

AENOR

Keymark Certificate Solar thermal energy



078/000016

AENOR certifies that the organization

TERMICOL ENERGIA SOLAR, S.L.

registered office	PI LA ISLA - CL RIO VIEJO, 39 41703 DOS HERMANAS (Sevilla - España)
supplies	Solar collectors
in compliance with	UNE-EN 12975-1:2006 (EN 12975-1:2006)
Trade Mark	T8S, T8SH, T10S, T10SH
Technical information	Specified in Annexes to the Certificate
Production site	PI 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 078/000016, dated 2016-10-13
First issued on	2011-10-13
Modified on	2017-11-23
Validity date	2021-10-13

Rafael GARCÍA MEIRO
Chief Executive Officer

Original Electronic Certificate

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Product certification body accredited by ENAC, number 01/C-PR002.078



Annex to Solar Keymark Certificate Supplementary Information	Licence Number	078/000016
	Issued	2017-11-23

Annual collector output in kWh/collector at mean fluid temperature ϑ_m , based on ISO 9806:2013 test results

Collector name	Standard Locations ϑ_m	Athens			Davos			Stockholm			Würzburg		
		25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C
T8S		2.293	1.621	1.042	1.747	1.199	742	1.278	834	500	1.386	893	526
T8SH		2.293	1.621	1.042	1.747	1.199	742	1.278	834	500	1.386	893	526
T10S		2.836	2.004	1.289	2.160	1.482	918	1.581	1.032	618	1.714	1.104	650
T10SH		2.836	2.004	1.289	2.160	1.482	918	1.581	1.032	618	1.714	1.104	650
Annual output per m ² gross area		1.108	783	504	844	579	359	618	403	241	670	431	254
Fixed or tracking collector		Fixed (slope = latitude - 15°; rounded to nearest 5°)											
Annual irradiation on collector plane		1765 kWh/m ²			1714 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. 5.01 (March 2016). A detailed description of the calculations is available at www.solarkeymark.org/scenocalc

Additional Information

Collector heat transfer medium	Water-Glycole
Hybrid Thermal and Photo Voltaic collector	No
The collector is deemed to be suitable for roof integration	No
The collector was tested successfully according to EN ISO 9806:2013 under the following conditions:	
Climate class (A, B or C)	C
Maximum tested positive load	1020 Pa
Maximum tested negative load	1012 Pa
Hail resistance using steel ball (maximum drop height)	- m

Energy Labelling Information

	Reference Area, A_{sol} (m ²)	Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}	
T8S	2,07	Collector efficiency (η_{col})	58 %
T8SH	2,07	<i>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/m², 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 9806:2013.</i>	
T10S	2,56		
T10SH	2,56		
		Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}	
		Zero-loss efficiency (η_0)	0,733 --
		First-order coefficient (a_1)	3,34 W/(m ² K)
		Second-order coefficient (a_2)	0,014 W/(m ² K ²)
		Incidence angle modifier IAM (50°)	0,88 --
<i>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.</i>			