SOLAREKS

Solar Energy Systems

SOLAREKS

S SERIES SOLAR COLLECTORS

TECHNICAL SPECIFICATIONS

Solareks Solar Energy Systems
İmes San. Sitesi A Blok 106. Sk. No:48
Yukarı Dudullu / Ümraniye - İstanbul / Türkiye
Tel: 0090 2163148580 Fax: 0090 2163641029
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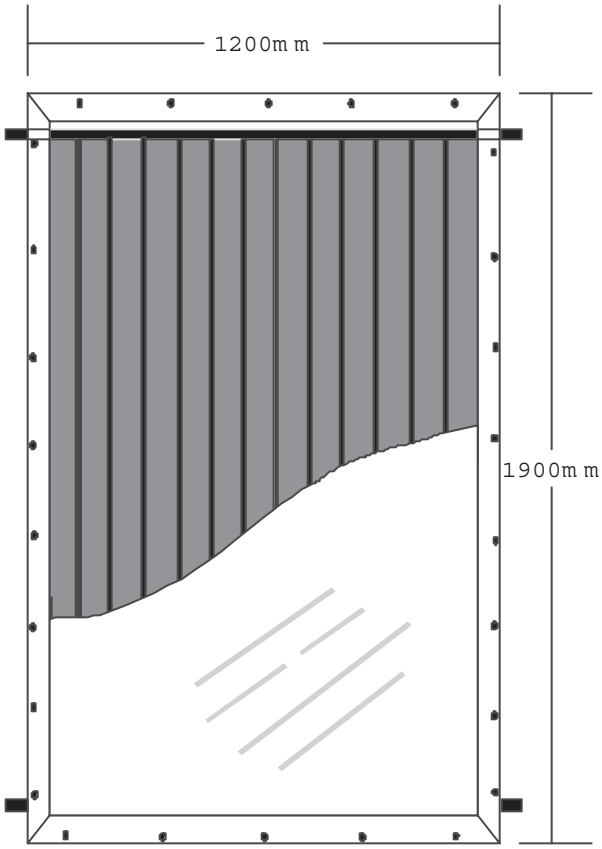

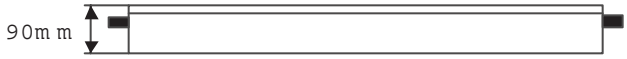

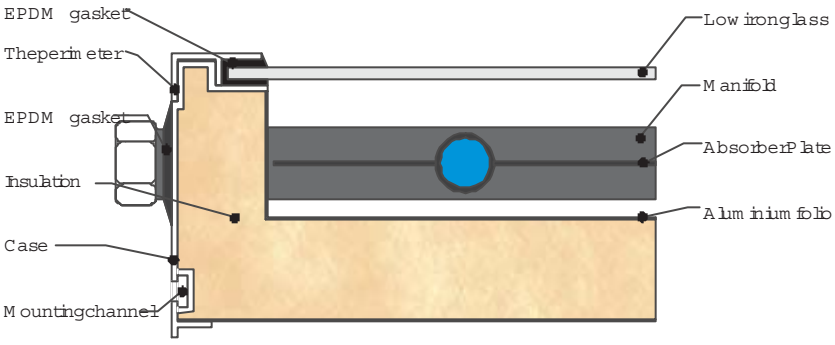

A. General Information

1.0 Product Description

Solareks S series flate plate solar collectors are single glazed with low-iron tempered glass. The absorber is made of copper or aluminium and selective coated. The back and sides of the collectors are insulated with polyurethane-glaswool or polyurethane-rockwool or only rockwool. The collector frame is extruded aluminium with a baked enamel or anodized finish.

