



Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate	Certificate No.	OEM 9949/2/1
	Date of issue	3/2/2014

Company	ARCO IRIS Ltd	Country	Greece
Brand (optional)		Website	<a href="http://solaretitane.gr">http://solaretitane.gr</a>
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Postal Code	12132	Tel.	+030 210 5719301
City	PERISTERI ATTIKIS	Fax	+030

Collector Type (flat plate / evacuate tubular / un-glazed)	Flat plate collector
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Integration in the roof possible ?	Yes
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Collector name	Aperture area (A <sub>a</sub> ) [m <sup>2</sup> ]	Gross length [mm]	Gross width [mm]	Gross height [mm]	Gross area (A <sub>g</sub> ) [m <sup>2</sup> ]	Power output per collector unit G = 1000 W/m <sup>2</sup> T <sub>m</sub> -T <sub>a</sub> :				
						0 K	10 K	30 K	50 K	70 K
						[W]	[W]	[W]	[W]	[W]
STT101504	1.38	1,480	1,010	86	1.50	1,087	1,014	854	674	
STT121404	1.72	1,480	1,230	86	1.82	1,355	1,264	1,064	840	593
STT102004	1.86	1,980	1,010	86	2.00	1,466	1,367	1,150	909	642
STT201004H	1.86	1,010	1,980	86	2.00	1,466	1,367	1,150	909	642
STT121904	2.23	1,930	1,230	86	2.37	1,757	1,639	1,379	1,089	769
STT191204H	2.23	1,230	1,930	86	2.37	1,757	1,639	1,379	1,089	769
STT122104	2.57	2,160	1,260	86	2.72	2,025	1,889	1,590	1,255	886
STT211204H	2.57	1,260	2,160	86	2.72	2,025	1,889	1,590	1,255	886

Collector efficiency parameters related to aperture area (A <sub>a</sub> ) Note 1	η <sub>0a</sub>	0.788	-
	a <sub>1a</sub>	5,140	W/(m <sup>2</sup> K)
	a <sub>2a</sub>	0.017	W/(m <sup>2</sup> K <sup>2</sup> )

Stagnation temperature - Note 2	t <sub>stg</sub>	151.9 °C
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Effective thermal capacity	C <sub>eff</sub> = C/A <sub>a</sub>	9.78 kJ/(m <sup>2</sup> K)
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Max. operation pressure - Note 3	p <sub>max</sub>	1 Mpa
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Incidence angle modifiers K <sub>θ</sub> (θ)	G <sub>DIF</sub> /G <sub>TOT</sub>		θ <sub>T</sub> / θ <sub>L</sub>	50°	10°	20°	30°	40°	60°	70°
	min	max								
	G <sub>DIF</sub> /G <sub>TOT</sub> : min&max - while measuring			K <sub>θ</sub> (θ <sub>L</sub> )	0.80	1.00	0.99	0.98	0.97	0.90
			0.80	0.80	1.00	0.99	0.98	0.97	0.90	0.81
										<i>Optional values</i>

Testing Laboratory	Demokritos
Website	<a href="http://www.solar.demokritos.gr">www.solar.demokritos.gr</a>
Test report id. number	4122 DE2, 4123 DQ2, 4125 DE2
Date of test report	27/3/2014
Perf. test method	EN 12975-2 6.1.4 (outdoor/außen/extérieur)

Comments of testing laboratory :  
[Example data sheet](#)

Note 1	Test conditions	Fluid	Water	Flow rate	0.020	kg/s per m <sup>2</sup>	<b>N.C.S.R "DEMOKRITOS"</b> SOLAR ENERGY LABORATORY Head: <b>Dr Vassilis Belessiotis</b> Tel: +210 6503815 - Fax: +210 6544592 153 10 Ag. Paraskevi - Attiki - Greece 
Note 2	Irradiance, G <sub>s</sub> =1000 W/m <sup>2</sup> Ambient temperature, T <sub>a</sub> =30 °C						
Note 3	Given by manufacturer						

Central Offices: Dragoumi 6, 145 61 kifisia, Athens, Tel: +301 6233493-4 , Fax: +301 6233495, <http://www.dqshellas.gr>, e-mail: [ioannisalexidou@dqshellas.gr](mailto:ioannisalexidou@dqshellas.gr)

<b>Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate</b>	<b>Certificate No.</b>	<b>OEM 9949/2/1</b>
	Issued	3/2/2014

<b>Annual collector output kWh / Jährliche Kollektor Leistung kWh / Energie annuelle produite par le capteur kWh</b>															
<b>Collector name</b>	<b>Location and collector temperature (T<sub>m</sub>)</b>														
	<b>Athens</b>			<b>Davos</b>			<b>Stockholm</b>			<b>Würzburg</b>					
	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C
STT101504	1,514	911	479	1,070	628	304	795	441	212	862	467	223			
STT121404	1,888	1,136	597	1,334	783	379	991	558	264	1,075	582	278			
STT102004	2,041	1,228	645	1,445	847	410	1,071	594	285	1,162	630	300			
STT201004H	2,041	1,228	645	1,443	847	410	1,071	594	285	1,162	630	300			
STT121904	2,447	1,473	774	1,730	1,015	492	1,285	713	342	1,394	755	360			
STT191204H	2,447	1,473	774	1,730	1,015	492	1,285	713	342	1,394	755	360			
STT122104	2,820	1,697	892	1,993	1,170	567	1,480	821	394	1,606	870	413			
STT211204H	2,820	1,697	892	1,993	1,170	567	1,480	821	394	1,606	870	413			

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

<b>Overview of locations</b>				
Location	Latitude °	G <sub>tot</sub> kWh/m <sup>2</sup>	T <sub>a</sub> °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°

<b>G<sub>tot</sub></b>	Annual total irradiation on collector plane	kWh/m <sup>2</sup>
<b>T<sub>a</sub></b>	Mean annual ambient air temperature	°C
<b>T<sub>m</sub></b>	Constant collector operating temperature (mean of in- and outlet temperatures)	°C

Calculation of the annual collector performance is done by the official Solar Keymark spreadsheet tool. Hour by hour the collector output is calculated according to the efficiency parameters from the Keymark test using constant collector operating temperature (T<sub>m</sub>). Detailed description with all equations used is available from the Solar Keymark web site (direct link: <http://www.estif.org/solarkeymark/annexb1.php>)

<p><b>Central Offices: Dragoumi 6, 145 61 kifisia, Athens, Tel: +301 6233493-4 , Fax: +301 6233495, <a href="http://www.dqshellas.gr">http://www.dqshellas.gr</a>, e-mail: <a href="mailto:ioannisalexiou@dqshellas.gr">ioannisalexiou@dqshellas.gr</a></b></p>	<p>Datasheet version: VERSION 3.4, 30-11-2011 Calculation program version: 3.07 October 2011</p>
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