

AENOR

Keymark Certificate Solar thermal energy



078/000303

AENOR certifies that the organization

SOMAGAS-SOCIEDADE DE MATERIAIS DE GÁS, Lda.

registered office VIA JEAN PIAGET, 63 4410-236 CANELAS (Oporto - Portugal)

supplies Solar collectors

in compliance with UNE-EN 12975-1:2006 (EN 12975-1:2006)

Trade Mark SomaSol 2200, SomaSol 2600
Technical information Specified in Annexes to the Certificate

Production site 6066111-517470

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 2018-11-29

Validity date 2023-11-29


Rafael GARCÍA MEIRO
Chief Executive Officer

Original Electronic Certificate

AENOR INTERNACIONAL S.A.U.
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Product certification body accredited by ENAC, number 01/C-PR002.078



Annex to Solar Keymark Certificate - Summary of EN ISO 9806:2013 Test Results					Licence Number		078/000303							
					Date issued		2018-11-29							
					Issued by		AENOR							
Licence holder		SOMAGAS-SOCIEDADE DE MATERIAIS DE GÁS, Lda.			Country		PORTUGAL							
Brand (optional)		Somamol			Web		www.somagas.com							
Street, Number		VIA JEAN PIAGET, 63			E-mail		geral@somagas.com							
Postcode, City		4410-236 CANELAS			Tel		+351 227133197							
Collector Type					Flat plate collector, glazed									
Collector name					Gross area (A_G)	Gross length	Gross width	Gross height	Power output per collector $G_b = 850 \text{ W/m}^2$; $G_d = 150 \text{ W/m}^2$ $\vartheta_m - \vartheta_a$					
					m ²	mm	mm	mm	0 K	10 K	30 K	50 K	70 K	49 K
SomaSol 2200					2,23	2.089	1.069	98	1.557	1.478	1.303	1.105	884	1.115
SomaSol 2600					2,58	1.289	1.234	98	1.801	1.710	1.507	1.278	1.022	1.290
Power output per m ² gross area					698	663	584	495	396	500				
Performance parameters test method					Steady state - indoor									
Performance parameters (related to A_G)					η_0 ,hem	a1	a2							
Units					-	W/(m ² K)	W/(m ² K ²)							
Test results					0,698	3,401	0,013							
Incidence angle modifier test method					Steady state - outdoor									
Bi-directional incidence angle modifiers					No									
Incidence angle modifier					Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
Transversal					$K_{\theta T, coll}$					0,96				0,00
Longitudinal					$K_{\theta L, coll}$					0,96				0,00
Heat transfer medium for testing					Water									
Flow rate for testing (per gross area, A_G)					dm/dt	0,033								kg/(sm ²)
Maximum temperature difference for thermal performance calculations					$(\vartheta_m - \vartheta_a)_{max}$	49								K
Standard stagnation temperature ($G = 1000 \text{ W/m}^2$; $\vartheta_a = 30 \text{ °C}$)					ϑ_{stg}	214,8								°C
Effective thermal capacity, incl. fluid (per gross area, A_G)					C/m ²	4,36								kJ/(Km ²)
Maximum operating temperature					$\vartheta_{max, op}$	200								°C
Maximum operating pressure					$p_{max, op}$	1000								kPa
Testing laboratory					Fundación CENER-CIEMAT			http://www.cener.com						
Test report(s)					30.2367.0-4-1 / 30.2367.0-5-1 30.2367.0-6-1 / 30.2367.0 30.3280.0			Dated		29/10/2014 04/01/2018				
Comments of testing laboratory					Datashet version: 5.01, 2016-03-01									
- The collectors models SOMASOL 2200 and SOMASOL 2600 were tested according to ISO 9806:2013. According to SKM rules, the results of the collector model SOMASOL 2600 are representative for the whole SOMASOL family. These collectores were tested according to EN ISO 9806 in 2014 under a different trade Mark. For traceability between trademarks please contact AENOR.					 CENER									
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Annex to Solar Keymark Certificate Supplementary Information	Licence Number	078/000303
	Issued	2018-11-29

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
SomaSol 2200		2.528	1.786	1.143	1.905	1.295	788	1.411	906	531	1.535	982	566
SomaSol 2600		2.925	2.066	1.322	2.205	1.499	911	1.632	1.048	614	1.776	1.136	654
Annual output per m ² gross area		1.134	801	512	854	581	353	633	406	238	688	440	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	Yes	
The collector was tested successfully according to EN ISO 9806:2013 under the following conditions:		
Climate class (A, B or C)	A	--
Maximum tested positive load	2100	Pa
Maximum tested negative load	2100	Pa
Hail resistance using ice balls (diameter)	25	mm

Energy Labelling Information				
	Reference Area, A _{sol} (m ²)	Data required for CDR (EU) No 811/2013 - Reference Area A _{sol}		
SomaSol 2200	2,23	Collector efficiency (η_{col})	54	%
SomaSol 2600	2,58	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 9806:2013.		
		Data required for CDR (EU) No 812/2013 - Reference Area A _{sol}		
		Zero-loss efficiency (η_0)	0,698	--
		First-order coefficient (a ₁)	3,40	W/(m ² K)
		Second-order coefficient (a ₂)	0,013	W/(m ² K ²)
		Incidence angle modifier IAM (50°)	0,96	--
		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.		