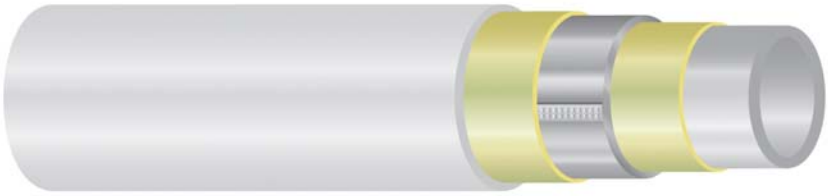
uponor

PIPE MANUAL &

TECHNICAL INFORMATION



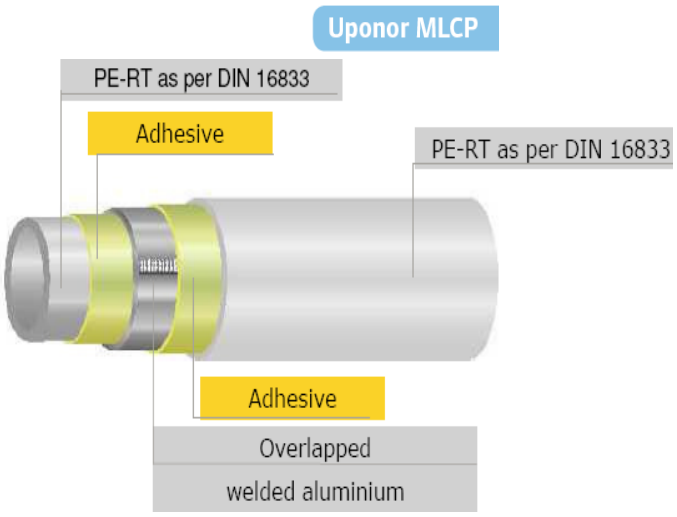
Certified Product
Australian Standard

WaterMark

Uponor MLCP – the advantages of plastic and metal in one single pipe

YOUR KEY ADVANTAGES

- Fast, safe & easy to install
- Lightweight
- Low heat expansion
- No oxygen penetration
- Connects direct to the boiler
- Flexible & tough
- No pipe snap back
- No corrosion or scale build up
- Easy to bend
- No expanding of the pipe needed
- Only ONE tool required
- No welding or soldering
- Low pressure loss thanks to smooth inner layer
- Less fittings required
- Saves time & money
- Maximum water temperature 95℃
- Reduces water hammer noise
- Approved by Australian Standards
- Fully Water Marked



The (MLCP) multi-layered composite pipe from Uponor is a 5 layered pipe designed to unite the advantages of a metal and plastic pipe. It consists of longitudinal safety welded aluminium, to which an inner and outer layer of high temperature resistant polyethylene is applied. The system is designed for easy, safe and fast pipe installation: simply cut to length, bevel, join and crimp. It's as easy as 1 2 3.

With high flexibility and toughness joined with a high pressure and temperature resistance Uponor MLCP is suitable for radiator connections, floor heating and mains water supply.

Basic Crimping System

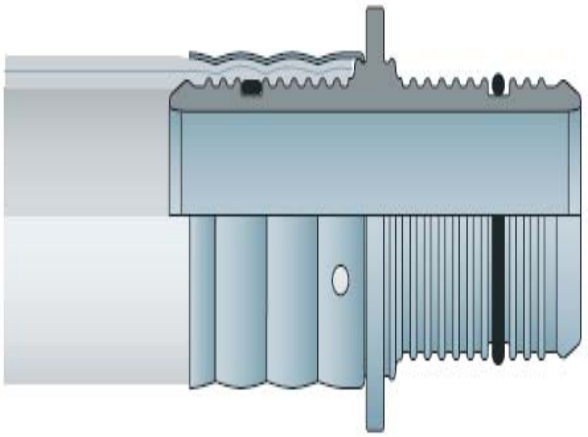
The patented MLCP crimping system enables connections to be established within a matter of seconds without welding or soldering. The external press sleeve offers protection to the o-rings.

The aluminium crimp sleeves have inspection windows to check the insertion depth of the pipe before you crimp. The plastic stop ring acts as a guide to position the crimping jaws before crimp the pipe to the fittings.

