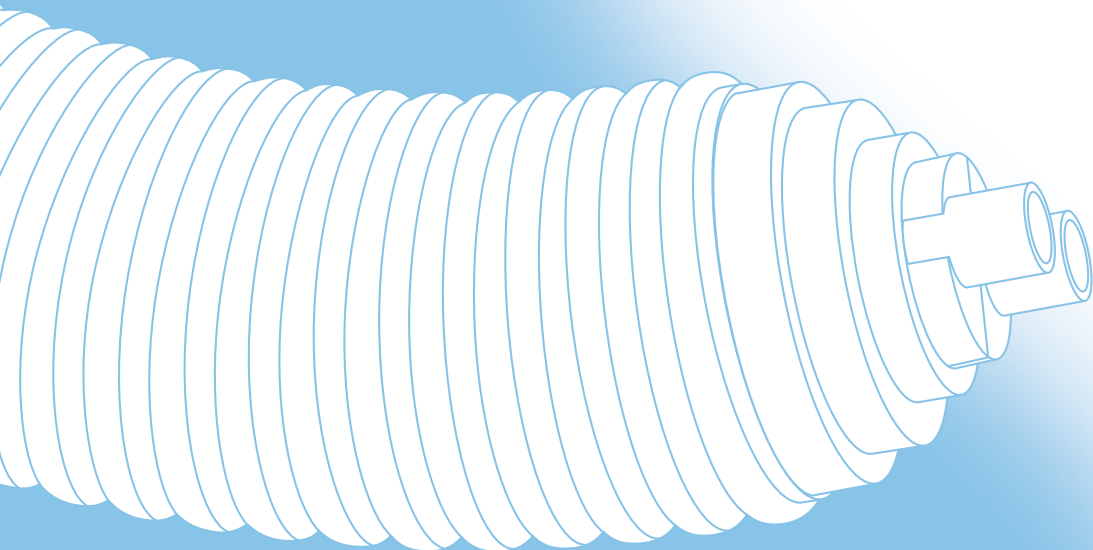




PIPE SYSTEMS

TECHNICAL  
INFORMATION

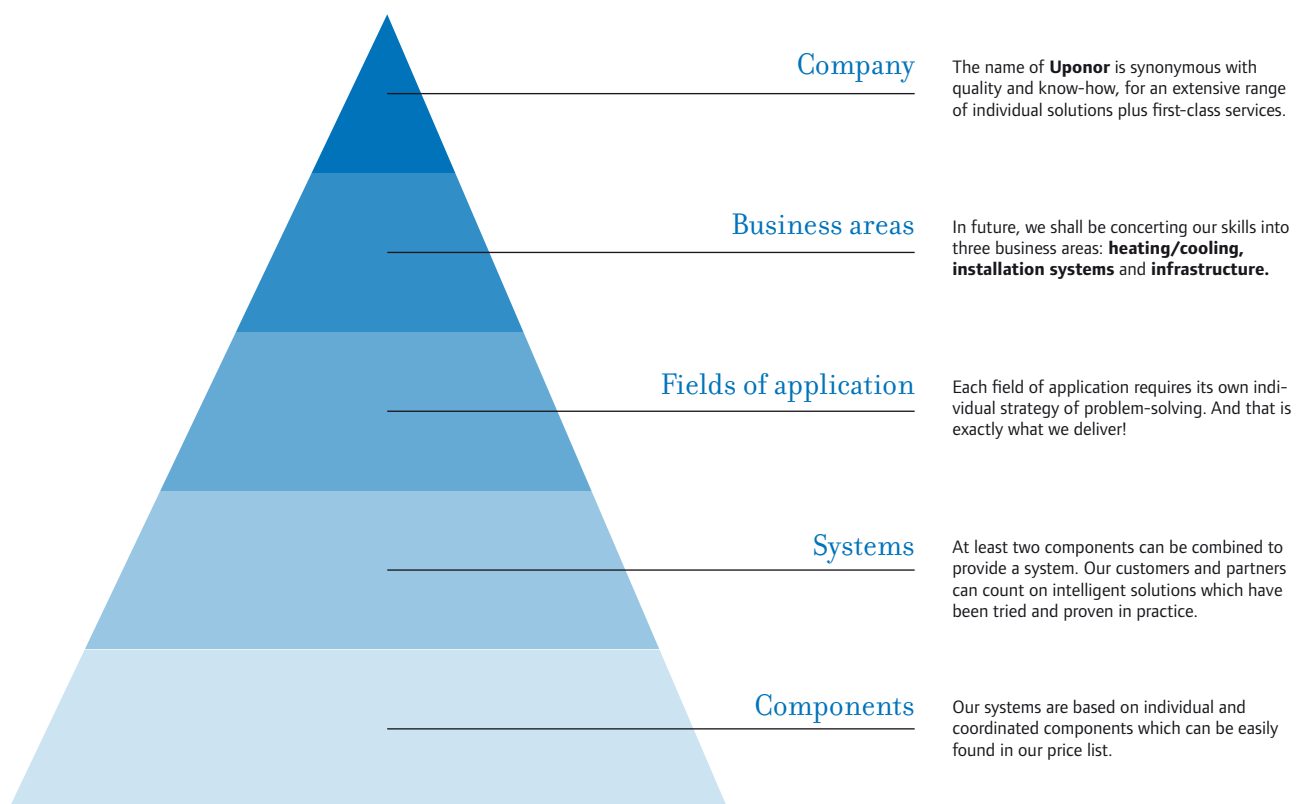
Flexible, pre-insulated  
pipe systems



# Uponor – the clever choice

Uponor provides solutions based on well-conceived products – a fact which is most certainly the reason why we are today among the leading suppliers of products for the HVACR sector, and environmental or communal engineering. Consolidating these segments to form a strong global market means we can streamline work procedures, work more cost-efficiently and simplify our range of products. Below the line, that means only first-class products leave our company - products which already today meet the requirements of the future and incorporate superb customer services from the business areas: heating/cooling, installation systems and infrastructure.

The difference lies with Uponor



## A single brand name – a single promise

Our sense of obligation towards our customers, coupled with an awareness of our responsibility towards them, the need to provide them with reliable and transparent solutions means we can be trusted never to go back on our word. We work together with the market experts to create a world of comfort so that you can be sure that a partnership with us will always pay off. Now, and in the future.

- Subject to technical changes and amendments to contents without notice.
- For further information, refer to [www.uponor.com](http://www.uponor.com)

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# Flexible, pre-insulated pipes made by Uponor

As a planner and processor you are accountable for the quality of your work. And if it's supply pipe system you are dealing with, you simply cannot afford to have any short-term or long-term problems. Using Uponor flexible, pre-insulated pipes will ensure you are always on the safe side. We provide well-conceived, extremely durable systems which are just as easy to plan as they are to install. They are available in the very highest quality which has led to practically no complaints being made in the last 25 years. Last but not least, we can provide you with a highly qualified service during each phase of your project so that on its completion, you can confidently "tick it off" with a feeling of something well achieved.



## Assured quality

Uncompromising quality is top of our list of priorities. Consistent quality controls during the production process is just one element of our quality management system. We regularly have our products tested by independent organisations to make sure they comply with our stringent standards.

### ■ Kiwa KOMO approval and certification

During the half-yearly system approval process in accordance with current regulations BRL 5609, the inter-action between all of the components is investigated. The approval certifies a service life of at least 30 years, impermeability under 0.3 bar pressurized water and ambient temperature of 30°C. Further tests were carried out regarding heat loss, statics and creep behaviour of the pipes under uniform specifications.

### ■ DIN Certco Certification

The annual certification in accordance with ISO 8497/ VDI 2055 is verification of heat loss and serves as a basis for the heat loss diagram we publish. The certification is particularly significant as it is carried out in a practice-related context using a specimen from our production process.

### ■ Structural analysis

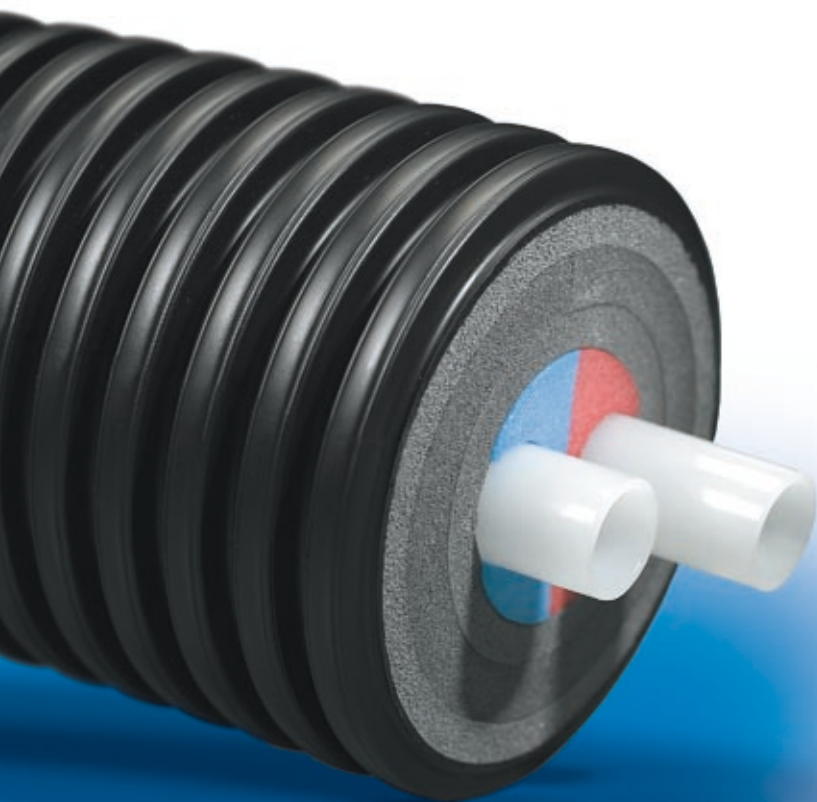
This verification is based on ATV DVWK-A127 and confirms that our pipe systems are also suitable for use in defined installation conditions to accommodate heavy traffic load SLW 60.

### ■ Ageing of insulation

Investigations have shown that in varying installation conditions there are no signs of any significant increase in heat conductivity in our insulation – not even after two years of service.

### ■ Insulation water absorption

Materials testing in accordance with EN 253 at 80°C (DIN 53428) certifies that our insulating material displays a water absorption rate of less than 1 vol. per cent. Its insulating properties remain practically unchanged under this almost negligible water absorption rate.



# Solid know-how for practice-specific products

Although excellent materials and perfect processing are essential for making a high-quality product, a product will only really prove its worth in practice in a well-engineered system. That means our products are all exactly compatible with one another and can therefore be installed easily and correctly under the often difficult conditions on the daily construction site.

Uponor Ecoflex proves its fit-for-purpose property not only by its flexibility. At the end of any pipe system, the lever arm, of course, becomes shorter and shorter. This is a system whereby only a minimum of strength is required for even small bending radii. House lead-ins, installations around obstacles, or pipe branches are easy to handle and allow installations to be carried out swiftly and on schedule.

We find the simplest solution the best. And we attach great value to the fact that our system components can be installed without the use of any special tools. On the one hand, the fitter is more familiar with his daily tools and on the other hand, any subsequent minor jobs or extensions can be made in a distinctly shorter time.

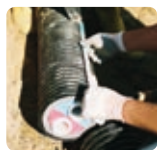
How good a product really is becomes obvious on the construction site itself. Many things which work perfectly well in theory turn out to have hidden weaknesses when coming into contact with dirt, or cold, or wet conditions. The flexible, pre-insulated pipe systems made by Uponor have been designed from the very beginning for trouble-free installation under severe conditions – valuable features which pay off when space is at a premium or in adverse weather conditions.



Trouble-free, rapid and faultless installation



Even small bending radii present no installation problems



Developed specially for difficult conditions on the construction site



Planning supply pipelines using pre-insulated pipe systems is not necessarily part of everyday business. Particularly when it comes to special-purpose installations, our experts are there to answer your questions, quickly and capably. Specialised engineers are ready to help you in word and deed in all the phases of your project. They can advise you on the selection of pipes and accessories, design and dimensioning of lines or the organisation of construction procedures. On request, we can provide a free service for preliminary project engineering of networks.

But our service does not stop with the planning. We can also provide an individual cut-to-length service for your project.

And we can also help with large-scale projects as our field service will provide on-site training to ensure you get a perfect installation – even the first time round.

## All of our services for our flexible pre-insulated pipe systems at a glance:

- Pipes cut to the length you require
- Product training directly on site
- Support with project planning and project design
- Advice in all engineering issues for your project
- Execution of product training

# An overview of construction

## Experience means flexibility

Profile pipe, insulation, inside pipe – and the “System” is ready? Far from it! Every single meter of Uponor Ecoflex pipe is backed more than 25 years of experience. Quality and suitability for use are, and always were, at the foreground of our developments for a variety of system solutions. We take in product details such as the geometry of the outside jacket, the type and design of the insulation, the material for the medium pipe, i.e. the real „insides“ of an Uponor pipe into consideration. And not to be forgotten, the pipe’s most special, visible feature – its flexibility.

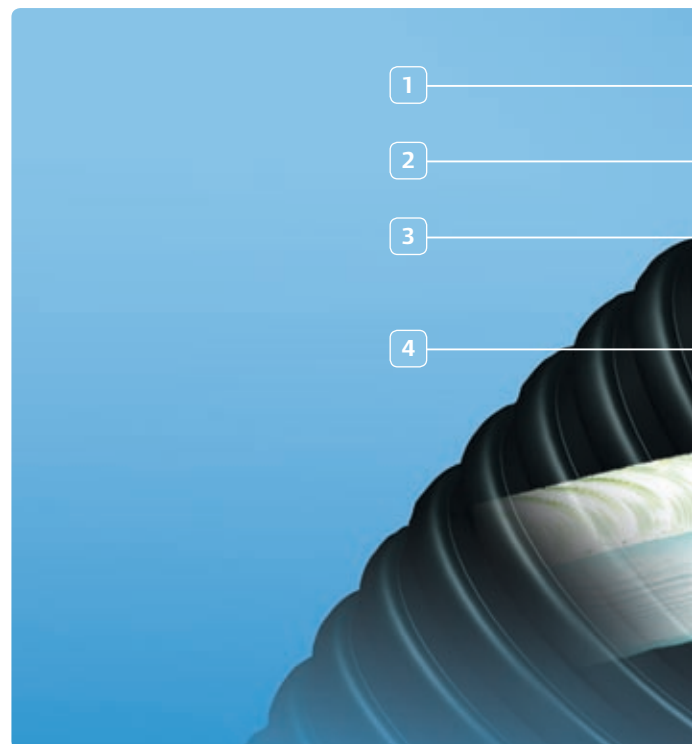
## Material/Service life

Polyethylene grades such as HDPE or PE-Xa have the basic chemical and physical properties to lend the pipes the best pre-requisites for us in supply lines engineering. The high-grade plastic of the medium pipe prevents particle deposits and corrosion and features a tremendously long service life coupled with highest temperature stability (PE-Xa) and crack resistance.

The use of monitoring elements in accordance with EN 14119 is therefore not required. The fact that we set quality standards for all of our products which are far higher than the usual requirements, ensures maximum project safety and service life.

## Practice-oriented accessories

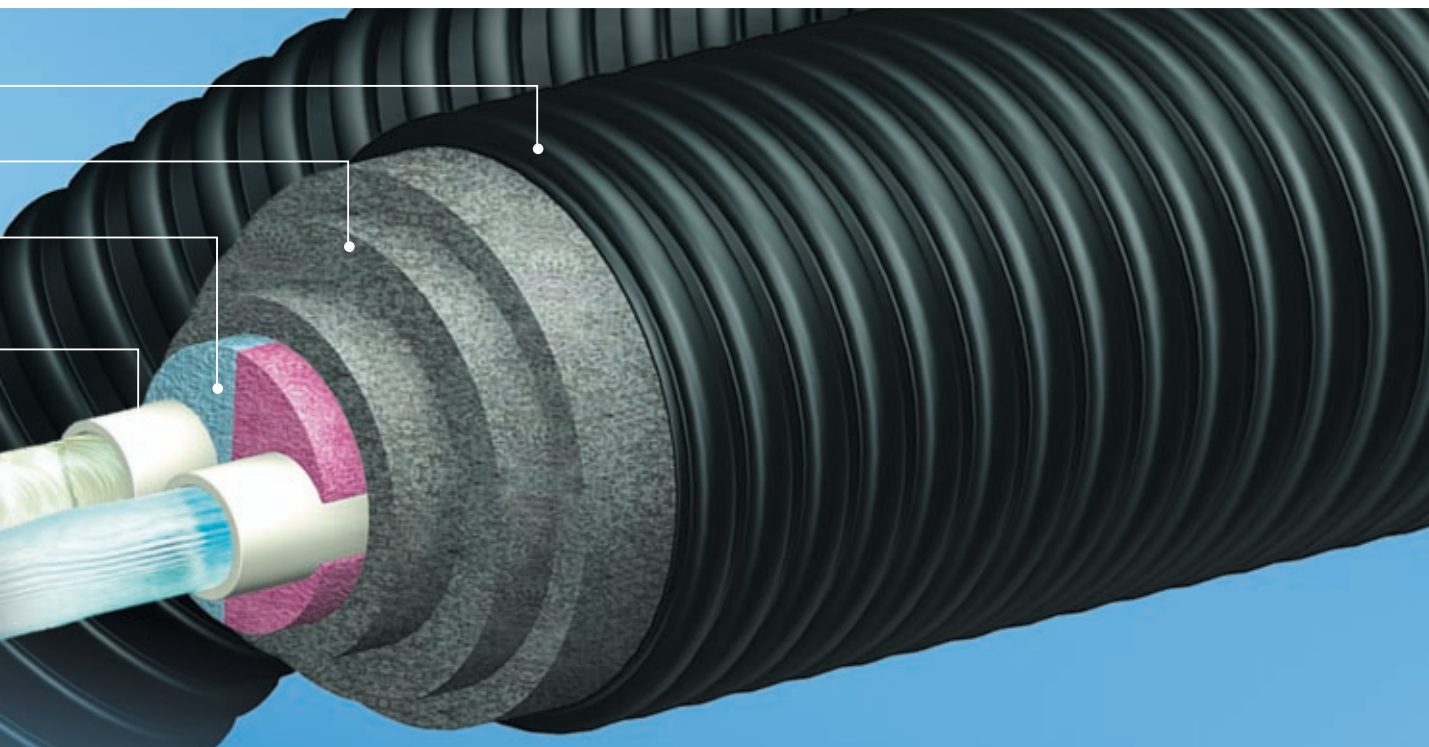
Practice-oriented for us means that installation is straightforward, the pipes are easy to handle and are safe in the long term. We therefore stock a variety of fittings, insulating sets, diverse wall seals and house lead-ins as well as a wide range of processing materials. The section “Uponor range of accessories for pre-insulated pipe systems” from Page 32 or our delivery programme from Page 51 of this brochure will provide you with information on the complete range.



