

Certificate number	15706 Rev.1	Replaces	15706 Rev.0
Issued	09/05/2023	First edition	09/05/2018
Report number	PKC0002092	Expiry date	08/05/2028
Page	1 of 1	Contract number	PKC0002751

Product Certificate Solar Thermal Products

License holder:	Sunerg Solar S.r.l. Via Donino Donini 51, 06012 Cinquemiglia - Città di Castello (PG), Italy
Production site(s):	Sunerg Solar S.r.l. Via Donino Donini 51, 06012 Cinquemiglia - Città di Castello (PG), Italy
Product	Solar thermal collector
Model(s):	BLUh+

Kiwa Cermet Italia hereby declares that the product can be considered complying to the testing requirements and is entitled to use the Solar Keymark Label, based upon the following aspects:

Laboratory testing of the solar thermal products, which are performed by an accredited laboratory in accordance to EN ISO/IEC 17025:2005 -see annex-, using the following standards:

- ISO 9806:2013
Solar Energy – Solar Thermal Collectors – Test Methods

Specific CEN Keymark Scheme Rules for Solar Thermal Products SKN_N0444R6.

Periodic Inspection of the Factory site(s) performed by Kiwa Cermet Italia.
A description of the test results is given in the annex to this certificate.

This certificate is issued in accordance with the Kiwa Cermet Italia regulations.

Publication of the certificate is allowed.

The validity of this certificate is subject to the positive result of periodic surveillance visits.

The validity of this certificate can be verified on request at the following e-mail address: energy@kiwacermet.it.

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CERTIFICATE

Kiwa Cermet Italia S.p.A.
Società con socio unico, soggetta all'attività di direzione e coordinamento di Kiwa Italia Holding Srl

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PRD N° 069B

Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC Mutual Recognition Agreements

Annex to Solar Keymark Certificate					Licence Number		15706 Rev.1				
					Date issued		2023-05-09				
					Issued by		Kiwa Cermet Italia S.p.A.				
Licence holder		Sunerg Solar S.r.l.			Country		Italy				
Brand (optional)					Web		https://www.sunergsolar.com				
Street, Number		Via Donino Donini 51			E-mail		info@sunergsolar.com				
Postcode, City		06012 Città di Castello (PG)			Tel		+39 0758540018				
Collector Type					Flat plate collector						
Collector name					Power output per collector						
					G _b = 850 W/m ² , G _d = 150 W/m ² & u = 1.3 m/s θ _m - θ _a						
					0 K	10 K	30 K	50 K	70 K	96 K	
					W	W	W	W	W	W	
BLUh+					1,485	1,414	1,260	1,091	906	640	
					0	0	0	0	0	0	
Power output per m ² gross area					759	723	645	558	463	327	
Performance parameters test method		Steady state - outdoor									
Performance parameters (related to A _G)		η 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		0.770	3.53	0.010	0.000	0.00	10,200	0.000	0.00	0.0E+00	0.91
Incidence angle modifier test method		Steady state - outdoor									
Incidence angle modifier		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
Transversal		K _{θT, coll}	1.00	1.00	0.99	0.98	0.95	0.88	0.75	0.50	0.00
Longitudinal		K _{θL, coll}	1.00	1.00	0.99	0.98	0.95	0.88	0.75	0.50	0.00
Heat transfer medium for testing		Water									
Flow rate for testing (per gross area, A _G)		dm/dt	0.019	kg/(sm ²)							
Maximum temperature difference during thermal performance test		(θ _m - θ _a) _{max}	66.2	K							
Standard stagnation temperature (G = 1000 W/m ² ; θ _a = 30 °C)		θ _{stg}	224	°C							
Maximum operating temperature		θ _{max op}	185	°C							
Maximum operating pressure		p _{max, op}	600	kPa							
Testing laboratory		ENEA - Centro Ricerche Trisaia					http://www.trisaia.enea.it				
Test report(s)		RP.2018.COL.198.1 RP.2018.COL.198a.1					Dated		09/05/2018 09/05/2018		
Comments of testing laboratory		Ver. 6.2 (13.01.2022)									
Performance results according to ISO 9806:2013.											
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Annex to Solar Keymark Certificate					Licence Number		15706 Rev.1							
Supplementary Information					Issued		2023-05-09							
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	
BLUh+		2,384	1,722	1,158	1,823	1,285	840	1,338	891	558	1,454	963	594	
Gross Thermal Yield per m ² gross area		1,219	881	592	933	657	430	684	456	286	744	493	304	
Annual efficiency, η_a		69%	50%	34%	57%	40%	26%	59%	39%	24%	60%	40%	24%	
Fixed or tracking collector		Fixed (slope = latitude - 15°; rounded to nearest 5°)												
Annual irradiation on collector plane		1765 kWh/m ²			1630 kWh/m ²			1166 kWh/m ²			1244 kWh/m ²			
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 Ver. 6.2 (13.01.2022). 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								No						
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		I _X (MJ/m ²) >		600				
Maximum tested positive load								2410		Pa				
Maximum tested negative load								2006		Pa				
Hail resistance using steel ball (maximum drop height)								2		m				
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)					
BLUh+		1.96			9-V-1234S-A:7,1880-C:21,1050-D				1.84					
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})		60%			Zero-loss efficiency (η_0)				0.76		--			
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)				3.53		W/(m ² K)			
					Second-order coefficient (a ₂)				0.010		W/(m ² K ²)			
					Incidence angle modifier IAM (50°)				0.95		--			
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.														
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