

Annex to Solar Keymark Certificate Supplementary Information	Licence Number	011-7S3230 R
	Issued	2024-03-08

Gross Thermal Yield in kWh/collector at mean fluid temperature ϑ_m													
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
TZ58/1800-20G		2,775	1,766	818	1,972	1,096	375	1,511	828	302	1,657	900	340
TZ58/1800-25G		3,452	2,196	1,017	2,453	1,363	466	1,879	1,030	376	2,061	1,119	423
TZ58/1800-30G		4,128	2,626	1,216	2,933	1,630	558	2,248	1,232	450	2,465	1,338	506
Gross Thermal Yield per m ² gross area		876	557	258	622	346	118	477	261	95	523	284	107
Annual efficiency, η_a		50%	32%	15%	38%	21%	7%	41%	22%	8%	42%	23%	9%
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	Yes				
The collector was tested successfully under the following conditions:					
Climate class (A+, A, B or C)	B		--		
G (W/m ²) >	900	ϑ_a (°C) >	15	H_x (MJ/m ²) >	540
Maximum tested positive load	1500		Pa		
Maximum tested negative load	1500		Pa		
Hail resistance using steel ball (maximum drop height)	0.4		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		Additional Informative Technical Data	
	Reference Area, A_{sol} (m ²)	Hydraulic Designation Code	Aperture Area, A_a (m ²)
TZ58/1800-20G	3.17	1-H-12S-C:28.5,1790-D	1.94
TZ58/1800-25G	3.94	1-H-12S-C:28.5,2205-D	2.43
TZ58/1800-30G	4.71	1-H-12S-C:28.5,2620-D	2.91

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})	28%	Zero-loss efficiency (η_0)	0.44
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)	2.84
		Second-order coefficient (a_2)	0.031
		Incidence angle modifier IAM (50°)	1.32
		W/(m ² K)	--
		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.	