


Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate		Licence Number		011-7S2509 F								
		Issued		2015-04-28								
Company holding the		ASOTEC Solar- und Wärmetechnik GmbH			Country		Deutschland					
Brand (optional)					Website		www.asotec.de					
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Postal Code / City, province		57644	Hattert	Tel/Fax		+49 2662 939616 / 2662 939617						
Collector Type (flat plate glazed/un-glazed; evacuate tubular)		Flat plate collector - glazed										
Thermal / photo voltaic hybrid collector? (PVT collector)		No										
Integration in the roof possible ? (manufacturers declaration)		No										
Collector name	Aperture area (Aa) m ²	Gross length mm	Gross width mm	Gross height mm	Gross area (AG) m ²	Power output per collector module						
						Gb = 850 W/m ² ; Gd = 150 W/m ² Tm-Ta						
						0 K W	10 K W	30 K W	50 K W	70 K W		
AS-Sunline 2100	1.88	1951	1051	80	2.05	1547	1468	1297	1108	901		
Performance test method		Liquid heating collector - quasi-dynamic - outdoor										
Performance parameters related to aperture area		η _{0b}	c1	c2	c3	c4	c6	Kθd				
Units		-	W/(m ² K)	W/(m ² K ²)	J/(m ³ K)	-	s/m	-				
Test results - Flow rate and fluid see note 1		0.826	4.068	0.012	0.000	0.000	0.000	0.973				
Bi-directional incidence angle modifiers?		No <i>Kθ values are obligatory for 50°.</i>										
Incidence angle modifiers Kθ(θ)		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°	
		Kθ(θ)	1.00	0.99	0.98	0.97	0.94	0.89	0.80	0.50	0.00	
Incidence angle modifier not bi-directional - leave fields blank												
Stagnation temperature - Weather conditions see note 2		Tstg					198		°C			
Effective thermal capacity		ceff = C/Ag					15.2		kJ/(m ² K)			
Max. intended operation temperature - see note 3		Tmax,op					-		°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 m ² aperture area												
Flow rate	kg/(s m ²)	-	-	-	-	-	-	-	-	-	-	
Pressure drop, ΔP	Pa	-	-	-	-	-	-	-	-	-	-	
Optional weather data		Location			Link			-				
Testing Laboratory		TZS, ITW University Stuttgart										
Website		http://www.itw.uni-stuttgart.de										
Test report id. number		10COL870/1OEM03				Date of test report		2015.04.21				
During the test GDIF/GTOT was always between		0	and		1							
Comments of testing laboratory: none												
Note 1	Flow rate	0.020 kg/(s m ²)	Fluid	Water								
Note 2	Irradiance, G = 1000 W/m ² ; Ambient temperature , Ta=30 °C											
Note 3	Given by manufacturer											
								Datasheet version: 4.06, 2014-01-15				
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Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	011-7S2509 F
	Issued	28.04.2015

Annual collector output kWh/module														
Collector name	Location and collector temperature (T _m)													
	Athens			Davos			Stockholm			Würzburg			0	
	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C		
AS-Sunline 2100	2 509	1 776	1 155	1 890	1 294	806	1 396	903	541	1 525	982	578		

Collector mounting: Fixed or tracking	Fixed; slope = latitude - 15° (rounded to nearest 5°)
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Overview of locations				
Location	Latitude °	G _{tot} kWh/m ²	T _a °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°

G _{tot}	Annual total irradiation on collector plane	kWh/m ²
T _a	Mean annual ambient air temperature	°C
T _m	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 (T_m). A detailed description of the calculations is available at <http://www.sp.se/en/index/services/solar/ScenoCalc/Sidor/default.aspx>.