### 1 The Jacket pipe

- Specially-developed Uponor pipe geometry
- Special corrugated rib profile provides high flexibility as well as high degree of static load resistance (ring rigidity)
- Static evidence as per **ATV-DVWK-A127 (SLW 60)** (Heavy Traffic Load)
- Major advantage: small bending radii
- Material: high impact-proof HDPE





## 2 Insulation

- Very low thermal loss (pipe system "Uponor Ecoflex Thermo" as per VDI 2055, externally monitored by FIW Munich and certified under DIN Certco [6V046] + [6V047])
- Age-resistant
- Closed cell structure, water absorption < 1 Vol %
- Permanently elastic (dimensional stability of more than 30 years has been verified under operating conditions)
- Flexibility in the form of multi-layer insulation, so-called "onion skin design"
- Compensation of linear thermal expansion (no expansion joints or elbows required)



## 3 Two-coloured Dog Bone

- Registered design and available solely from Uponor:
- The two-colour Dog Bone prevents the flow and return lines being confused when medium pipes are connected.



## 4 Medium pipe

- Materials: PE-Xa and PE-100 (Supra)
- Maximum safety and service life
- Free of deposits /encrustation
- Frost-proof and resistant against many aggressive media
- Max. stress crack resistance

### Technical data for insulating material

Property	Standard	Unit	Value
Water absorption, 24 days	DIN 53428	vol-%	< 1.0
Elongation at break	DIN 53571	%	204
Volumetric weight	DIN 53420	kg/m <sup>3</sup>	30
Tensile strength	DIN 53571	N/cm <sup>2</sup>	24
Tear strength	DIN 53575	N/mm	1.38
Compression hardness (50 % deformation)	DIN 53577	kPa	71
Flammability	DIN 4102		B2

# Material properties of the medium pipe

## PE-Xa medium pipe (applications up to 95 °C)



### Aqua

The DVGW-approved medium pipes in the Uponor Ecoflex Aqua product series are suitable for transporting warm potable water up to 95°C at a pressure of max. 10 bar. The PE-Xa medium pipe is produced in line with DIN16892/16893 with a diameter wall thickness ratio of SDR 7.4.

Mechanical properties	Standards	Temperature	Standard value	Unit
Density			938	kg/m <sup>3</sup>
Tensile strength	DIN 53455	20 °C	19 – 26	N/mm <sup>2</sup>
	DIN 53455	80 °C	9 – 13	N/mm <sup>2</sup>
Elasticity module	DIN 53457	20 °C	600 – 900	N/mm <sup>2</sup>
	DIN 53457	80 °C	300 – 350	N/mm <sup>2</sup>
Elongation at break	DIN 53455	20 °C	350 – 550	%
	DIN 53455	100 °C	500 – 700	%
Impact strength	DIN 53453	–140 °C	no break	kJ/m <sup>2</sup>
	DIN 53453	20 °C	no break	kJ/m <sup>2</sup>
	DIN 53453	100 °C	no break	kJ/m <sup>2</sup>
Moisture absorption	DIN 53472	22 °C	0.01	mg/4d
Friction coefficient with steel			0.08 – 0.1	
Oxygen-Permeability		20 °C	$0.8 \times 10^{-13}$	g m/m <sup>2</sup> s bar
		55 °C	$3.0 \times 10^{-13}$	g m/m <sup>2</sup> s bar



### Thermo

Uponor Ecoflex Thermo medium pipes are coated with an EVOH oxygen diffusion barrier as per DIN 4726 and are thus particularly suited for transporting warm water up to 95 °C and a max. pressure of 6 bar. The diameter-wall thickness ratio is SDR 11.

Thermal properties	Standards	Temperature	Standard value	Unit
Application temperature			–50 to +95	°C
Linear coefficient of expansion		20 °C	$1.4 \times 10^{-4}$	m/mK
		100 °C	$2.05 \times 10^{-4}$	m/mK
Softening point			+133	°C
Specific heat			2.3	kJ/kgK
Thermal conductivity	DIN 4725		0.35	W/mK



## PE-100 medium pipe (applications up to 20 °C)



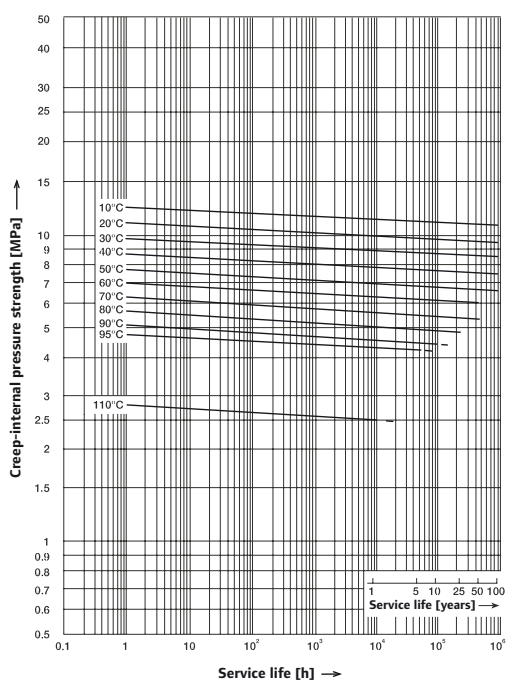
### Supra

The medium pipe in our Uponor Ecoflex Supra pipeline is produced in HDPE (PE 100). With a diameter-wall thickness ratio SDR 11 and pressure load of max. 16 bar at 20°C, it is designed specially for transporting cold potable water and for use in cooling water networks. Our HDPE medium pipe is DVGW-approved for transporting potable water.

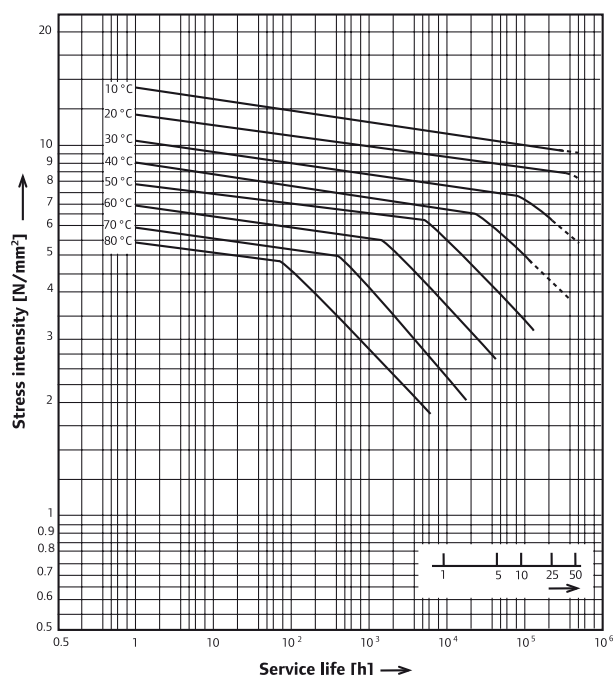
Property	Standard	PE 100 (standard values)	Unit
Density at 23 °C	DIN 53479 ISO 1183 ISO/R 1183	approx. 0.96	g/cm <sup>3</sup>
Break strength	DIN 53495	38	N/mm <sup>2</sup>
Elongation at break	DIN 53495	> 600	%
Tensile strength at yield	DIN 53495	25	N/mm <sup>2</sup>
Elasticity module (tensile test)	ISO 178	approx. 1.200	N/mm <sup>2</sup>
Hardness	ISO 2039	46	N/mm <sup>2</sup>
Vicat-softening point	DIN/ISO 306		°C
VST-A/50		127	
VST-B/50		77	
Thermal conductivity (at 20 °C)	DIN 52612	0.38	W/mK
Application temperature		-10 bis +20 (16 bar)	°C
Thermal linear expansion coefficient	DIN 53752	1.8 x 10 <sup>-4</sup>	1/°C
Fire behaviour	DIN 4102 Part 1	B2	—



### Service life: PE-Xa medium pipe



### Service life: HDPE medium pipe



# Pipes and fields of Application

## Uponor media diversity

Our pipes are used all over the world to handle a great variety of media – whether in heating network systems in housing developments, cooling water systems, in hotel complexes or in industry for potable water, foodstuffs and chemicals. The Uponor Ecoflex Quattro pipeline

system is synonymous for media diversity. It allows the supply of heating water and potable water in just one pipeline and is therefore especially suitable for use in housing tie-ins.



**Uponor Ecoflex Thermo**

- Heating water



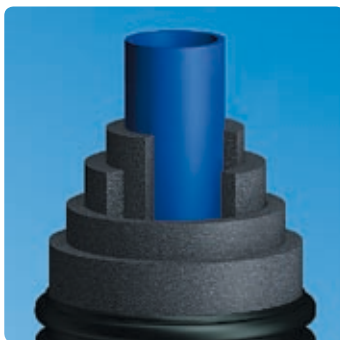
**Uponor Ecoflex Aqua**

- Potable water, warm
- foodstuffs



**Uponor Ecoflex Quattro**


- Heating water and potable water, warm with circulation



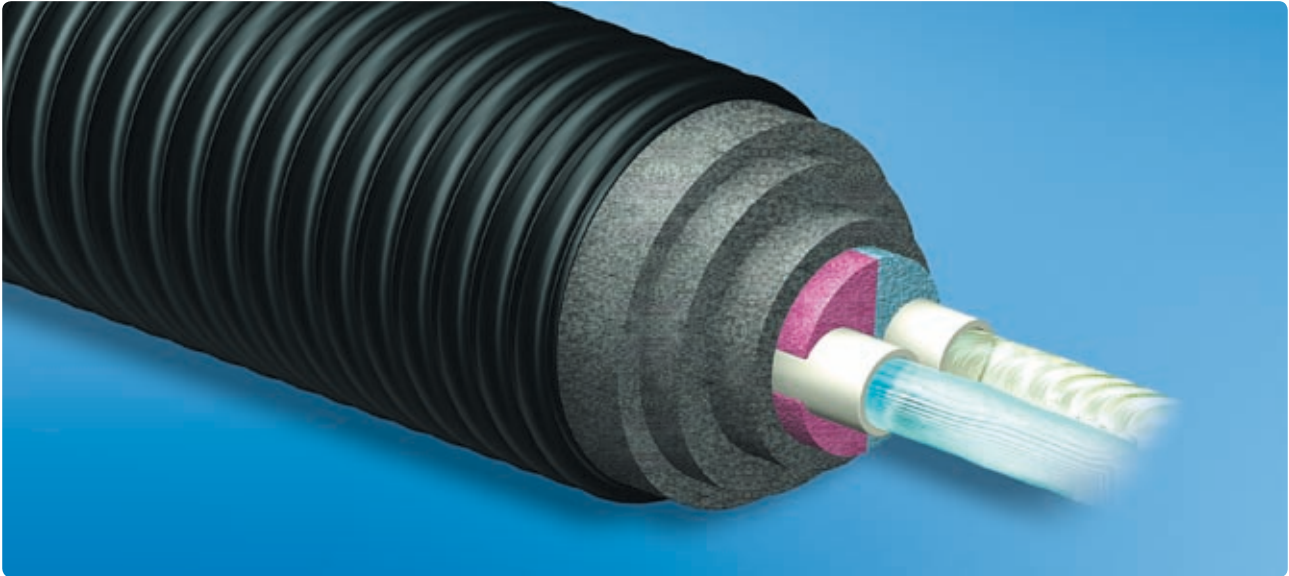
**Uponor Ecoflex Supra**

- Potable water, cold
- Cooling water
- Also available with anti-freeze cable

## An overview of key product information

Medium	Medium temperature	Operating pressure				
			Uponor Ecoflex Thermo	Uponor Ecoflex Aqua	Uponor Ecoflex Quattro	Uponor Ecoflex Supra
Potable water, cold	20 °C	16 bar				●
Potable water, warm	95 °C	10 bar		●	●	
Heating water	95 °C	6 bar	●		●	
Cooling water	-10 °C	16 bar				●
Chemicals			on request	on request		on request
Foodstuffs				on request		on request
Pressurized waste water			on request			on request
<b>Others</b>						
Anti-freeze cable optional						●
Heating tape optional			●	●		
<b>Material</b>						
Medium pipe			PE-Xa with EVOH	PE-Xa	PE-Xa and PE-Xa with EVOH	PE-100
Insulating material			PE-X	PE-X	PE-X	PE-X
Jacket pipe			PE-HD	PE-HD	PE-HD	PE-HD

# Product profile: Uponor Ecoflex Thermo



## Practical, perfect and versatile for hot water supply systems

The ideal solution for the distribution of hot water in local heating supply networks or for integration into building complexes and individual houses. The Uponor Ecoflex Thermo twin variant combines flow and return in one flexible pipe system. The classification of the Thermo pipe system is described in DIN EN 15632-T3 Draft 2007 as a non-composite system with a plastic medium pipe.



## Uponor Ecoflex Thermo Mini



95 °C



6 bar



25–32 mm

### Main application

- Heating water

### Other applications

- Waste water
- Chemicals

### Medium pipe

- PE-Xa with EVOH, SDR 11

### Option

- Heating cable (see Page 38)

### Insulating material

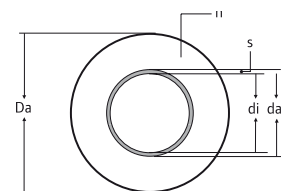
- PE-X foam

### Material jacket pipe

- HDPE

### Note:

In minor applications in private areas (such as greenhouses). Especially well suited for installation in empty ductwork.



Art. No.	Medium pipe da/di/s [mm]	n	Jacket pipe Da [mm]	Weight [kg/m]	Length on delivery [m]	Bending radius [m]	Insulation thickness [mm]
1018132	25 / 20.4 / 2.3	1	68	0.50	200	0.20	15
1018133	32 / 26.2 / 2.9	1	68	0.55	150	0.25	12

## Uponor Ecoflex Thermo Single



95 °C



6 bar



25–110 mm

### Main application

- Heating water

### Other applications

- Waste water
- Chemicals

### Medium pipe

- PE-Xa mit EVOH, SDR 11

### Option

- Heating cable (refer to Page 38)

### Insulating material

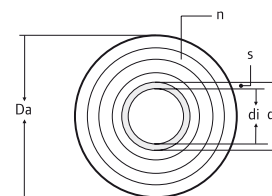
- PE-X foam

### Material jacket pipe

- HDPE

### Note:

The tried-and-proven solution for heating water distribution in local heating networks and for individual building tie-ins.



Article Number	Medium pipe da / di / s [mm]	n	Jacket pipe Da [mm]	Weight [kg/m]	Delivery lengths [m]	Bending radius [m]	Insulation thickness [mm]
1018109	25 / 20.4 / 2.3	4	140	1.10	200	0.25	45
1018110	32 / 26.2 / 2.9	3	140	1.20	150	0.30	42
1018111	40 / 32.6 / 3.7	4	175	2.20	100	0.35	55
1018112	50 / 40.8 / 4.6	4	175	2.43	100	0.45	50
1018113	63 / 51.4 / 5.8	3	175	2.73	100	0.55	43
1018114	75 / 61.4 / 6.8	3	200	3.74	100	0.80	49
1018115	90 / 73.6 / 8.2	3	200	4.20	100	1.10	39
1018116	110 / 90.0 / 10.0	3	200	5.24	100	1.20	30

## Uponor Ecoflex Thermo Twin



95 °C



6 bar



25–63 mm

### Main application

- Heating water

### Other applications

- Waste water
- Chemicals

### Medium pipe

- PE-Xa with EVOH, SDR 11

### Insulating material

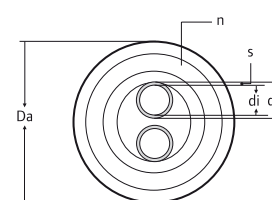
- PE-X foam

### Material jacket pipe

- HDPE

### Note:

Combined flow and return in one pipe system incl. dog bone to prevent confusion when medium pipes are being connected.



Article Number	Medium pipe da / di / s [mm]	n	Jacket pipe Da [mm]	Weight [kg/m]	Delivery lengths [m]	Bending radius [m]	Insulation thickness [mm]
1018134	(2x) 25 / 20.4 / 2.3	3	175	2.09	200	0.5	43
1018135	(2x) 32 / 26.2 / 2.9	3	175	2.16	150	0.6	38
1018136	(2x) 40 / 32.6 / 3.7	2	175	2.50	100	0.8	28
1018137	(2x) 50 / 40.8 / 4.6	3	200	3.59	100	1.0	32
1018138	(2x) 63 / 51.4 / 5.8	2	200	4.49	100	1.2	18

# Pressure loss: Uponor Ecoflex Thermo

Heating pipe: Basis 50 °C water temperature\*

Volume flow		DIM:	25 x 2.3	32 x 2.9	40 x 3.7	50 x 4.6	63 x 5.8	75 x 6.8	90 x 8.2	110 x 10
		di (mm)	20.4	26.2	32.6	40.8	51.4	61.4	73.6	90.0
l/h	l/s		kPa/m m/s	kPa/m m/s	kPa/m m/s	kPa/m m/s	kPa/m m/s	kPa/m m/s	kPa/m m/s	kPa/m m/s
36	0.01									
72	0.02									
108	0.03									
144	0.04									
180	0.05		0.020 0.162							
216	0.06		0.028 0.194							
252	0.07		0.037 0.226							
288	0.08		0.047 0.259							
324	0.09		0.058 0.291							
360	0.1		0.071 0.323	0.020 0.191						
720	0.2		0.244 0.646	0.069 0.381	0.024 0.243					
1080	0.3		0.507 0.969	0.143 0.572	0.049 0.365					
1440	0.4		0.850 1.293	0.239 0.762	0.082 0.487	0.028 0.310				
1800	0.5		1.270 1.616	0.358 0.953	0.122 0.608	0.041 0.388				
2160	0.6		1.765 1.939	0.496 1.143	0.169 0.730	0.058 0.466				
2520	0.7		2.330 2.262	0.655 1.334	0.223 0.852	0.076 0.543				
2880	0.8		2.966 2.585	0.834 1.524	0.284 0.973	0.097 0.621	0.032 0.391			
3240	0.9		3.668 2.908	1.031 1.715	0.351 1.095	0.119 0.699	0.039 0.440			
3600	1		4.438 3.231	1.247 1.905	0.425 1.217	0.144 0.776	0.047 0.489			
3960	1.1		5.272 3.555	1.481 2.096	0.504 1.338	0.171 0.854	0.056 0.537			
4320	1.2		6.171 3.878	1.733 2.286	0.590 1.460	0.200 0.931	0.066 0.586	0.028 0.411		
5040	1.4		8.156 4.524	2.290 2.668	0.779 1.703	0.265 1.087	0.087 0.684	0.037 0.480		
5760	1.6		10.388 5.170	2.916 3.049	0.992 1.947	0.337 1.242	0.111 0.782	0.047 0.548		
6480	1.8		12.859 5.816	3.609 3.430	1.227 2.190	0.417 1.397	0.137 0.879	0.058 0.617	0.024 0.429	
7200	2		15.566 6.463	4.367 3.811	1.485 2.433	0.504 1.552	0.166 0.977	0.071 0.685	0.030 0.477	
7920	2.2		18.504 7.109	5.190 4.192	1.764 2.677	0.599 1.708	0.197 1.075	0.084 0.754	0.035 0.524	
8640	2.4		21.670 7.755	6.077 4.573	2.065 2.920	0.701 1.863	0.230 1.173	0.098 0.823	0.041 0.572	
9360	2.6		25.060 8.402	7.026 4.954	2.387 3.163	0.810 2.018	0.266 1.270	0.114 0.891	0.047 0.620	
10080	2.8		28.671 9.048	8.037 5.335	2.730 3.407	0.926 2.173	0.304 1.368	0.130 0.960	0.054 0.667	
10800	3		32.500 9.694	9.109 5.716	3.094 3.650	1.049 2.329	0.345 1.466	0.147 1.028	0.061 0.715	0.023 0.478
12600	3.5		43.015 11.310	12.051 6.669	4.092 4.258	1.388 2.717	0.456 1.710	0.194 1.200	0.081 0.834	0.031 0.558
14400	4		54.847 12.926	15.360 7.622	5.214 4.867	1.768 3.105	0.580 1.954	0.247 1.371	0.103 0.953	0.039 0.638
16200	4.5			19.029 8.574	6.458 5.475	2.189 3.493	0.718 2.199	0.306 1.542	0.128 1.072	0.049 0.718
18000	5			23.050 9.527	7.821 6.083	2.650 3.881	0.869 2.443	0.370 1.714	0.154 1.191	0.059 0.797
19800	5.5			27.418 10.480	9.301 6.692	3.151 4.269	1.033 2.687	0.440 1.885	0.184 1.311	0.070 0.877
21600	6			32.127 11.432	10.896 7.300	3.690 4.657	1.210 2.931	0.516 2.056	0.215 1.430	0.082 0.957
23400	6.5			37.172 12.385	12.604 7.908	4.268 5.046	1.399 3.176	0.596 2.228	0.248 1.549	0.095 1.037
25200	7				14.425 8.516	4.884 5.434	1.601 3.420	0.682 2.399	0.284 1.668	0.108 1.116
27000	7.5				16.357 9.125	5.537 5.822	1.815 3.664	0.773 2.571	0.322 1.787	0.123 1.196