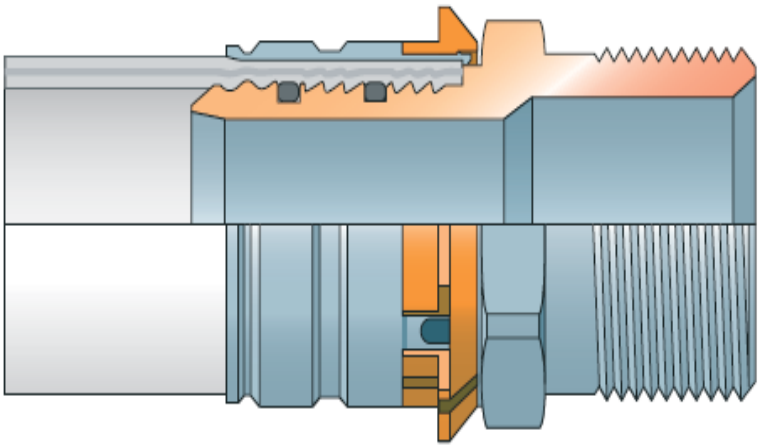
The fittings are made from PPSU or DR Brass. Uponor fittings are available in a range of different sizes.

Composite fitting made from PPSU

Sectional drawing of 16-32mm composite press fitting

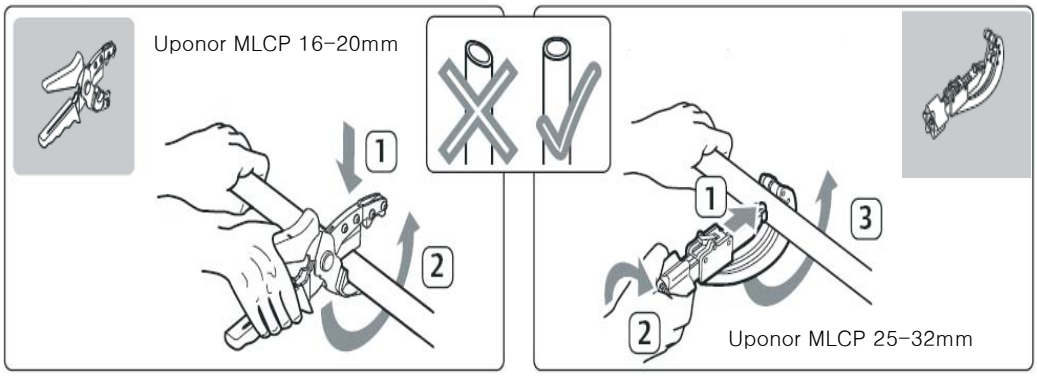


Sectional drawing of 16-32mm press metal fitting with profile aluminium sleeve and plastic stop ring

