

AENOR

Keymark Certificate Solar thermal energy



078/000363

AENOR certifies that the organization

TERMICOL ENERGÍA SOLAR, S.L.

registered office POLIGONO INDUSTRIAL LA ISLA - CL RIO VIEJO, 39 41703 DOS HERMANAS (Sevilla - España)

supplies Solar collectors

in compliance with UNE-EN 12975-1:2006+A1:2011 (EN 12975-1:2006+A1:2010)

Trade Mark G26, G26H
Technical information Specified in Annexes to the Certificate

Production site POLIGONO INDUSTRIAL LA ISLA - CL RIO VIEJO, 39 41703 DOS HERMANAS (Sevilla - España)

Certification scheme In order to grant this Certificate, AENOR has tested the product and has verified the quality system implemented for its manufacture. AENOR performs these tasks periodically while the Certificate has not been cancelled, in accordance with Specific Rules RP 078.01.

First issued on 2020-09-14
Validity date 2025-09-14


Rafael GARCÍA MEIRO
Chief Executive Officer

Original Electronic Certificate

AENOR INTERNACIONAL SAU.
Génova, 6. 28004 Madrid. España
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Product certification body accredited by ENAC, number 1/C-PR271



Annex to Solar Keymark Certificate					Licence Number		078/000363							
					Date issued		2020-09-14							
					Issued by		AENOR							
Licence holder		TERMICOL ENERGIA SOLAR, S.L.			Country		SPAIN							
Brand (optional)		--			Web		http://www.termicol.es							
Street, Number		C/ Rio Viejo 39			E-mail		info@termicol.com							
Postcode, City		41703 Dos Hermanas - SEVILLA			Tel		+34 954 930 545							
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 $\vartheta_m - \vartheta_a$									
					0 K	10 K	30 K	50 K	70 K	84 K				
					m ²	mm	mm	mm	mm	mm	mm			
					W	W	W	W	W	W				
G26H					2,53	1.240	2.040	81	1.920	1.829	1.629	1.405	1.157	968
G26					2,53	2.040	1.240	81	1.920	1.829	1.629	1.405	1.157	968
Power output per m ² gross area					759	723	644	555	457	383				
Performance parameters test method		Steady state - indoor												
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		0,780	3,47	0,012	0,000	0,00	4.534	0,000	0,00	0,0E+00	0,82			
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	0,99	0,97	0,94	0,88	0,79	0,59	0,00	0,00			
Longitudinal		K _{θL, coll}	1,00	0,99	0,97	0,94	0,88	0,79	0,59	0,00	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}	54	K							
Standard stagnation temperature (G = 1000 W/m ² ; $\vartheta_a = 30$ °C)					ϑ_{stg}	209,4	°C							
Maximum operating temperature					$\vartheta_{max, op}$	210	°C							
Maximum operating pressure					p _{max, op}	800	kPa							
Testing laboratory		Fundación CENER, LEST					http://www.cener.com							
Test report(s)		30.3785.0-001 30.3785.0-002 30.3785.0					Dated		30/07/2020					
Comments of testing laboratory					Datasheet version: 6.1, 2019-09-26									
					 CENER									
<p>AENOR INTERNACIONAL S.A.U. - Génova, 6. - 28004 - Madrid, España - Tel. 91 432 60 00 - www.aenor.com</p> <p>Product certification body accredited by ENAC, number 1/C-PR271</p>														



Annex to Solar Keymark Certificate Supplementary Information	Licence Number	078/000363
	Issued	2020-09-14

Annual collector output 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
G26H		2.908	2.069	1.359	2.222	1.545	986	1.624	1.073	660	1.760	1.147	695
G26		2.908	2.069	1.359	2.222	1.545	986	1.624	1.073	660	1.760	1.147	695
Annual output per m ² gross area		1.149	818	537	878	611	390	642	424	261	696	454	275
Annual efficiency, η_a		65%	46%	30%	54%	37%	24%	55%	36%	22%	56%	36%	22%
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. 6.1 (September 2019). 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
		H_x (MJ/m ²) >	600
Maximum tested positive load	2500		Pa
Maximum tested negative load	2500		Pa
Hail resistance using ice balls (diameter)	25		mm

Additional collector attribute(s)			
<input type="checkbox"/> Using external power source(s) for normal operation	<input type="checkbox"/> Active or passive measure(s) for self-protection		
<input type="checkbox"/> Co-generating thermal and electrical power	<input type="checkbox"/> Façade collector(s)		

Energy Labelling Information		Additional Informative Technical Data	
	Reference Area, A_{sol} (m ²)	Hydraulic Designation Code	Aperture Area, A_a (m ²)
G26H	2,53	1-H-1234S-A:7.2,115-C:16,2108-D	2,41
G26	2,53	1-V-1234S-A:7.2,1915-C:16,1284-D	2,41

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)	3,47
		Second-order coefficient (a_2)	0,012
		Incidence angle modifier IAM (50°)	0,87
		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.	