

# ARSEN®

FLEXIBLE METAL  
SOLAR - BOILER HOSES  
FOR SOLAR ENERGY SYSTEMS



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# SOLAR ENERGY SYSTEM HOSES

## GENERAL EXPLANATIONS



*Arsenflex Solar Energy System Hoses are a modern solution for solar panel installations designed to get hot water using solar energy.*

*In order to reduce difficulties of determining needed hose lengths and using beforehand manufactured hoses during installations, Arsenflex Solar System Hoses are produced either single or double insulated according to customer demands and shipped in coils of 10 to 50 meters.*

*Also to ease making the connection from collector temperature sensor to control unit, a double-tipped silicon cable is attached besides the hose and insulation.*

*Especially in external environments, preferring hoses with insulating prevents energy and heat losses which are extremely important for the whole system.*

### Dimensions and Operating Conditions of Solar System Hoses

DN		Inner Dia.	Outside Dia.	Tol. (±)	Static Bend Radius	Wall Thick.	Pitch Type	Pressure Rating	Surface Area	Weight
(mm)	(inch)	(mm)	(mm)	(mm)	rmin (mm)	(mm)	(Pitch)	(bar)	(m <sup>2</sup> /m)	(kg/m)
12	1/2"	12.4 12.0	16.7 16.7	0.20	19	0.15	Wide Standard	16 9	0.07 0.09	0.09 0.11
16	5/8"	16.6 16.2	22.0 21.8	0.20	25	0.18	Wide Standard	10 7	0.10 0.12	0.14 0.17
20	3/4"	20.3 20.0	26.0 26.7	0.20	30	0.20	Wide Standard	10 4	0.12 0.17	0.16 0.22
25	1"	25.6 25.4	31.7 32.3	0.20	35	0.20	Wide Standard	8 3	0.15 0.20	0.24 0.35

# TYPES OF SOLAR SYSTEM HOSES WITH INSULATION



## **1 in 1 Single Insulated Hoses without Braiding**

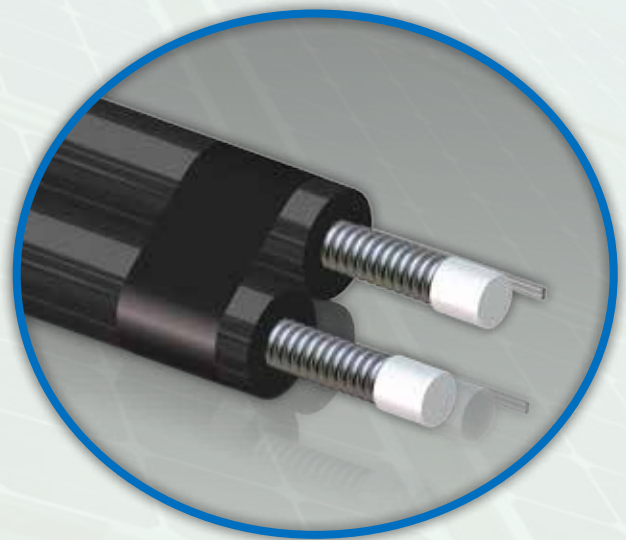
Hose Diameters: DN12 / DN16 / DN20 / DN25  
Hose Lengths: 10 / 15 / 20 / 25 / 50 m  
Insulation Thickness: 9mm / 13 mm / 19 mm  
Hose Type: Wide / Standard Pitch

Hose Material: AISI 316L / 304L  
Insulation Material: EPDM  
Cable Material: Silicon

## **2 in 1 Double Insulated Hoses without Braiding**

Hose Diameters: DN12 / DN16 / DN20 / DN25  
Hose Lengths: 10 / 15 / 20 / 25 / 50 m  
Insulation Thickness: 9mm / 13 mm / 19 mm  
Hose Type: Wide / Standard Pitch

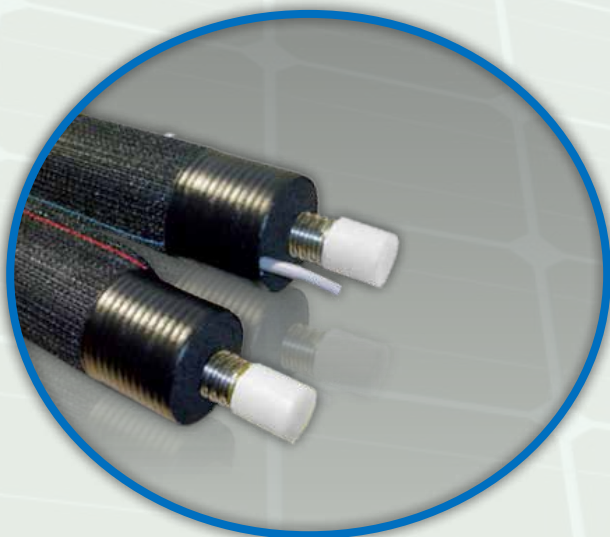
Hose Material: AISI 316L / 304L  
Insulation Material: EPDM  
Cable Material: Silicon



## **2 in 1 Double Insulated Hoses with Braiding**

Hose Diameters: DN12 / DN16 / DN20 / DN25  
Hose Lengths: 10 / 15 / 20 / 25 / 50 m  
Insulation Thickness: 9mm / 13 mm / 19 mm  
Hose Type: Wide / Standard Pitch