1.1 Dimensions

1910 x 1220 x 90 mm

Gross Area: 2.31 m^2

Absorber Area: 2.0 m^2

Heat Transfer Liquid Volume: 1.8 lt

Connections: 3/4"

1.2 Weight

35 kg

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2.0 Product Use

2.1 Product Applications

Residential domestic hot water, small commercial and industrial process hot water such as;

- Villages
- Apartment houses (central system)
- Pool heating systems
- Commercial;
  - ✓ Hotels
  - ✓ Hospitals
  - ✓ Oil stations
  - ✓ Factories...

2.2 Geographic and Climatic Limitations

None.

B. Absorber

1.0 General Description

The absorber consists of eight aluminium or copper fins arranged with integral copper or aluminium waterway tubes. The absorber coating is selective surface. The selective surface absorbs the radiation between 0,3-2,5 µm wavelength and emmisivity of infrared radiation between 2,5 -50 µm is very low. As seen below the efficiency of Solareks Solar Collectors are higher then matt black painted collectors.

1.1 Chemical Composition

Material: Pure Copper
Copper Content: % 99,90
Standarts: DIN 1786, DIN EN 1057, ASTM B 280, ASTM B68, ASTM B 75
Absorber Surface: Selective

2.0 Optical Performance

2.1 Absorptivity of Solar Radiation

% 95

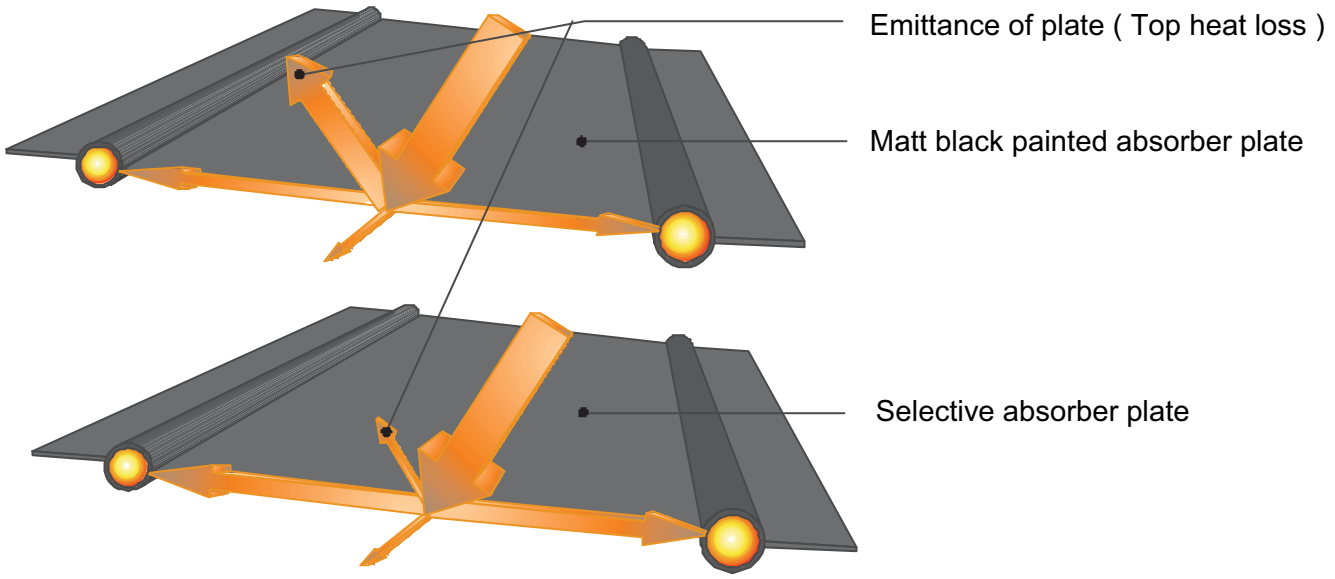
2.2 Emissivity of Infrared Radiation

% 5 -12

3.0 Thermal Performance

3.1 Heat Conductivity

360 W/mK



Top heat lossses of *Selective* and *matt black painted* absorber plates

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3.2 Fin Efficiency

% 93...96

3.3 Heat Transfer

Good thermal transfer due to the high conductivity of aluminium&copper and the bond between the efficient fins.

