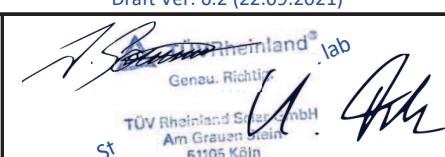


Annex to Solar Keymark Certificate					Licence Number		011-7S2745 F							
					Date issued		2023-08-07							
					Issued by		DINCertco							
Licence holder		Cirelius, S.A.			Country		Portugal							
Brand (optional)		-			Web		www.cirelius.pt							
Street, Number		Rua da Cancela Velha, 26			E-mail		info@cirelius.pt							
Postcode, City		4430-660 Avintes, V. N. Gaia			Tel		+351 227 843 817							
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	90 K W
Solius TopSol XL					2.38	2 064	1 154	68	1 705	1 622	1 432	1 210	955	668
Power output per m ² gross area									716	682	602	508	401	281
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 ²)	J/(m ³ K)	-	J/(m ² K)	s/m	W/(m ² K ⁴)	W/(m ² K ⁴)	-
Test results					0.719	3.31	0.017	0.000	0.00	15 198	0.000	0.00	0.0E+00	0.98
Incidence angle modifier test method					Quasi dynamic - outdoor									
Incidence angle modifier					Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
Transversal					$K_{\theta T, coll}$	1.00	1.00	0.99	0.97	0.94	0.89	0.78	0.45	0.00
Longitudinal					$K_{\theta L, coll}$	1.00	1.00	0.99	0.97	0.94	0.89	0.78	0.45	0.00
Heat transfer medium for testing					Water									
Flow rate for testing (per gross area, A_G)					dm/dt					0.110	kg/(sm ²)			
Maximum temperature difference during thermal performance test					$(\vartheta_m - \vartheta_a)_{max}$					60	K			
Standard stagnation temperature (G = 1000 W/m ² ; ϑ_a = 30 °C)					ϑ_{stg}					200	°C			
Maximum operating temperature					$\vartheta_{max, op}$					n.n.	°C			
Maximum operating pressure					$p_{max, op}$					1000	kPa			
Testing laboratory					TÜV Rheinland Solar GmbH					www.tuv.com/solar				
Test report(s)					21248537.001 DE23MFU8 001 (Document evaluation)					Dated		22.06.2020 08.08.2023		
Comments of testing laboratory					Draft Ver. 6.2 (22.09.2021)									
														
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