SOLAR COLLECTOR CERTIFICATION AND RATING

SRCC OG-100

CERTIFIED SOLAR COLLECTOR

SUPPLIER: **Alternate Energy Technologies**
1057 N. Ellis Road
Jacksonville, FL 32254

MODEL: Morning Star MSC-24
COLLECTOR TYPE: Glazed Flat-Plate
CERTIFICATION #: 100-2002-002B

COLLECTOR THERMAL PERFORMANCE RATING

Megajoules Per Panel Per Day				Thousands of Btu Per Panel Per Day			
CATEGORY (Ti-Ta)	CLEAR DAY 23 MJ/m^2·d	MILDLY CLOUDY 17 MJ/m^2·d	CLOUDY DAY 11 MJ/m^2·d	CATEGORY (Ti-Ta)	CLEAR DAY 2000 Btu/ft^2·d	MILDLY CLOUDY 1500 Btu/ft^2·d	CLOUDY DAY 1000 Btu/ft^2·d
A (-5°C)	34	25	17	A (-9°F)	32	24	16
B (5°C)	31	22	14	B (9°F)	29	21	13
C (20°C)	26	18	10	C (36°F)	24	17	9
D (50°C)	15	8	2	D (90°F)	15	8	2
E (80°C)	6	1		E (144°F)	6	1	

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

Original Certification Date: November 22, 2002

COLLECTOR SPECIFICATIONS

Gross Area:	2.276	m^2	24.50	ft^2	**Net Aperture Area:**	2.015	m^2	21.69	ft^2
Dry Weight:	46.3	kg	102	lb	**Fluid Capacity:**	3.4	l	0.9	gal
Test Pressure:	1103	kPa	160	psig	**Max. Oper. Temp.:**	176.7	°C	350	°F

COLLECTOR MATERIALS

Frame:	Anodized Aluminum
Cover (Outer):	Low Iron Tempered Glass
Cover (Inner):	None
Absorber Material:	Tube - Copper / Plate - Copper Fin
Absorber Coating:	Selective Coating
Insulation (Side):	Polyisocyanurate
Insulation (Back):	Polyisocyanurate

PRESSURE DROP

Flow		Δ P	
ml/s	**gpm**	**Pa**	**in H_2O**

TECHNICAL INFORMATION

Efficiency Equation [NOTE: (P) = Ti-Ta]

							Y Intercept	Slope	
S I Units:	η =	0.691	-3.3960	(P)/I	-0.0019	(P)^2/I	0.706	-4.9099	W/m^2·°C
I P Units:	η =	0.691	-0.5985	(P)/I	-0.0002	(P)^2/I	0.706	-0.865	Btu/hr·ft^2·°F

Incident Angle Modifier [(S) = 1/cos θ - 1, 0°≤ θ ≤60°]

$K_{\alpha\tau}$ =	1.0	-0.1939	(S)	-0.0055	(S)^2
$K_{\alpha\tau}$ =	1.0	-0.20	(S)	(Linear Fit)	

Model Tested: AE-21
Test Fluid: Water
Test Flow Rate: 39 ml/s 0.62 gpm

REMARKS: