DIN CERTCO
Gesellschaft für Konformitätsbewertung mbH

CERTIFICATE

Certificate holder	**Riello S.p.A.** **Via Ing. Pilade Riello 7** **37045 Legnago VR** **ITALY**
Production facility	Morbegno
Product	Solar collectors
Type, Model	CP20TSS
Testing basis	DIN EN 12975-1:2011-01 DIN EN 12975-2:2006-06 SOLAR KEYMARK Scheme Rules (2019-03)
Mark of conformity	
Registration No.	011-7S2400 F
Valid until	2024-07-31
Right of use	This certificate entitles the holder to use the mark of conformity shown above in conjunction with the specified registration number. See annex for further information.

2019-08-19

Dipl.-Wi.-Ing. (FH) Sören Scholz
Head of Certification Body

GESELLSCHAFT FÜR KONFORMITÄTSBEWERTUNG MBH
DIN CERTCO

DAkkS
Deutsche Akkreditierungsstelle
D-ZE-11125-01-00

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ANNEX

Certificate 011-7S2400 F dated 2019-08-19

Technical Data See data sheet, part of the test report of 2014-07-07

Note(s):

- The freeze resistance test according to DIN EN 12975-2, clause 5.8 was not necessary. According to the manufacturer's declaration, the certified solar collectors may be used in frost exposed areas only in combination with appopriate frost protection mixtures or with appropriate frost protection controller.

- The optional impact resistance test according to DIN EN 12975-2, clause 5.10 was not carried out.

Testing laboratory/ Inspection body

Institut für Solartechnik SPF
Hochschule für Technik
Rapperswil
Oberseestraße 10
8640 Rapperswil
SWITZERLAND

Test report(s) No. C1631LPEN, No. C1631QPEN dated 2014-07-07

TÜVRheinland DIN CERTCO Precisely Right.

SPF INSTITUT FÜR SOLARTECHNIK

Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	011-7S2400 F
	Issued	2014-07-22

Company holding the	Riello S.p.A.		**Country**	Italy	
Brand (optional)	–		**Website**	www.riellogroup.com	
Street, street number	Via Mussa 20		**E-mail**	info@riello.it	
Postal Code / City, province	IT-35017	Piombino Dese	**Tel/Fax**	+39	049 932 39 11 /-46

Collector Type (flat plate glazed/un-glazed; evacuate tubular)	Flat plate collector - glazed
Thermal / photo voltaic hybid collector? (PVT collector)	No
Integration in the roof possible ? (manufacturers declaration)	No

Collector name	Aperture area (Aa)	Gross length	Gross width	Gross height	Gross area (AG)	Power output per collector module G = 1000 W/m², Tm-Ta 0 K	10 K	30 K	50 K	70 K
	m²	mm	mm	mm	m²	W	W	W	W	W
CP20TSS	1.772	1'813	1'044	70	**1.893**	1'379	1'291	1'114	937	759

Performance test method		Glazed liquid heating collector - steady state - outdoor								
Performance parameters related to aperture area		η0	a1	a2						
Units		-	W/(m²K)	W/(m²K²)						
Test results - *Flow rate and fluid see note 1*		0.778	4.96	0.0005						

Bi-directional incidence angle modifiers?	Yes	Kθ *values are obligatory for 50°.*								
Incidence angle modifiers Kθ(θT) transversal direction	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
	Kθ(θT)	1.00	1.00	0.99	0.96	0.87	0.76	0.66	0.39	0.00
Incidence angle modifiers Kθ(θL) longitudinal direction	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
	Kθ(θL)	1.00	1.00	0.99	0.96	0.87	0.76	0.66	0.39	0.00

Stagnation temperature - *Weather conditions see note 2*	T_{stg}	192	°C
Effective thermal capacity	$c_{eff} = C/A_g$	4.81	kJ/(m²K)
Max. intende operation temperature - *see note 3*	$T_{max,op}$	--	°C
Max. operation pressure - *see note 3*	$p_{max,op}$	1000	kPa

Pressure drop table - for a collector family, the values shall be for the module with highest ΔP per m² aperture area

Flow rate	kg/(s m²)	0.008	0.017	0.025	0.033	0.041	0.050	0.058	0.066	0.074	0.083
Pressure drop, ΔP	Pa	103	222	357	508	675	859	1058	1273	1505	1752

