

Certificate number	17580 Rev.0	Replaces	-
Issued	25/03/2024	First edition	25/03/2024
Report number	PKC0013076	Expiry date	17/12/2028
Page	1 of 1	Contract number	PKC0013119

Product Certificate Solar Thermal Products

License holder: **AMK COLLECTRA AG**
Lagerstrasse 30, 9740 Buchs/SG, Switzerland

Production site(s): Via Venezia 11 – 37053 Cerea (VR), Italy

Product Solar thermal collector

Model(s): OPC10p

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_N0444R7.

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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Industry Division Manager
Maurizio Lorenzon

Kiwa Cermet Italia S.p.A.

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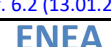



PRD N° 0069PRD

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



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Annex to Solar Keymark Certificate					Licence Number		17580 Rev.0							
					Date issued		2024-03-25							
					Issued by		Kiwa Cermet Italia S.p.A.							
Licence holder		AMK COLLECTRA AG			Country		Switzerland							
Brand (optional)					Web		https://amk-solac.com							
Street, Number		Lagerstrasse 30			E-mail		sales@amk-solac.com							
Postcode, City		9740, Buchs/SG			Tel		+44 817501717							
Collector Type					Evacuated tubular collector									
Collector name					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	93 K				
					m ²	W	W	W	W	W	W			
OPC10p					2.12	1,106	1,921	114	1,272	1,250	1,190	1,107	1,002	857
Power output per m ² gross area					600	590	561	522	473	404				
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		0.602	0.91	0.013	0.000	0.00	50,900	0.000	0.00	0.0E+00	0.98			
Incidence angle modifier test method		Quasi dynamic - outdoor												
Incidence angle modifier		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°			
Transversal		$K_{GT, coll}$	1.01	1.02	1.06	1.10	1.14	1.16	1.12	0.56	0.00			
Longitudinal		$K_{GL, coll}$	1.00	0.99	0.98	0.95	0.91	0.84	0.69	0.35	0.00			
Heat transfer medium for testing		Water												
Flow rate for testing (per gross area, A _G)		dm/dt	0.020	kg/(sm ²)										
Maximum temperature difference during thermal performance test		$(\vartheta_m - \vartheta_a)_{max}$	62	K										
Standard stagnation temperature ($G = 1000 \text{ W/m}^2$; $\vartheta_a = 30 \text{ }^\circ\text{C}$)		ϑ_{stg}	279	°C										
Maximum operating temperature		$\vartheta_{max, op}$	130	°C										
Maximum operating pressure		$p_{max, op}$	1000	kPa										
Testing laboratory		ENEA Centro Ricerche Trisaia					http://www.trisaia.enea.it							
Test report(s)		RP.2018.COL.202.1 RP.2018.COL.202a.1					Dated		18/12/2018 18/12/2018					
Comments of testing laboratory		Ver. 6.2 (13.01.2022)												
		 TERIN-SSI Dr. Vincenzo Sabatelli 												
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Annex to Solar Keymark Certificate Supplementary Information	Licence Number	17580 Rev.0
	Issued	2024-03-25

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
OPC10p		2,248	1,970	1,612	1,916	1,606	1,264	1,390	1,145	878	1,494	1,234	946
Gross Thermal Yield per m ² gross area		1,060	929	760	904	757	596	656	540	414	705	582	446
Annual efficiency, η_a		60%	53%	43%	55%	46%	37%	56%	46%	36%	57%	47%	36%
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)	B		--		
G (W/m ²) >	900	ϑ_a (°C) >	15	H_x (MJ/m ²) >	540
Maximum tested positive load	2416		Pa		
Maximum tested negative load	2014		Pa		
	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)
OPC10p	2.12	10-V-1122S-A:X-C:X	1.91

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})	54%	Zero-loss efficiency (η_0)	0.60
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)	0.91
		Second-order coefficient (a_2)	0.013
		Incidence angle modifier IAM (50°)	1.04
		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.	