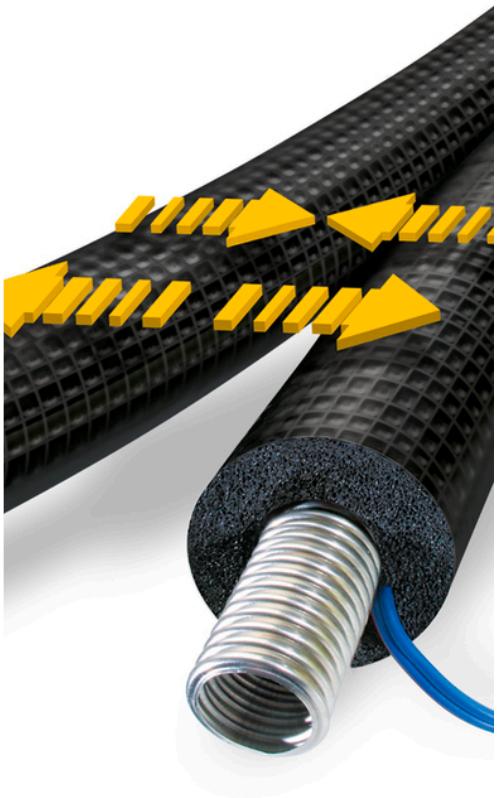
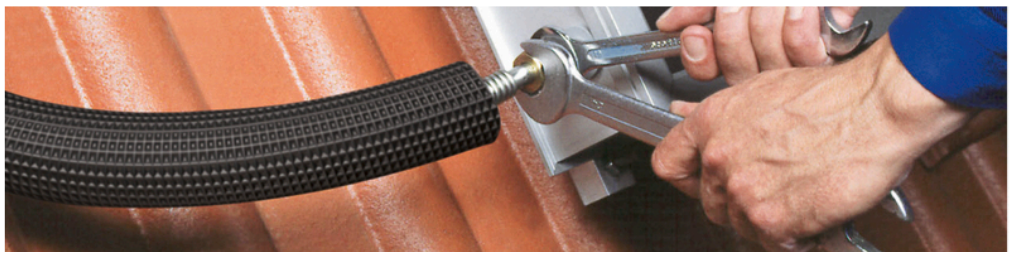
## INSTALL IT. OPTIMIZE SOLAR ENERGY.

# ArmaFlex
## DuoSolar

Provides a full system solution and ease of installation for solar energy applications

// Specially designed, pre-insulated solar tubing
// Stainless steel pipe to EN 10088-2
// Easy and fast to install
// Wide range of accessories
// Integrated sensor cable





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# ArmaFlex DuoSolar

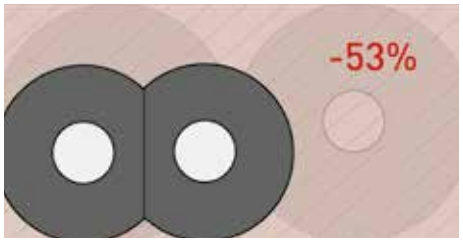
The ArmaFlex DuoSolar range offers reliable and easy-to install solutions for solar thermal systems. The pre-insulated feed and return pipes connect the solar panel with the thermal storage water heater. They optimize thermal efficiency and increases life time expectancy of the entire system. ArmaFlex DuoSolar for flat solar collectors with up to +150 °C is available as covered corrugated stainless-steel tubing (ArmaFlex DuoSolar VA) and copper piping (ArmaFlex DuoSolar CU). Due to the patented join-split fastening system, the pre-insulated pipes can be split and re-joined easily during the installation process without any damage to the protective foil.

**// DuoSolar 220**

While solar pipes for flat plate collectors are only suitable for a maximum application temperature of 150 °C, DuoSolar 220 even withstands the high temperatures of tube collectors of up to 220 °C. Flexible foam insulation materials become brittle at such high temperatures and lose their insulating properties. With DuoSolar 220 Armacell has closed this gap and also provides a twin-pipe system for the high operating temperatures of evacuated tube collectors.

# ArmaFlex DuoSolar e-Save

With ArmaFlex DuoSolar e-Save Armacell now provides a space-saving "100% solution". Based on calculations by FIW Munich using the finite element method, the R&D department developed pre-insulated twin pipes that not only offer high energy savings, but are also extremely space-efficient. ArmaFlex DuoSolar e-Save requires less than half the space needed by separately laid solar pipes to achieve same energy efficiency.




