



Certificate number	7693 Rev.0	Replaces	-
Issued	09/10/2024	First edition	09/10/2024
Report number	PKC0013377	Expiry date	17/12/2028
Page	1 of 1	Contract number	PKC0013529

## Product Certificate Solar Thermal Products

**License holder:** **JODO Italia S.r.l.**  
Via 11 Settembre, 6/1 – 37019 Peschiera del Garda (VR), Italy

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

**Product** Solar thermal collector

**Model(s):** SOLDFP21T

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](mailto: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



Annex to Solar Keymark Certificate

		Licence Number		7693 Rev.0										
		Date issued		2024-10-09										
		Issued by		Kiwa Cermet Italia S.p.A.										
Licence holder		JODO Italia S.r.l.		Country		Italy								
Brand (optional)				Web		https://www.jodoitalia.com								
Street, Number		Via 11 Settembre 6/1		E-mail		m.borri@jodoitalia.com								
Postcode, City		37019 Peschiera del Garda (VR)		Tel		+39 0309904804								
Collector Type				Evacuated tubular collector										
Collector name					Power output per collector									
					Gb = 850 W/m2, Gd = 150 W/m2 & u = 1.3 m/s $\vartheta_m - \vartheta_a$									
					0 K	10 K	30 K	50 K	70 K	94 K				
					W	W	W	W	W	W				
SOLDFP21T					4.45	2,316	1,921	114	2,710	2,677	2,598	2,501	2,386	2,223
Power output per m <sup>2</sup> gross area					609	602	584	562	536	499				
Performance parameters test method		Steady state - outdoor												
Performance parameters (related to A <sub>G</sub> )		$\eta_0, b$	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		0.611	0.690	0.005	0.000	0.00	50,900	0.000	0.00	0.0E+00	0.98			
Incidence angle modifier test method			Steady state - outdoor											
Incidence angle modifier		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°			
Transversal		K <sub>θT, coll</sub>	1.01	1.02	1.06	1.10	1.14	1.16	1.12	0.56	0.00			
Longitudinal		K <sub>θL, coll</sub>	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 <sub>G</sub> )				dm/dt	0.020	kg/(sm <sup>2</sup> )								
Maximum temperature difference during thermal performance test				( $\vartheta_m - \vartheta_a$ ) <sub>max</sub>	64.3	K								
Standard stagnation temperature (G = 1000 W/m <sup>2</sup> ; $\vartheta_a = 30$ °C)				$\vartheta_{stg}$	279	°C								
Maximum operating temperature				$\vartheta_{max, op}$	130	°C								
Maximum operating pressure				p <sub>max, op</sub>	1000	kPa								
Testing laboratory		ENEA Centro Ricerche Trisaia				http://www.trisaia.enea.it								
Test report(s)		RP.2018.COL.202.1				Dated		18/12/2018						
Comments of testing laboratory										Ver. 6.2 (13.01.2022)				
										<p style="text-align: center;"><b>ENEA</b> TERIN-SSI Dr. Vincenzo Sabatelli <i>Vincenzo Sabatelli</i></p>				
<p>Kiwa Cermet Italia S.p.A. • Via Cadriano, 23 • 40057 Granarolo dell'Emilia (BO) • Italy Tel: +39 0514593111 • Fax: +39 051763382 • E-Mail: info@kiwacermet.it • www.kiwa.it</p>														

Annex to Solar Keymark Certificate		Licence Number		7693 Rev.0												
Supplementary Information		Issued		2024-10-09												
<b>Gross Thermal Yield in kWh/collector at mean fluid temperature <math>\vartheta_m</math></b>																
Standard Locations		Athens		Davos		Stockholm		Würzburg								
Collector name	$\vartheta_m$	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C			
SOLDFP21T		4,808	4,423	3,966	4,206	3,791	3,337	3,031	2,686	2,326	3,249	2,885	2,500			
Gross Thermal Yield per m <sup>2</sup> gross area		1,080	994	891	945	852	750	681	604	523	730	648	562			
Annual efficiency, $\eta_a$		61%	56%	50%	58%	52%	46%	58%	52%	45%	59%	52%	45%			
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 Ver. 6.2 (13.01.2022). A detailed description of the calculations is available at <a href="http://www.estif.org/solarkeymarknew/">http://www.estif.org/solarkeymarknew/</a>																
<b>Additional Information</b>																
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 <sup>2</sup> ) >		900		$\vartheta_a$ (°C) >		15		$H_x$ (MJ/m <sup>2</sup> ) >		540						
Maximum tested positive load										2416		Pa				
Maximum tested negative load										2014		Pa				
												m				
<b>Additional collector attribute(s)</b>																
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				
<b>Energy Labelling Information</b>							<b>Additional Informative Technical Data</b>									
Reference Area, $A_{sol}$ (m <sup>2</sup> )							Hydraulic Designation Code			Aperture Area, $A_a$ (m <sup>2</sup> )						
SOLDFP21T							4.45			21-V-1122S-A:X-C:X			4.02			
Data required for CDR (EU) No 811/2013 - Reference Area							Data required for CDR (EU) No 812/2013 - Reference Area $A_{sol}$									
Collector efficiency ( $\eta_{col}$ )							57%									
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.							Zero-loss efficiency ( $\eta_0$ )			0.61				--		
							First-order coefficient ( $a_1$ )			0.69				W/(m <sup>2</sup> K)		
							Second-order coefficient ( $a_2$ )			0.005				W/(m <sup>2</sup> K <sup>2</sup> )		
							Incidence angle modifier IAM (50°)			1.03				--		
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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