



Certificado



Certificate no. PSK-003/2026
Certificado nº

Name and address of certificate holder:
Nome e morada do titular do certificado:

VELPA SOLAR HEATERS, LTD.
25A Optikou Nikolaide Street
3045 Limassol
Cyprus

Product:
Produto:

Thermal Solar Collector
Coletor Solar Térmico

Type references:
Referências:

CAS 1 F15, CAS 2 F15, CAS 3 F15, CAS 4 F15, CAS 5 F15

Trademark(s):
Marca(s) comercial(is):

VELPA

Technical characteristics:
Características técnicas:

Annex to Solar Keymark Certificate No. PSK-003/2026
Anexo ao Certificado Solar Keymark com Nº PSK-003/2026

This product is in conformity with:
Este produto está em conformidade com:

EN 12975:2022, EN ISO 9806:2017

and with the Specific Keymark Scheme Rules for Solar Thermal Products
e com as Regras Particulares do CEN Keymark Scheme para Produtos Solares Térmicos.

Test report(s) ref. / Issued by:
Relatório(s) de ensaios nº(s) / Emitido(s) por:

05/V.1/LES/2026

Additional information (if any):
Informação adicional (se existir):

This certificate is valid until:
Este certificado é válido até:

2031-06-30

and supersedes certificate no:
e substitui o certificado nº:

Date of issue:
Data de emissão:

2026-07-01

Francisco Barroca
General Manager / Diretor Geral



This Certificate includes one Annex with 2 (two) pages
Este Certificado é constituído por um Anexo com 2 (duas) páginas

