

Annex to Solar Keymark Certificate					Licence Number		011-7S677 F							
					Date issued		2025-04-29							
					Issued by		DIN CERTCO							
Licence holder		SOLTOP Energie SA			Country		Switzerland							
Brand (optional)					Web		www.soltop-energie.ch							
Street, Number		Rue des Sablons 8			E-mail		info.fr@soltop-energie.ch							
Postcode, City		CH-3960 Sierre			Tel		+41 27 451 13 20							
Collector Type					WISC (Wind and/or infrared sensitive collector)									
Collector name					Gross area (A_G) m ²	Gross length mm	Gross width mm	Gross height mm	Power output per collector $G_b = 850 \text{ W/m}^2$, $G_d = 150 \text{ W/m}^2$ & $u = 1.3 \text{ m/s}$ $\vartheta_m - \vartheta_a$					
									0 K	10 K	30 K	50 K	70 K	81 K
Solardach AS					1.95	2'216	880	50	1'649	1'364	787	203	0	0
PliaTherm AS					1.95	2'216	880	50	1'649	1'364	787	203	0	0
Power output per m² gross area					846	699	404	104	0	0				
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 ² K)	W/(m ² K ²)	J/(m ³ K)	-	J/(m ² K)	s/m	W/(m ² K ⁴)	W/(m ² K ⁴)	-
Test results					0.865	20.80	0.005	3.655	0.35	16'583	0.010	0.00	0.0E+00	0.99
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	1.00	1.00	1.00	1.00	1.00	0.97	0.82	0.00
Longitudinal					$K_{\theta L, coll}$	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.82	0.00
Heat transfer medium for testing					Water-Glycole									
Flow rate for testing (per gross area, A_G)					dm/dt		0.021		kg/(sm ²)					
Maximum temperature difference during thermal performance test					$(\vartheta_m - \vartheta_a)_{max}$		51		K					
Standard stagnation temperature ($G = 1000 \text{ W/m}^2$; $\vartheta_a = 30 \text{ °C}$)					ϑ_{stg}		100		°C					
Maximum operating temperature					$\vartheta_{max, op}$		150		°C					
Maximum operating pressure					$p_{max, op}$		300		kPa					
Testing laboratory					SPF Institute for Solar Technology				www.spf.ch					
Test report(s)					C1818				Dated		06.09.2024			
Comments of testing laboratory					Draft Ver. 6.2 (22.09.2021)									
					 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														

Annex to Solar Keymark Certificate Supplementary Information	Licence Number	011-7S677 F
	Issued	2025-04-29

Gross Thermal Yield in kWh/collector at mean fluid temperature ϑ_m													
Standard Locations		Athens			Davos			Stockholm			Würzburg		
Collector name	ϑ_m	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C
Solardach AS		2'403	512	37	1'189	217	6	984	194	11	1'135	245	27
PliaTherm AS		2'403	512	37	1'189	217	6	984	194	11	1'135	245	27
Gross Thermal Yield per m² gross area		1'232	262	19	610	111	3	505	99	6	582	126	14
Annual efficiency, η_a		70%	15%	1%	37%	7%	0%	43%	9%	0%	47%	10%	1%
Fixed or tracking collector	Fixed (slope = latitude - 15°; rounded to nearest 5°)												
Annual irradiation on collector plane		1765 kWh/m²			1630 kWh/m²			1166 kWh/m²			1244 kWh/m²		
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 ϑ_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 ²) >	1000	ϑ _a (°C) >	20	H _x (MJ/m ²) >	600
Maximum tested positive load				1000	Pa
Maximum tested negative load				1000	Pa
Hail resistance using ice balls (diameter)				25	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)	No

Energy Labelling Information		Additional Informative Technical Data	
	Reference Area, A_{sol} (m ²)	Hydraulic Designation Code	Aperture Area, A_a (m ²)
Solardach AS	1.95	X-V-23F-AC:X	1.83
PliaTherm AS	1.95	X-V-23F-AC:X	1.83

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 (η_{col})	25%	Zero-loss efficiency (η_0)	0.85
Remark: Collector efficiency (η_{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 ² , expressed in % and rounded to the nearest integer. Deviating from the regulation η_{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)	14.59
		Second-order coefficient (a_2)	0.005
		Incidence angle modifier IAM (50°)	1.00
		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.	