### Heating pipe: Basis 50 °C water temperature\*

Volume flow		DIM:	25 x 2.3	32 x 2.9	40 x 3.7	50 x 4.6	63 x 5.8	75 x 6.8	90 x 8.2	110 x 10
		di (mm)	20.4	26.2	32.6	40.8	51.4	61.4	73.6	90.0
			kPa/m m/s	kPa/m m/s	kPa/m m/s	kPa/m m/s	kPa/m m/s	kPa/m m/s	kPa/m m/s	kPa/m m/s
l/h	l/s									
28800	8				18.398 9.733	6.227 6.210	2.041 3.908	0.869 2.742	0.362 1.906	0.138 1.276
30600	8.5				20.548 10.341	6.954 6.598	2.279 4.153	0.970 2.913	0.404 2.025	0.154 1.356
32400	9				22.806 10.950	7.717 6.986	2.528 4.397	1.076 3.085	0.448 2.144	0.171 1.435
34200	9.5				25.170 11.558	8.516 7.374	2.790 4.641	1.187 3.256	0.495 2.264	0.188 1.515
36000	10				27.639 12.166	9.350 7.762	3.062 4.886	1.303 3.427	0.543 2.383	0.207 1.595
37800	10.5					10.220 8.151	3.347 5.130	1.424 3.599	0.593 2.502	0.226 1.675
39600	11					11.125 8.539	3.643 5.374	1.550 3.770	0.646 2.621	0.246 1.754
43200	12					13.038 9.315	4.268 5.863	1.816 4.113	0.756 2.859	0.288 1.914
46800	13					15.089 10.091	4.939 6.351	2.101 4.456	0.875 3.098	0.333 2.073
50400	14					17.275 10.867	5.653 6.840	2.405 4.798	1.001 3.336	0.381 2.233
54000	15					19.595 11.644	6.412 7.328	2.727 5.141	1.135 3.574	0.431 2.392
57600	16					22.048 12.420	7.213 7.817	3.067 5.484	1.277 3.812	0.485 2.552
61200	17						8.057 8.306	3.426 5.827	1.426 4.051	0.542 2.711
64800	18						8.944 8.794	3.802 6.169	1.582 4.289	0.601 2.871
68400	19						9.872 9.283	4.197 6.512	1.746 4.527	0.663 3.030
72000	20						10.842 9.771	4.609 6.855	1.917 4.765	0.728 3.190
79200	22						12.906 10.748	5.485 7.540	2.281 5.242	0.866 3.509
86400	24						15.132 11.725	6.430 8.226	2.674 5.719	1.015 3.828
93600	26						17.520 12.703	7.443 8.911	3.095 6.195	1.175 4.147
100800	28							8.523 9.597	3.544 6.672	1.345 4.466
108000	30							9.670 10.282	4.020 7.148	1.525 4.785
115200	32							10.883 10.968	4.523 7.625	1.716 5.104
122400	34							12.161 11.653	5.054 8.101	1.917 5.423
129600	36							13.503 12.339	5.611 8.578	2.128 5.741
136800	38								6.195 9.054	2.350 6.060
144000	40								6.805 9.531	2.581 6.379
162000	45								8.444 10.722	3.201 7.177
180000	50								10.243 11.914	3.883 7.974
198000	55								12.200 13.105	4.623 8.772
216000	60									5.423 9.569
234000	65									6.281 10.367
252000	70									7.196 11.164
270000	75									8.167 11.961
288000	80									9.195 12.759

### \*Pressure loss correction factors for other water temperatures

°C	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95
Factor	1.217	1.183	1.150	1.117	1.100	1.067	1.050	1.017	1.000	0.983	0.967	0.952	0.938	0.933	0.918	0.904	0.890	0.873

# Pressure loss: Uponor Ecoflex Thermo

## Heating pipe: rapid design

Spread							Mass flow	Pipe type $\Delta p.v$	Pipe type $\Delta p.v$	Pipe type $\Delta p.v$
$\Delta T=10\text{ K}$	$\Delta T=15\text{ K}$	$\Delta T=20\text{ K}$	$\Delta T=25\text{ K}$	$\Delta T=30\text{ K}$	$\Delta T=35\text{ K}$	$\Delta T=40\text{ K}$				
10 kW	15 kW	20 kW	25 kW	30 kW	35 kW	40 kW	860 kg/h	25/20.4 0.30974 kPa/m 0.74962 m/s	32/26.2 0.09786 kPa/m 0.46148 m/s	
20 kW	30 kW	40 kW	50 kW	60 kW	70 kW	80 kW	1720 kg/h	32/26.2 0.32917 kPa/m 0.92296 m/s	40/32.6 0.11240 kPa/m 0.58708 m/s	50/40.8 0.03872 kPa/m 0.37481 m/s
30 kW	45 kW	60 kW	75 kW	90 kW	105 kW	120 kW	2580 kg/h	32/26.2 0.66923 kPa/m 1.38445 m/s	40/32.6 0.22851 kPa/m 0.88062 m/s	50/40.8 0.07872 kPa/m 0.56221 m/s
40 kW	60 kW	80 kW	100 kW	120 kW	140 kW	160 kW	3440 kg/h	40/32.6 0.37806 kPa/m 1.17416 m/s	50/40.8 0.13023 kPa/m 0.74962 m/s	63/51.4 0.04348 kPa/m 0.47232 m/s
50 kW	75 kW	100 kW	125 kW	150 kW	175 kW	200 kW	4300 kg/h	50/40.8 0.19244 kPa/m 0.93702 m/s	63/51.4 0.06425 kPa/m 0.59040 m/s	75/61.2 0.02805 kPa/m 0.41646 m/s
60 kW	90 kW	120 kW	150 kW	180 kW	210 kW	240 kW	5160 kg/h	50/40.8 0.26445 kPa/m 1.12443 m/s	63/51.4 0.08839 kPa/m 0.70848 m/s	75/61.2 0.03859 kPa/m 0.49975 m/s
70 kW	105 kW	140 kW	175 kW	210 kW	245 kW	280 kW	6020 kg/h	50/40.8 0.34945 kPa/m 1.31183 m/s	63/51.4 0.11513 kPa/m 0.82656 m/s	75/61.2 0.05053 kPa/m 0.58304 m/s
80 kW	120 kW	160 kW	200 kW	240 kW	280 kW	320 kW	6880 kg/h	63/51.4 0.14654 kPa/m 0.94464 m/s	75/61.2 0.06334 kPa/m 0.66633 m/s	90/73.6 0.02657 kPa/m 0.46072 m/s
90 kW	135 kW	180 kW	225 kW	270 kW	315 kW	360 kW	7740 kg/h	63/51.4 0.18133 kPa/m 1.06272 m/s	75/61.2 0.07836 kPa/m 0.74962 m/s	90/73.6 0.03266 kPa/m 0.51831 m/s
100 kW	150 kW	200 kW	250 kW	300 kW	350 kW	400 kW	8600 kg/h	63/51.4 0.21940 kPa/m 1.18080 m/s	75/61.2 0.09480 kPa/m 0.83291 m/s	90/73.6 0.03905 kPa/m 0.57590 m/s
110 kW	165 kW	220 kW	275 kW	330 kW	385 kW	440 kW	9460 kg/h	63/51.4 0.26071 kPa/m 1.29888 m/s	75/61.2 0.11263 kPa/m 0.91620 m/s	90/73.6 0.04639 kPa/m 0.63349 m/s
120 kW	180 kW	240 kW	300 kW	360 kW	420 kW	480 kW	10320 kg/h	75/61.2 0.13183 kPa/m 0.99949 m/s	90/73.6 0.05429 kPa/m 0.69108 m/s	110/90.0 0.02064 kPa/m 0.46217 m/s
130 kW	195 kW	260 kW	325 kW	390 kW	455 kW	520 kW	11180 kg/h	75/61.2 0.15238 kPa/m 1.08278 m/s	90/73.6 0.06274 kPa/m 0.74867 m/s	110/90.0 0.02385 kPa/m 0.50068 m/s
140 kW	210 kW	280 kW	350 kW	420 kW	490 kW	560 kW	12040 kg/h	75/61.2 0.17427 kPa/m 1.16608 m/s	90/73.6 0.07174 kPa/m 0.80626 m/s	110/90.0 0.02727 kPa/m 0.53919 m/s
150 kW	225 kW	300 kW	375 kW	450 kW	525 kW	600 kW	12900 kg/h	75/61.2 0.19746 kPa/m 1.24937 m/s	90/73.6 0.08129 kPa/m 0.86385 m/s	110/90.0 0.03089 kPa/m 0.57771 m/s
160 kW	240 kW	320 kW	400 kW	480 kW	560 kW	640 kW	13760 kg/h	75/61.2 0.22196 kPa/m 1.33266 m/s	90/73.6 0.09136 kPa/m 0.92144 m/s	110/90.0 0.03472 kPa/m 0.61622 m/s
170 kW	255 kW	340 kW	425 kW	510 kW	595 kW	680 kW	14620 kg/h	90/73.6 0.10196 kPa/m 0.97903 m/s	110/90.0 0.03874 kPa/m 0.65473 m/s	
180 kW	270 kW	360 kW	450 kW	540 kW	630 kW	720 kW	15480 kg/h	90/73.6 0.11308 kPa/m 1.03662 m/s	110/90.0 0.04296 kPa/m 0.69325 m/s	
190 kW	285 kW	380 kW	475 kW	570 kW	665 kW	760 kW	16340 kg/h	90/73.6 0.12472 kPa/m 1.09421 m/s	110/90.0 0.04738 kPa/m 0.73176 m/s	

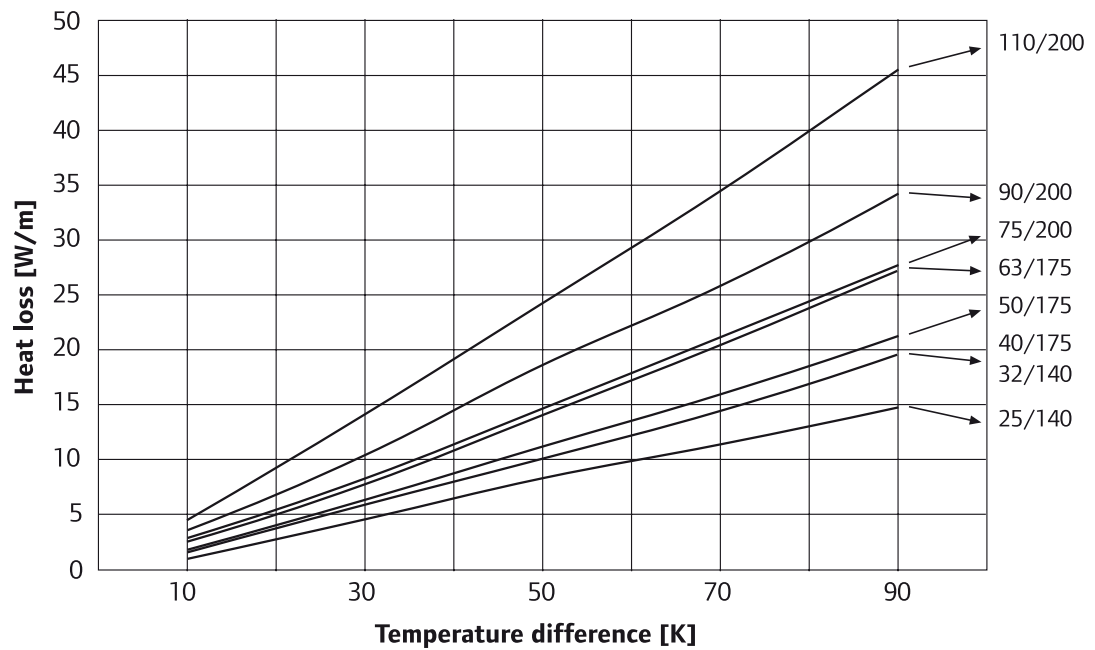
## Heating pipe: rapid design

Spread							Mass flow	Pipe type $\Delta p.v$	Pipe type $\Delta p. v$	Pipe type $\Delta p. v$
$\Delta T= 10\text{ K}$	$\Delta T=15\text{ K}$	$\Delta T=20\text{ K}$	$\Delta T=25\text{ K}$	$\Delta T=30\text{ K}$	$\Delta T=35\text{ K}$	$\Delta T=40\text{ K}$				
200 kW	300 kW	<b>400 kW</b>	500 kW	600 kW	700 kW	800 kW	17200 kg/h	90/73.6 0.13687 kPa/m 1.15180 m/s	110/90.0 0.05199 kPa/m 0.77028 m/s	
210 kW	315 kW	<b>420 kW</b>	525 kW	630 kW	735 kW	840 kW	18060 kg/h	90/73.6 0.14953 kPa/m 1.20939 m/s	110/90.0 0.05680 kPa/m 0.80879 m/s	
220 kW	330 kW	<b>440 kW</b>	550 kW	660 kW	770 kW	880 kW	18920 kg/h	90/73.6 0.16269 kPa/m 1.26698 m/s	110/90.0 0.06179 kPa/m 0.84730 m/s	
230 kW	345 kW	<b>460 kW</b>	575 kW	690 kW	805 kW	920 kW	19780 kg/h	90/73.6 0.17635 kPa/m 1.32457 m/s	110/90.0 0.06697 kPa/m 0.88582 m/s	
240 kW	360 kW	<b>480 kW</b>	600 kW	720 kW	840 kW	960 kW	20640 kg/h	90/73.6 0.19051 kPa/m 1.38216 m/s	110/90.0 0.07234 kPa/m 0.92433 m/s	
250 kW	375 kW	<b>500 kW</b>	625 kW	750 kW	875 kW	1000 kW	21500 kg/h	110/90.0 0.07790 kPa/m 0.96285 m/s		
260 kW	390 kW	<b>520 kW</b>	650 kW	780 kW	910 kW	1040 kW	22360 kg/h	110/90.0 0.08364 kPa/m 1.00136 m/s		
270 kW	405 kW	<b>540 kW</b>	675 kW	810 kW	945 kW	1080 kW	23220 kg/h	110/90.0 0.08956 kPa/m 1.03987 m/s		
280 kW	420 kW	<b>560 kW</b>	700 kW	840 kW	980 kW	1120 kW	24080 kg/h	110/90.0 0.09567 kPa/m 1.07839 m/s		
290 kW	435 kW	<b>580 kW</b>	725 kW	870 kW	1015 kW	1160 kW	24940 kg/h	110/90.0 0.10196 kPa/m 1.111690 m/s		
300 kW	450 kW	<b>600 kW</b>	750 kW	900 kW	1050 kW	1200 kW	25800 kg/h	110/90.0 0.10843 kPa/m 1.15541 m/s		
310 kW	465 kW	<b>620 kW</b>	775 kW	930 kW	1085 kW	1240 kW	26660 kg/h	110/90.0 0.11507 kPa/m 1.19393 m/s		
320 kW	480 kW	<b>640 kW</b>	800 kW	960 kW	1120 kW	1280 kW	27520 kg/h	110/90.0 0.12190 kPa/m 1.23244 m/s		
330 kW	495 kW	<b>660 kW</b>	825 kW	990 kW	1155 kW	1320 kW	28380 kg/h	110/90.0 0.12890 kPa/m 1.27096 m/s		
340 kW	510 kW	<b>680 kW</b>	850 kW	1020 kW	1190 kW	1360 kW	29240 kg/h	110/90.0 0.13608 kPa/m 1.30947 m/s		
350 kW	525 kW	<b>700 kW</b>	875 kW	1050 kW	1225 kW	1400 kW	30100 kg/h	110/90.0 0.14344 kPa/m 1.34798 m/s		

# Heat loss: Uponor Ecoflex Thermo

## Uponor Ecoflex Thermo Single

Thermal conductivity ground: 1.0 W/mK  
Ground coverage: 0.8 m



## Example for Uponor Ecoflex Thermo Single 50/175

$T_M$  = Medium temperature  
 $T_E$  = Ground temperature  
 $\Delta T$  = Temperature difference (K)

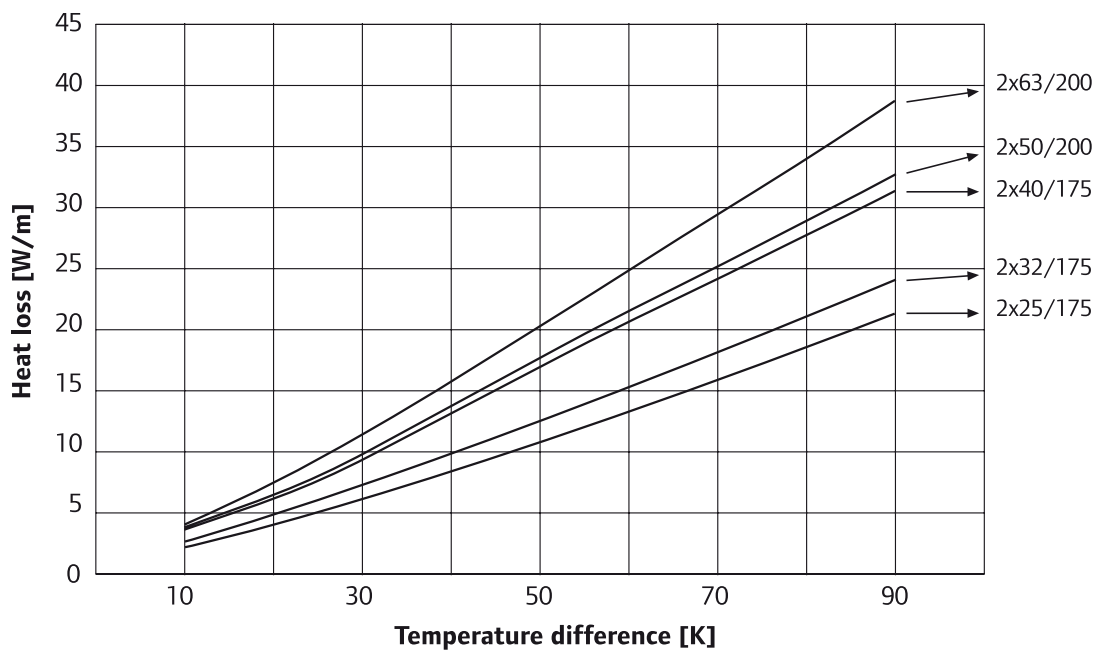
$\Delta T = T_M - T_E$   
 $T_M = 75\text{ °C}$   
 $T_E = 5\text{ °C}$   
 $\Delta T = 75 - 5 = 70\text{ K}$

Heat loss: 15.75 W/m



## Uponor Ecoflex Thermo Twin

Thermal conductivity ground: 1.0 W/mK  
Ground coverage: 0.8 m



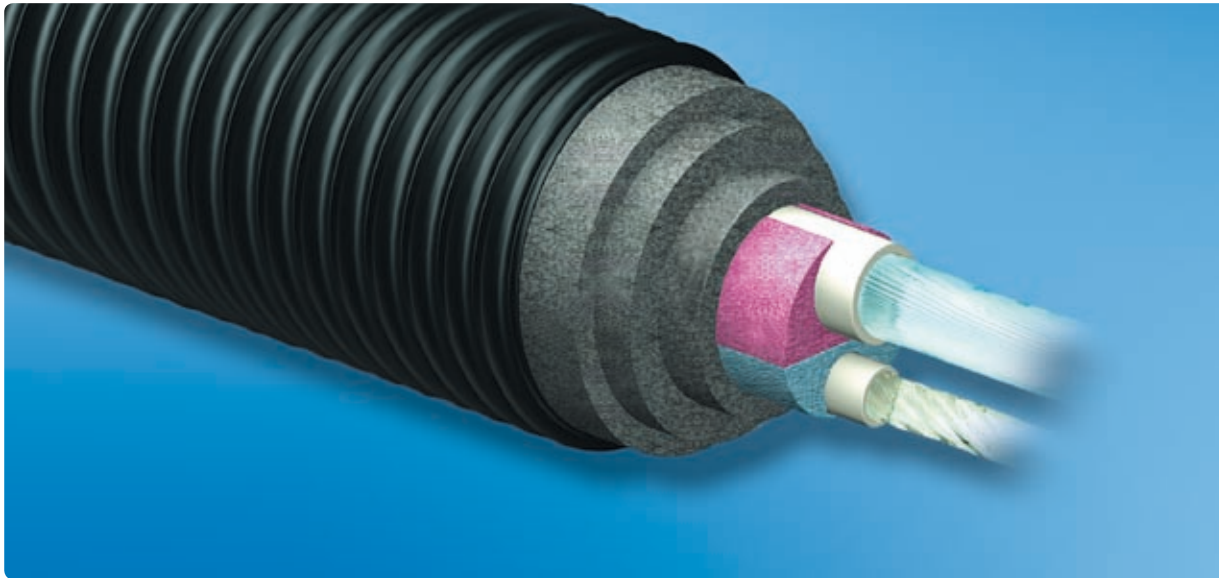
### Example for Uponor Ecoflex Thermo Twin 2 x 32/175

$T_V$  = Flow temperature  
 $T_R$  = Return temperature  
 $T_E$  = Ground temperature  
 $\Delta T$  = Temperature difference (K)  
 $\Delta T = (T_V + T_R)/2 - T_E$   
 $T_V = 70\text{ °C}$   
 $T_R = 40\text{ °C}$   
 $T_E = 5\text{ °C}$   
 $\Delta T = (70 + 40)/2 - 5 = 50\text{ K}$

Heat loss: 12.50 W/m



## Product profile: Uponor Ecoflex Aqua



### Your flexible specialist for warm potable water

Simply unbeatable for quick, safe and particularly cost-efficient installations in the warm water supply sector. The twin design is supplied with a solution using integrated circulation lines.

DIN

DVGW

DVGW

SVGW  
SSIGE



## Uponor Ecoflex Aqua Single



95 °C



10 bar



25–63 mm

### Main application

- Potable water, warm

### Other applications

- Foodstuffs
- Chemicals

### Medium pipe

- PE-Xa, SDR 7.4

### Option

- Heating cable (refer to Page 38)

### Insulation material

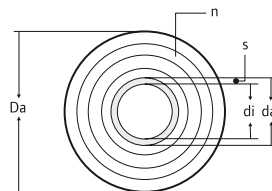
- PE-X foam

### Material jacket pipe

- HDPE

### Note:

The safe and cost-efficient pipe-line for warm water installations  
Dimensions of (da) 25 to 63 mm.



Article Number	Medium pipe da / di / s [mm]	n	Jacket pipe Da [mm]	Weight [kg/m]	Delivery lengths [m]	Bending radius [m]	Insulation thickness [mm]
1018117	25 / 18.0 / 3.5	3	140	1.20	200	0.35	45
1018118	32 / 23.2 / 4.4	3	140	1.30	150	0.40	42
1018119	40 / 29.0 / 5.5	4	175	2.37	100	0.45	55
1018120	50 / 36.2 / 6.9	4	175	2.71	100	0.55	50
1018121	63 / 45.6 / 8.7	3	175	3.17	100	0.65	43

## Uponor Ecoflex Aqua Twin



95 °C



10 bar



25–50 mm

### Main application

- Potable water, warm  
with circulation

### Other applications

- Foodstuffs
- Chemicals

### Medium pipe

- PE-Xa, SDR 7.4

### Insulation material

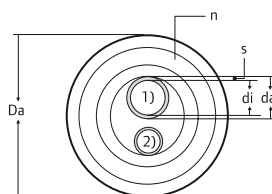
- PE-X foam

### Material jacket pipe

- HDPE

### Note:

Including circulation line. Here too the two-coloured Dog Bone prevents confusion when connecting the medium pipe.



Article Number	Medium pipe da / di / s [mm]	n	Jacket pipe Da [mm]	Weight [kg/m]	Delivery lengths [m]	Bending radius [m]	Insulation thickness [mm]
1018139	1) 25 / 18.0 / 3.5 2) 25 / 18.0 / 3.5	3	175	2.22	200	0.65	43
1018140	1) 32 / 23.2 / 4.4 2) 25 / 18.0 / 3.5	3	175	2.37	150	0.70	38
1018141	1) 40 / 29.0 / 5.5 2) 25 / 18.0 / 3.5	3	175	2.62	100	0.90	38
1018142	1) 50 / 36.2 / 6.9 2) 25 / 18.0 / 3.5	2	175	2.90	100	1.00	28

# Pressure loss: Uponor Ecoflex Aqua

Potable water pipe: Basis 50 °C water temperature\*

Volume flow		DIM:	25 x 3.5		32 x 4.4		40 x 5.5		50 x 6.9		63 x 8.7	
		di (mm)	18		23.2		29		36.2		45.6	
l/h	l/s		kPa/m	m/s	kPa/m	m/s	kPa/m	m/s	kPa/m	m/s	kPa/m	m/s
6	0.01											
72	0.02											
108	0.03											
144	0.04											
180	0.05		0.036	0.204								
216	0.06		0.050	0.245								
252	0.07		0.065	0.286								
288	0.08		0.083	0.327								
324	0.09		0.103	0.368								
360	0.1		0.124	0.409	0.037	0.246						
720	0.2		0.429	0.817	0.127	0.492	0.043	0.314				
1080	0.3		0.890	1.226	0.263	0.738	0.089	0.470	0.031	0.301		
1440	0.4		1.494	1.635	0.442	0.984	0.150	0.627	0.051	0.401		
1800	0.5		2.233	2.044	0.660	1.230	0.224	0.784	0.076	0.501		
2160	0.6		3.103	2.452	0.917	1.476	0.311	0.941	0.106	0.601	0.034	0.376
2520	0.7		4.098	2.861	1.210	1.722	0.410	1.097	0.140	0.701	0.045	0.438
2880	0.8		5.215	3.270	1.540	1.968	0.522	1.254	0.178	0.801	0.058	0.501
3240	0.9		6.452	3.678	1.905	2.214	0.645	1.411	0.220	0.902	0.071	0.563
3600	1		7.806	4.087	2.304	2.460	0.780	1.568	0.266	1.002	0.086	0.626
3960	1.1		9.275	4.496	2.737	2.706	0.927	1.724	0.316	1.102	0.102	0.689
4320	1.2		10.857	4.905	3.203	2.952	1.084	1.881	0.370	1.202	0.120	0.751
5040	1.4				4.233	3.444	1.433	2.195	0.489	1.403	0.158	0.876
5760	1.6				5.390	3.936	1.824	2.508	0.622	1.603	0.201	1.002
6480	1.8				6.672	4.428	2.257	2.822	0.769	1.803	0.248	1.127
7200	2				8.075	4.920	2.731	3.135	0.931	2.004	0.301	1.252
7920	2.2				9.598	5.412	3.245	3.449	1.106	2.204	0.357	1.377
8640	2.4				11.239	5.904	3.799	3.762	1.294	2.404	0.418	1.502
9360	2.6						4.392	4.076	1.496	2.605	0.483	1.628
10080	2.8						5.024	4.389	1.711	2.805	0.552	1.753
10800	3						5.694	4.703	1.939	3.005	0.626	1.878
12600	3.5						7.532	5.486	2.564	3.506	0.827	2.191
14400	4						9.599	6.270	3.266	4.007	1.053	2.504
16200	4.5						11.890	7.054	4.045	4.508	1.304	2.817
18000	5								4.898	5.009	1.579	3.130
19800	5.5								5.824	5.510	1.877	3.443
21600	6								6.823	6.011	2.198	3.756
23400	6.5								7.892	6.512	2.542	4.069
25200	7								9.032	7.013	2.908	4.382
27000	7.5								10.240	7.514	3.297	4.695
28800	8										3.708	5.008
30600	8.5										4.140	5.321
32400	9										4.594	5.634
34200	9.5										5.069	5.947
36000	10										5.566	6.260
37800	10.5										6.083	6.573
39600	11										6.621	6.886
43200	12										7.759	7.512
46800	13										8.979	8.138
50400	14										10.279	8.764

**\*Pressure loss correction factors for other water temperatures**

°C	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95
<b>Factor</b>	1.208	1.174	1.144	1.115	1.087	1.060	1.039	1.019	1.000	0.982	0.965	0.954	0.943	0.928	0.923	0.907	0.896	0.878



**Flow rates**

Flow rates have a considerable influence on the cost-efficiency and operational safety of a supply system. High flow rates result in high pressure losses and high dynamic pressure losses can occur. Furthermore, particles which have been deposited on the pipe walls may become entrained. Low flow rates result in long retention times whereby the water can become cloudy or contaminated with germs. Adequate water exchange must be observed.



**Dimensioning of lines for industrial water**

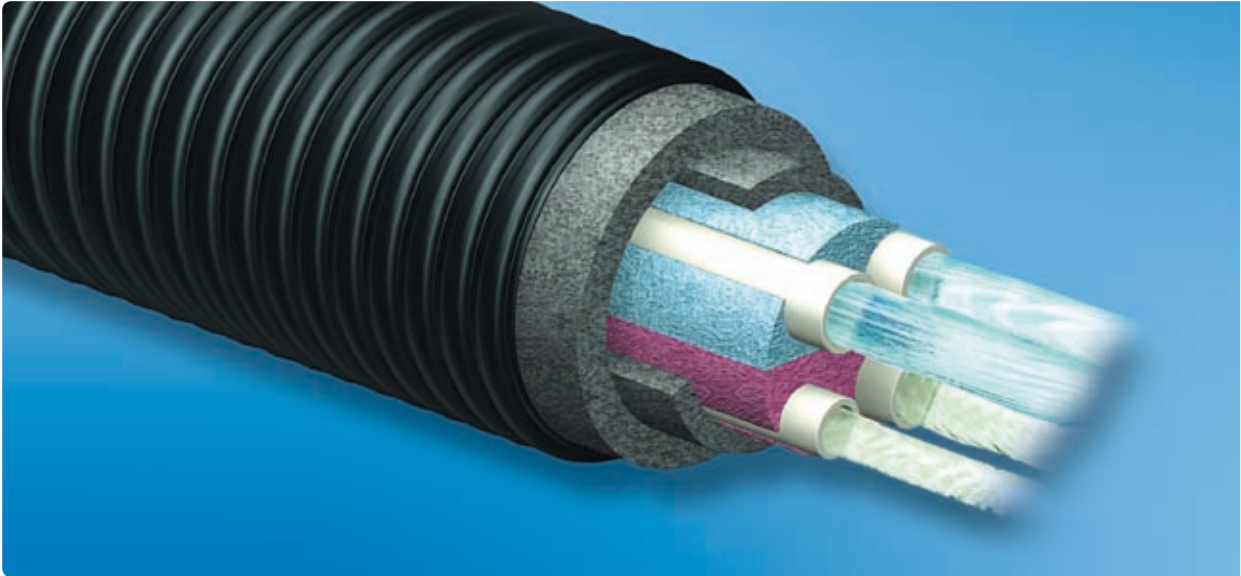
The dimensioning of pipelines carrying water for domestic use must ensure there is sufficient water supply at each of the tap connections. The pipeline system dimensions must ensure that in the case of the lowest absolute pressure, each tap connection is sufficiently supplied.



**Note:**

Please observe DIN 1988 and the DVGW Work Sheet W551, which include some new items referring to district heating supply.

# Product profile: Uponor Ecoflex Quattro



## Just the thing for individual building tie-ins

“One for all!” heating water, flow and return, potable water plus circulation – all in just one pipe: there is no easier nor more cost-efficient way of safely linking up individual buildings or building complexes.

## Uponor Ecoflex Quattro



95 °C



6/10 bar



25–32 mm

### Main application

- Heating water
- Potable water, warm with circulation

### Medium pipe

- PE-Xa, SDR 7.4
- PE-Xa with EVOH, SDR 11

### Insulation material

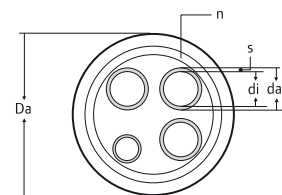
- PE-X foam

### Material jacket pipe

- HDPE

### Note:

Uponor Ecoflex Quattro pipelines are also particularly practical and cost-efficient for linking up annex buildings. Here too the two-coloured Dog Bone prevents confusion when connecting the medium pipe.



Article Number	Medium pipe $d_a / d_i / s$ [mm]	n	Jacket pipe $D_a$ [mm]	Weight [kg/m]	Delivery lengths [m]	Bending radius [m]	Insulation thickness [mm]
1018147	2x 25 / 20.4 / 2.3 2x 25 / 18.0 / 3.5	3	175	2.40	200	0.80	35
1018148	2x 32 / 26.2 / 2.9 2x 25 / 18.0 / 3.5	2	175	2.60	150	0.80	35
1018149	2x 32 / 26.2 / 2.9 32 / 23.2 / 4.4 25 / 18.0 / 3.5	2	175	2.70	150	0.80	34

# Pressure loss: Uponor Ecoflex Quattro

Potable water pipe: Basis 50 °C water temperature\*

Volume flow		DIM:	25 x 3.5		32 x 4.4	
		di (mm)	18		23.2	
l/h	l/s		kPa/m	m/s	kPa/m	m/s
180	0.05		0.036	0.204		
216	0.06		0.050	0.245		
252	0.07		0.065	0.286		
288	0.08		0.083	0.327		
324	0.09		0.103	0.368		
360	0.1		0.124	0.409	0.037	0.246
720	0.2		0.429	0.817	0.127	0.492
1080	0.3		0.890	1.226	0.263	0.738
1440	0.4		1.494	1.635	0.442	0.984
1800	0.5		2.233	2.044	0.660	1.230
2160	0.6		3.103	2.452	0.917	1.476
2520	0.7		4.098	2.861	1.210	1.722
2880	0.8		5.215	3.270	1.540	1.968
3240	0.9		6.452	3.678	1.905	2.214
3600	1		7.806	4.087	2.304	2.460
3960	1.1		9.275	4.496	2.737	2.706
4320	1.2		10.857	4.905	3.203	2.952
5040	1.4				4.233	3.444
5760	1.6				5.390	3.936
6480	1.8				6.672	4.428
7200	2				8.075	4.920
7920	2.2				9.598	5.412
8640	2.4				11.239	5.904

\*Pressure loss correction factors  
for other water temperatures

°C	10	15	20	25	30	35
Factor	1.208	1.174	1.144	1.115	1.087	1.060

°C	40	45	50	55	60	65
Factor	1.039	1.019	1.000	0.982	0.965	0.954

°C	70	75	80	85	90	95
Factor	0.943	0.928	0.923	0.907	0.896	0.878

Heating pipe: rapid design

Spread							Mass flow	Pipe type Δp. v	Pipe type Δp. v
ΔT= 10 K	ΔT=15 K	ΔT=20 K	ΔT=25 K	ΔT=30 K	ΔT=35 K	ΔT=40 K			
5 kW	7.5 kW	10 kW	12.5 kW	15 kW	17.5 kW	20 kW	430 kg/h	25/20.4 0.09208 kPa/m 0.37481 m/s	
10 kW	15 kW	20 kW	25 kW	30 kW	35 kW	40 kW	860 kg/h	25/20.4 0.30974 kPa/m 0.74962 m/s	32/26.2 0.09786 kPa/m 0.46148 m/s
15 kW	22.5 kW	30 kW	37.5 kW	45 kW	52.5 kW	60 kW	1290 kg/h	25/20.4 0.62973 kPa/m 1.12443 m/s	32/26.2 0.19896 kPa/m 0.69222 m/s
20 kW	30 kW	40 kW	50 kW	60 kW	70 kW	80 kW	1720 kg/h	32/26.2 0.32917 kPa/m 0.92296 m/s	
25 kW	37.5 kW	50 kW	62.5 kW	75 kW	87.5 kW	100 kW	2150 kg/h	32/26.2 0.48641 kPa/m 1.15370 m/s	
30 kW	45 kW	60 kW	75 kW	90 kW	105 kW	120 kW	2580 kg/h	32/26.2 0.66923 kPa/m 1.38445 m/s	

# Pressure loss: Uponor Ecoflex Quattro

Heating pipe: Basis 50 °C water temperature\*

Volume flow		DIM:	25 x 2.3		32 x 2.9	
		di (mm)	20.4		26.2	
l/h	l/s		kPa/m	m/s	kPa/m	m/s
180	0.05		0.020	0.162		
216	0.06		0.028	0.194		
252	0.07		0.037	0.226		
288	0.08		0.047	0.259		
324	0.09		0.058	0.291		
360	0.1		0.071	0.323	0.020	0.191
720	0.2		0.244	0.646	0.069	0.381
1080	0.3		0.507	0.969	0.143	0.572
1440	0.4		0.850	1.293	0.239	0.762
1800	0.5		1.270	1.616	0.358	0.953
2160	0.6		1.765	1.939	0.496	1.143
2520	0.7		2.330	2.262	0.655	1.334
2880	0.8		2.966	2.585	0.834	1.524
3240	0.9		3.668	2.908	1.031	1.715
3600	1		4.438	3.231	1.247	1.905
3960	1.1		5.272	3.555	1.481	2.096
4320	1.2		6.171	3.878	1.733	2.286
5040	1.4		8.156	4.524	2.290	2.668
5760	1.6		10.388	5.170	2.916	3.049
6480	1.8		12.859	5.816	3.609	3.430
7200	2		15.566	6.463	4.367	3.811
7920	2.2		18.504	7.109	5.190	4.192
8640	2.4		21.670	7.755	6.077	4.573
9360	2.6		25.060	8.402	7.026	4.954
10080	2.8		28.671	9.048	8.037	5.335
10800	3		32.500	9.694	9.109	5.716
12600	3.5		43.015	11.310	12.051	6.669
14400	4		54.847	12.926	15.360	7.622
16200	4.5				19.029	8.574
18000	5				23.050	9.527
19800	5.5				27.418	10.480
21600	6				32.127	11.432
23400	6.5				37.172	12.385

