

Annex to Solar Keymark Certificate													Licence Number			011-7S2926 F					
Supplementary Information													Issued			2024-06-04					
Gross Thermal Yield 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	25°C	50°C	75°C					
KSF-25D		2 999	2 220	1 533	2 327	1 679	1 131	1 695	1 161	751	1 850	1 261	806								
Gross Thermal Yield per m ² gross area		1 190	881	608	924	666	449	673	461	298	734	500	320								
Annual efficiency, η_a		67%	50%	34%	57%	41%	28%	58%	40%	26%	59%	40%	26%								
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													2600			Pa					
Maximum tested negative load													1500			Pa					
Hail resistance using steel ball (maximum drop height)													2			m					
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																					
		Reference Area, A _{sol} (m ²)		Hydraulic Designation Code								Aperture Area, A _a (m ²)									
KSF-25D		2.52		11-V-12345-7.2,1897-20.6,1310-D								2.32									
Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}																					
Collector efficiency (η_{col})		60%																			
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.																					
Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}																					
Zero-loss efficiency (η_0)		0.74																			
First-order coefficient (a_1)		3.16																			
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.																					
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