Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate		Licence Number	011-7S2517 F
		Issued	2016-05-10

Company holding the	Skorut Systemy Solarne Sp. z o. o.		Country	Poland	
Brand (optional)			Website	http://www.skorut-solar.pl/	
Street, street number	ul. Wybickiego 71		E-mail	office@skorut-solar.pl	
Postal Code / City, province	32-400	Myślenice	Tel/Fax	48	12 272 -20 25 / -31 24

Collector Type (flat plate glazed/un-glazed; evacuate tubular)	Flat plate collector - glazed
Thermal / photo voltaic hybid collector? (PVT collector)	No
Integration in the roof possible ? (manufacturers declaration)	No

	Aperture area (Aa)	Gross length	Gross width	Gross height	Gross area (AG)	Power output per collector module Gb = 850 W/m²; Gd = 150 W/m² Tm-Ta				
						0 K	10 K	30 K	50 K	70 K
Collector name	m²	mm	mm	mm	**m²**	W	W	W	W	W
MAX1	2.13	2 037	1 137	80	**2.32**	1 580	1 503	1 335	1 147	941
SK 2.2 *	2.20	2 098	1 137	80	**2.39**	1 632	1 553	1 378	1 185	972
ASKOSOLARMAX *	2.35	2 224	1 137	80	**2.53**	1 744	1 658	1 472	1 266	1 038
SK 2.52 Al	2.52	2 393	1 137	80	**2.72**	1 870	1 778	1 579	1 357	1 113

Performance test method	Liquid heating collector - quasi-dynamic - outdoor							
Performance parameters related to aperture area	η0b	c1	c2	c3	c4	c6	Kθd	
Units	-	W/(m²K)	W/(m²K²)	J/(m³K)	-	s/m	-	
Test results - Flow rate and fluid see note 1	0.750	3.518	0.011	0.000	0.000	0.000	0.929	

Bi-directional incidence angle modifiers?	No	*K θ values are obligatory for 50°.*								
Incidence angle modifiers Kθ(θ)	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
	Kθ(θ)	1.00	0.99	0.98	0.96	0.92	0.87	0.74	0.36	0.00
Incidence angle modifier not bi-directional - leave fields blank										

Stagnation temperature - Weather conditions see note 2	Tstg	197 °C
Effective thermal capacity	ceff = C/Ag	15.347 kJ/(m²K)
Max. intende operation temperature - see note 3	Tmax,op	180 °C
Max. operation pressure - see note 3	pmax,op	1000 kPa

Pressure drop table - for a collector family, the values shall be for the module with highest ΔP per m² aperture area											
Flow rate	kg/(s m²)	-	-	-	-	-	-	-	-	-	-
Pressure drop, ΔP	Pa	-	-	-	-	-	-	-	-	-	-

Optional weather data	Location		Link	
Testing Laboratory	TZS, ITW University of Stuttgart			
Website	http://www.itw.uni-stuttgart.de			
Test report id. number	14COL1235, 14COL1236, - 1236Q	Date of test report	2016.05.10	
During the test GDIF/GTOT was always between	0	and	1	

Comments of testing laboratory:

* acc. to manufacturer

This data sheet relpaces the data sheet issued on 2015.11.24. Collector name SK2.52 was corrected to SK 2.52 Al.

Note 1	Flow rate	0.020	kg/(s m²)	Fluid	Water
Note 2	Irradiance, G = 1000 W/m²; Ambient temperature , Ta=30 °C				
Note 3	Given by manufacturer				

Datasheet version: 4.06, 2014-01-15

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Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	011-7S2517 F
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Annual collector output kWh/module

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
MAX1	2 520	1 799	1 183	1 913	1 325	840	1 408	923	563	1 534	999	600
SK 2.2 *	2 603	1 858	1 222	1 976	1 369	868	1 454	954	581	1 584	1 032	619
ASKOSOLARMAX *	2 781	1 985	1 305	2 110	1 462	927	1 553	1 019	621	1 692	1 102	661
SK 2.52 Al	2 982	2 129	1 400	2 263	1 568	994	1 665	1 092	666	1 815	1 182	709

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

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 (Tm). A detailed description of the calculations is available at http://www.sp.se/en/index/services/solar/ScenoCalc/Sidor/default.aspx.

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ScenoCalc version: Ver. 4.06 (Jan, 2014)