Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate				Licence Number	011-7S2501 F
				Issued	2015-05-21

Company holding the	GASOKOL GmbH		Country	Austria
Brand (optional)			Website	www.gasokol.at
Street, street number	Solarpark 1		E-mail	erich.temper@gasokol.at
Postal Code / City, province	A- 4351	Saxen	Tel/Fax	43 (0) 7269 / 766 00 300

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)	Yes

Collector name	Aperture area (Aa)	Gross length	Gross width	Gross height	Gross area (AG)	Power output per collector module 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
sunWin AF24UM4	2,22	2.064	1.154	68	**2,38**	1.728	1.640	1.455	1.254	1.040

Performance test method	Glazed liquid heating collector - steady state - outdoor									
Performance parameters related to aperture	η0	a1	a2							
Units	-	W/(m²K)	W/(m²K²)							
Test results - Flow rate and fluid see note 1	0,778	3,867	0,008							

Bi-directional incidence angle	Yes	*Kϑ values are obligatory for 50°.*								
Incidence angle modifiers Kθ(θT)	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
transversal direction	Kθ(θT)	1,00	1,00	0,99	0,97	0,94	0,86	0,73	0,47	0,00
Incidence angle modifiers Kθ(θL)	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
longitudinal direction	Kθ(θL)	1,00	1,00	0,99	0,97	0,94	0,86	0,73	0,47	0,00

Stagnation temperature - Weather conditions see note 2	Tstg	185	°C
Effective thermal capacity	ceff = C/Ag	4,84	kJ/(m²K)
Max. intende operation temperature - see note 3	Tmax,op	120	°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	Fraunhofer ISE; TestLab Solar Thermal Systems			
Website	www.kollektortest.de			
Test report id. number	ktb-2010-20	Date of test report	2010.07.21	
During the test GDIF/GTOT was always between	0,17	and	0,242	

Comments of testing laboratory:

Example comment.

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**				

ASIC Austria Solar Innovation Center
Datasheet version: 4.06, 2014-01-15
T: +43 7242 9396-5560
office@asic.at, www.asic.at

Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	011-7S2501 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	
sunWin AF24UM4	2.753	1.957	1.302	2.086	1.454	947	1.532	1.006	627	1.666	1.085	666	

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.

DIN CERTCO • Alboinstraße 56 • 12103 Berlin, Germany
Tel: +49 30 7562-1131 • Fax: +49 30 7562-1141 • E-Mail: info@dincertco.de • www.dincertco.de

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ScenoCalc version: Ver. 4.06 (Jan, 2014)