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Issued	30/11/2017	First edition	01/02/2012
Report number	100179791	Expiry date	29/11/2022
Page	1 of 1	Contract number	KIP TH 750

Certificate

Product Certificate Solar Thermal Products

Kiwa Cermet Italia hereby declares that the **solar thermal collector**, type

Solarcollector^{II}

supplied by **ATAG Verwarming Nederland B.V.**
Galileistraat 27 - 7131 PE Lichtenvoorde, The Netherlands

Is entitled to use the Solar Keymark label.

The compliance is based on examination to:
EN 12975-1:2006 + A1:2010, EN 12975-2:2006 and the
Specific Keymark Scheme Rules for Solar Thermal Products V30.00

A description of the test results is given in the appendix to this certificate.

*This certificate is issued in accordance with the Kiwa Cermet Italia regulations.
Publication of the certificate is allowed.
The validity of this certificate is subject to the positive result of periodic surveillance visits.*

Chief Operating Officer
Giampiero Belcredi

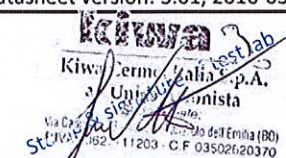


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SGQ N° 007A SSI N° 006G
SGA N° 010D FSM N° 004I
PRD N° 069B

Annex to Solar Keymark Certificate - Summary of EN ISO 9806:2013 Test Results					Licence Number		15418 Rev.0																	
					Date issued		2017-11-30																	
					Issued by		Kiwa Cermet Italia S.p.A.																	
Licence holder		ATAG Verwarming Nederland B.V.			Country		The Netherlands																	
Brand (optional)					Web		www.atagverwarming.nl																	
Street, Number		Galileistraat 27			E-mail		info@atagverwarming.nl																	
Postcode, City		7131 PE Lichtenvoorde			Tel		+31 544391777																	
Collector Type					Flat plate collector, glazed																			
Collector name					Gross area (A _G)		Gross length		Gross width		Gross height		Power output per collector G _b = 850 W/m ² ; G _d = 150 W/m ² θ _m - θ _a											
					m ²		mm		mm		mm		0 K		10 K		30 K		50 K		70 K		93 K	
SolarcollectorII					2,50		2.118		1.181		94		1.952		1.863		1.656		1.412		1.128		757	
Power output per m ² gross area					856		817		726		619		495		332									
Performance parameters test method					Steady state - indoor																			
Performance parameters (related to A _G)					η _{0,hem}		a1		a2															
Units					-		W/(m ² K)		W/(m ² K ²)															
Test results					0,856		3,688		0,021															
Incidence angle modifier test method					Steady state - indoor																			
Bi-directional incidence angle modifiers					Yes																			
Incidence angle modifier					Angle		10°		20°		30°		40°		50°		60°		70°		80°		90°	
Transversal					K _{θT, coll}		1,00		1,00		0,99		0,98		0,96		0,93		0,87				0,00	
Longitudinal					K _{θL, coll}		1,00		1,00		0,99		0,98		0,96		0,93		0,87				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 for thermal performance calculations					(θ _m - θ _a) _{max}		92,9		K															
Standard stagnation temperature (G = 1000 W/m ² ; θ _a = 30 °C)					θ _{stg}		210		°C															
Effective thermal capacity, incl. fluid (per gross area, A _G)					C/m ²		5,84		kJ/(Km ²)															
Maximum operating temperature					θ _{max, op}		120		°C															
Maximum operating pressure					p _{max, op}		600		kPa															
Testing laboratory		CENER; Kiwa Nederland B.V.			www.cener.com; www.kiwa.com																			
Test report(s)		30.1586 / 120300931			Dated		19/05/2011; 28/08/2012																	
Comments of testing laboratory					Datasheet version: 5.01, 2016-03-01																			
This datasheet is not complete as the testing of the collector was not performed according to ISO 9806:2013. Performance parameters related to the aperture area (2,28 m ²).																								
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Annex to Solar Keymark Certificate		Licence Number		15418 Rev.0									
Supplementary Information		Issued		2017-11-30									
Annual collector output in kWh/collector at mean fluid temperature ϑ_m , based on ISO 9806:2013 test results													
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
SolarcollectorII		3.167	2.291	1.483	2.429	1.678	1.022	1.788	1.176	693	1.944	1.274	739
Annual output per m ² gross area		1.389	1.005	650	1.066	736	448	784	516	304	853	559	324
Fixed or tracking collector		Fixed (slope = latitude - 15°; rounded to nearest 5°)											
Annual irradiation on collector plane		1765 kWh/m ²			1714 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. 5.01 (March 2016). A detailed description of the calculations is available at www.solarkeymark.org/scenocalc													
Additional Information													
Collector heat transfer medium										Water			
Hybrid Thermal and Photo Voltaic collector										No			
The collector is deemed to be suitable for roof integration										No			
The collector was tested successfully according to EN ISO 9806:2013 under the following conditions:													
Climate class (A, B or C)										--		--	
Maximum tested positive load										675		Pa	
Maximum tested negative load										507		Pa	
Hail resistance using ice balls (diameter)										25		mm	
Energy Labelling Information													
		Reference Area, A_{sol} (m ²)		Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}									
SolarcollectorII		2,28		Collector efficiency (η_{col})				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 9806:2013.											
		Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}											
		Zero-loss efficiency (η_0)				0,856		--					
		First-order coefficient (a_1)				3,69		W/(m ² K)					
		Second-order coefficient (a_2)				0,021		W/(m ² K ²)					
		Incidence angle modifier IAM (50°)				0,96		--					
		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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