of Cover Plates	One	
Flow Pattern	Parallel	Forced Circulation
Number of Flow Tubes	Ten	

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

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

Efficiency Equations

$$\eta = 71.3 - 496 (Ti-Ta)/I$$

$$\eta = 71.3 - 87 (Ti-Ta)/I$$

$$\eta = 69.8 - 343 (Ti-Ta)/I - 1590 [(Ti-Ta)/I]^2$$

$$\eta = 69.8 - 60 (Ti-Ta)/I - 49 [(Ti-Ta)/I]^2$$

Units of (Ti-Ta)/I are °C / Watt/m²

Units of (Ti-Ta)/I are °F / Btu/hr·ft²

RATING

The 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-hours/m² (1600 Btu/ft²) distributed over a 10 hour period.

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

Collector Temperature

Energy Output

Low Temperature, 35°C (95°F)	27,900 Kilojoules/day	26,500 Btu/day
Intermediate Temperature, 50°C (122°F)	22,900 Kilojoules/day	21,700 Btu/day
High Temperature, 100°C (212°F)	7,700 Kilojoules/day	7,300 Btu/day

REFERENCE 00081N