Eurovent Certita Certification - ECC

Annex to Solar Keymark Certificate

Licence Number	24.02.001
Date issued	2024-02-12
Issued by	ECC

Licence holder	BOISUREL	Country	FRANCE
Brand (optional)	BSLA4	Web	https://www.boisurel.com
Street, Number	32 chemin de novital	E-mail	contact@boisurel.com
Postcode, City	31150 Lespinasse	Tel	+33 749 926 105

Collector Type	Flat plate collector (air-heating)

Collector name	Gross area (A_G)	Gross length	Gross width	Gross height	Power output per collector					
					G = 1000 W/m2					
					Tm - Ta [K] =			6,4	9,2	14
	m²	mm	mm	mm	ṁ [kg/h] =			258,4	166,5	77,1
BSLA4	2,21	2 068	1 068	83	Power output [W] =			1 114	1 050	746
Power output per m² gross area							674	644	611	547

Performance parameters test method	Glazed air heating collector - steady state - indoor		
Mass flow rate depending performance parameters related to gross area	η(258,4 kg/h)	η(166.5 kg/h)	η(77.1 kg/h)
Units	--	--	--
Test results	0,505	0,475	0,338

Incidence angle modifier test method		Glazed air heating collector - steady state - outdoor								
Incidence angle modifier	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
Transversal	$K_{\theta T,coll}$			0,98		0,95				0,00
Longitudinal	$K_{\theta L,coll}$			0,98		0,95				0,00

Heat transfer medium for testing	Air		
Flow rate for testing (per gross area, A_G)	dm/dt	--	kg/(sm²)
Maximum temperature difference during thermal performance test	$(\vartheta_m-\vartheta_a)_{max}$	14	K
Standard stagnation temperature (G = 1000 W/m²; ϑ_a = 30 °C)	ϑ_{stg}	145,8	°C
Maximum operating temperature	ϑ_{max_op}	70	°C
Maximum operating pressure	$p_{max,op}$	--	kPa

Testing laboratory	Fundación CENER, LEST	www.cener.com	
Test report(s)	30.4266.0-001 30.4266.0-002 30.4344.0-001	Dated	07/11/2023 22/01/2024

Comments of testing laboratory Ver. 6.2 (13.01.2022)

1 The tests have been carried out according to EN ISO 9806:2017
2 For open to ambient solar air heaters, sucking in ambient air, it is just possible to determine the instantaneous efficiency at certainmass flow rates and ambient temperature.
Scenocalc results and energy labeling information (see p.2) is not applicable.

CENER

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Supplementary Information	Issued	2024-02-12

Annual collector output in kWh/collector at mean fluid temperature ϑ_m

Standard Locations		Athens			Davos			Stockholm			Würzburg		
Collector name	ϑ_m	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C
BSLA4		see comments p.1											
Annual output per m² gross area													
Annual efficiency, η_a													
Fixed or tracking collector		Fixed (slope = latitude - 15°; rounded to nearest 5°)											
Annual irradiation on collector plane		1765 kWh/m²			1630 kWh/m²			1166 kWh/m²			1244 kWh/m²		
Mean annual ambient air temperature		18,5°C			3,2°C			7,5°C			9,0°C		
Collector orientation or tracking mode		South, 25°			South, 30°			South, 45°			South, 35°		

#NOM?

Additional Information

Collector heat transfer medium				Air	
The collector is deemed to be suitable for roof integration				No	
The collector was tested successfully under the following conditions:					
Climate class (A+, A, B or C)				B	--
G (W/m²) >	900	ϑ_a (°C) >	15	H_x (MJ/m²) >	540
Maximum tested positive load				6000	Pa
Maximum tested negative load				6000	Pa
Hail resistance using ice balls (diameter)				25	mm

Additional collector attribute(s)

- ☐ Using external power source(s) for normal operation
- ☐ Active or passive measure(s) for self-protection
- ☐ Co-generating thermal and electrical power
- ☐ Façade collector(s)

Energy Labelling Information

	Reference Area, A_{sol} (m²)
BSLA4	2,21

Additional Informative Technical Data

Hydraulic Designation Code	Aperature Area, A_a (m²)
	1,91

Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}

Collector efficiency (η_{col})	see comments p.1

Remark: Collector efficiency (ηcol) is defined in CDR (EU) No 811/2013 as collector efficiency of the solar collector at a temperature difference between the solar collector and the surrounding air of 40 K and a global solar irradiance of 1000 W/m², expressed in % and rounded to the nearest integer. Deviating from the regulation ηcol is based on reference area (Asol) which is aperture area for values according to EN 12975-2 or gross area for ISO 9806:2017.

Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}

Zero-loss efficiency (η_0)	see comments p.1	--
First-order coefficient (a_1)	see comments p.1	W/(m²K)
Second-order coefficient (a_2)	see comments p.1	W/(m²K²)
Incidence angle modifier IAM (50°)	see comments p.1	--

Remark: The data given in this section are related to collector reference area (A_{sol}) which is aperture area for values according to EN 12975-2 or gross area for ISO 9806. Consistent data sets for either aperture or gross area can be used in calculations like in the regulation 811 and 812 and simulation programs.