TÜVRheinland®
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Genau. Richtig.

SPF INSTITUT FÜR SOLARTECHNIK

Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	011-7S2521 F
	Issued	2015-05-27

Company holding the	Sebasol		Country	Switzerland	
Brand (optional)	--		Website	www.sebasol.ch	
Street, street number	Aloys-Fauquez 6		E-mail	info@sebasol.ch	
Postal Code / City, province	CH-1018	Lausanne	Tel/Fax	+41	21 311 37 42 / 86 21 311 37 42

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)	Yes

	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
Collector name	m²	mm	mm	mm	m²	W	W	W	W	W
Sebasol 2012 X1/Y1	1.505	830	2'170	135	1.801	1'196	1'141	1'022	890	747

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	0.795	3.560	0.010

Bi-directional incidence angle modifiers?	Yes	Kϑ values are obligatory for 50°.								
Incidence angle modifiers Kθ(θT)	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
transversal direction	Kθ(θT)	1.00	1.00	0.99	0.98	0.93	0.82	0.62	0.33	0.00
Incidence angle modifiers Kθ(θL)	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
longitudinal direction	Kθ(θL)	1.00	0.99	0.99	0.98	0.93	0.82	0.62	0.33	0.00

Stagnation temperature - Weather conditions see note 2	Tstg	203	°C
Effective thermal capacity	ceff = C/Ag	5.81	kJ/(m²K)
Max. intende operation temperature - see note 3	Tmax,op	227	°C
Max. operation pressure - see note 3	pmax,op	600	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)	0.002	0.004	0.006	0.008	0.010	0.012	0.014	0.016	0.018	0.019
Pressure drop, ΔP	Pa	1951	5234	9848	15793	23069	31677	41616	52886	65487	79420

Optional weather data	Location		Link	
Testing Laboratory	SPF, CH-8640 Rapperswil			
Website	www.solarenergy.ch			
Test report id. number	C1547LPEN, C1548QPEN		Date of test report	13.02.2014, 13.02.2014

During the test GDIF/GTOT was always between	0.07	and	0.20

Comments of testing laboratory:

Custom built collectors: Performance determined on a collector Sebasol 2012 X1/Y3. Other dimensions are possible!
X: Number of modules in horizontal direction Y: Number of modules in vertical direction
Gross length[mm]: Y*790+40; Gross width[mm]: X*2050+120; Aperture area[m2]: Y*0.75*X*2.006

Note 1	Flow rate	0.013	kg/(s m²)	Fluid	Water-Glycole
Note 2	Irradiance, G = 1000 W/m²; Ambient temperature , Ta=30 °C				
Note 3	Given by manufacturer				

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Datasheet version: 4.05, 2013-11-07

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Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	011-7S2521 F
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Annual collector output kWh/module

Collector name	Location and collector temperature (Tm)											
	Athens			Davos			Stockholm			Würzburg		
	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C
Sebasol 2012 X1/Y1	1'882	1'369	932	1'452	1'036	691	1'058	714	456	1'148	769	484

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.