\* Pressure loss correction factors for other water temperatures

°C	10	15	20	25	30	35
Factor	1.217	1.183	1.150	1.117	1.100	1.067

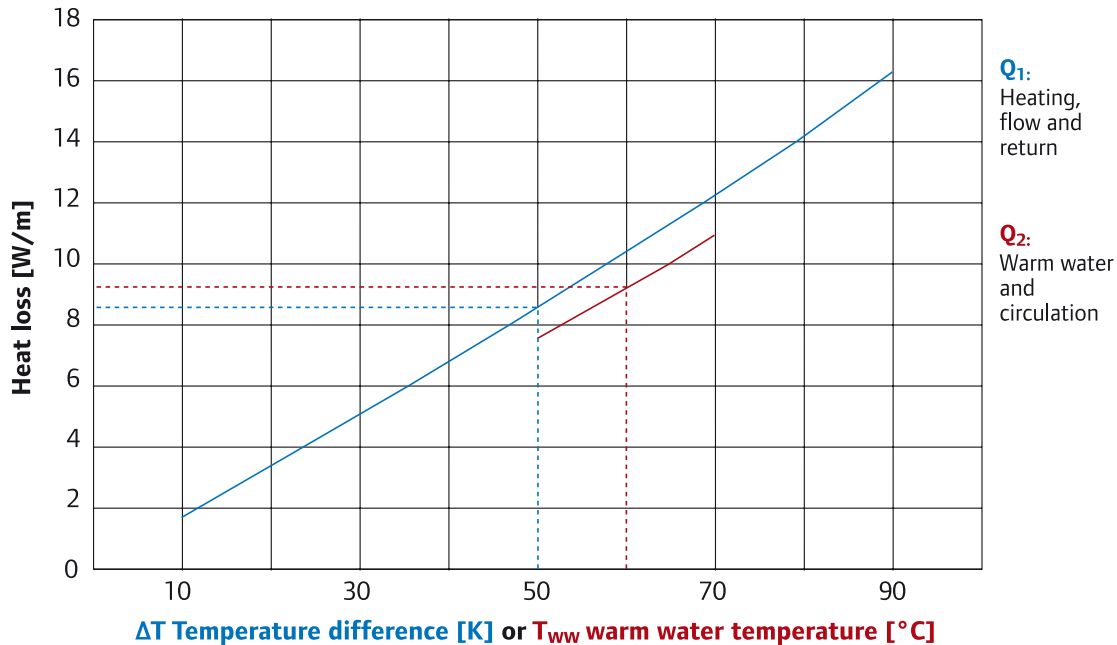
°C	40	45	50	55	60	65
Factor	1.050	1.017	1.000	0.983	0.967	0.952

°C	70	75	80	85	90	95
Factor	0.938	0.933	0.918	0.904	0.890	0.873



# Heat loss: Uponor Ecoflex Quattro

Thermal conductivity ground: 1.0 W/mK  
Ground coverage: 0.8 m



## Example for Uponor Ecoflex Quattro

T<sub>V</sub> = flow temperature  
T<sub>R</sub> = return temperature  
T<sub>E</sub> = ground temperature  
ΔT = temperature difference (K)  
T<sub>ww</sub> = temperature warm water and circulation line  
ΔT = (T<sub>V</sub> + T<sub>R</sub>)/2 - T<sub>E</sub>  
T<sub>V</sub> = 70 °C  
T<sub>R</sub> = 40 °C  
T<sub>E</sub> = 5 °C  
ΔT = (70 + 40)/2 - 5 = 50 K  
T<sub>ww</sub> = 60 °C

It follows therefore that:

Q<sub>1</sub> (at ΔT = 50K) = 8.5 W/m

Q<sub>2</sub> (at T<sub>ww</sub> = 60 °C) = 9.2 W/m

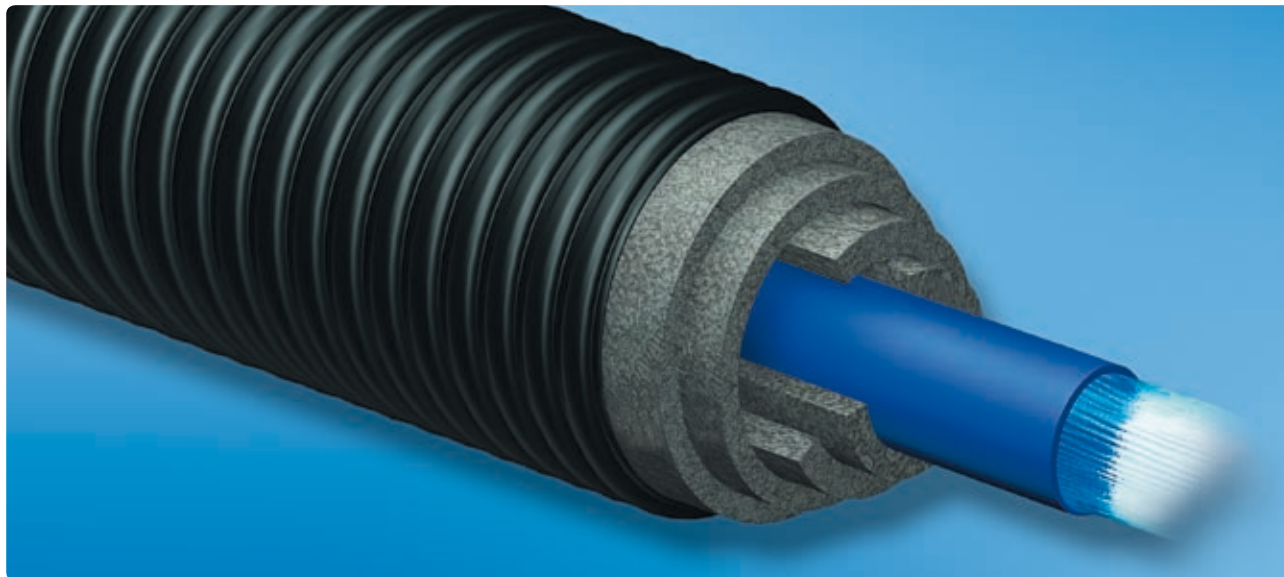
**Specific heat loss per running metre:**

**Q = Q<sub>1</sub> + Q<sub>2</sub> = (8.5 + 9.2) W/m = 17.7 W/m**



Heat loss checked by  
FIW München:  
Art.-No.: 1018149

## Product profile: Uponor Ecoflex Supra



### The ultimate in for cold potable water and cooling water networks

Refreshingly consistent for cold liquid media. Besides cold potable water applications, the preferred fields of use for Uponor Ecoflex Supra are cooling water networks in hotel complexes or industrial facilities. The optional anti-freeze cable ensures frost-proof transport of potable water even at the lowest of ambient temperatures.

DIN

DVGW

DVGW



## Uponor Ecoflex Supra



20 °C



16 bar



25–110 mm

### Main application

- Potable water, cold
- Cooling water

### Other applications

- Waste water

### Medium pipe

- HDPE (PE 100), SDR 11

### Option

- Frost protection cable (see Page 38)

### Insulating material

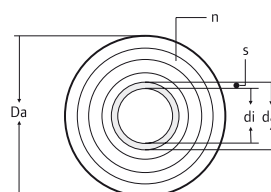
- PE-X foam

### Material jacket pipe

- HDPE

### Note:

For swimming pools, hotel, wellness centres and industrial use. Supra is optimised for use in medium temperatures from -10°C to +20°C.



Art. No.	Medium pipe da/di/s [mm]	n	Jacket pipe Da [mm]	Weight [kg/m]	Length on delivery [m]	Bending radius [m]	Insulation thickness [mm]
1018124	25/20.4/2.3	1	68	0.52	100	0.20	15
1018125	32/26.2/2.9	1	68	0.62	100	0.25	12
1018126	40/32.6/3.7	3	140	1.44	100	0.30	39
1018127	50/40.8/4.6	3	140	1.67	100	0.40	34
1018128	63/51.4/5.8	2	140	1.97	100	0.50	27
1018129	75/61.4/6.8	3	175	2.89	100	0.60	38
1018130	90/73.6/8.2	2	175	3.31	100	0.70	28
1018131	110/90.0/10.0	3	200	5.24	100	1.20	30

## Frost protection cable FS-A-2X



Optionally available is the self-regulating frost protection cable for Uponor Ecoflex Supra pipes which allows the frost-proof transport of potable water outdoors – even over long distances. A simple plug-in connection and connecting elements simplify the installation of the VDE-tested cable.

# Pressure loss: Uponor Ecoflex Supra

Potable water/cooling water pipe: Basis 20 °C water temperature

V	25 / 20.4 / 2.3		32 / 26.2 / 2.9		40 / 32.6 / 3.7		50 / 40.8 / 4.6		63 / 51.4 / 5.8		75 / 61.4 / 6.8		90 / 73.6 / 8.2		110 / 90.0 / 10.0	
	v	Δp	v	Δp	v	Δp	v	Δp	v	Δp	v	Δp	v	Δp	v	Δp
[l/s]	[m/s]	[bar/ 100 m]	[m/s]	[bar/ 100 m]	[m/s]	[bar/ 100 m]	[m/s]	[bar/ 100 m]	[m/s]	[bar/ 100 m]	[m/s]	[bar/ 100 m]	[m/s]	[bar/ 100 m]	[m/s]	[bar/ 100 m]
0.025	0.076	0.0086														
0.0315	0.096	0.0127	0.059	0.0041												
0.04	0.122	0.0189	0.075	0.0061												
0.05	0.153	0.0275	0.094	0.0088	0.060	0.0031										
0.063	0.193	0.0407	0.119	0.0130	0.075	0.0045										
0.08	0.245	0.0611	0.151	0.0195	0.096	0.0067	0.061	0.0024								
0.1	0.306	0.0895	0.188	0.0285	0.120	0.0098	0.076	0.0034								
0.125	0.382	0.1315	0.235	0.0417	0.150	0.0144	0.096	0.0050	0.060	0.0017						
0.16	0.490	0.2016	0.301	0.0638	0.192	0.0219	0.122	0.0076	0.077	0.0026	0.054	0.0011				
0.2	0.612	0.2974	0.377	0.0939	0.240	0.0321	0.153	0.0111	0.096	0.0037	0.068	0.0016				
0.25	0.765	0.4394	0.471	0.1384	0.300	0.0473	0.191	0.0163	0.120	0.0055	0.085	0.0024	0.059	0.0010		
0.315	0.964	0.6599	0.593	0.2072	0.377	0.0706	0.241	0.0244	0.152	0.0082	0.107	0.0036	0.074	0.0015		
0.4	1.224	1.0068	0.753	0.3152	0.479	0.1071	0.306	0.0369	0.193	0.0123	0.136	0.0054	0.094	0.0023	0.063	0.0009
0.5	1.530	1.4972	0.942	0.4672	0.599	0.1585	0.382	0.0544	0.241	0.0182	0.170	0.0079	0.118	0.0033	0.079	0.0013
0.63	1.927	2.2631	1.187	0.7039	0.755	0.2381	0.482	0.0816	0.304	0.0272	0.214	0.0119	0.148	0.0049	0.099	0.0019
0.8	2.448	3.4774	1.507	1.0776	0.958	0.3634	0.612	0.1242	0.386	0.0413	0.272	0.0180	0.188	0.0075	0.126	0.0029
1	3.059	5.2062	1.883	1.6072	1.198	0.5405	0.765	0.1842	0.482	0.0611	0.340	0.0266	0.235	0.0111	0.157	0.0043
1.25			2.354	2.4022	1.498	0.8053	0.956	0.2738	0.602	0.0906	0.425	0.0394	0.294	0.0163	0.196	0.0063
1.6			3.014	3.7567	1.917	1.2547	1.224	0.4253	0.771	0.1403	0.544	0.0609	0.376	0.0252	0.252	0.0097
2					2.396	1.8774	1.530	0.6345	0.964	0.2088	0.680	0.0904	0.470	0.0374	0.314	0.0143
2.5					2.995	2.8148	1.912	0.9483	1.205	0.3112	0.850	0.1345	0.588	0.0555	0.393	0.0212
3.15							2.409	1.4406	1.518	0.4714	1.071	0.2033	0.740	0.0838	0.495	0.0320
4							3.059	2.2247	1.928	0.7254	1.360	0.3123	0.940	0.1285	0.629	0.0489
5									2.410	1.0873	1.700	0.4670	1.175	0.1917	0.786	0.0729
6.3									3.036	1.6567	2.142	0.7098	1.481	0.2908	0.990	0.1103
8											2.720	1.0965	1.880	0.4480	1.258	0.1695
10											3.399	1.6493	2.350	0.6722	1.572	0.2537
12.5													2.938	1.0104	1.965	1.3804
16															2.515	0.5966
20															3.144	0.8977



### Flow velocity

The flow velocity considerably impacts the cost-efficiency and operational safety of the supply system. High flow velocity can lead to high pressure losses and high dynamic losses in pressure may also occur. Furthermore, deposited particles on the pipe walls may become entrained. Low flow velocity may lead to long residence times which may mean the water can become contaminated or cloudy. Care must be taken to ensure adequate water exchange.



### Dimensioning of lines for industrial water

Lines for industrial water must be so dimensioned that an adequate water supply to the individual tap connections is ensured. The pipe system must be so dimensioned that even under the lowest absolute pressure on the individual tap connections supplies are adequately ensured.



### Note:

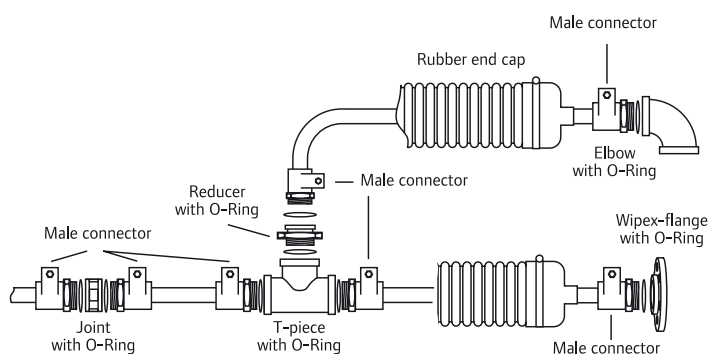
Please observe DIN 1988 and the DVGW Work Sheet W 551 which now included distance heating supplies.

# The Uponor Range of accessories for pre-insulated pipe systems

## Uponor Wipex connecting system – for our Thermo, Aqua and Quattro products

Uponor Wipex is a practical connection system sealed with an O-ring and male connector on a fitting thus additional sealing using Teflon or hemp is not required. The male connector and the fittings each have cylindrical threads. The O-ring is pushed in between and after fixing provides a long-term and absolutely leak-proof

connection. Uponor Wipex male connectors are available for SDR 7.4 (Uponor Ecoflex Aqua) and SDR 11 (Uponor Ecoflex Thermo).



Uponor Wipex connecting system



### Planning notes:

If the Uponor Wipex System is used in conjunction with components of other makes a fitting (elbow or coupling) with a female thread must be used as a closing element.



#### Uponor plastic male connector – for the main service take-off on Uponor Ecoflex Supra

The Uponor PP male connector has been tried and proven over many years as the perfect connection for HDPE medium pipes. The simple handling of this

clamping fitting provides, on the one hand, a safe connection and on the other hand rapid progress in installing Uponor Ecoflex Supra pipe systems.



Also the Uponor Supra pipes can be connected by electro-welding-fittings, which are approved for PE 100, SDR 11 pipes (not provided by Uponor flexible, pre-insulated systems)

# The Uponor range of accessories for pre-insulated pipe systems

## Uponor insulating sets

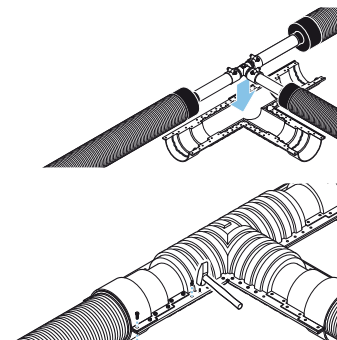
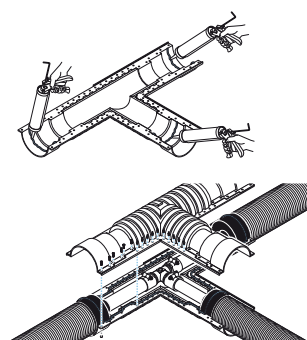
### Practice-oriented, efficient and optimum service life

For all straight, elbowed and T-connections the matching insulating kits are available to insulate and seal jacket pipes. They fit onto both Single and Twin pipes. There is also an H-insulating kit available for the transition from Single main lines to Twin branch lines. The insulating kits comprise insulated half-shells which are first bonded

with PU adhesive and finally screwed and dowelled. Pipes with a jacket pipe diameter less than 140 mm can be adapted using Uponor reducers.



Uponor T-insulating kit



Uponor elbow insulating kit



Uponor straight insulating kit



Uponor H-insulating kit



Uponor reducers



#### Note:

Uponor connecting chambers must be used to insulate and seal T-branches in Uponor Ecoflex Quattro pipes.



## Uponor rubber end caps

### To protect pipes ends and sealing off components

Prior to connecting and insulating, the ends of the jacket pipe must be fitted with Uponor rubber end caps!

Uponor rubber end caps serve to protect the insulation at the cut ends of pipes and to seal off components. The pipes are thus protected against moisture and damage and the whole systems can optimally fulfil its designated

purpose over many years. An additional swellable ring is supplied to prevent the ingress of water. The end caps are simply and easily slipped over the ends of the pipes during assembly and secured with a ring clamp.



Sealing ring

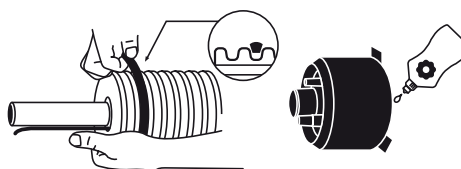


Clamping ring



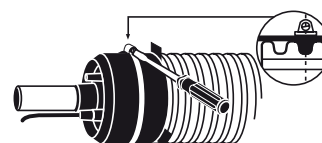
#### Note:

Before attaching the end caps, the pipeline must first be insulated to the required length whereby it is important to take the measurements of the insulating kit into consideration.



#### Note:

When using Uponor insulating kits, the ring clamps must not be fitted!

