



Annex to Solar Keymark Certificate		Licence Number		011-7S2074 F											
Supplementary Information		Issued		2023-05-02											
<b>Gross Thermal Yield in kWh/collector at mean fluid temperature <math>\vartheta_m</math></b>															
	Standard Locations	Athens			Davos			Stockholm			Würzburg				
Collector name	$\vartheta_m$	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C		
SKT 1.0-w		3 140	2 174	1 354	2 340	1 555	916	1 733	1 089	620	1 896	1 183	663		
Gross Thermal Yield per m <sup>2</sup> gross area		1 231	853	531	918	610	359	680	427	243	743	464	260		
Annual efficiency, $\eta_a$		70%	48%	30%	56%	37%	22%	58%	37%	21%	60%	37%	21%		
Fixed or tracking collector		Fixed (slope = latitude - 15°; rounded to nearest 5°)													
Annual irradiation on collector plane		1765 kWh/m <sup>2</sup>			1630 kWh/m <sup>2</sup>			1166 kWh/m <sup>2</sup>			1244 kWh/m <sup>2</sup>				
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 $\vartheta_m$ (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 <a href="http://www.estif.org/solarkeymarknew/">http://www.estif.org/solarkeymarknew/</a>															
<b>Additional Information</b>															
Collector heat transfer medium										Water-Glycole					
The collector is deemed to be suitable for roof integration										Yes					
The collector was tested successfully under the following conditions:															
Climate class (A+, A, B or C)										A		--			
G (W/m <sup>2</sup> ) >		1000		$\vartheta_a$ (°C) >		20		H <sub>x</sub> (MJ/m <sup>2</sup> ) >		600					
Maximum tested positive load										4000		Pa			
Maximum tested negative load										3000		Pa			
Hail resistance using ice balls (diameter)										35		mm			
<b>Additional collector attribute(s)</b>															
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			
<b>Energy Labelling Information</b>						<b>Additional Informative Technical Data</b>									
		Reference Area, A <sub>sol</sub> (m <sup>2</sup> )				Hydraulic Designation Code				Aperture Area, A <sub>a</sub> (m <sup>2</sup> )					
SKT 1.0-w		2.55				2-V-1234S-A:7.1.13219-C:16.8.2125				2.43					
<b>Data required for CDR (EU) No 811/2013 - Reference Area A<sub>sol</sub></b>						<b>Data required for CDR (EU) No 812/2013 - Reference Area A<sub>sol</sub></b>									
Collector efficiency ( $\eta_{col}$ )		58%				Zero-loss efficiency ( $\eta_0$ )		0.76		--					
Remark: Collector efficiency ( $\eta_{col}$ ) 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 <sup>2</sup> , expressed in % and rounded to the nearest integer. Deviating from the regulation $\eta_{col}$ is based on reference area (A <sub>sol</sub> ) which is aperture area for values according to EN 12975-2 or gross area for ISO 9806:2017.						First-order coefficient (a <sub>1</sub> )		3.96		W/(m <sup>2</sup> K)					
						Second-order coefficient (a <sub>2</sub> )		0.014		W/(m <sup>2</sup> K <sup>2</sup> )					
						Incidence angle modifier IAM (50°)		0.95		--					
Remark: The data given in this section are related to collector reference area (A <sub>sol</sub> ) 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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