ICIM S.p.A. a socio unico
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Capitale Soc EUR. 260.000,00 int. versato ed esistente
C.F./P. IVA e Iscriz. Reg. Imprese di Milano n. 12908230159 - R.E.A. n. 1596292

Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	123BN/0
	Issued	2013-10-03

Company holding the	Maltezos S.A.	Country	Greece
Brand (optional)		Website	www.maltezos.gr
Street, street number	55 Amfitheas AV, GR 175 64 P. Faliro	E-mail	info@maltezos.gr
Postal Code / City, province	17564 Athens	Tel/Fax	

Collector Type (flat plate glazed/un-glazed; evacuate tubular)	Flat plate collector - glazed
Thermal / photo voltaic hybid collector? (PVT collector)	No
Integration in the roof possible ? (manufacturers declaration)	No

Collector name	Aperture area (Aa)	Gross length	Gross width	Gross height	Gross area (AG)	Power output per collector module G = 1000 W/m², Tm-Ta 0 K	10 K	30 K	50 K	70 K
	m²	mm	mm	mm	m²	W	W	W	W	W
SAC 130 x 200	2,39	1.990	1.285	90	2,56	1.754	1.675	1.477	1.227	926

Performance test method	Glazed liquid heating collector - steady state - outdoor		
Performance parameters related to aperture area	η0	a1	a2
Units	-	W/(m²K)	W/(m²K²)
Test results - Flow rate and fluid see note 1	0,734	3,063	0,027

Bi-directional incidence angle modifiers? Yes		Kϑ values are obligatory for 50°.								
Incidence angle modifiers Kθ(θT) transversal direction	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
	Kθ(θT)	--	--	1,00	--	0,96	0,92	--	0,57	0,00
Incidence angle modifiers Kθ(θL) longitudinal direction	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
	Kθ(θL)	--	--	1,00	--	0,96	0,92	--	0,57	0,00

Stagnation temperature - Weather conditions see note 2	Tstg	162	°C
Effective thermal capacity	ceff = C/Ag	11,99	kJ/(m²K)
Max. intende operation temperature - see note 3	Tmax,op	160	°C
Max. operation pressure - see note 3	pmax,op	1000	kPa

Pressure drop table - for a collector family, the values shall be for the module with highest ΔP per m² aperture area

Flow rate	kg/(s m²)	--	--	--	--	--	--	--	--	--	
Pressure drop, ΔP	Pa	--	--	--	--	--	--	--	--	--	

Optional weather data	Location		Link	
Testing Laboratory	Eurofins Modulo Uno S.p.A.			
Website	www.eurofins.it			
Test report id. number	M1.13.NRG.0296/49763	Date of test report	2013/09/10	
During the test GDIF/GTOT was always between	--	and	--	

Comments of testing laboratory:

eurofins | Modulo Uno

Eurofins - Modulo Uno SpA
Laboratorio di prova c/o Parco Scientifico Tecnologico
Strada Savonesa 9 - 15050 Rivalta Scrivia (AL)
Tel. 0131 850 100 - Fax 0131 860 185
Sede Legale: Via Cuorgnè, 21 - 10156 TORINO (ITALY)
Codice Fiscale e Partita IVA 01469620010

Datasheet version: 4.05, 2013-11-07

Note 1	Flow rate	0,018	kg/(s m²)	Fluid	Water
Note 2	Irradiance, G = 1000 W/m²; Ambient temperature , Ta=30 °C				
Note 3	Given by manufacturer				

CE 0425 ACCREDIA Verificatore accreditato EMAS IT-V-0008 Aderente a CISQ Aderente come CISQ a IQNet EFG eurocer-building

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Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	123BN/0
	Issued	03/10/2013

Annual collector output kWh/module

	Location and collector temperature (Tm)												
	Athens			Davos			Stockholm			Würzburg			
Collector name	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	
SAC 130 x 200	2.839	2.023	1.229	2.170	1.446	802	1.600	1.018	553	1.739	1.105	591	

Collector mounting: Fixed or tracking	Fixed; slope = latitude - 15° (rounded to nearest 5°)

Overview of locations

Location	Latitude °	Gtot kWh/m²	Ta °C	Collector orientation or tracking mode
Athens	38	1.765	18,5	South, 25°
Davos	47	1.714	3,2	South, 30°
Stockholm	59	1.166	7,5	South, 45°
Würzburg	50	1.244	9,0	South, 35°

Gtot	Annual total irradiation on collector plane	kWh/m²
Ta	Mean annual ambient air temperature	°C
Tm	Constant collector operating temperature (mean of in- and outlet temperatures)	°C

The calculation of the annual collector performance is performed with the official Solar Keymark spreadsheet tool ScenoCalc. The collector output is calculated hour by hour according to the efficiency parameters from the Keymark test using constant collector operating temperature (Tm). A detailed description of the calculations is available at http://www.sp.se/en/index/services/solar/ScenoCalc/Sidor/default.aspx.