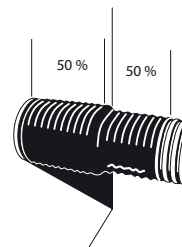
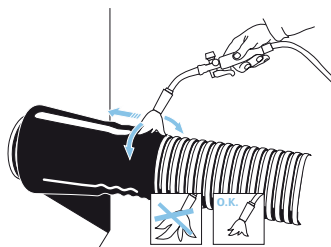
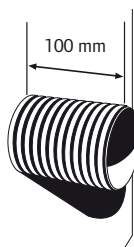
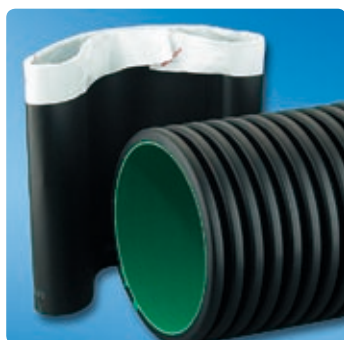


## Uponor wall seals

### Uponor NPW wall seals - for non-pressurized water

This wall seal can be used wherever there is no pressurized water. The wall sleeve is usually wallied into the breakthrough in the wall or installed under plaster in an adequately-sized core hole. When the installation is complete, it is sealed using heat-shrinkable tube.

Uponor jacket pipe [mm]	Wall sleeve (da) [mm]
68	90
140	175
175	235
200	250



# Uponor range of accessories for pre-insulated pipe systems

## Uponor wall seals PWP – pressurized water proof

Wherever pressurized water is to be expected, a pressurized water proof Uponor wall seal must be installed; either directly into a lined water-impermeable concrete core hole, or into a walled-in fibre cement pipe.

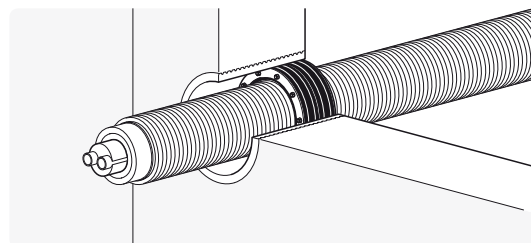


### Note:

Before installing a PWP Uponor wall sleeve into a core hole, the hole is to be coated with Uponor epoxy resin!

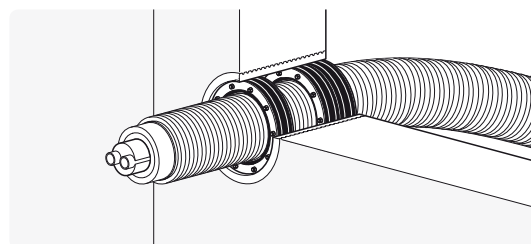


Uponor jacket pipe [mm]	Core hole [mm]
68	125
140	200
175	250
200	300



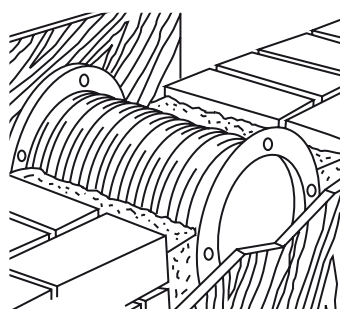
### Note:

If the jacket pipe cannot be placed at a right angle in the wall sleeve, we recommend using the Uponor supplementary set to eliminate any possible tension.



## Uponor fibre cement pipe – for PWP wall seals

Uponor jacket pipe [mm]	Liner pipe (da) [mm]
68	125
140	200
175	250
200	300

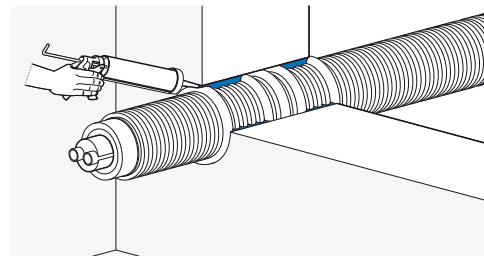


## Uponor House lead-in

### Uponor service take-off, pressurized water-proof

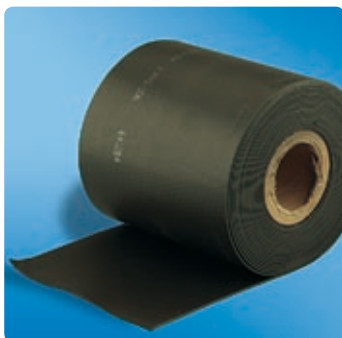
As an alternative to the pressurized water-proof wall seal, this house lead-in can be used whereby a core hole (for water-impermeable concrete) is required. The jacket pipe is wrapped around with a sealing hose and led into the coated hole. The annular gap on both sides (inside and outside) are then filled in with expanding resin foam.

Uponor Jacket pipe [mm]	Core hole diameter [mm]
68	90–95
140	160–165
175	195–200
200	220–225



### Other accessories

The Uponor accessory range for pre-insulated pipes also comprises further products in addition to those presented here e.g. shrink tape, Uponor heat-shrinkable tape or Uponor trench warning tape. Please refer to Page 50 and further for a complete overview and detailed information on all the products in our delivery programme.



Uponor shrinkable tape



Uponor trench warning tape

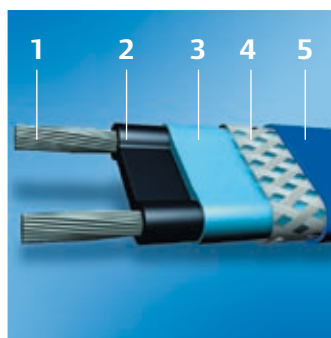
# The Uponor range of accessories for pre-insulated pipe systems

## Anti-freeze cable and heating tape

### Anti-freeze cable FS-A-2X

The optionally available self-regulating anti-freeze cable for Uponor Ecoflex Supra pipes allows potable water to be transported over great distances in the open

at minus temperatures. A simple plug-in connection and connecting elements make easy work of installing the VDE-approved cable.



#### Structure of the anti-freeze cable

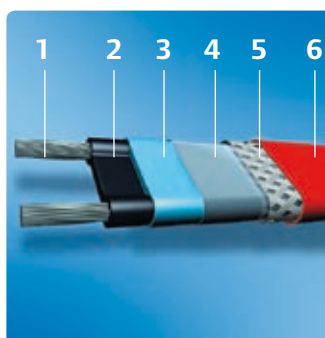
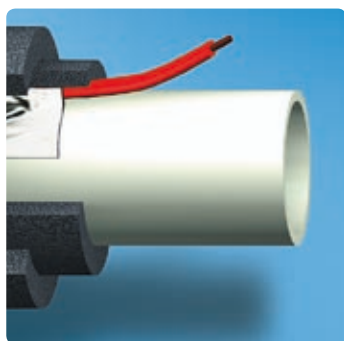
1. Copper lead (1.2 mm<sup>2</sup>)
2. Self-regulating heating element
3. Modified polyolefine insulation
4. Protective braid in tin-plated copper wire
5. Protective braid in tin-plated copper wire

Approvals: VDE, ÖVE, SEV, CSTB, SVGW, DVGW

### Heating wire HWAT-R

The self-regulating heating wire reacts automatically to fluctuations in temperature thanks to its special structure. Energy consumption is therefore adjusted to the conditions prevailing in each case. A simple plug-in

connection and connecting elements make easy work of installing the heating wire which are, of course, VDE-approved.



#### Structure of heating tape

1. Copper lead (1.2 mm<sup>2</sup>)
2. Self-regulating heating element
3. Modified polyolefine insulation
4. Aluminium laminated foil
5. Protective braid in tin-plated copper wire
6. Modified polyolefine insulation

Approvals: VDE, ÖVE, SEV, CSTB, SVGW, DVGW

#### Accessories for FS-A-2X und HWAT-R

Connection set	RayClic-CE-02
Connection set	RayClic-S-02
Connection set with busbar	RayClic-PS-02
T-branch	RayClic-T-02
T-branch with busbar	RayClic-PT-02
X-branch	RayClic-X-02
Gel-filled end connection	RayClic-E-02

#### Electrical design FS-A-2X and HWAT-R

- The complete cable length determines the number and dimensioning of protection.
- The ground fault circuit interrupter (FI): 30 mA, is regulatory!
- Leads for the self-regulating temperature retaining cables in accordance with locally applicable regulations
- Mains connection must be made by a qualified electrician.

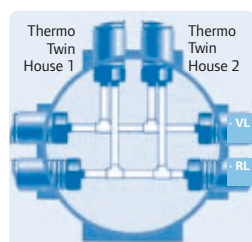


Heating cable Type	FS-A-2X	HWAT-R
<b>Use</b>	Uponor Ecoflex Supra	Uponor Ecoflex Thermo/Aqua
<b>Nominal voltage [V]</b>	230 V / 50 Hz	230 V / 50 Hz
<b>Max. permissible ambient temperature [°C]</b>	+ 65	+ 85
<b>Max. length of heating circle</b>	at 10 A at 16 A at 20 A	50 m 80 m 100 m
<b>Nominal power at 0 °C [W/m]</b>	approx. 10	approx. 30
<b>Power at recommended medium temperature [W/m]</b>	approx. 8.4 (5 °C)	approx. 15 (50 °C)
<b>Min. bending radius [mm]</b>	10	10
<b>Min. installation temperature [°C]</b>	+ 5	+ 5
<b>Colour of protective jacket</b>	dark red	light red
<b>Max. thickness [mm]</b>	6.6	7.0
<b>Max. width [mm]</b>	14.2	15.7
<b>Weight [kg/m]</b>	0.13	0.14
<b>Additions to heating cable length</b>	per connection per T-branch	approx. 0.3 m approx. 1.0 m

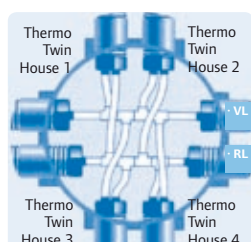
## Uponor chamber

Uponor connection chambers are design to accommodate pipe connections which cannot be made with an Uponor T-insulation set, e.g. for connecting

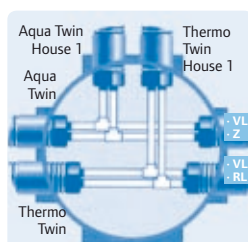
Uponor Ecoflex Single to Twin pipes or for Uponor Ecoflex Quattro pipelines.



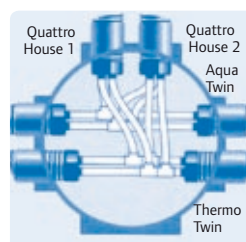
Heat supply from the mains to two houses



Heat supply from mains to four houses



Heating water and domestic water from the mains to the house



Heating water and domestic water from the mains to two houses using Quattro

# Notes on processing and installation

## Loading and unloading



The flexible and pre-insulated pipe systems are delivered on practical, space-saving coils to the construction site. The coils can be usually unloaded with the site excavator or any other type of lifting equipment. The jacket pipe must be protected during the unloading procedure from damage by pointed or sharp-edged objects. Only nylon or textile bands with a minimum width of

50 mm should be used during the unloading process. If lifting hooks are used, these should be either padded or have rounded tips.



### Warning:

When being lifted, the coils may deform by as much as 30 cm due to their flexibility and inherent weight.

## Storage, professional advice



The flexible and pre-insulated pipe systems must be stored horizontally on an even and smooth surface. The pipe ends are fitted by the manufacturer with plastic caps to protect from sunlight and soiling; it is essential that the caps remain in place until the final installation. Neither must the pipe be squashed nor over-extended. Plastic materials must never be brought into contact with aggressive substances such as motor fuel, solvents, timber preservative or similar substances. At particularly low temperatures, we

recommend the pipes are stored in a hall or any other protected place. The lower the temperature, the more rigid the pipes become.



## Standard values for installing Uponor pre-insulated pipe systems



The time taken to install the pipe systems depends on local circumstances. In the following table, obstacles, undercrossings, weather conditions, set-up times and other

such factors have not been taken into account, neither the employment of auxiliary aids such as excavators or cable winches.

Pipe type	25 metre	50 metre	100 metre
	fitters / Duration [mins.]	fitters / Duration [mins.]	fitters / Duration [mins.]
<b>Single:</b>			
25	2 / 15	2 / 30	3 / 40
32	2 / 15	2 / 30	3 / 40
40	2 / 20	2 / 40	3 / 60
50	2 / 20	2 / 40	3 / 60
63	3 / 20	3 / 40	4 / 60
75	3 / 25	3 / 50	4 / 75
90	3 / 30	4 / 60	5 / 90
110	3 / 30	4 / 60	5 / 90
<b>Twin:</b>			
25	2 / 20	2 / 40	3 / 60
32	2 / 20	2 / 40	3 / 60
40	2 / 30	3 / 40	4 / 60
50	3 / 25	3 / 50	5 / 90
63	3 / 30	4 / 60	5 / 90
<b>Quattro:</b>			
	2 / 30	3 / 40	4 / 60

### Standard values for average installation times for connections and accessories:

#### Number of fitters/group minutes per item

(e.g. 2/15 = 2 fitters requires 15 mins. per item)

Uponor rubber end caps	1 / 5
Uponor Wipex male connectors	2 / 15
Uponor Wipex fitting	2 / 30
Uponor Wipex T-piece (complete)	2 / 40
Uponor straight insulating kit	1 / 35
Uponor T-insulating kit	1 / 45
Uponor elbow insulating kit	1 / 35
Uponor H-insulating kit	2 / 50
Uponor chamber incl. 6 x outlets for jacket pipe	2 / 50
Uponor wall sleeve NPW (non-pressure water-proof)	1 / 30
Uponor wall seal pressure water-proof PWP	1 / 30
Uponor house lead-in, pressure water-proof (PWP)	1 / 30



The installation times given above are group minutes for the corresponding number of fitters (without trench work). The figures are meant as guidance for calculations.

### Two example to illustrate average, practice-relevant installation times for Uponor pre-insulated pipe systems:

#### Example 1:

- Installation of 2 x 25 m Uponor Ecoflex Thermo-Single pipe, dimensions  $d_a = 63$  mm
- 3 fitters, without the use of auxiliary aids

#### Installation time: 2 x 20 minutes

#### Example 2:

- Assembly of a house lead-in (NPW)
- 1 fitter, excluding tools
- Targets rubber end cap 1/5, male connector 1/15, wall seal NPW 1/30

# Examples of installations and site procedures



## 1 House lead-in Uponor Ecoflex Thermo Twin

### A House lead-in, pressure water-proof

Article	Number
Uponor Ecoflex Thermo Twin	
Uponor rubber end caps Twin	1
Uponor Wipex male connectors 6 bar	2
Uponor Wipex joint	2
Uponor coating for house lead-in	1
Uponor house lead-in pressure water-proof PWP	1

### B alternative: wall sleeve, non-pressure water-proof

Article	Number
Uponor wall sleeve NPW	1
Uponor Ecoflex Thermo Twin	
Uponor rubber end caps Twin	1
Uponor Wipex male connectors 6 bar	2
Uponor Wipex joint	2

### C alternative: wall sleeve, pressure water-proof

Article	Number
Uponor fibre cement pipe PWP *)	1
Uponor Ecoflex Thermo Twin	
Uponor wall seal PWP	1
Uponor supplementary set PWP *)	
Uponor rubber end caps Twin	1
Uponor Wipex male connectors 6 bar	2
Uponor Wipex joint	2

\*) examine optionally, necessity



## 2 House connection with Thermo Single

Two house lead-in,  
pressure water-proof

Uponor Ecoflex Thermo Single		
Uponor rubber end caps Single	2	
Uponor Wipex male connectors 6 bar	2	
Uponor Wipex joint	2	
Uponor coating for house lead-in	1	
Uponor house lead-in pressure water-proof PWP	1	

## 3 Supply for adjacent building with Quattro

Two wall sleeve, pressure water-proof,  
heating, potable water, warm, circulation

Uponor fibre cement pipe PWP *)	2	
Uponor Ecoflex Quattro		
Uponor wall seal PWP	2	
Uponor rubber end caps Quattro	2	
Uponor supplementary set PWP *)		
Uponor Wipex male connectors 6 bar	4	
Uponor Wipex male connectors 10 bar	4	
Uponor Wipex joint	8	

## 4 Take-off from Thermo Single main line to Thermo Twin take-off lines in H-insulation set

Artikel	Anzahl	
Uponor Ecoflex Thermo Single		
Uponor Ecoflex Thermo Twin		
Uponor H-insulating kit	1	
Uponor rubber end caps Single	4	
Uponor rubber end caps Twin	1	
Uponor Wipex male connectors 6 bar	6	
Uponor Wipex T-pieces	2	
Uponor Wipex reducers *)		

## 5 Thermo Twin take-off in T-insulation set

Artikel	Anzahl	
Uponor Ecoflex Thermo Twin		
Uponor T-insulating kit	1	
Uponor rubber end caps Twin	3	
Uponor Wipex male connectors 6 bar	6	
Uponor Wipex T-pieces	2	
Uponor Wipex reducers *)		

## 6 Thermo Twin connections in straight insulation set

Artikel	Anzahl	
Uponor Ecoflex Thermo Twin		
Uponor straight insulating kit	1	
Uponor rubber end caps Twin	2	
Uponor Wipex male connectors 6 bar	4	
Uponor Wipex joint	2	

## 7 Take-off from Thermo Single main line to Thermo Twin take-off line in chamber

Artikel	Anzahl	
Uponor Ecoflex Thermo Single		
Uponor Ecoflex Thermo Twin		
Uponor chamber	1	
Uponor heat-shrinkable tube for chamber	6	
Uponor insulation tape for heat-shrinkable tube		
Uponor rubber end caps Single	4	
Uponor rubber end caps Twin	2	
Uponor Wipex male connectors 6 bar	8	
Uponor Wipex T-piece	4	
Uponor Wipex reducers *)		
Wipex elbow *)		

if required, connecting pipe, tube stub  
or barrel nipple (provided by customer)

\*) examine optionally, necessity

### Site preparation

The flexibility of Uponor Ecoflex pipes allows them to be adapted to almost any type of routing conditions on site. Existing lines can be crossed over or under, and obstacles simply detoured.

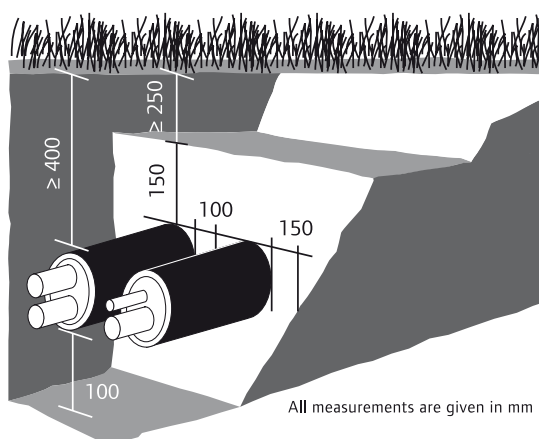
The system requires only a shallow narrow trench to be excavated. During installation, the pipe trenches outside of the pipe connections and branches need normally not be walked over so sufficient working space should be created at these points. In any case of changes in pipeline direction the various pipe systems must not fall below the permissible minimum bending radii. The excavated soil can be deposited on just one side of the trench. The pipeline is then rolled out on the other side direct into the trench. It is essential to avoid damage to the jacket pipe.

