



Certificado

Certificate no.
Certificado nº **PSK-003/2025**



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

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

VELPA

Technical characteristics:
Características técnicas:

Annex to Solar Keymark Certificate No. PSK-003/2025
Anexo ao Certificado Solar Keymark com Nº PSK-003/2025

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

EN 12975-1:2006+A1:2010, EN 12975-2:2006

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:

Σ.13.06.12.01, Σ.13.06.12.02, Σ.25.10.12.01 / AEL

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

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

2026-06-30

and supersedes certificate no:
e substitui o certificado nº:

PSK-001/2025

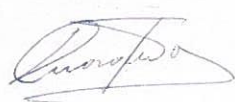
Date of issue:
Data de emissão:

2025-11-28

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-003/2025				
					Date issued		2025-11-28				
					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					Flat plate collector						
Collector name	Gross area (A_G) m ²	Gross length mm	Gross width mm	Gross height mm	Power output per collector G _b = 850 W/m ² , G _d = 150 W/m ² & u = 1.3 m/s $\vartheta_m - \vartheta_a$						
					0 K W	10 K W	30 K W	50 K W	70 K W	78 K W	
CAS 1 F15	1,48	1 491	991	85	998	943	813	655	470	389	
CAS 2 F15	1,83	1 490	1 225	85	1 234	1 166	1 005	810	581	481	
CAS 3 F15	1,97	1 990	990	85	1 329	1 256	1 082	872	626	517	
CAS 4 F15	2,42	1 976	1 225	85	1 632	1 542	1 329	1 071	769	636	
Power output per m ² gross area					674	637	549	443	318	263	
Performance parameters test method		Steady state - outdoor									
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 ²)	J/(m ³ K)	-	J/(m ² K)	s/m	W/(m ² K ⁴)	W/(m ² K ⁴)	-
Test results		0,690	3,49	0,023	0,000	0,00	8 446	0,000	0,00	0,0E+00	0,85
Incidence angle modifier test method		Steady state - outdoor									
Incidence angle modifier		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
Transversal		$K_{\theta T, coll}$	1,00	0,99	0,97	0,94	0,88	0,78	0,63	0,39	0,00
Longitudinal		$K_{\theta L, coll}$	1,00	0,99	0,97	0,94	0,88	0,78	0,63	0,39	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					$(\vartheta_m - \vartheta_a)_{max}$		48		K		
Standard stagnation temperature ($G = 1000 \text{ W/m}^2$; $\vartheta_a = 30^\circ \text{C}$)					ϑ_{stg}		185		°C		
Maximum operating temperature					$\vartheta_{max, op}$		200		°C		
Maximum operating pressure					$p_{max, op}$		1000		kPa		
Testing laboratory		AELAB - Applied Energy Laboratory				http://www.aelab.gov.cy					
Test report(s)		Σ.13.06.12.01 Σ.13.06.12.02 Σ.25.10.12.01				Dated		09/01/2014 09/01/2014 09/01/2014			
Comments of testing laboratory					Ver. 6.2 (13.01.2022)						
					 						
CERTIF Associação para a Certificação Rua José Afonso, 9E - 2810-237 Almada - Portugal Tel: +351 212 586 940 / Fax: +351 212 586 959 / mail@certif.pt / www.certif.pt											

Annex to Solar Keymark Certificate	Licence Number	PSK-003/2025
Supplementary Information	Issued	2025-11-28

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
CAS 1 F15		1 520	1 003	556	1 118	694	349	830	491	245	903	527	259
CAS 2 F15		1 879	1 241	687	1 382	858	432	1 026	607	304	1 116	651	320
CAS 3 F15		2 023	1 336	740	1 488	924	465	1 105	654	327	1 202	701	344
CAS 4 F15		2 485	1 641	909	1 828	1 135	571	1 357	803	401	1 476	861	423
Gross Thermal Yield per m ² gross area		1 027	678	376	755	469	236	561	332	166	610	356	175
Annual efficiency, η_a		58%	38%	21%	46%	29%	14%	48%	28%	14%	49%	29%	14%
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. 6.2 (13.01.2022). 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)				B	--
G (W/m ²) >	900	θ _a (°C) >	15	H _x (MJ/m ²) >	540
Maximum tested positive load				1000	Pa
Maximum tested negative load				1000	Pa
Hail resistance using steel ball (maximum drop height)				-	m

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		Additional Informative Technical Data	
	Reference Area, A_{sol} (m ²)	Hydraulic Designation Code	Aperture Area, A_a (m ²)
CAS 1 F15	1,48	8-V-1234S-A:14.1,1361-C:20.6,1035	1.35
CAS 2 F15	1,83	10-V-1234S-A:14.1,1375-C:20.6,1285	1.67
CAS 3 F15	1,97	8-V-1234S-A:14.1,1875-C:20.6,1050	1.80
CAS 4 F15	2,42	10-V-1234S-A:14.1,1865-C:20.6,1282	2.26

Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}		Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}	
Collector efficiency (η_{col})	50%	Zero-loss efficiency (η_0)	0,67
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.		First-order coefficient (a_1)	3,49
		Second-order coefficient (a_2)	0,023
		Incidence angle modifier IAM (50°)	0,88
		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.	