**// Quick-fitting Couplings**

System accessories which are especially tailored to the solar range ensure tight connections. For the installation of ArmaFlex DuoSolar VA Armacell offers quick-fitting couplings:
The flexible pipes can be connected to the system components of solar thermal systems in seconds – simply by tightening a nut. This eliminates the time-consuming flanging of connections and allows considerable cost savings. The couplings provide a permanent and leakproof seal for corrugated stainless steel tubes.

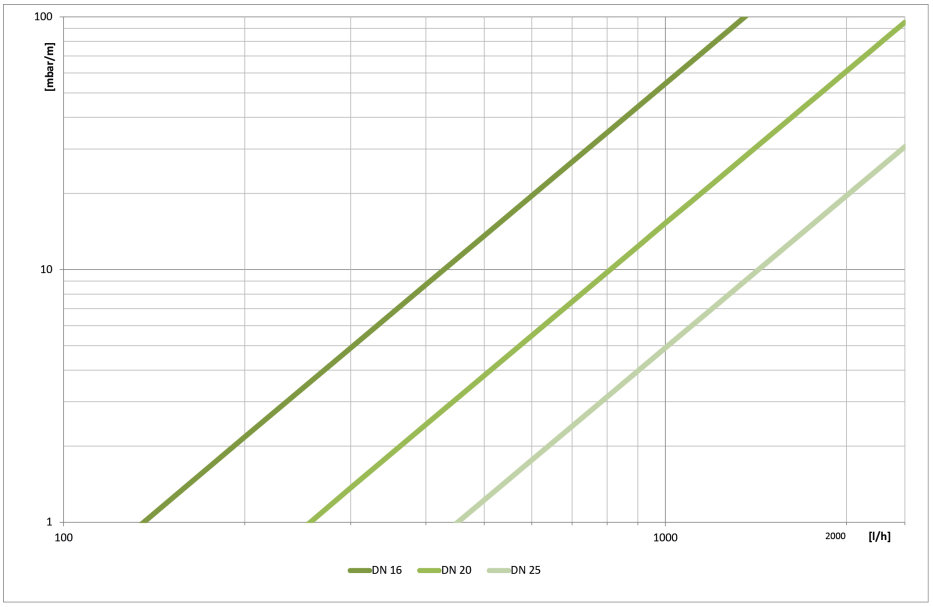
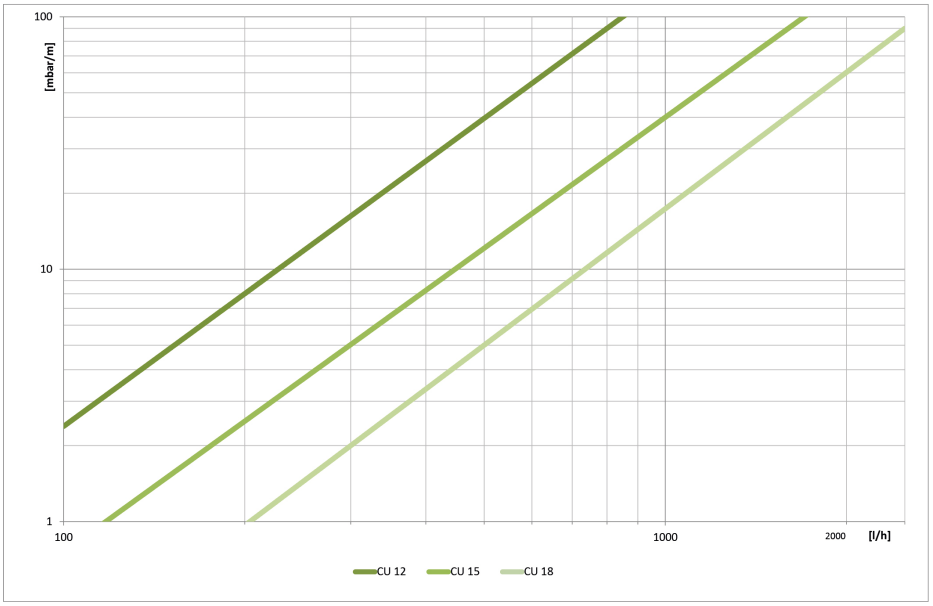
**// Your Benefits**

- Space-saving ‚100% solution'
- Pre-insulatedtwin pipes
- Maximum energy savings with extreme space-efficiency
- Requires less than half the space needed by separatly laid solar pipes