The trench must have a sandy bed, free of stones. Sand particle size should be 0 to 2/3 mm. Avoid any pointed or sharp-edged objects in the trench. The pipeline must be carefully embedded (at least 10 cm below and above the jacket pipe and between the trench walls) as this has a decisive impact on the service life of the jacket pipe. When determining the minimum coverage, any possible damage through subsequent construction work during the whole of the service life must be taken into consideration. The filling material must be compacted layer for layer, from 500 mm the coverage must also be compacted by machine. Then place the routing barrier tape and fill in the trench. The Uponor Ecoflex jacket



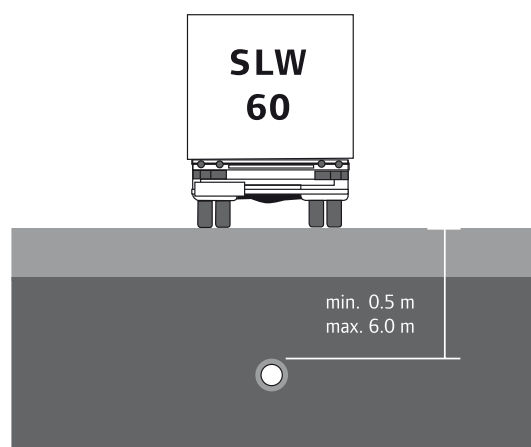
pipes remain stable under earth and SLW (heavy traffic load) of  $h=0.5$  m up to max. 6 m. The required static evidence is verified according to the current regulation ATV-DVWK-A127 for embedded pipes. The verification applies only to certain installation conditions.

### Minimum coverage without traffic load



**Warning** – local frost lines have not been taken into consideration!

### Coverage with heavy traffic load (SLW 60)





# Installation, fixing of pipe systems and bending radii

Store the delivered coil as far as possible in its protective packaging until installation! Then roll off the pipe directly from the coil next to or into the trench.

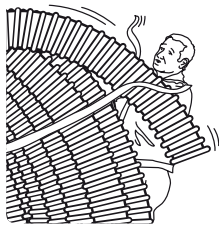


Fig. 1

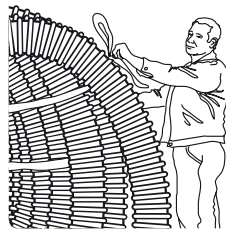


Fig. 2



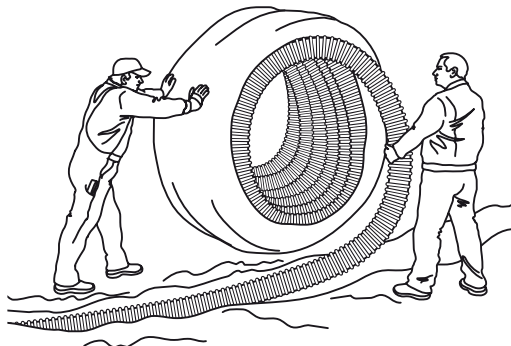
**Warning:** The pipe ends could whiplash when the textile tapes are opened (see Fig. 1) Therefore make sure the coils are always secured with two to three tapes. (see Fig. 2).

Never pull the pipe across the ground as pointed objects could cause damage. Should the jacket pipe become damaged, it can be repaired using a shrinkable tape.

All pipeline parts and system accessories must be visually inspected prior to installation or processing for damage of influences which impact its function. Parts which are inacceptably impacted must be discarded! If the pipeline is to be installed horizontally in the open, support points (for example, using sand) must be provided to prevent the pipe from slipping later. If the ground is uneven, these supports must be provided every 25 metres.

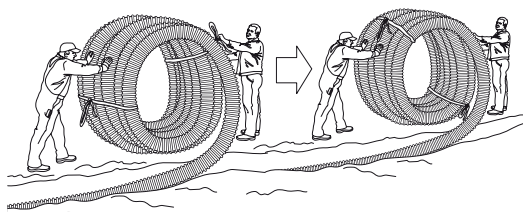
When embedding pipe sections, a sufficiently free pipe length of 3 to 5 metres must be provided for installing the connecting systems. Where there is a change of material from steel to plastic medium pipe, stress may be transferred from the steel to the plastic pipe during temperature changes. In this case, shear forces particularly are to be avoided; if necessary, provide fixed points around the ends of the steel medium pipe. If installing in extremely low temperatures (increased pipe rigidity), the pipes should be stored in a heated hall or carry out the installation beneath a heated shelter directly at the trench.

**Rolling out the pipes from the inside (recommended for jacket pipe diameters 140 and 175 mm or coiled lengths up to 100 m):**

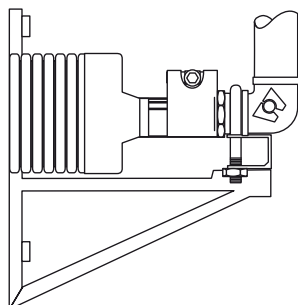


Do not remove exterior packaging! Cut the nylon securing tapes in the coil. Take out the inner pipe end from the coil (do not remove the end cap until the pipe is connected!). Fix the pipe ends (e.g. by weighing them down or placing sand on top of them). Roll out the pipe, coil by coil.

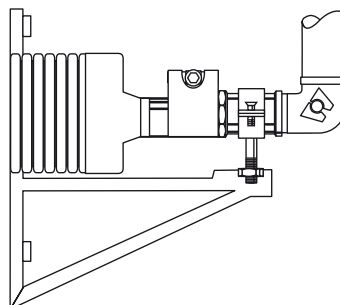
**Rolling out the pipe from the outside (recommended for jacket pipe diameters 200 mm or coiled lengths in excess of 100 m):**



Remove the packaging foil. Open the first nylon tape at the outside pipe end, loosen the pipe end from the coil and fix the coil once more with the nylon tape. **Warning** – when opening the first nylon tape, the pipe end is under tension and can whiplash! Fix the loose pipe end (e.g. by weighing it down or placing sand on it) and roll out as far as the next nylon tape. Repeat this process until the coil is completely unrolled.

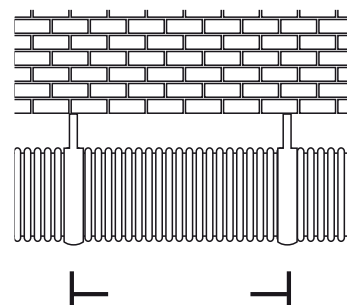


**Fixing to pipe elbow with a pipe clamp**



**Fixing to a fixed point joint with a pipe clamp**

The expansion behaviour of PE-X material leads to slight changes in the length of the medium pipe therefore a tension-free connection must be provided by a pipe bend or a fixed point joint.



**Wall and ceiling installation**

The Uponor pipe system can be fixed to any wall or ceiling using simple pipe clamps at intervals of 100 cm to prevent the pipe from sagging.



**Bending radii in mm**

Product	25	32	40	50	63	75	90	110
Uponor Ecoflex Thermo Single	250	300	350	450	550	800	1100	1200
Uponor Ecoflex Thermo Twin	500	600	800	1000	1200			
Uponor Ecoflex Aqua Single	350	400	450	550	650			
Uponor Ecoflex Aqua Twin	650	700	900	1000				
Uponor Ecoflex Quattro	800	800						
Uponor Ecoflex Supra	200	250	300	400	500	600	700	1200
Uponor Ecoflex Thermo Mini	200	250						

# Pressure test, leak test in accordance with DIN 1988, Part 2

## Legal information

Pressure tests are services performed under a service contract and form part of the contractual performances of the contractor even if they are not mentioned in the description of performances to be rendered. According to applicable and valid standards, pressure tests must be carried out before the system is placed in operation. In order to establish that the connection is leakproof, the test must be carried out before the connection is insulated and sealed.

## Execution of pressure test

The finished but not yet covered pipelines are filled with filtered water so that they are free of air. The pressure test is to be carried out as a preliminary and as a main test.

## Preliminary test

For the preliminary test, a test pressure corresponding to permissible operating overpressure plus 5 bar is applied every 10 minutes twice for a period of 30 minutes. Then after a further test period of 30 minutes, the test pressure must not drop by no more than 0.6 bar (0.1 every 5 minutes) and there must be no leakages.

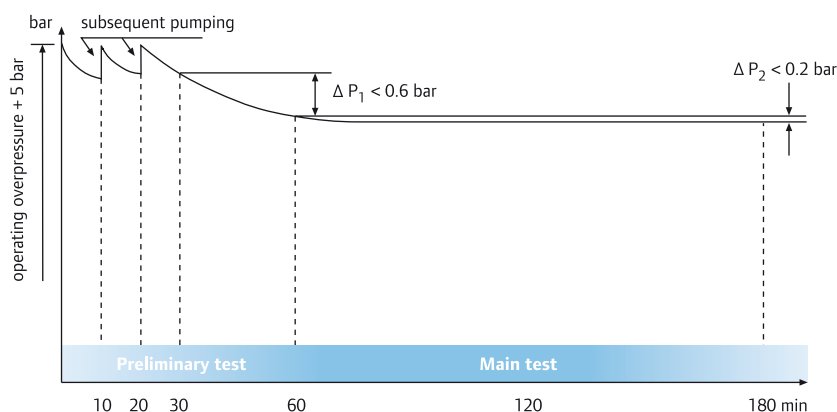
## Main test

The main test must be carried out immediately following the preliminary test. The test lasts for 2 hours. The test pressure read off after the preliminary test must not fall more than 0.2 bar after 2 hours and there must be no leakages anywhere in the tested unit.

## Plastic pipes

The material properties of plastic pipes lead to an elongation of the pipe during the pressure test which can influence the test results. Temperature differences between the pipe and the test medium caused by high thermal expansion coefficients of plastic pipes might also influence test results whereby a change in temperature of 10 K corresponds roughly to a change in pressure of 0.5 to 1 bar. Efforts should therefore be made to ensure that during the pressure test, the temperature of the test medium remains as constant as possible. During the pressure test, a visual inspection of all the connections should also be carried out as experience has shown that small leakages are not always noticed by observing the pressure gauge. The pipelines must be thoroughly purged after the pressure test.

## Pressure test diagram



# Pressure test protocol

MASTER COPY

Construction project: \_\_\_\_\_

Ordering party: \_\_\_\_\_

Installation company: \_\_\_\_\_

Temperatures:

Water temperature: \_\_\_\_\_ °C    Ambient temperature: \_\_\_\_\_ °C

☐

Lines filled with filtered water are free of air

## Preliminary test

(in certain cases, this counts as the main test)

Test duration: 60 minutes

Test pressure: operating overpressure + 5 bar

Pressure after 30 minutes (test start): \_\_\_\_\_ bar

Pressure after 60 minutes (final pressure): \_\_\_\_\_ bar (pressure drop max. 0.6 bar)

Final result of preliminary test

☐

Leakages observed

## Main test

Test duration: 120 minutes

max.permissible pressure drop: 0.2 bar

Pressure at test start: \_\_\_\_\_ bar (from final pressure in preliminary test)

Pressure after 120 minutes (final pressure): \_\_\_\_\_ bar (pressure drop max. 0.2 bar)

Final result of main test:

☐

Leakages observed

Start of test

End of test

Place

Date

Ordering party (representative)

Installation company (representative)



# Pressure test and leak test as per DIN 1838

## Legal notice

Pressure tests are additional services provided under a contract for work and services and are part of the contractual services to be furnished by the contractor without having to be mentioned in the description of services to be provided. According to applicable standards, a pressure test must be carried out prior to the system being taken into operation. In order to test whether connections are leak-proof, the test must be carried out prior to these being insulated and closed.

## Execution of pressure test

The completed but not yet covered lines are filled with filtered water in order to free them free of air.

Heating lines may be tested with 1.3 times the pressure of the total pressure (static pressure), however, with at least 1 bar overpressure at each point of the facility. Only pressure gauges are to be used which allow unmistakable readings of pressure changes of 0.1 bar. The pressure gauge must be located whenever possible at the lowest point of the facility.

The temperature balance between ambient temperature and the temperature of the water used for filling the line must be taken into consideration after a suitable

waiting time after establishing the test pressure. The test pressure must be re-established after the waiting time.

The test pressure must be maintained over a period of 2 hours and must not drop below more than 0.2 bar whereby there must be no leakages. If possible immediately after the cold water pressure test, the water is heated up to the highest calculated temperature in order to see if the facility remains leak-proof at the highest temperature. After the facility has cooled down, the heating lines and their connections are to be tested for leaks.

# Record of pressure tests on heating lines

MASTER COPY

Construction project: \_\_\_\_\_

Construction stage: \_\_\_\_\_

Ordering party: \_\_\_\_\_

Installation company: \_\_\_\_\_

Permissible max. operating pressure (at the lowest point of the facility): \_\_\_\_\_ bar

Height of facility: \_\_\_\_\_ m

Design parameters – flow temperature: \_\_\_\_\_ °C

– Return temperature: \_\_\_\_\_ °C

The temperature balance between ambient temperature and the temperature of the water used for filling the line must be taken into consideration after a suitable waiting time after establishing the test pressure. The test pressure must be re-established after the waiting time.

All containers, devices and fittings e.g. safety valves and expansion vessels which are not suitable for test pressure must be isolated from the facilities to be tested during the pressure test. The facility is filled with filtered water and completely freed of air. During the test, a visual inspection of the pipe connections must be carried out.

**Begin:** \_\_\_\_\_, \_\_\_\_\_  
Date Time

**Test pressure :** \_\_\_\_\_ bar

**End:** \_\_\_\_\_, \_\_\_\_\_  
Date Time

**Drop in pressures :** \_\_\_\_\_ bar  
(max 0.2 bar)

The above-named facility was heated up to design temperature on \_\_\_\_\_ (date). No leakage was observed. Likewise, no leakage was observed after the facility had cooled down. Should there be a danger of the facility freezing up, suitable measures should be taken (e.g. the use of anti-freeze agents, heating the building). In so far as anti-freeze is no longer required for the intended purpose of the facility, the anti-freeze agent must be discharged and the facility rinsed through at least 3 times, each time using fresh water.

Was anti-freeze agent added to the water: ☐ Yes ☐ No

Procedures taken as explained above: ☐ Yes ☐ No

\_\_\_\_\_  
Commencement of test

\_\_\_\_\_  
Completion of test

\_\_\_\_\_  
Place

\_\_\_\_\_  
Date

\_\_\_\_\_  
Ordering party(representative)

\_\_\_\_\_  
Installation company (representative)

# The Uponor Delivery Programme for Flexible, Pre-insulated pipes

## Uponor Ecoflex Thermo Single

pre-insulated single pipe PE-X, max. 6 bar / 95 °C, Heating

Article number	Medium pipe da / di / s [mm]	DN	Jacket pipe Da [mm]	Weight [kg/m]	Delivery length max. [m]	Bending radius [m]
1018109	25 / 20,4 / 2,3	20	140	1,18	200	0,25
1018110	32 / 26,2 / 2,9	25	140	1,31	150	0,30
1018111	40 / 32,6 / 3,7	32	175	2,03	100	0,35
1018112	50 / 40,8 / 4,6	40	175	2,26	100	0,45
1018113	63 / 51,4 / 5,8	50	175	2,56	100	0,55
1018114	75 / 61,4 / 6,8	65	200	3,74	100	0,80
1018115	90 / 73,6 / 8,2	80	200	4,20	100	1,10
1018116	110 / 90,0 / 10,0	100	200	5,24	100	1,20

On request, available with heating tape HWAT-R. Delivery time on request.



## Uponor Ecoflex Thermo Twin

pre-insulated double pipe PE-X, max. 6 bar / 95 °C, Heating

Article number	Medium pipe da / di / s [mm]	DN	Jacket pipe Da [mm]	Weight [kg/m]	Delivery length max. [m]	Bending radius [m]
1018134	25 / 20,4 / 2,3 (2x)	20	175	1,92	150	0,50
1018135	32 / 26,2 / 2,9 (2x)	25	175	1,99	150	0,60
1018136	40 / 32,6 / 3,7 (2x)	32	175	2,33	100	0,80
1018137	50 / 40,8 / 4,6 (2x)	40	200	3,59	100	1,00
1018138	63 / 51,4 / 5,8 (2x)	50	200	4,55	100	1,20



## Uponor Ecoflex Thermo Mini

pre-insulated single pipe PE-X, max. 6 bar / 95 °C, Heating

Article number	Medium pipe da / di / s [mm]	DN	Jacket pipe Da [mm]	Weight [kg/m]	Delivery length max. [m]	Bending radius [m]
1018132	25 / 20,4 / 2,3	20	68	0,50	200	0,20
1018133	32 / 26,2 / 2,9	25	68	0,55	150	0,25

On request, available with heating tape HWAT-R. Delivery time on request.



## Uponor Ecoflex Aqua Single

pre-insulated single pipe PE-X, max. 10 bar / 95 °C, potable water, warm

Article number	Medium pipe da / di / s [mm]	DN	Jacket pipe Da [mm]	Weight [kg/m]	Delivery length max. [m]	Bending radius [m]
1018117	25 / 18,0 / 3,5	20	140	1,24	200	0,35
1018118	32 / 23,2 / 4,4	25	140	1,42	150	0,40
1018119	40 / 29,0 / 5,5	32	175	2,20	100	0,45
1018120	50 / 36,2 / 6,9	40	175	2,54	100	0,55
1018121	63 / 45,8 / 8,7	50	175	3,00	100	0,65

On request, available with heating tape HWAT-R. Delivery time on request.



Deliveries are made in accordance with our "General Terms and Conditions of Sale". Subject to technical changes without notice.

## Uponor Ecoflex Aqua Twin

pre-insulated double pipe PE-X, max. 10 bar / 95 °C, potable water, warm

Article number	Medium pipe da / di / s [mm]	DN	Jacket pipe Da [mm]	Weight [kg/m]	Delivery length max. [m]	Bending radius [m]
1018139	1) 25 / 18,0 / 3,5 2) 25 / 18,0 / 3,5	20 20	175	2,05	150	0,65
1018140	1) 32 / 23,2 / 4,4 2) 25 / 18,0 / 3,5	25 20	175	2,20	150	0,70
1018141	1) 40 / 29,0 / 5,5 2) 25 / 18,0 / 3,5	32 20	175	2,45	100	0,90
1018142	1) 50 / 36,2 / 6,9 2) 25 / 18,0 / 3,5	40 20	175	2,73	100	1,00



## Uponor Ecoflex Quattro

pre-insulated quad-pipe PE-X, max. 6 bar / 95 °C, Heating and/or max. 10 bar / 95 °C / potable water, warm

Article number	Medium pipe da / di / s [mm]	DN	Jacket pipe Da [mm]	Weight [kg/m]	Delivery length max. [m]	Bending radius [m]
1018147	(2x) 25 / 20,4 / 2,3 (2x) 25 / 18,0 / 3,5	20 20	175	2,41	150	0,80
1018148	(2x) 32 / 26,2 / 2,9 (2x) 25 / 18,0 / 3,5	25 20	175	2,64	150	0,80
1018149	(2x) 32 / 26,2 / 2,9 32 / 23,2 / 4,4 25 / 18,0 / 3,5	25 25 20	175	2,78	150	0,80



## Uponor Ecoflex Supra

pre-insulated single pipe PE-HD, max. 16 bar / 20 °C, potable and cold water

Article number	Medium pipe da / di / s [mm]	DN	Jacket pipe Da [mm]	Weight [kg/m]	Delivery length max. [m]	Bending radius [m]
1018124	25 / 20,4 / 2,3	20	68	0,52	100	0,20
1018125	32 / 26,2 / 2,9	25	68	0,62	100	0,25
1018126	40 / 32,6 / 3,7	32	140	1,47	100	0,30
1018127	50 / 40,8 / 4,6	40	140	1,67	100	0,40
1018128	63 / 51,4 / 5,8	50	140	1,97	100	0,50
1018129	75 / 61,4 / 6,8	65	175	2,72	100	0,60
1018130	90 / 73,6 / 8,2	80	175	3,14	100	0,70
1018131	110 / 90,0 / 10,0	100	200	5,24	100	1,20



On request available with anti-freeze cable FS-A-2X. delivery time on request.  
Connecting system Supra on request, depending on field of application!