Optional weather data	Location		Link

Testing Laboratory	SPF, CH-8640 Rapperswil		
Website	www.solarenergy.ch		
Test report id. number	C1361LPEN, C1361QPEN	**Date of test reports**	07.07.2014

During the test G_{DIF}/G_{TOT} was always between 0.08 and 0.26

Comments of testing laboratory:

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Note 1	**Flow rate**	0.023	kg/(s m²)	**Fluid**	Water-Glycole	Dr. Andreas Bohren
Note 2	**Irradiance, G = 1000 W/m²; Ambient temperature , Ta=30 °C**					
Note 3	**Given by manufacturer**					

Datasheet version: 4.06, 2014-01-15

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Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	011-7S2400 F
	Issued	2014-07-22

Annual collector output kWh/module

Collector name	Location and collector temperature (Tm)											
	Athens			Davos			Stockholm			Würzburg		
	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C
CP20TSS	2'102	1'372	851	1'521	994	615	1'125	683	404	1'226	731	423

Collector mounting: Fixed or tracking	Fixed; slope = latitude - 15° (rounded to nearest 5°)

Overview of locations

Location	Latitude °	Gtot kWh/m²	Ta °C	Collector orientation or tracking mode
Athens	38	1'765	18.5	South, 25°
Davos	47	1'714	3.2	South, 30°
Stockholm	59	1'166	7.5	South, 45°
Würzburg	50	1'244	9.0	South, 35°

Gtot	Annual total irradiation on collector plane	kWh/m²
Ta	Mean annual ambient air temperature	°C
Tm	Constant collector operating temperature (mean of in- and outlet temperatures)	°C

The calculation of the annual collector performance is performed with the official Solar Keymark spreadsheet tool ScenoCalc. The collector output is calculated hour by hour according to the efficiency parameters from the Keymark test using constant collector operating temperature (Tm). A detailed description of the calculations is available at http://www.sp.se/en/index/services/solar/ScenoCalc/Sidor/default.aspx.

RIELLO S.p.A.

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23900 Lecco (LC)
Tel. +39 0341 277111

RIELLO S.p.A.
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direzione e coordinamento di Riello Group SPA
Sede legale e amministrativa
37045 Legnago (VR) - Via Ing. Pilade Riello 7
Cap. soc. € 7.117.400,00 i.v.
Reg. delle Imp. di Verona N. 02641790239
C.F. e Part. IVA 02641790239

Piombino Dese, 29 Giugno 2015

DICHIARAZIONE DI CORRISPONDENZA

La società

Riello SpA Heating Products Direction
Via Ing. Pilade Riello 7
37045 Legnago
ITALIA

dichiara che i collettori solari serie CP e sistemi a circolazione naturale TSSA dotati di certificazione Solar Keymark e costruiti presso lo stabilimento di Piombino Dese, sono tecnicamente identici ai collettori solari e ai sistemi a marchio Beretta secondo quanto riportato nella tabella allegata.

DECLARATION OF CORRESPONDENCE

The company

Riello SpA Heating Products Direction
Via Ing. Pilade Riello 7
37045 Legnago
ITALIA

declare that the solar collectors type CP and thermosiphon system TSSA certified Solar Keymark and manufactured in the factory located in Piombino Dese, are technically identical to the solar collectors and to the systems with the Beretta brand according to the enclosed table.

Riccardo Rompani
Product Marketing Residential HVAC Manager
Riello S.p.A.

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Descrizione collettore solare	Marchio / Brand	Certificato n.
Solar collector type	Beretta	Certificate n.
CP20TNA	SCN-20S	099BN/0
CP20TSA	SCF-20N	011-7S1765 F
CP25TLA	SCI-25N	011-7S1951 F
CP25TVA	SCF-25N	011-7S1766 F
CP25VVA	SCF-V25	011-7S1983 F
CP25VOA	SCO-25N	011-7S2056 F
TSSA BLACK 200/1	NS-SOL 200/1	111 BN/0
TSSA BLACK 300/2	NS-SOL 300/2	111 BN/0

CP20TSS	SCF-20B	011-7S2400 F
CP25TVS	SCF-25B	011-7S2399 F
CP25TOS	SCO-25B	011-7S2505 F