



CERTIFIKAT

Solar Keymark Certificate

No. SP SC0055-14

Holder/Issued to

Company: Zhejiang Shentai Solar Energy Co., Ltd.
Address: 199 Lianhong road, Yuanhua Industry Zone, Haining, Zhejiang, China

Product name and description

Vacuum tube thermal solar collectors for water heating. For technical information see Appendix.

Models:	SHC8, SHC9, SHC10, SHC12, SHC14, SHC15, SHC16, SHC18, SHC20, SHC21, SHC22, SHC24
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Certificate

The product mentioned above is found to comply with requirements in EN 12975-1:2006+A1:2010 and EN 12975-2: 2006 and the Specific CEN Keymark Scheme Rules for Solar Thermal Products.

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 2019-01-20 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 2014-01-20

SP Technical Research Institute of Sweden Certification


Lennart Aronsson
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SP Technical Research Institute of Sweden

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Empowered Certification Body No. 012: SP Certification, Sweden
For more information of Solar Keymark visit: www.solarkeymar.org
This certificate may not be reproduced other than in full, except with the prior written approval by SP. 4P00317

Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate		Certificate number	SP SC0055-14
		Date of issue	2014-01-20
Company holding the licence	Zhejiang Shentai Solar Energy Co.,Ltd	Country	China
Brand (optional)	Suntask	Website	www.suntasksolar.com
Street, number	Lianhong road, 199	E-mail	info@suntasksolar.com
Postal Code	314416	Tel.	+86 573-87861111
City	Haining	Fax	+86 573-87862577

Collector Type (flat plate / evacuate tubular / un-glazed)	Evacuated tubular collector
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Integration in the roof possible ?	No
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Collector name	Aperture area (A _a) [m ²]	Gross length [mm]	Gross width [mm]	Gross height [mm]	Gross area (A _G) [m ²]	Power output per collector unit G = 1000 W/m ² T _m -T _a :				
						0 K	10 K	30 K	50 K	70 K
						[W]	[W]	[W]	[W]	[W]
SHC8	1.41	1917	910	133	1.74	939	917	869	815	755
SHC9	1.59	1917	1020	133	1.96	1064	1039	985	923	855
SHC10	1.78	1917	1130	133	2.17	1189	1162	1101	1032	956
SHC12	2.16	1917	1350	133	2.59	1440	1406	1333	1250	1158
SHC14	2.53	1917	1570	133	3.01	1690	1651	1564	1467	1359
SHC15	2.72	1917	1680	133	3.22	1815	1773	1680	1576	1460
SHC16	2.91	1917	1790	133	3.43	1941	1895	1796	1684	1560
SHC18	3.28	1917	2010	133	3.85	2191	2140	2028	1902	1762
SHC20	3.66	1917	2230	133	4.28	2442	2384	2260	2119	1963
SHC21	3.84	1917	2340	133	4.49	2567	2507	2376	2228	2064
SHC22	4.03	1917	2450	133	4.70	2692	2629	2491	2337	2165
SHC24	4.41	1917	2670	133	5.12	2943	2874	2723	2554	2366

Collector efficiency parameters related to <u>aperture area (A_a)</u> Type of fluid and flow rate see note 1	η _{0a}	0.668	-
	a _{1a}	1.496	W/(m ² K)
	a _{2a}	0.005	W/(m ² K ²)

Stagnation temperature - Weather conditions see note 2	t _{stg}	276	°C
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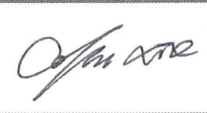
Effective thermal capacity	C _{eff} = C/A _a	3.17	kJ/(m ² K)
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Max. operation pressure - see note 3	p _{max}	1000	kPa
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Incidence angle modifiers K _θ (θ)	G _{DIF} /G _{TOT}		θ _T /θ _L	50°	10°	20°	30°	40°	60°	70°
	min	max	K _θ (θ _T)	--	--	1.03	--	1.05	1.18	--
	0.07		0.12	K _θ (θ _L)	0.95	--	--	--	--	--
G _{DIF} /G _{TOT} : min&max - while measuring										
<i>Optional values</i>										

Testing Laboratory	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Website	www.intertek.com
Test report id. number	131016040GZU -001
Date of test report	2014-1-7
Perf. test method	EN 12975-2 6.1.4 (outdoor)

Comments of testing laboratory :
The "negative pressure test of the collector" according to EN 12975-2:2006,5.9.2 was not performed.

Note 1	Fluid	Water	Flow rate	0.020	kg/s per m ²		
Note 2	Irradiance, G _s =1000 W/m ² ; Ambient temperature, T _a =30 °C						
Note 3	Given by manufacturer						

Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Certificate number	SP SC0055-14
	Date of issue	2014-01-20

Annual collector output kWh														
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		
SHC8	1598	1372	1147	1345	1134	937	969	793	637	1043	855	683		
SHC9	1811	1554	1300	1524	1285	1062	1098	898	722	1182	969	774		
SHC10	2024	1738	1453	1704	1436	1187	1227	1005	807	1321	1083	865		
SHC12	2450	2104	1759	2062	1739	1437	1486	1216	977	1599	1311	1047		
SHC14	2877	2470	2065	2421	2041	1687	1744	1428	1147	1878	1539	1229		
SHC15	3089	2652	2217	2600	2192	1811	1873	1533	1231	2016	1653	1320		
SHC16	3303	2836	2371	2780	2344	1937	2003	1639	1317	2156	1767	1412		
SHC18	3729	3202	2677	3139	2646	2187	2261	1851	1486	2434	1995	1594		
SHC20	4155	3568	2983	3497	2949	2436	2520	2062	1656	2712	2223	1776		
SHC21	4369	3751	3136	3677	3100	2562	2649	2168	1742	2852	2338	1867		
SHC22	4581	3934	3288	3856	3251	2686	2778	2274	1826	2990	2451	1958		
SHC24	5008	4299	3594	4215	3554	2936	3037	2485	1996	3268	2679	2140		

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

Calculation of the annual collector performance is done by the official Solar Keymark spreadsheet tool. Hour by hour the collector output is calculated according to the efficiency parameters from the Keymark test using constant collector operating temperature (T_m). Detailed description with all equations used is available from the Solar Keymark web site (direct link: <http://www.estif.org/solarkeymark/annexb1.php>)

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	VERSION 3.6, 2012.01.20
	Calculation program version:
	Ver4.05, Nov,2013 (SP) <i>[Signature]</i>