TÜVRheinland®
DIN CERTCO

Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate	**Licence number**	**011 - 7S1595 R**
	Date of issue	

Company holding the licence	China Hitek Solar Co., Ltd.	**Country**		China
Brand (optional)		**Website**		www.hitek-solar.com
Street, number	No. 25 Zhujiang Road	**E-mail**		info@hitek-solar.com
Postal Code	214028	**Tel.**	+86	51 085 229 209
City	New District, Wuxi	**Fax**		

Collector Type (flat plate / evacuate tubular / un-glazed)	Evacuated tubular collector
Integration in the roof possible ?	No

Collector name	Aperture area (Aa) [m²]	Gross length [mm]	Gross width [mm]	Gross height [mm]	Gross area (AG) [m²]	Power output per collector unit G = 1000 W/m², Tm-Ta : 0 K [W]	10 K [W]	30 K [W]	50 K [W]	70 K [W]
NSC-70-10	1.085	1898	1060	155	2.012	690	658	590	513	429

Collector efficiency parameters related to aperture area (Aa) Type of fluid and flow rate see note 1	η_{0a}	0.635	-
	a_{1a}	2.7942	W/(m²K)
	a_{2a}	0.0091	W/(m²K²)
Stagnation temperature - Weather conditions see note 2	t_{stg}	196	°C
Effective thermal capacity	$c_{eff} = C/A_a$	11.991	kJ/(m²K)
Max. operation pressure - see note 3	p_{max}	600	kPa

Incidence angle modifiers $K_\theta(\theta)$	G_{DIF}/G_{TOT} min	G_{DIF}/G_{TOT} max	θ_T / θ_L	50°	*10°*	*20°*	*30°*	*40°*	*60°*	*70°*
	0.08	0.11	$K_\theta(\theta_T)$	1.050	*1.000*	*1.000*	*1.010*	*1.030*	*1.040*	*0.760*
			$K_\theta(\theta_L)$	0.900	*1.000*	*0.990*	*0.970*	*0.950*	*0.830*	*0.670*
G_{DIF}/G_{TOT}: min&max - while measuring					***Optional values***					

Testing Laboratory	IZES gGmbH, TZSB an der HTW
Website	www.izes.de/tzsb/
Test report id. number	KT10_01_2
Date of test report	18-06-2013
Perf. test method	EN 12975-2 6.1.4 (outdoor)

Comments of testing laboratory :

Note 1	**Fluid**	Water	**Flow rate**	0.0205	kg/s per m²
Note 2	**Irradiance, Gs=1000 W/m²; Ambient temperature , Ta=30 °C**				
Note 3	**Given by manufacturer**				

tzsb Testzentrum Solarthermie Gebäude D2 66115 Saarbrücken

VERSION 3.6, 2012.01.20

Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence number	011 - 7S1595 R
	Issued	0

Annual collector output kWh

Collector name	Location and collector temperature (Tm)														
	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			
NSC-70-10	1126	829	568	933	667	440	639	436	280	693	470	297			

Collector mounting: Fixed or tracking	Fixed; slope = latitude - 15° (rounded to nearest 5°)

Overview of locations

Location	Latitude °	Gtot kWh/m²	Ta °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°

Gtot	Annual total irradiation on collector plane	kWh/m²
Ta	Mean annual ambient air temperature	°C
Tm	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 (Tm). 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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Calculation program version:
3.07, October 2011 (SP)