# TECHNICAL DATA - ARMAFLEX DUOSOLAR

| | |
|---|---|
| Brief description | ArmaFlex DuoSolar is a flexible pre-insulated, UV resistant piping system used to connect solar collectors with the hot-water storage tank in an easy and professional way. The system is offered with a smart join-split system with two stainless steel hoses and includes a sensor cable. |
| Material type | Factory-made flexible elastomeric foam based on ethylene propylene diene methylene (EPDM), according to EN 14304. Corrugated austenitic stainless steel hose according to EN 10088-2: X 2 CrNiMo 17-12-2 and DIN 17441: 1.4404 // Fullfill EN ISO 10380:2013 and EN 13618 p.B. 7.2. Polyolefin-copolymer coating. |
| Product colour range | Black |
| Product range | Pre-insulated corrugated stainless steel hoses in different coil lengths.<br>In the return pipe, a sensor cable (2x0.75 mm²) with halogen free, temperature resistant silicon coating (+180°C) is integrated. |
| Applications | Piping system to connect solar collectors with the hot-water storage tank, hot-water boiler and for other uses. |
| Installation | ArmaFlex HT 625 is a certified and compatible adhesive for a long-term performing system. |
| Remarks | During installation, we strongly recommend that proprietary hangers are used at every one meter distance to support the whole system. The solar system and heat transfer fluid has to be well matched to ensure corrosion- and interference-free operations. We recommend an annual laboratory test of the fluid medium (density, concentration, corrosion, pH value). The heat transfer fluid has to be completely replaced in case the parameters are out of limits.<br>EC Certificate of Conformity no. 0543 of Güteschutzgemeinschaft Hartschaum e.V. Celle |

| Property | Value / Assessment | | Standard / Test method |
|---|---|---|---|
| **Temperature range** | | | |
| Service temperature[1] | Min. °C | Max. °C | EN 14707, EN 14304 |
| | -50 | 150 | |
| **Thermal conductivity** | | | |
| Declared thermal conductivity | θm | 40°C | EN ISO 8497, EN ISO 13787 |
| | λd ≤ [W/(m·K)] | 0.042 | |
| | Formula | $\lambda = [36.92 + 0.125 \cdot \theta m + 0.0008 \cdot (\theta m-30)^2] / 1000]$ | |
| **Fire Performance and Approvals** | | | |
| Reaction to fire | E(L) | | EN 13501-1, EN ISO 11925-2 |
| **Physical attributes** | | | |
| Dimensions and tolerances | In accordance to EN 14304, table 1. | | EN 13467 |
| **Weather and UV resistance** | | | |
| UV resistance | Very good | | EN ISO 4892-2 |
| **Other technical features** | | | |
| Maintenance | Long term corrosion and failure proof operation of the solar thermal equipment is only possible when the system and heat transfer medium are optimally matched to each other.<br>We recommend an annual laboratory test of the medium (e.g. density, concentration, corrosion protection, pH). The heat transfer medium must be replaced completely, if the parameters do not longer meet the specifications. | | |
| Maximum operating pressure (bar) | CU 12 = 79 // DN 16 = 16<br>CU 15 = 62 // DN 20 = 10<br>CU 18 = 65 // DN 25 = 10 | | |

| Property | Value / Assessment | Standard / Test method |
|---|---|---|
| Maximum operating pressure (graph)[2] |  | |
| |  | |
| Pipe volume (l/m) | CU 12 = 0,085 // DN 16 = 0,272<br>CU 15 = 0,141 // DN 20 = 0,430<br>CU 18 = 0,201 // DN 25 = 0,633 | |

[1] For use in temperatures beyond the maximum and minimum service temperature range indicated in the technical data table, please contact our Customer Service Centre.

[2] Pressure drop [mbar/m] over Volume flow [l/h] for Medium temperature 60°C // Heat fluid 1,2-Propylenglycol // Dynamic Viscosity 1612.8 x $10^{-6}$ kg/ms // Weight density 1008 kg/$m^3$.

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# ABOUT ARMACELL

As the inventor of flexible foam for equipment insulation and a leading provider of engineered foams, Armacell develops innovative and safe thermal and mechanical solutions that create sustainable value for its customers. Armacell's products significantly contribute to global energy efficiency making a difference around the world every day. With more than 3,300 employees and 25 production plants in 19 countries, the company operates two main businesses, Advanced Insulation and Engineered Foams. Armacell focuses on insulation materials for technical equipment, high-performance foams for acoustic and lightweight applications, recycled PET products, next-generation aerogel technology and passive fire protection systems.

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