Hose Material: AISI 316L / 304L  
Outside Braid Material: Polyamid  
Insulation Material: EPDM  
Cable Material: Silicon



# QUICK CONNECTION TECHNIQUES



*It is quite important to use an easy and quick connection technique for hose installations in solar energy systems.*

*This provides cost savings by reducing workmanship costs besides providing products at a good cost.*

*Because no handiness is required for mounting hoses and connection parts we produce, it is quite easy for anyone without experience.*

## Material Specifications

**Hose:** AISI 316 L/ 304L Stainless Steel

**Ring:** AISI 304 Stainless Steel

**Fittings:** MS58 Brass

**Seal:** Klingerite without Asbestos

## Dimensions and Operating Conditions

Hose Diameter	Fitting Diameter	Inner Dia.	Outside Dia.	Tol. (±)	Kit Hose Length	Kit Part Qty.	Pressure Rating	Temp. Rating
DN12 / 1/2"	1/2"	12.4	16.7	0.20	25 m	10 pcs of Nut Ring Seal	16	150 °C
DN16 / 5/8"	3/4"	16.6	22.0	0.20	20 m		10	150 °C
DN20 / 3/4"	1"	20.3	26.0	0.20	15 m		6	150 °C
DN25 / 1"	1 1/4"	25.6	31.7	0.30	10 m		5	150 °C

## Installation



*Hose is cut in needed length.*



*Swatting equipment is adjusted into the last convolution and closed.*



*The convolution is flattened by pulling and releasing the equipment as shown in the figure.*



*The ring is tightened and fixed behind the flattened convolution.*



*The seal is placed inside the nut to finish the installation.*



*The hoses are now ready to install with seals and preferably with double sided nipples.*

# BOILER HOSES GENERAL EXPLANATIONS



Boilers are devices in solar heated hot water systems in order to finally heat the usage water by heating the water in solar collectors and circulating through flexible metal hoses located in a tank and used as serpentine.

Due to pressurization problems and freezing events that take place in systems which usage water is the same with the water circulating in the collector system, hot water systems with boilers are advantageous comparing with the systems without boilers which usage water is directly heated.

Using flexible metal hoses as serpentine in boilers has many advantages as efficiency resulted from high surface area comparing to steel pipes, installation ease for their flexibility and high corrosion resistance of stainless steel to corrosion and lime.

Lengths and inlet - outlet connections of Arsenflex Boiler System Hoses are produced according to needs of boiler manufacturers and shipped in a stainless steel framework either as single or double serpentine when needed. Arsen creates solutions for stainless steel frameworks according to customer demands.

## Material Specifications

**Hose:** AISI 316 L / 304L Stainless Steel

**Connections:** AISI 316 / 304 Stainless Steel

### **General Dimensions and Operating Conditions of Boiler System Hoses**

Hose Dimensions	1/2" - 2" (DN12-DN50)
Fitting Dimensions	3/8" - 2 1/2" (Inner or Outer Threads, Several Lengths)
Temperature Rating	-270 / +600 °C
Pressure Rating	8 - 20 bar

# BOILER HOSES CONNECTION AND SPECIFICATIONS



Boiler connection hoses are produced either wide or standard pitch according to pressure rating.

Though AISI 316L is usually preferred as raw material because of its high corrosion resistance, they may also be produced from AISI 304L stainless steel.



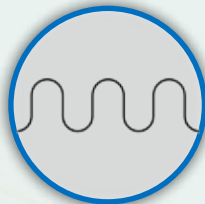
## Standards Followed

Male Side Threads: Conical threads according to ISO 7-1

Female Side Threads: Cylindrical threads according to ISO 228-1

Connection Type: According to EN ISO 10806

Production: According to EN ISO 10380

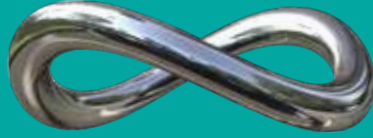


## Boiler Hose Dimensions and Operating Conditions

DN		Inner Dia.	Outside Dia.	Tol. (±)	Static Bend Radius	Wall Thick.	Pitch Type	Pressure Rating	Surface Area	Weight
(mm)	(inch)	(mm)	(mm)	(mm)	rmin (mm)	(mm)	(Pitch)	(bar)	(m <sup>2</sup> /m)	(kg/m)
12	1/2"	12.4 12.0	16.7 16.7	0.40	19	0.15 0.30	Wide Standard	16 20	0.07 0.08	0.09 0.19
16	5/8"	16.6 16.1	22.0 21.8		25	0.18 0.30	Wide Standard	10 16	0.10 0.11	0.14 0.28
20	3/4"	20.3 20.0	26.0 26.7		30	0.20 0.30	Wide Standard	10 16	0.12 0.16	0.16 0.39
25	1"	25.6 25.4	31.7 32.3		35	0.20 0.30	Wide Standard	8 12	0.15 0.20	0.24 0.48
32	1 1/4"	34.3	40.8		50	0.30	Standard	10	0.23	0.55
40	1 1/2"	40.0	49.5		55	0.40	Standard	9	0.29	0.94
50	2"	49.8	59.8		60	0.40	Standard	8	0.37	1.19

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