



CERTIFIKAT

Solar Keymark Certificate No. SP SC0870-15

Holder/Issued to

Company: Sun Heating Tec Co., Ltd.

Address: No. 8 Puhui Rd., Economic Development Zone, Shengzhou, Zhejiang, China

Product name and description

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

Models:	SHT 2000A
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Certificate

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 9806:2013 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 (SP Technical Research Institute of Sweden, No. 012), also see CEN-CENELEC Internal Regulations Part 4 Certification, Annex A.

Validity

This certificate is valid until 2020-11-17 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 SP. This is the first version of this certificate.

Borås, Sweden 2015-11-17

**SP Technical Research Institute of Sweden
Certification**


Lennart Aronsson
Product Certification Manager


Susanne Hansson
Certification Officer



Summary of ISO 9806:2013 Test Results, annex to Solar KEYMARK Certificate						Licence Number SP SC0870-15					
						Issued		2015-11-17			
Company holding the				Sun Heating Tec Co., Ltd.		Country		China			
Brand (optional)				SHT		Website		www.sunheatingtec.com			
Street, street number				No.8 Puhui Rd, Economic Development Zone		E-mail		info@sunheatingtec.com			
Postal Code / City, province				Shengzhou, Zhejiang		Tel/Fax		+86 575-8138-9722/575-8138-9726			
Collector Type (flat plate glazed/un-glazed; evacuate tubular)						Flat plate collector - glazed					
Thermal / photo voltaic hybrid collector? (PVT collector)						No					
Integration in the roof possible? (manufacturers declaration)						No					
Collector name	Aperture area (Aa) m ²	Gross length mm	Gross width mm	Gross height mm	Gross area (AG) m ²	Power output per collector module					
						G = 1000 W/m ²					
						T _m -T _a					
						0 K	10 K	30 K	50 K	70 K	
						W	W	W	W	W	
SHT 2000A	1.85	2 000	1 000	76	2.00	1 468	1 389	1 197	958	674	
Performance test method						Glazed liquid heating collector - steady state - outdoor					
Performance parameters related to aperture						η ₀	a ₁	a ₂			
Units						-	W/(m ² K)	W/(m ² K ²)			
Test results - Flow rate and fluid see note 1						0.792	3.945	0.031			
Bi-directional incidence angle modifiers?						No	<i>Kθ values are obligatory for 50°.</i>				
Incidence angle modifiers Kθ(θ)		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
		Kθ(θ)						0.93			
Incidence angle modifier not bi-directional - leave fields blank											
Stagnation temperature - Weather conditions see note 2						T _{stg}	183	°C			
Effective thermal capacity						ceff = C/Ag	2.71	kJ/(m ² K)			
Max. intended operation temperature - see note 3						T _{max,op}	120	°C			
Max. operation pressure - see note 3						p _{max,op}	800	kPa			
Pressure drop table - for a collector family, the values shall be for the module with highest ΔP per m ² aperture area											
Flow rate	kg/(s m ²)	0.000	0.005	0.011	0.017	0.024	0.030				
Pressure drop, ΔP	Pa	0	26	73	118	173	244				
Optional weather data		Location			Link						
Testing Laboratory						Intertek Testing Services Shenzhen Ltd. Guangzhou Branch					
Website						www.intertek.com					
Test report id. number						150506078GZU-001		Date of test report		2015-10-24	
During the test GDIF/GTOT was always between						0.17	and	0.23			
Comments of testing laboratory:											
No comment.											
Note 1	Flow rate	0.020	kg/(s m ²)	Fluid	Water						
Note 2	Irradiance, G = 1000 W/m ² ; Ambient temperature, T _a = 30 °C										
Note 3	Given by manufacturer										
Proj5P08101						Datasheet version: 4.06, 2014-01-15					
Certification Body: SP Technical Research Institute of Sweden Box 857, 501 15 Borås, Sweden											
www.sp.se info@sp.se tel +4610 516 5000											



Annex to Solar Keymark Certificate

Annual collector output based on ISO 9806:2013 Test Results, annex to Solar KEYMARK Certificate	Licence Number	SP SC0870-15
	Issued	2015-11-17

Annual collector output kWh/module													
Collector name	Location and collector temperature (T _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	
SHT 2000A	2 308	1 542	849	1 706	1 058	518	1 268	752	366	1 381	811	389	

Collector mounting: Fixed or tracking	Fixed; slope = latitude - 15° (rounded to nearest 5°)
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Overview of locations				
Location	Latitude °	G _{tot} kWh/m ²	T _a °C	Collector orientation or tracking mode
Athens	38	1 765	18.5	South, 25°
Davos	47	1 714	3.2	South, 30°
Stockholm	59	1 166	7.5	South, 45°
Würzburg	50	1 244	9.0	South, 35°

G _{tot} Annual total irradiation on collector plane	kWh/m ²
T _a Mean annual ambient air temperature	°C
T _m Constant collector operating temperature (mean of in- and outlet temperatures)	°C

The calculation of the annual collector performance is performed with the official Solar Keymark spreadsheet tool ScenoCalc. The collector output is calculated hour by hour according to the efficiency parameters from the Keymark test using constant collector operating temperature (T_m). A detailed description of the calculations is available at <http://www.sp.se/en/index/services/solar/ScenoCalc/Sidor/default.aspx>.

Certification Body: SP Technical Research Institute of Sweden Box 857, 501 15 Borås, Sweden www.sp.se info@sp.se tel +4610 516 5000	Datasheet version:
	4.06, 2014-01-15
	ScenoCalc version:
	Ver. 4.06 (Jan, 2014)