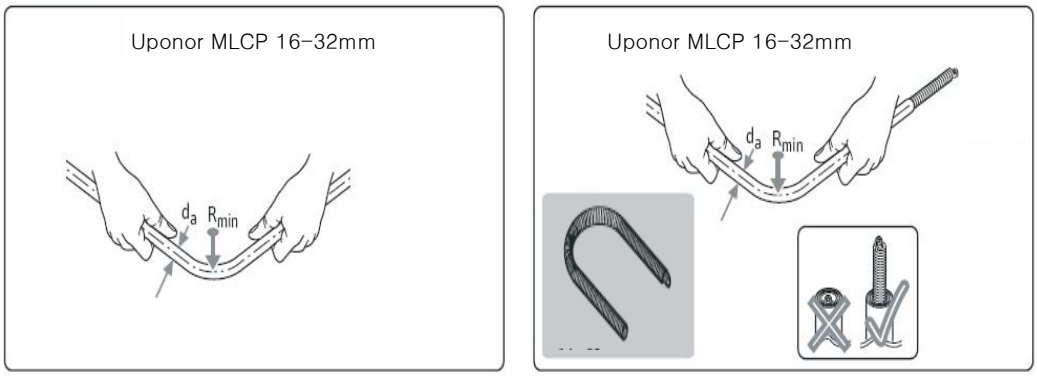


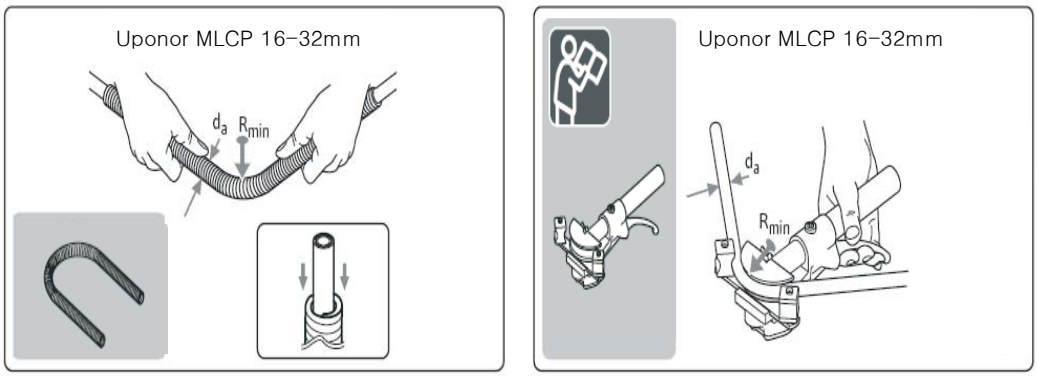
Operating instructions

1. Cutting



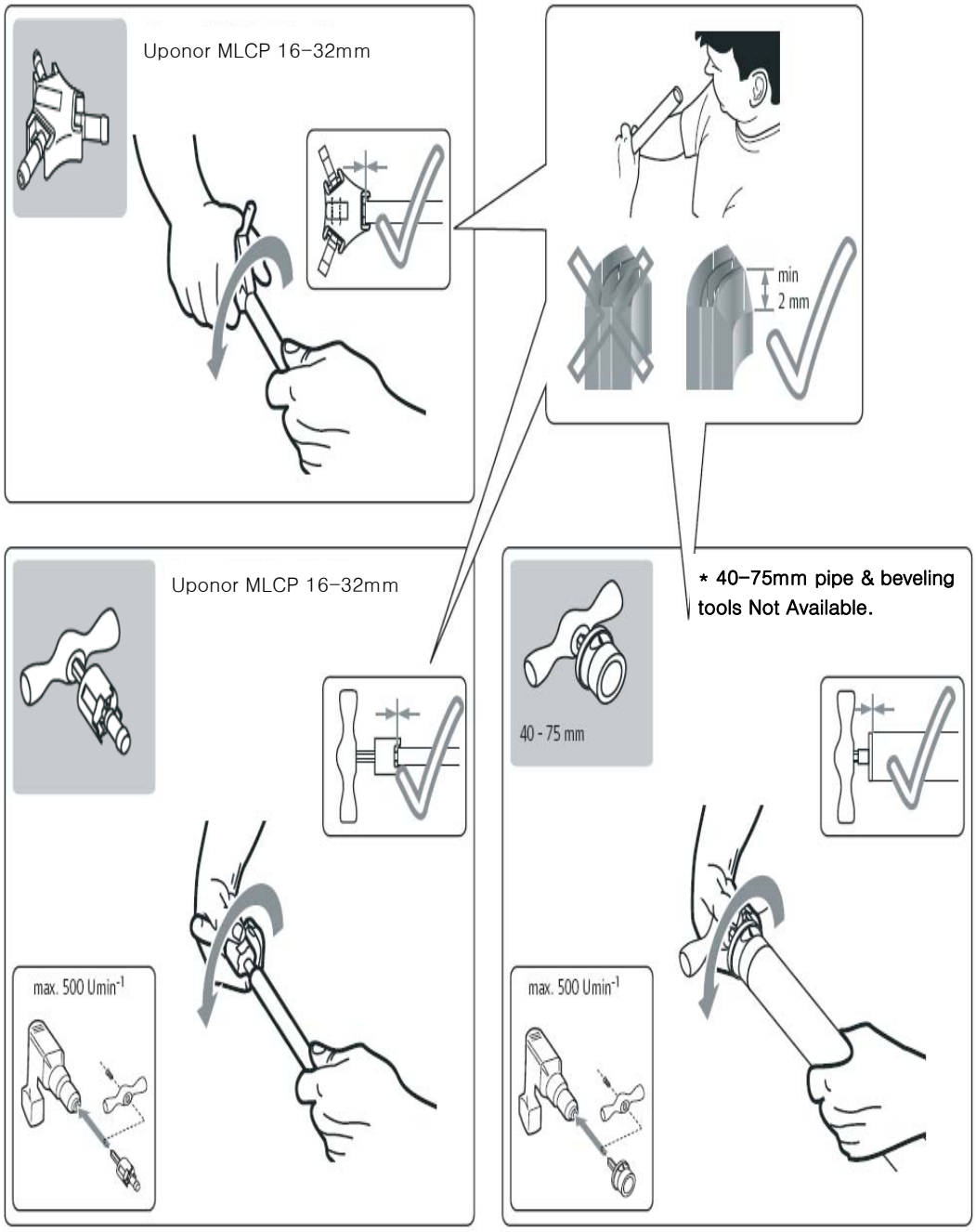
2. Bending



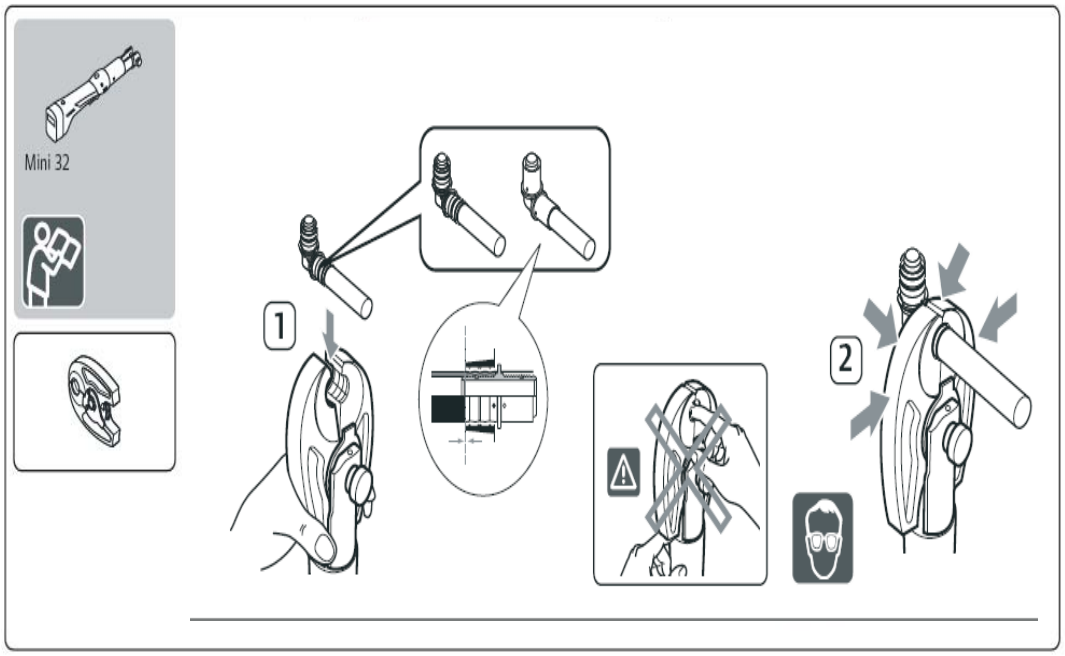


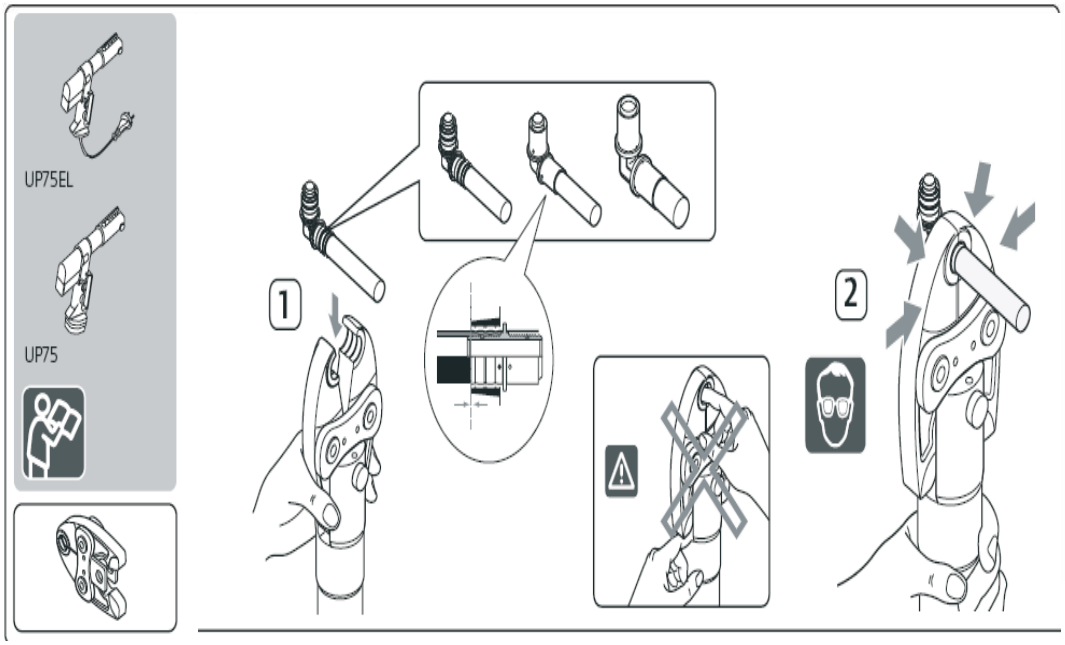
Operating instructions

3. Centering and beveling



Operating instructions





Technical data and dimensions

Dimensions OD x s [mm]	16 x 2	20 x 2,25	25 x 2,5	32 x 3
Inner diameter ID [mm]	12	15.5	20	26
Length coil [m]	100/200/500	100/200	50/100	50
Length straight length [m]	5	5	5	5
Outer diameter coil [cm]	80	100	120	120
Weight coil/straight length [g/m]	105/118	148/160	211/240	323/323
