

Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate	Certificate No.	011-7S2343 F
	Date of issue	08-04-2014

Company	Odörfer Haustechnik GmbH	Country	Austria
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Collector Type (flat plate / evacuate tubular / un-glazed)	Flat plate collector
Integration <u>in</u> the roof possible ?	No

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]
PlusLine Großflächenkollektor Aufdach	9.28	2 065	4 871	113	10.06	7 433	7 124	6 420	5 606	4 680

Collector efficiency parameters related to aperture area (A_a) Type of fluid and flow rate see note 1	η _{0a}	0.801	-
	a _{1a}	3.188	W/(m ² K)
	a _{2a}	0.015	W/(m ² K ²)

Stagnation temperature - Weather conditions see note 2	t _{stg}	197	°C
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Effective thermal capacity	c _{eff} = C/A _a	7.31	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 K _θ (θ _T)	50° 0.80	10° 0.99	20° 0.98	30° 0.94	40° 0.89	60° 0.64	70° 0.31
	min	max								
	G _{DIF} /G _{TOT} : min&max - while measuring			K _θ (θ _L) 0.80	0.99	0.98	0.94	0.89	0.64	0.31

Optional values

Testing Laboratory	TÜV Energie und Umwelt GmbH
Website	www.eco-tuv.de
Test report id. number	21219755_EN_P_PlusLine; 21219755_EN_R_PlusLine
Date of test report	08-04-2014 (all)
Perf. test method	EN 12975-2 6.3 (outdoor)

Comments of testing laboratory :	

Note 1	Fluid	Water	Flow rate	0.020 kg/s per m ²	
Note 2	Irradiance, G_s=1000 W/m²		Ambient temperature, T_a=30 °C		
Note 3	Given by manufacturer				

VERSION 3.5, 2012.01.13



Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Certificate No.	011-7S2343 F
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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		
PlusLine Großflächenkollektor Aufdach	10 560	7 649	5 115	8 672	6 125	3 946	5 965	4 036	2 549	6 421	4 292	2 655		

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

Overview of locations				
Location	Latitude °	Gtot kWh/m ²	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/m ²
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 (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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