Deliveries are made in accordance with our "General Terms and Conditions of Sale". Subject to technical changes without notice.

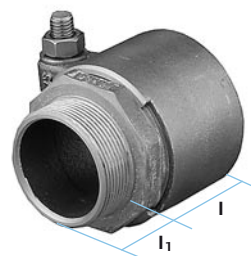
## Uponor Wipex Fittings with cylindrical thread, O-Ring seal

Alloy CW 602 N/CC 491 K, O-Ring EPDM

### Uponor Wipex male connector 6 bar

6 bar / 95 °C for Uponor Ecoflex pipe systems Thermo Single, Thermo Twin, Thermo Mini, Quattro

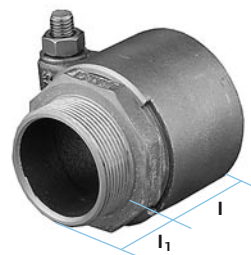
Article number	Pipe size da / di / s [mm]	Connection Male thread [inch]	Weight [kg/piece]	I [mm]	I <sub>1</sub> [mm]
1018328	25 / 20,4 / 2,3	1"	0,20	26	13
1018329	32 / 26,2 / 2,9	1"	0,30	38	13
1018330	40 / 32,6 / 3,7	1 1/4"	0,50	44	14
1018331	50 / 40,8 / 4,6	1 1/4"	0,70	51	14
1018332	63 / 51,4 / 5,8	2"	1,20	67	16
1018333	75 / 61,4 / 6,8	2"	1,50	71	17
1018334	90 / 73,6 / 8,2	3"	2,40	80	17
1018335	110 / 90,0 / 10,0	3"	3,50	2	17



### Uponor Wipex male connector 10 bar

for Uponor Ecoflex pipe systems Aqua Single, Aqua Twin, Quattro (DVGW-approved)

Article number	Pipe size da / di / s [mm]	Connection Male thread [inch]	Weight [kg/piece]	I [mm]	I <sub>1</sub> [mm]
1018336	25 / 18,0 / 3,5	1"	0,20	26	13
1018338	32 / 23,2 / 4,4	1"	0,30	38	13
1018339	40 / 29,0 / 5,5	1 1/4"	0,50	44	14
1018340	50 / 36,4 / 6,8	1 1/4"	0,70	51	14
1018341	63 / 45,8 / 8,7	2"	1,20	67	16

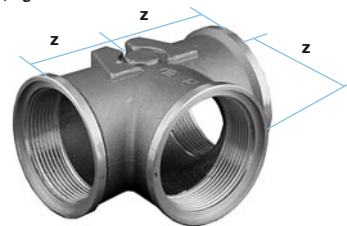


### Uponor Wipex T-piece

for Uponor Ecoflex pipe systems Aqua Single, Aqua Twin, Thermo Single, Thermo Twin, Thermo Mini, Quattro

Article number	Dimensions O-Ring di x s [mm]	Connection Male thread [inch]	Weight [kg/piece]	z [mm]
1018345	35,0 x 3,0	1"	0,31	35
1018346	43,5 x 3,0	1 1/4"	0,48	42
1018347	61,91 x 3,53	2"	1,01	55
1018348	90,0 x 4,0	3"	2,64	75

incl. O-Rings

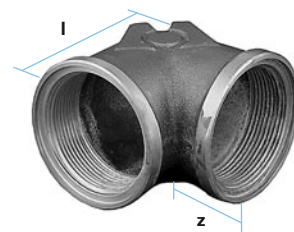


### Uponor Wipex elbow

for Uponor Ecoflex pipe systems Aqua Single, Aqua Twin, Thermo Single, Thermo Twin, Thermo Mini, Quattro

Article number	Dimensions O-Ring di x s [mm]	Connection Female thread [inch]	Weight [kg/piece]	I [mm]	z [mm]
1018350	35,0 x 3,0	1"	0,27	58	35
1018351	43,5 x 3,0	1 1/4"	0,45	68	42
1018352	61,91 x 3,53	2"	0,94	91	55
1018353	90,0 x 4,0	3"	2,20	126	75

incl. O-Rings

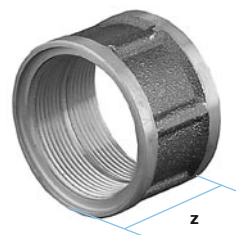


## Uponor Wipex joint

for Uponor Ecoflex pipe systems Aqua Single, Aqua Twin, Thermo Single, Thermo Twin, Thermo Mini, Quattro

Article number	Dimensions O-Ring da x s [mm]	Connection female thread [inch]	Weight [kg/piece]	z [mm]
1018355	35,0 x 3,0	1"	0,18	30
1018356	43,5 x 3,0	1 1/4"	0,20	37
1018357	61,91 x 3,53	2"	0,39	45
1018358	90,0 x 4,0	3"	0,70	55

incl. O-Rings

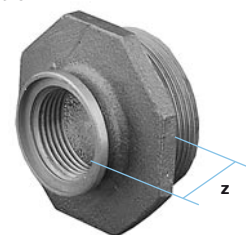


## Uponor Wipex reducers

for Uponor Ecoflex pipe systems Aqua Single, Aqua Twin, Thermo Single, Thermo Twin, Thermo Mini, Quattro

Article number	Dimensions O-Ring di x s [mm]	R 1 male thread [inch]	R 2 female thread [inch]	Weight [kg/piece]	z [mm]
1018368	35,0 x 3,0	1 1/4"	1"	0,22	20
1018369	43,5 x 3,0	1 1/2"	1 1/4"	0,25	21
1018371	35,0 x 3,0	2"	1"	0,41	21
1018372	43,5 x 3,0	2"	1 1/4"	0,46	25
1018374	35,0 x 3,0	3"	1"	0,92	23
1018375	43,5 x 3,0	3"	1 1/4"	1,03	27
1018376	61,91 x 3,53	3"	2"	0,99	31

incl. O-Rings

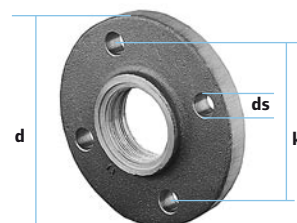


## Uponor Wipex flange

for Uponor Ecoflex pipe systems Aqua Single, Aqua Twin, Thermo Single, Thermo Twin, Thermo Mini, Quattro

Article number	DN	Screw holes Number	Dimensions O-Ring di x s [mm]	Connection female thread [inch]	Weight [kg/piece]	k [mm]	ds [mm]	d [mm]
1018359	25	4	35,0 x 3,0	1"	1,33	85	14	115
1018360	32	4	43,5 x 3,0	1 1/4"	1,96	100	18	140
1018362	50	4	61,91 x 3,53	2"	2,96	125	18	165
1018364	80	8	90,0 x 4,0	3"	4,36	160	18	200

incl. O-Rings

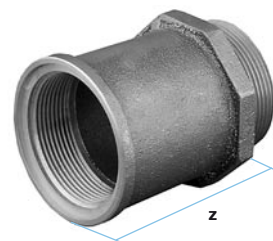


## Uponor Wipex fixed point joint

for Uponor Ecoflex pipe systems Aqua Single, Aqua Twin, Thermo Single, Thermo Twin, Thermo Mini, Quattro

Article number	Dimensions O-Ring da x s [mm]	Connection female thread [inch]	Weight [kg/piece]	z [mm]
1018302	35,0 x 3,0	1"	0,23	42
1018303	43,5 x 3,0	1 1/4"	0,45	68
1018304	61,91 x 3,53	2"	0,78	73
1018305	90,0 x 4,0	3"	2,15	111

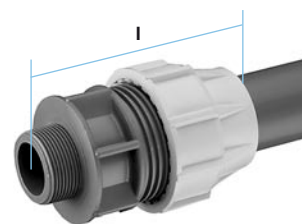
incl. O-Rings



## Uponor plastic male connector

for main service take-off on Uponor Ecoflex Supra pipes

Article number	For medium pipe dimensions da/s [mm]	Male thread [inch]	Weight [kg]	l [mm]
1018400	25 x 2,3	3/4"	0,073	95
1018401	32 x 2,9	1"	0,115	106
1018402	40 x 3,7	1 1/4"	0,192	116
1018403	50 x 4,6	1 1/2"	0,282	135
1018404	63 x 5,8	2"	0,480	167
1018405	75 x 6,8	2 1/2"	0,728	191
1018406	90 x 8,2	3"	1,133	230
1018407	110 x 10,0	4"	1,919	267



## Uponor rubber end-cap

incl. clamping ring and swelling ring

Article number	For medium pipe da [mm]	For jacket pipe Da [mm]	Weight [kg/piece]	Use with product	l [mm]	l <sub>1</sub> [mm]
1018316	25 + 32	68	0,15	Thermo Mini, Supra	80	140
1018315	25 + 28 + 32	140	0,29	Thermo Single / Aqua Single	90	184
1018313	32 + 40 + 50	175	0,39	Thermo Single / Aqua Single	90	184
1018314	40 + 50 + 63	140	0,30	Supra	90	184
1018312	63 + 75	175	0,41	Thermo Single / Aqua Single / Supra	90	184
1018310	75 + 90 + 110	200	0,45	Thermo Single / Supra	90	184
1018311	90 + 110	175	0,43	Supra	90	184
1018309	2x 25 + 32 + 40	175	0,41	Thermo Twin / Aqua Twin	90	184
1018308	2x 25 + 32 + 50	175	0,41	Thermo Twin / Aqua Twin	90	184
1018307	2x 40 + 50 + 63	200	0,49	Thermo Twin	90	184
1018306	2x 25 + 32 25 + 28 + 32 22 + 25 + 32	175	0,45	Quattro	90	184

Material: EPDM, clamping ring: stainless steel



## Uponor T-insulating kit

for sealing T-connections for Single or Twin pipes with a jacket pipe outside diameter of 200, 175 and 140 mm

Article number	d [mm]	d1 [mm]	d2 [mm]	l [mm]	b [mm]	Weight [kg/set]
1021990	200	175	140	1200	735	8,20

comprising half-pipe lagging, stainless steel screws, plastic body-bound rivets and adhesive

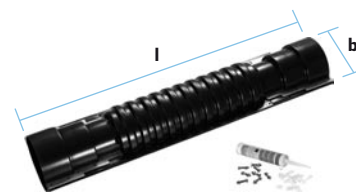


## Uponor straight insulating kit

for sealing straight connections for Single and Twin pipes with a jacket pipe outside diameter of 200, 175 and 140 mm

Article number	d [mm]	d1 [mm]	d2 [mm]	l [mm]	b [mm]	Weight [kg/set]
1021992	200	175	140	1200	270	6,20

comprising half-pipe lagging, stainless steel screws, plastic body-bound rivets and adhesive

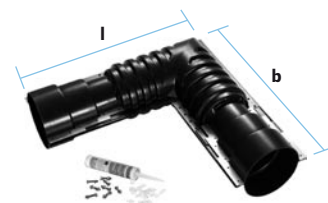


## Uponor elbow insulating kit

for sealing elbow connections for Single and Twin pipes with a jacket pipe outside diameter of 200, 175 and 140 mm

Article number	d [mm]	d1 [mm]	d2 [mm]	l [mm]	b [mm]	Weight [kg/set]
1021991	200	175	140	735	735	6,50

comprising half-pipe lagging, stainless steel screws, plastic body-bound rivets and adhesive

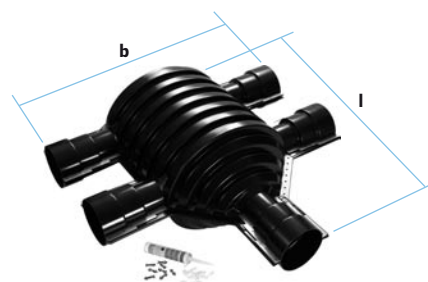


## Uponor H-insulating kit

for sealing Single main lines with Twin outlet lines with a jacket pipe outside diameter of 200, 175 and 140 mm

Article number	d [mm]	d1 [mm]	d2 [mm]	l [mm]	b [mm]	Weight [kg]
1007355	200	175	140	1290	1260	19,00

comprising half-pipe lagging, stainless steel screws, plastic body-bound rivets and adhesive





## Uponor reducer rings

for straight and T-insulations to compensate varying jacket pipe dimensions

Article number	d [mm]	d1 [mm]	l [mm]	Weight [kg/set]
1007357	140	68	140	0,13

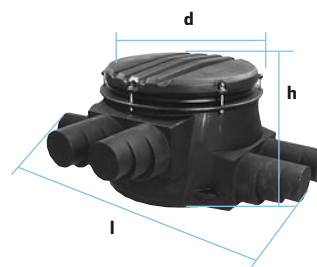


## Uponor chamber

with lid and outlets for connections to 140/175/200 mm jacket pipes

Article number	Diameter outer d [mm]	Number connections x jacket pipe diameter [mm]	Height h [mm]	Length l [mm]	Weight [kg/piece]
1018326	980	6 x 140 / 175 / 200	685	1660	50
1018327	980	8 x 140 / 175 / 200	685	1660	52

Material: chamber PE + PE-foam, cover: PE, sealing ring: SBR, screws: stainless steel



## Uponor heat-shrinkable tube

for chamber

Article number	Jacket pipe Diameter [mm]	l [m]	Weight [kg/piece]
1018379	140	0,20	0,20
1018380	175	0,25	0,25
1018381	200	0,30	0,30

Material: PEX



## Uponor sealing tape for heat-shrinkable tube

for sealing jacket pipe inlet in the Uponor chamber

Article number	l [m]
1018382	10

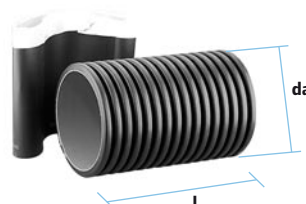


## Uponor wall sleeve NPW (non-pressure water-proof)

with heat-shrinkable tube, non pressure water-proof

Article number	Jacket pipe diameter [mm]	Diameter wall sleeve da [mm]	l [mm]	Weight [kg/piece]
1018266	68	90	375	1,20
1018269	140	175	375	1,80
1018270	175	235	375	1,90
1018268	200	250	375	2,10

Material: wall sleeve PE-HD, heat-shrinkable tube: PEX



## Uponor wall seal PWP (pressure water-proof)

as lead-ins for jacket pipes where pressurized water is present. For direct use in a water-impervious concrete core hole or in a bricked-in Uponor fibre cement pipe.

Article number	d [mm]	d1 [mm]	l [mm]	Weight [kg/piece]
1007358	68	125	110	1,21
1007360	140	200	110	2,42
1007361	175	250	110	3,70
1007362	200	300	110	4,90

d= jacket pipe diameter, d1 = core hole



## Uponor supplementary set PWP (pressure water-proof)

Accessories for reducing radial tension in jacket pipes when installed at an incline and not at a right angle into walls. May only be used in combination with an Uponor pressure water-proof wall seal.

Article number	d [mm]	d1 [mm]	l [mm]	Weight [kg/piece]
1007363	68	125	65	0,72
1007365	140	200	65	1,43
1007366	175	250	65	2,30
1007367	200	300	65	3,30

d= jacket pipe diameter, d1 = core hole

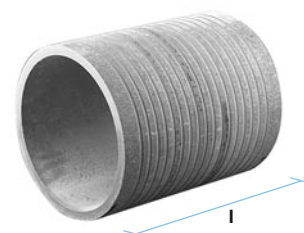


## Uponor fibre cement pipe PWP (pressure water-proof)

for wall seal, pressure water-proof

Article number	Liner pipe diameter DN	For jacket pipe diameter [mm]	l [mm]	Weight [kg/piece]
1007368	125	68	400	8,00
1007370	200	140	400	15,20
1007371	250	175	400	18,80
1007372	300	200	400	22,00

Material: Fibre cement



## Uponor epoxy resin for PWP

For lining the walls of water-impervious concrete core holes, for Uponor wall seals, PWP

Article number	Weight [kg/Set]
1007373	1,45 für ca. 3,5 m <sup>2</sup>



## Uponor house lead-in, pressure water-proof

Article number	Jacket pipe diameter [mm]	Core hole diameter [mm]	Weight [kg/set]
1018292	68	90	0,75
1018293	140	160	1,15
1018294	175	195	1,50
1018295	200	220	1,85



## Uponor coating for house lead-in

Sealing paste for core hole

Article number	Contents [ml]	Weight [kg/piece]
1018296	0,750	0,80 für ca. 0,5–0,75 m²



## Uponor shrinkable tape

for sealing damaged jacket pipes

Article number	Roll length max. [m]	Width [mm]	Weight [kg/m]
1018378	30	255	0,49



## Uponor trench warning tape

marked with the name Uponor and symbols; Colour: red

Article number	Length [m]	Width [mm]	Weight [kg/roll]
1018385	250	40	2,00



# Project data recording for your Enquiries for offers

MASTER COPY

Please fax to: +49 (0)9521 690-750

Construction project:

\_\_\_\_\_  
\_\_\_\_\_

Medium:

☐ Potable water      ☐ Heating water      ☐ Cooling water  
☐ Waste water: \_\_\_\_\_  
☐ Foodstuffs: \_\_\_\_\_  
☐ Others: \_\_\_\_\_

Temperatures:

max.: \_\_\_\_\_ °C      Return: \_\_\_\_\_ °C

Pressure:

\_\_\_\_\_ bar

Power:

\_\_\_\_\_ kg/h      \_\_\_\_\_ kW

Traffic load:

\_\_\_\_\_ t (e.g. SWL 60 = 60 t)

Other information:

Ground properties: \_\_\_\_\_

Existing  
supply lines: \_\_\_\_\_

Annual operating  
hours of pipelines: \_\_\_\_\_ h/a

☐ Inspection chambers planned      ☐ Shut-off devices planned

House lead-in/wall sleeves/wall seals:

☐ Pressurized water-proof (retained stormwater, ground water)

☐ Core hole (Water-impermeable concrete)

☐ Fibre cement pipe (to wall in)

☐ Not pressurized water-proof (wall sleeve to wall in)

Faxed documents:

☐ Installation plan to scale \_\_\_\_\_ : \_\_\_\_\_

☐ with lengths of sections

☐ and performance figures for take-off points

Company:

Stamp

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

Contact person \_\_\_\_\_

Telephone \_\_\_\_\_

Fax \_\_\_\_\_



## **Uponor - partnering with professionals**

Uponor is a leading supplier of plumbing and heating systems for the residential and commercial building markets across Europe and North America, and a prominent supplier of municipal infrastructure pipe systems in Europe. Uponor's key applications are radiant heating, tap water systems and infrastructure solutions. The Group employs 4,250 people globally. In 2007, Uponor's net sales totalled 1,050 billion euros. Uponor Corporation is listed on the Nordic Exchange in Helsinki, Finland.

Uponor International Sales takes care of all business activities in Western Asia, Far East, Africa and Latin America.

**Uponor. Simply more.**

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