CERTIFIKAT

Solar Keymark Licence
No. SP SC1054-11

Holder/Issued to/Manufacturer

Company: Jiangsu Sunrain Solar Energy Co.,Ltd
Address: Ning Hai Industrial Zone, Lianyungang City, Jiangsu Province, China

Product name and description

Thermal solar sollector. For technical information see Appendix.

Model:	**TZ58/1800-xxR5**	Collector type:	Evacuated tube
Number of covers:	1	Cover material:	Borosilicate glass
Casing material:	Aluminium	Weight, empty:	34 -109 kg
Absorber construction type:	Evacuated tubular collector with heat pipe	Heat transfer fluid:	Water / Glycol

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 2016-11-29 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.estif.org/solarkeymark/index.php

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 29th November 2011

SP Technical Research Institute of Sweden
Certification

Lennart Aronsson
Product Certification Manager

Peter Kovács
Certification Officer

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Appendix to Solar Keymark Licence No. SP SC1054-11

Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate Kurzfassung EN 12975 Test Ergebnisse, Anlage zum Solar KEYMARK-Zertifikat Synthèse des résultas d'essais selon EN 12975, annexe au certificat Solar KEYMARK	**Registration No.** Registernummer Numéro d'enregistrement	**SP SC1054-11**
	Date / Datum / Date	29-11-2011

Company / Firma / Société	Jiangsu Sunrain Solar Energy Co.,Ltd		**Country**/Land/Pays		China
Brand (optional)	SUNRAIN		**Website**		http://en.sunrain.com
Street / Straße / Rue	Ning Hai Industrial Zone, Lianyungang City, Jiangsu Province		**E-mail**		certification@sunrain.com
Postal Code, Place / PLZ, Ort / Code postal, Place	222243	China	**Tel.**	+86	0518-85959889
			Fax	+86	0518-85959808

Collector Type / Kollektorbauart / Type de capteur	Evacuated tube / Vakuumröhrenkollektor / Capteur à tube sous vide
To be roof integrated / im Dach eingegliedert zu sein / pour etre intégré dans le toit	No / nein / non

Product name Produktbezeichnung Modèle	**Aperture area** A_a Aperturfläche Superficie d'entrée	**Gross length** Länge(Außenmaß) Longueuhors tout	**Gross width** Breite (Außenmaß) largeur hors tout	**Gross height** Höhe (Außenmaß) epaisseur hors tout	**Gross area** A_G Bruttofläche Superficie hors-tout	**Power output per collector unit** Leistung je Kollektormodul Puissance fournie par le capteur G = 1000 W/m² Tm-Ta :				
						0 K	10 K	30 K	50 K	70 K
	[m²]	[mm]	[mm]	[mm]	[m²]	[W]	[W]	[W]	[W]	[W]
TZ58/1800-10R5	0.93	1978	828	110	1.64	633	613	556	480	383
TZ58/1800-12R5	1.12	1978	984	110	1.95	760	736	667	576	460
TZ58/1800-15R5	1.40	1978	1218	110	2.41	950	920	834	720	575
TZ58/1800-18R5	1.67	1978	1452	110	2.87	1139	1103	1001	864	689
TZ58/1800-20R5	1.86	1978	1608	110	3.18	1266	1226	1112	960	766
TZ58/1800-25R5	2.33	1978	1998	110	3.95	1583	1533	1390	1200	958
TZ58/1800-30R5	2.78	1978	2388	110	4.72	1892	1832	1662	1435	1145

Collector efficiency parameters related to aperture area Kollektorleistungsparameter bezogen auf die Aperturfläche Paramètres de performances thermiques rapportées à la superficie d'entrée {note 1}	η_{0a}	0.681	-
	a_{1a}	1.96	W/(m²K)
	a_{2a}	0.027	W/(m²K²)
Stagnation temperature / Stagnationstemperatur / Temperature de stagnation {note 2}	t_{stg}	225.3	°C
Effective thermal capacity / Effektive Wärmekapazität / Capacité thermique effective	$C_{eff} = C/A_a$	24.93	kJ/(m²K)
Max. operation pressure / max. Betriebsdruck / pression d'opération de maximum {note 3}	p_{max}	600	kPa

Incidence angle modifiers $K_\theta(\theta)$ Einfallswinkelkorrekturfaktoren $K_\theta(\theta)$ Facteur d'angle d'incidence $K_\theta(\theta)$	G_{DIF}/G_{TOT}		θ_T / θ_L	50°	10°	20°	30°	40°	60°	70°
	min	max	$K_\theta(\theta_T)$	--	--	1.08	--	1.2	1.64	--
	0.14	0.2	$K_\theta(\theta_L)$	0.94	--	--	--	--	--	--
G_{DIF}/G_{TOT}: min&max while measuring / min&max während messen / min&max pendant qu'essayant					***Optional values*** */ Angaben optional / Données optionnelles*					

Testing Laboratory / Prüflaboratorium / Laboratoire d'essais	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Website	www.intertek.com
Test report id. number / Prüberichtsnummer / numéro d'identification de rapport des essais	GZ11081694-1
Date of test report / Datum des Prüfberichts / date de rapport des essais	2011-10-18
Perf. test method / Leistungstestmethode / méthode d'essai de performance	EN 12975-2 6.1.4 (outdoor/außen/extérieur)

Comments of testing laboratory / Kommentare des Prüflaboratoriums / commentaires du laboratoire d'essais :

Also ITW Test reports No. 10COL919, 10COL920 and 10COL920Q all dated 2011-05-10 are used for evaluation of the certified product.

Note 1	**Test conditions** Prüfbedingungen Conditions d'essais	**Fluid** Flüssigkeit Liquide	Water Wasser Eau	**Flow rate** Durchfluss Débit	0.020	kg/s per m²	
Note 2	**Irradiance** / Bestrahlungsstärke / Irradiance **G_s=1000 W/m²** **Ambient temperature** / Umgebungstemperature / Temperature ambiante: **t_a=30 °C**						
Note 3	**Given by manufacturer** / Herstellerangaben / donnée par le fabricant						

Stamp of test lab

Version 0.2.8, 19-08-2009

Empowered Certification Body No. 012: SP Certification, Sweden PX16688
For more information of Solar Keymark visit: www.estif.org/solarkeymark/regcol.php
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