

Annex to Solar Keymark Certificate										Licence Number		011-7S2926 F	
Supplementary Information										Issued		2019-06-12	
Annual collector output 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
KSF 25D		2 953	2 147	1 449	2 259	1 595	1 039	1 662	1 110	695	1 811	1 206	743
Annual output per m ² gross area		1 172	852	575	896	633	412	659	441	276	719	479	295
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. 6.0 (October 2018). A detailed description of the calculations is available at www.solarkeymark.org/scenocalc													
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)	B											--	
G (W/m ²) >	900	ϑ_a (°C) >			15	H_x (MJ/m ²) >			540				
Maximum tested positive load	3000											Pa	
Maximum tested negative load	2000											Pa	
Hail resistance using steel ball (maximum drop height)	n.a.											m	
Additional collector attribute(s)													
<input type="checkbox"/> Using external power source(s) for normal operation <input type="checkbox"/> Active or passive measure(s) for self-protection <input type="checkbox"/> Co-generating thermal and electrical power <input type="checkbox"/> Wind and/or infrared sensitive collector(s) (WISC) <input type="checkbox"/> Façade collector(s)													
Energy Labelling Information													
	Reference Area, A_{sol} (m ²)	Hydraulic Designation Code											
KSF 25D	2.52	11-V-1234S-A:7.2,1894-C:20.6,1310-D											
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})	58%						Zero-loss efficiency (η_0)	0.72		--			
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)						3.29		W/(m ² K)				
	Second-order coefficient (a_2)						0.010		W/(m ² K ²)				
	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.												
DIN CERTCO • Alboinstraße 56 • 12103 Berlin, Germany Tel: +49 30 7562-1131 • Fax: +49 30 7562-1141 • E-Mail: info@dincertco.de • www.dincertco.de													