3.4 Coefficient of Thermal Expansion

To allow thermal expansion, the absorber plate is free to float within the collector case. EPDM gaskets prevent contact between the glazing and case and allows thermal expansion.

3.5 Operating Temperature Range

Max 200ºC

3.6 Working Pressure

Working Pressure: 8 bar
Test Pressure: 11 bar

C. Glazing System

1.0 General Description

Low-iron tempered special glass with a light transmission ratio of 91% is used. The special surface geometry lets the sunbeams through onto absorber plate at the correct angle even at a wider angle of incidence, thus minimising optical loss. Glass is fastened together with an aluminium capping around the perimeter.

1.1 Chemical Composition

Iron oxide content of the glass is very low.

1.2 Shape of Surface

Glass has a shallow stipple pattern to reduce the specular reflectance.

1.3 Thickness

3.2 – 3.8 mm

1.4 Standarts

DIN 1249, DIN EN 572-5

2.0 Optical Performance

2.1 Spectral Transmittance

Total light transmission ratio % 91.0 ± 0.5 (ISO 9050)

3.0 Fire Behavior

Non combustible. Does not produce toxic fumes in a fire situation.

4.0 Durability

Glass is chemically inert to most chemical solvents, staining agents and is resistant to surface weathering, ultraviolet and thermal degradation, and moisture damage.

D. Insulation

1.0 General Description

The back and sides are insulated with polyurethane+glaswool+aluminium folio or polyurethane+ rockwool+aluminium folio or only rockwool+aluminium folio. Aluminium folio reduces the back heat losses.

1.1 Density (polyurethane)

40 kg/m^3

1.2 Thickness (polyurethane)

Back: 40 mm
Side: 20 mm

2.0 Thermal Performance

2.1 Heat Conductivity

0.023 W/mK (25 ºC), (polyurethane)

2.2 Operating Temperature Range

..... 250 ºC (glasswool)

2.3 Specific Heat Coefficient

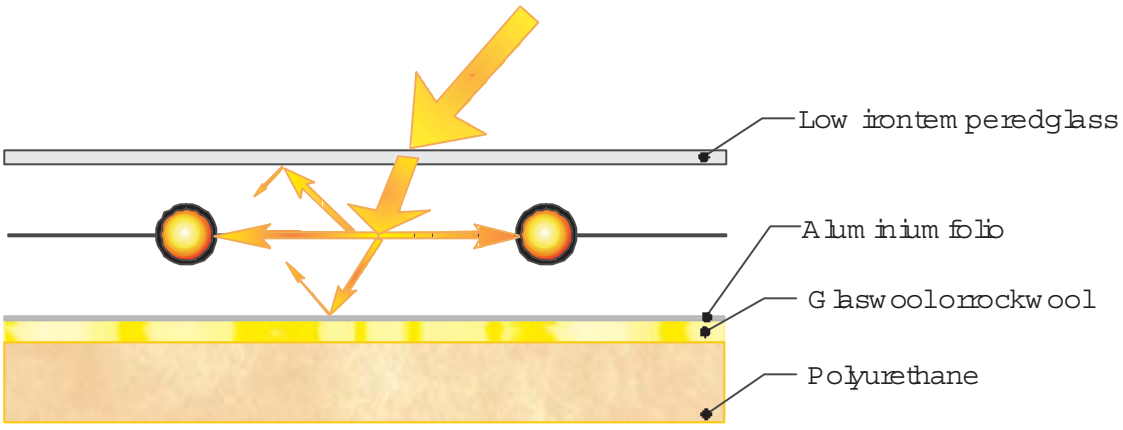
..... (polyurethane)
0.753 kJ/kgK (glasswool)

3.0 Fire Behavior (polyurethane)

Polyurethane does not fire immediately (DIN 4102). Does not leak when exposed to fire.

