
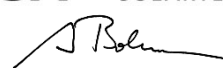


Annex to Solar Keymark Certificate					Licence Number		011-7S3280 F																	
					Date issued		2025-01-15																	
					Issued by		DIN CERTCO																	
Licence holder		Sebasol Vaud			Country		Switzerland																	
Brand (optional)					Web		www.sebasol.ch																	
Street, Number		Aloys-Fauquez 6			E-mail		info@sebasol.ch																	
Postcode, City		CH-1018 Lausanne			Tel		+41 21 3113742																	
Collector Type					Flat plate collector																			
Collector name					Gross area ( $A_G$ )		Gross length		Gross width		Gross height		Power output per collector $G_b = 850 \text{ W/m}^2$ , $G_d = 150 \text{ W/m}^2$ & $u = 1.3 \text{ m/s}$ $\vartheta_m - \vartheta_a$											
					m <sup>2</sup>		mm		mm		mm		0 K		10 K		30 K		50 K		70 K		110 K	
Sebasol Cu 2025					1.62		790		2'050		130		1'210		1'156		1'035		895		738		368	
Power output per m <sup>2</sup> gross area					747		713		639		553		455		227									
Performance parameters test method		Steady state - outdoor																						
Performance parameters (related to $A_G$ )		$\eta_0$ , b	a1	a2	a3	a4	a5	a6	a7	a8	Kd													
Units		-	W/(m <sup>2</sup> K)	W/(m <sup>2</sup> K <sup>2</sup> )	J/(m <sup>3</sup> K)	-	J/(m <sup>2</sup> K)	s/m	W/(m <sup>2</sup> K <sup>4</sup> )	W/(m <sup>2</sup> K <sup>4</sup> )	-													
Test results		0.758	3.18	0.014	0.000	0.00	6'176	0.000	0.00	0.0E+00	0.90													
Incidence angle modifier test method		Steady state - outdoor																						
Incidence angle modifier		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°													
Transversal		$K_{\theta T, coll}$	1.00	0.99	0.98	0.96	0.93	0.83	0.64	0.35	0.00													
Longitudinal		$K_{\theta L, coll}$	1.00	1.00	1.00	0.99	0.96	0.90	0.77	0.52	0.00													
Heat transfer medium for testing		Water-Glycole																						
Flow rate for testing (per gross area, $A_G$ )		dm/dt		0.020		kg/(sm <sup>2</sup> )																		
Maximum temperature difference during thermal performance test		$(\vartheta_m - \vartheta_a)_{max}$		80		K																		
Standard stagnation temperature ( $G = 1000 \text{ W/m}^2$ ; $\vartheta_a = 30 \text{ °C}$ )		$\vartheta_{stg}$		210		°C																		
Maximum operating temperature		$\vartheta_{max, op}$		100		°C																		
Maximum operating pressure		$p_{max, op}$		1200		kPa																		
Testing laboratory		SPF Institute for Solar Technology					www.spf.ch																	
Test report(s)		C1953					Dated		15.01.2025															
Comments of testing laboratory		Draft Ver. 6.2 (22.09.2021)																						
The collector usually installed as multiples of the basic element. Upon request, the collector is manufactured in other sizes and shapes.		 INSTITUT FÜR SOLARTECHNIK 																						
DIN CERTCO • Alboinstraße 56 • 12103 Berlin, Germany Tel: +49 30 7562-1131 • Fax: +49 30 7562-1141 • E-Mail: info@dincertco.de • www.dincertco.de																								

<b>Annex to Solar Keymark Certificate Supplementary Information</b>	<b>Licence Number</b>	<b>011-7S3280 F</b>
	<b>Issued</b>	<b>2025-01-15</b>

Gross Thermal Yield in kWh/collector at mean fluid temperature $\vartheta_m$													
Collector name	Standard Locations $\vartheta_m$	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 Cu 2025		1'921	1'403	938	1'486	1'050	677	1'084	727	450	1'179	786	480
Gross Thermal Yield per m <sup>2</sup> gross area		1'186	866	579	917	648	418	669	449	278	728	485	296
Annual efficiency, $\eta_a$		67%	49%	33%	56%	40%	26%	57%	38%	24%	58%	39%	24%
Fixed or tracking collector		Fixed (slope = latitude - 15°; rounded to nearest 5°)											
Annual irradiation on collector plane		1765 kWh/m <sup>2</sup>			1630 kWh/m <sup>2</sup>			1166 kWh/m <sup>2</sup>			1244 kWh/m <sup>2</sup>		
Mean annual ambient air temperature		18.5°C			3.2°C			7.5°C			9.0°C		
Collector orientation or tracking mode		South, 25°			South, 30°			South, 45°			South, 35°		

The collector is operated at constant temperature  $\vartheta_m$  (mean of in- and outlet temperatures). The calculation of the annual collector performance is performed with the official Solar Keymark spreadsheet tool Scenocalc Draft Ver. 6.2 (22.09.2021). A detailed description of the calculations is available at <http://www.estif.org/solarkeymarknew/>

Additional Information			
Collector heat transfer medium	Water-Glycole		
The collector is deemed to be suitable for roof integration	Yes		
The collector was tested successfully under the following conditions:			
Climate class (A+, A, B or C)	A		--
G (W/m <sup>2</sup> ) >	1000	$\vartheta_a$ (°C) >	20
		$H_x$ (MJ/m <sup>2</sup> ) >	600
Maximum tested positive load	2400		Pa
Maximum tested negative load	2000		Pa
Hail resistance using ice balls (diameter)	35		mm

Additional collector attribute(s)			
Using external power source(s) for normal operation	No	Active or passive measure(s) for self-protection	No
Co-generating thermal and electrical power	No	Façade collector(s)	Yes

Energy Labelling Information		Additional Informative Technical Data	
	Reference Area, $A_{sol}$ (m <sup>2</sup> )	Hydraulic Designation Code	Aperture Area, $A_a$ (m <sup>2</sup> )
Sebasol Cu 2025	1.62	1-H-X-A:10:12300	1.50

Data required for CDR (EU) No 811/2013 - Reference Area $A_{sol}$		Data required for CDR (EU) No 812/2013 - Reference Area $A_{sol}$	
Collector efficiency ( $\eta_{col}$ )	60%	Zero-loss efficiency ( $\eta_0$ )	0.75
Remark: Collector efficiency ( $\eta_{col}$ ) is defined in CDR (EU) No 811/2013 as collector efficiency of the solar collector at a temperature difference between the solar collector and the surrounding air of 40 K and a global solar irradiance of 1000 W/m <sup>2</sup> , expressed in % and rounded to the nearest integer. Deviating from the regulation $\eta_{col}$ is based on reference area ( $A_{sol}$ ) which is aperture area for values according to EN 12975-2 or gross area for ISO 9806:2017.		First-order coefficient ( $a_1$ )	3.18
		Second-order coefficient ( $a_2$ )	0.014
		Incidence angle modifier IAM (50°)	0.94
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		Remark: The data given in this section are related to collector reference area ( $A_{sol}$ ) which is aperture area for values according to EN 12975-2 or gross area for ISO 9806. Consistent data sets for either aperture or gross area can be used in calculations like in the regulation 811 and 812 and simulation programs.	