

AENOR

Keymark Certificate Solar thermal energy



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.

This certificate supersedes 078/000349, dated 2020-09-24

First issued on 2020-02-28
Modified on 2020-12-23
Validity date 2025-02-28

Rafael GARCÍA MEIRO
Chief Executive Officer

Original Electronic Certificate

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Product certification body accredited by ENAC, number 1/C-PR271





Annex to Solar Keymark Certificate Supplementary Information	Licence Number	078/000349
	Issued	2020-12-23

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
G21		2.386	1.705	1.122	1.806	1.250	790	1.333	871	529	1.454	947	565
G21H		2.363	1.689	1.112	1.789	1.238	783	1.321	863	524	1.440	938	560
Annual output per m ² gross area		1.115	797	524	844	584	369	623	407	247	679	442	264
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. 6.1 (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)	
☐ Using external power source(s) for normal operation	☐ Active or passive measure(s) for self-protection
☐ Co-generating thermal and electrical power	☐ 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)
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.	