Weight coil/straight length with water 10 °C [g/m]	218/231	337/349	525/554	854/854
Weight per coil [kg]	21.0/52.5	14.8/29.6	10.6/21.1	16.2
Weight per straight length [kg]	0.59	0.80	1.20	1.6
Water volume [l/m]	0.113	0.189	0.314	0.531
Pipe roughness k [mm]	0.0004	0.0004	0.0004	0.0004
Thermal conductivity λ (W/m x K)	0.40	0.40	0.40	0.40
Coefficient of expansion α (m/m x K)	25 x 10^{-6}	25 x 10^{-6}	25 x 10^{-6}	25 x 10^{-6}
Maximal temperature: 95 °C*				
Maximum continuous operating pressure 10 bar at 70 °C continuous operation temperature, Tested hydrostatic stress performance 50 years, safety factor 1.5*				
Min. bending radius by hand: 5 x OD [mm]	80	100	125	160
Min. bending radius with inner blending spring 4 x OD [mm]	64	80	100	128
Min. bending radius with outer blending spring 4 x OD [mm]	64	80	100	-
Min. bending radius with bending tool [mm]	49	78	80	128

Mounting technology

Pipe dimension OD x s [mm]	Maximum mounting distance between pipe clips L			Pipe weight with 10 °C water filling/without insulation	
	horizontal		vertical	Coil	Straight length
	Coil [m]	Straight length [m]	[m]	[kg/m]	[kg/m]
16 x 2.0	1.20	1.60	1.70	0.218	0.231
20 x 2.25	1.30	1.60	1.70	0.338	0.368
25 x 2.5	1.50	1.80	2.00	0.529	0.557
32 x 3.0	1.60	1.80	2.10	0.854	0.854