4.0 Durability (polyurethane)

Thickness of the polyurethane does not change in time. It is durable to heat and frost.



Heat losses are reduced by special *solar glass* and *aluminium folio*

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E. Sealant

1.0 General Description

The UV resistant EPDM rubber gasket has been used to give better sealing in all weather conditions and to avoid heat loss by conduction.

2.0 Chemical Composition

Ethylene propylene diene monomer rubber (EPDM)

2.1 Standarts

DIN 7863, DIN 7715

3.0 Physical Properties

3.1 Operating Temperature Range

-40...100 ºC

F. Collector Case

1.0 General Description

Collector casing is fabricated from aluminium extrusions with an integral mounting channel. Anodized AlMgSi0.5 has a useful life of 20 years approximately.

2.0 Chemical Properties

Material: Aluminium, AlMgSi0.5
Aluminum content: % 99
Standarts: AA6063, ISO 6362

3.0 Physical Properties

Density: 2.7 g/cm^3
Coating: Anodized or electrostatic paint.

4.0 Moisture Control System

The holes in the case allows sufficient air flow through the collector to remove any condensation or moisture.

5.0 Mounting Procedure

The collector can be easily installed on any roof with its specially designed casing and the installation kit.

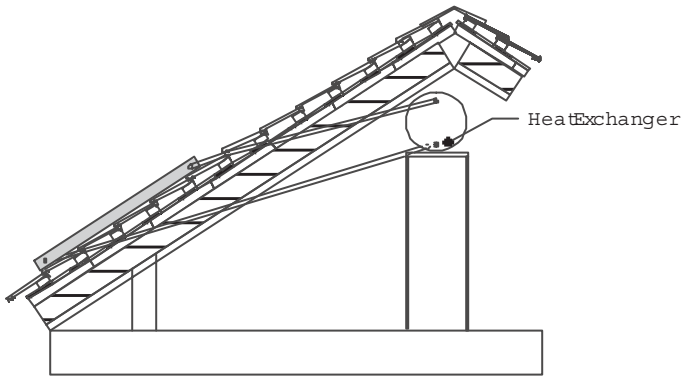
Replacement of Collectors ;

