

### Holder/Issued to/Manufacturer

## Guangdong Sunte Solar Co., Ltd.

No.2, Yanjiang East Road, Zhonglizhou, Dafen Community, Wanjiang District Dongguan City Guangdong Province China (523000)

### Product name and description

Flat plate solar thermal collectors for water heating.  
For technical information see Appendix (2 pages).

Models: STE-2.0C-AO-F STE-2.5C-AO-F

### Performance specification

The product is found to comply with the requirements in EN 12975-1:2006+A1:2010 Solar collectors, Part 1: General requirements and the Specific CEN Keymark Scheme Rules for Solar Thermal Products and are based on test results according to EN ISO 9806:2017 Solar thermal collectors – Test methods.

### Marking

Products conforming to this certificate shall be marked in accordance with the requirements in the Specific CEN Keymark Scheme Rules for Solar Thermal Products. The marking shall, together with the Keymark logo, show the identification code of the empowered certification body (RISE Research Institutes of Sweden AB, No. 012), also see CEN-CENELEC Internal Regulations Part 4 Certification, Annex A.

### Validity

This certificate is valid until 2024-07-05 provided that the conditions in the Solar Keymark Rules are fulfilled and the standard or rules are not modified significantly. The validity of the certificate can be checked in the database, see Solar Keymark website <http://www.solarkeymark.org>.

### Miscellaneous

The manufacturer's factory production control procedures are under surveillance by the responsibility of RISE. RISE certification rules SPCR 402 for Keymark – Solar Thermal Products applies.

Martin Tillander

Magnus Sturesson

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2017-08-08



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Annex to Solar Keymark Certificate Supplementary Information	Licence Number	SC0159-19
	Issued	2019-07-05

Annual collector output in kWh/collector at mean fluid temperature $\vartheta_m$													
Collector name	Standard Locations $\vartheta_m$	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
STE-2.0C-AO-F		2 284	1 415	758	1 614	962	476	1 207	678	329	1 320	726	349
STE-2.5C-AO-F		2 855	1 769	948	2 017	1 203	595	1 509	847	412	1 650	907	436
Annual output per m <sup>2</sup> gross area		1 142	708	379	807	481	238	604	339	165	660	363	174
Fixed or tracking collector		Fixed (slope = latitude - 15°; rounded to nearest 5°)											
Annual irradiation on collector plane		1765 kWh/m <sup>2</sup>			1714 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. 6.0 (October 2018). A detailed description of the calculations is available at [www.solarkeymark.org/scenocalc](http://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 <sup>2</sup> ) >	900
$\vartheta_a$ (°C) >	15
$H_x$ (MJ/m <sup>2</sup> ) >	540
Maximum tested positive load	3000 Pa
Maximum tested negative load	1000 Pa
Hail resistance using steel ball (maximum drop height)	2,0 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 <sup>2</sup> )	Hydraulic Designation Code
STE-2.0C-AO-F	2,00	10-VH-1234S-A:10,1920-C:22,1060-D
STE-2.5C-AO-F	2,50	12-VH-1234S-A:10,1920-C:22,1310-D

### Data required for CDR (EU) No 811/2013 - Reference Area $A_{sol}$

Collector efficiency ( $\eta_{col}$ )	52%	Zero-loss efficiency ( $\eta_0$ )	0,74	--
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 ( $A_{sol}$ ) which is aperture area for values according to EN 12975-2 or gross area for ISO 9806:2017.		First-order coefficient ( $a_1$ )	4,930	W/(m <sup>2</sup> K)
		Second-order coefficient ( $a_2$ )	0,014	W/(m <sup>2</sup> K <sup>2</sup> )
		Incidence angle modifier IAM (50°)	0,91	--

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.