



Keymark Certificate



078/000349

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 G21, G21H
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 2020-02-28


Last issued on 2025-02-28

Validity 2030-02-28

Rafael GARCÍA MEIRO
CEO





Annex to Solar Keymark Certificate					Licence Number		078/000349							
					Date issued		2025-02-28							
					Issued by		AENOR							
Licence holder		TERMICOL ENERGÍA SOLAR, S.L.			Country		SPAIN							
Brand (optional)		--			Web		http://www.termicol.es							
Street, Number		C/ Río 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 $\vartheta_m - \vartheta_a$									
					Gross area (A _G) m ²	Gross length mm	Gross width mm	Gross height mm	0 K W	10 K W	30 K W	50 K W	70 K W	84 K W
G21					2,14	2.044	1.045	81	1.466	1.393	1.234	1.059	866	721
G21H					2,12	1.039	2.039	81	1.452	1.380	1.223	1.049	858	715
Power output per m ² gross area					685	651	577	495	405	337				
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		0,689	3,30	0,010	0,000	0,00	4.243	0,000	0,00	0,0E+00	0,96			
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	0,99	0,97	0,95	0,91	0,83	0,57	0,00			
Longitudinal		K _{θL, coll}	1,00	0,99	0,99	0,97	0,95	0,91	0,83	0,57	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 ; $\vartheta_a = 30\text{ °C}$)					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)		30.3598.0-001 R 30.3598.0-002 / 30.3598.0-003 30.3598.0 R / 30.3598.1 R					Dated		20/02/2020 10/03/2020					
Comments of testing laboratory					Ver. 6.2 (13.01.2022)									
- The collectors models G21 and G26 were tested according to ISO 9806:2017. According to SKM rules, the results of the collector model G21 are representative for the whole GOLD family.														
AENOR CONFÍA S.A.U. - Génova, 6. - 28004 - Madrid, España - Tel. 91 432 60 00- www.aenor.com														
Product certification body accredited by ENAC, number 1/C-PR271														



Annex to Solar Keymark Certificate Supplementary Information	Licence Number	078/000349
	Issued	2025-02-28

Gross Thermal Yield in kWh/collector at mean fluid temperature ϑ_m														
Collector name	Standard Locations nicol.com	ϑ_m	Athens			Davos			Stockholm			Würzburg		
			25	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C
G21			2.387	1.706	1.123	1.807	1.251	791	1.334	872	530	1.455	947	566
G21H			2.364	1.690	1.113	1.790	1.239	783	1.322	864	525	1.441	939	561
Gross Thermal Yield per m ² gross area			1.115	797	525	844	584	370	623	408	248	680	443	265
Annual efficiency, η_a			63%	45%	30%	52%	36%	23%	53%	35%	21%	55%	36%	21%
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	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)			
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)
G21	2,14	1-V-1234S-A:7.2,1915-C:16,1084-D	2,00
G21H	2,12	1-H-1234S-A:7.2,915-C:16,2108-D	2,00

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)	0,68
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)	3,30
		Second-order coefficient (a_2)	0,010
		Incidence angle modifier IAM (50°)	0,94
		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.	