A. *Natural Circulation (Without pump)*

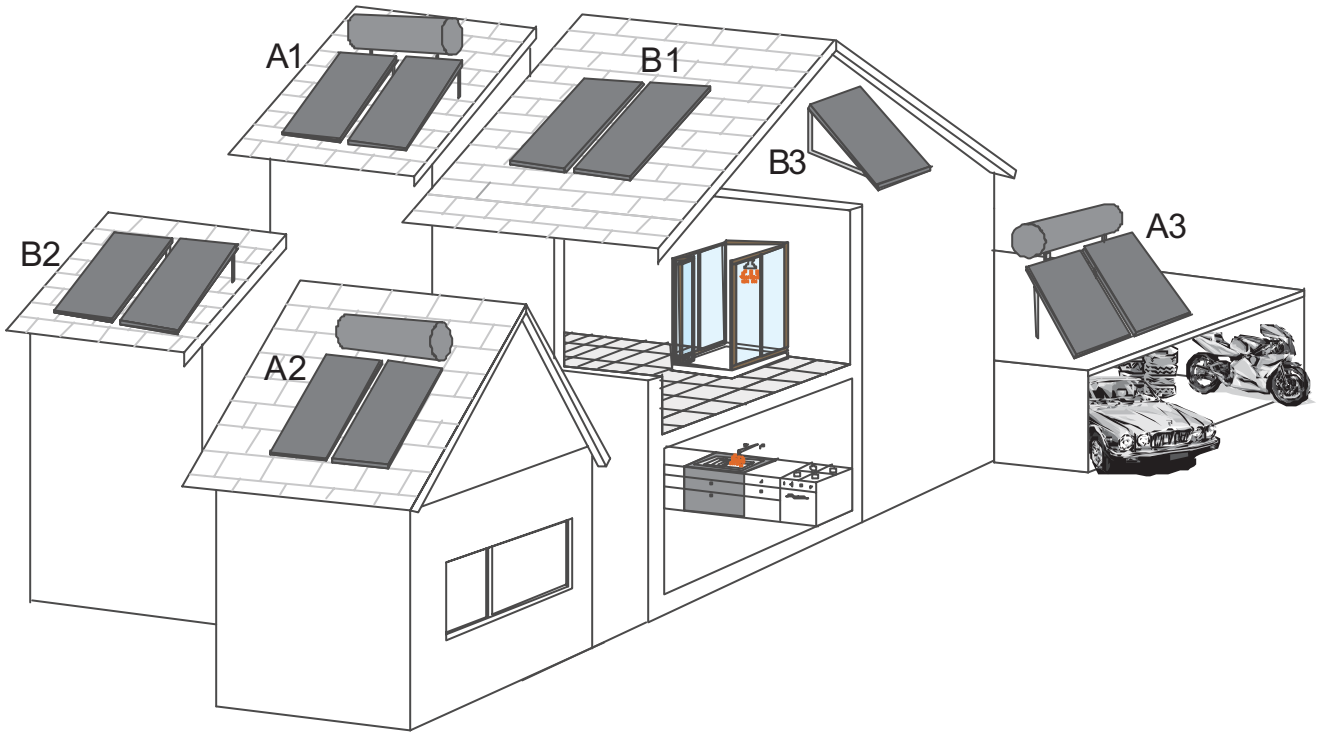
A.1, A.2, A.3

B. *Forced Circulation (With pump)*

B.1, B.2, B.3



Natural Circulation system (heat exchanger is under the roof)



Replacement of Solareks S Series Collectors

S SERIES SOLAR COLLECTORS

TECHNICAL SPECIFICATIONS

S SERIES COLLECTOR		
		Standarts
Dimensions	1900 x 1200 x 90 mm	-
Gross area	2.31 m^2	-
Heat transfer liquid volume	1.8 lt	-
Connections	¾"	TS 61
Weight	35 kg	-
Absorber		
Material	Pure copper	DIN 1786, DIN EN 1057, ASTM B 280, ASTM B68, ASTM B 75
Absorber area	2.0 m^2	-
Absorber surface	Selective	-
Absorptivity of Solar Radiation	% 95	-
Emissivity of Infrared Radiation	% 5 -12	-
Heat conductivity	Al:240 W/mK, Cu:360 W/mK	-
Fin Efficiency	% 93...96	-
Operating temperature range	..... 200 ºC	-
Working Pressure	8 bar	-
Test Pressure	11 bar	-
Glazing System		DIN 1249,DIN EN 572-5
Chemical composition	Low iron tempered glass	DIN 1249,DIN EN 572-5
Shape of Surface	Shallow stipple pattern	-
Thickness	3,2-3,8 mm	-
Total Spectral Transmittance	% 91.0 ± 0.5	ISO 9050
Fire Behavior	Does not burn	-
Insulation		
Material	Polyurethane + glasswool/rockwool+aluminium folio	-
Density	40 kg/m^3	-
Back insulation thickness	40 mm	-
Side insulation thickness	20 mm	-
Heat conductivity (polyurethane)	0.023 W/mK (25 ºC)	-
Operating temperature range(glaswool)	..... 250 ºC	-
Specific heat coefficient	.....(polyurethane),0.753 kj/kgK (glasswool)	-
Fire Behavior (polyurethane)	Does not leak when exposed to fire	DIN 4102
Sealant		
Material	EPDM	DIN 7863, DIN 7715
Operating temperature range	-40...100 ºC	-
Case		
Material	Aluminium,AlMgSi0.5	AA6063, ISO 6362
Density	2.7 g/cm^3	-
Coating	Anodizing or electrostatic paint	-
Moisture control system	✓	-