Annex to Solar Keymark Certificate				Licence Number		PSK-003/2026					
				Date issued		2026-07-01					
				Issued by		CERTIF					
Licence holder		VELPA SOLAR HEATERS LTD				Country		Cyprus			
Brand (optional)						Web		http://www.velpasolar.com			
Street, Number		Optikou Nikolaide Street, 25A				E-mail		info@velpasolar.com			
Postcode, City		3045, Limassol				Tel		+357 70003393			
Collector Type		Isotropic collector (e.g. flat plate collector)									
Collector name	Gross area (A_g) m ²	Gross length mm	Gross width mm	Power output per collector $G_b = 850 \text{ W/m}^2$, $G_d = 150 \text{ W/m}^2$ & $u = 1.3 \text{ m/s}$ $\vartheta_m - \vartheta_a$							
				-10 K	0 K	10 K	30 K	50 K	70 K	130 K	
				W	W	W	W	W	W	W	
CAS1 F15	1.48	1 490	990	999	946	889	763	620	460	0	
CAS2 F15	1.53	1 720	890	1 033	978	919	789	641	476	0	
CAS3 F15	1.83	1 490	1 225	1 235	1 170	1 099	943	766	569	0	
CAS4 F15	1.97	1 990	990	1 330	1 259	1 184	1 015	825	613	0	
CAS5 F15	2.42	1 990	1 225	1 633	1 547	1 454	1 247	1 013	753	0	
Power output per m ² gross area				675	639	601	515	419	311	0	
Performance parameters test method		Quasi dynamic									
Performance parameters (related to A_g)		η_0 , b	a1	a2	a3	a4	a5	a6	a7	a8	Kd
Units		-	W/(m ² K)	W/(m ² K)	J/(m ³ K)	-	J/(m ² K)	s/m	W/(m ² K)	W/(m ² K)	-
Test results		0.650	3.71	0.014			10 850				0.89
Incidence angle modifier test method		Quasi dynamic - outdoor									
Incidence angle modifier for G_b		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
Transversal		$K_{\theta T, coll}$	0.99	0.99	0.95	0.90	0.82	0.67	0.36	0.00	0.00
Longitudinal		$K_{\theta L, coll}$	0.99	0.99	0.95	0.90	0.82	0.67	0.36	0.00	0.00
Heat transfer medium for testing		Water									
Flow rate for testing (per gross area, A_g)		dm/dt	0.020		kg/(sm ²)						
Maximum temperature difference during thermal performance test		$(\vartheta_m - \vartheta_a)_{max}$	100		K						
Standard stagnation temperature ($G = 1000 \text{ W/m}^2$; $\vartheta_a = 30^\circ \text{C}$)		ϑ_{stg}	185,8		°C						
Maximum operating temperature		$\vartheta_{max, op}$	200		°C						
Maximum operating pressure		$p_{max, op}$	1000		kPa						
Testing laboratory		LNEG				http://www.testlab.com					
Test report(s)		05/V.1/LES/2026				Dated		23/06/2026			
Comments of testing laboratory		Ver. 6.3 (12.01.2026)									
		 Assinado por: Jorge Manuel Resende Vieira Facão Num. de Identificação: 10111167 Data: 2026.07.02 14:13:14 (+01'00')									
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Annex to Solar Keymark Certificate										Licence Number		PSK-003/2026						
Supplementary Information										Issued		2026-07-01						
Gross Thermal Yield 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					
CAS1 F15		1 400	907	516	1 017	628	328	754	441	229	826	476	240					
CAS2 F15		1 447	938	533	1 051	650	339	779	456	236	854	492	248					
CAS3 F15		1 731	1 122	638	1 257	777	406	932	545	283	1 021	588	297					
CAS4 F15		1 863	1 207	687	1 353	837	437	1 003	587	304	1 099	633	320					
CAS5 F15		2 289	1 483	844	1 662	1 028	537	1 233	721	374	1 350	778	393					
Gross Thermal Yield per m ² gross area		946	613	349	687	425	222	509	298	155	558	321	162					
Annual efficiency, η_a		54%	35%	20%	42%	26%	14%	44%	26%	13%	45%	26%	13%					
Fixed or tracking collector		Fixed (slope = latitude - 15°; rounded to nearest 5°)																
Annual irradiation on collector plane		1765 kWh/m ²			1630 kWh/m ²			1166 kWh/m ²			1244 kWh/m ²							
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°							
The collector is operated at constant temperature ϑ_m (mean of in- and outlet temperatures). The calculation of the annual collector performance is performed with the official Solar Keymark spreadsheet tool Scenocalc Ver. 6.3 (12.01.2026). A detailed description of the calculations is available at http://www.estif.org/solarkeymarknew/																		
Additional Information																		
Collector heat transfer medium										Water								
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)										A		--						
G (W/m ²) >		1000		ϑ_a (°C) >		20		H_x (MJ/m ²) >		600								
Maximum tested positive load										1000		Pa						
Maximum tested negative load										1000		Pa						
Hail resistance using ice balls (diameter)										25		mm						
Additional collector attribute(s)																		
Using external power source(s) for normal operation					No					Active or passive measure(s) for self-protection					No			
Co-generating thermal and electrical power					No					Façade collector(s)					No			
Energy Labelling Information																		
	Reference Area, A_{sol} (m ²)																	
CAS1 F15	1.48																	
CAS2 F15	1.53																	
CAS3 F15	1.83																	
CAS4 F15	1.97																	
CAS5 F15	2.42																	
Additional Informative Technical Data																		
	Hydraulic Designation Code																	
CAS1 F15	8-V-1234S-A:14,1,1365																	
CAS2 F15	7-V1234S-A:14,1595																	
CAS3 F15	10-V-1234S-A:14,1,1320																	
CAS4 F15	8-V-1234S-A:14,1,1810																	
CAS5 F15	10-V-1234S-A:14,1,1810																	
Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}																		
Collector efficiency (η_{col})		47%																
Remark: Collector efficiency (η_{col}) 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/m ² , expressed in % and rounded to the nearest integer. Deviating from the regulation η_{col} is based on reference area (A_{sol}) 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)		0.64																
First-order coefficient (a_1)		3.71																
Second-order coefficient (a_2)		0.014																
Incidence angle modifier IAM (50°)		0.84																
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.																		
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