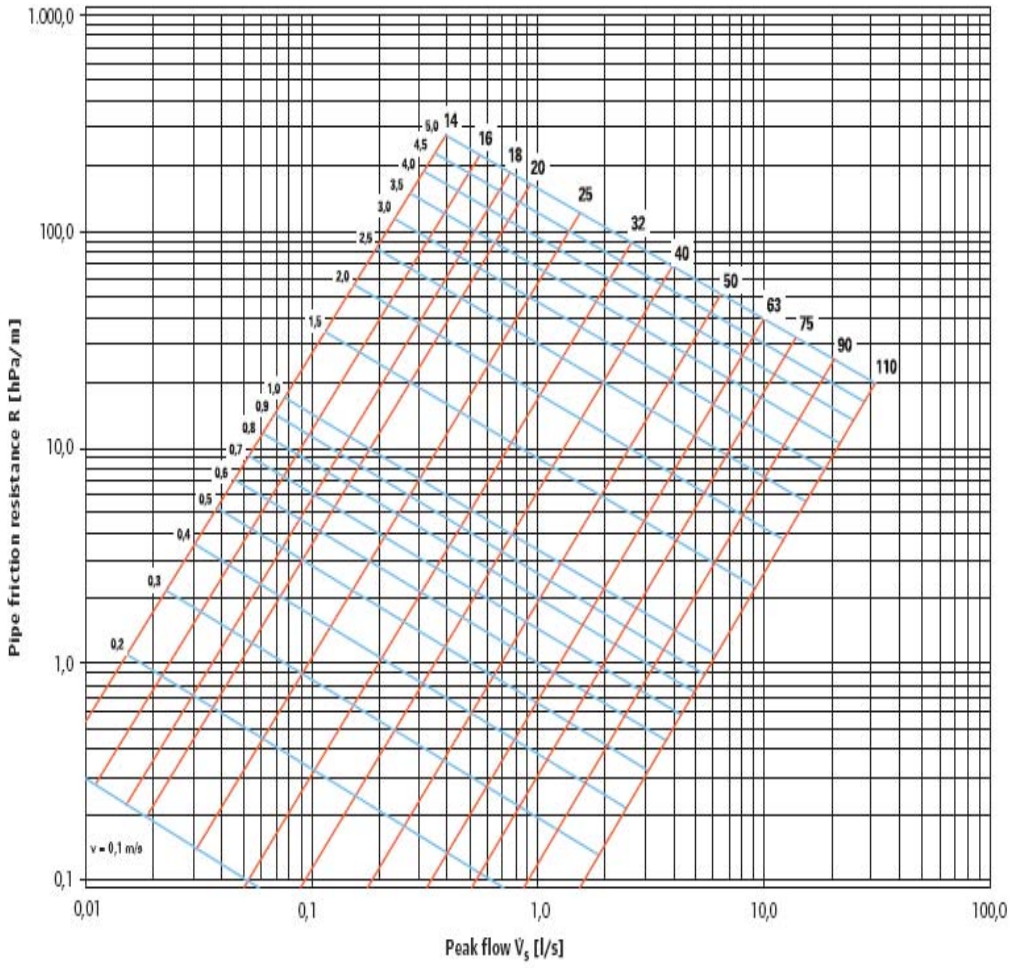
Pressure – loss graph

The pressure–loss graph contains the pipe characteristics for the various dimensions of Uponor MLC pipes as well as the flow rate limits.

The friction head per meter in relation to the pipe dimensions and the flow rate can be read from this diagram given the volume flow or discharge.

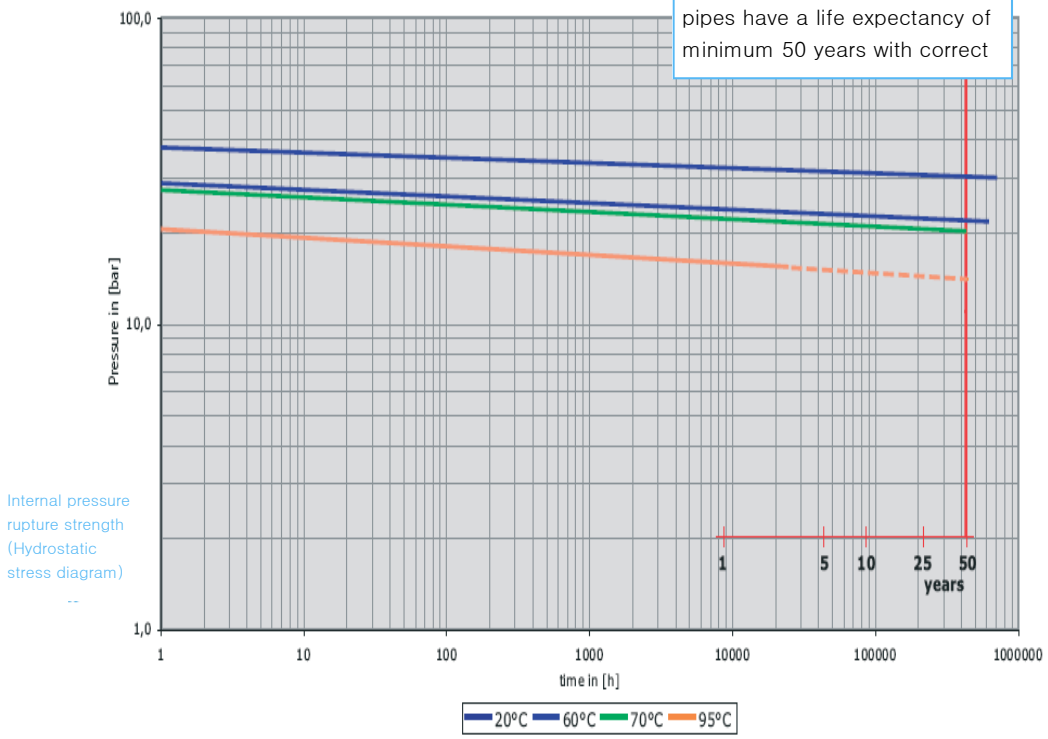
Pipe friction resistance – Uponor MLC pipe

Water, mean temperature 10℃

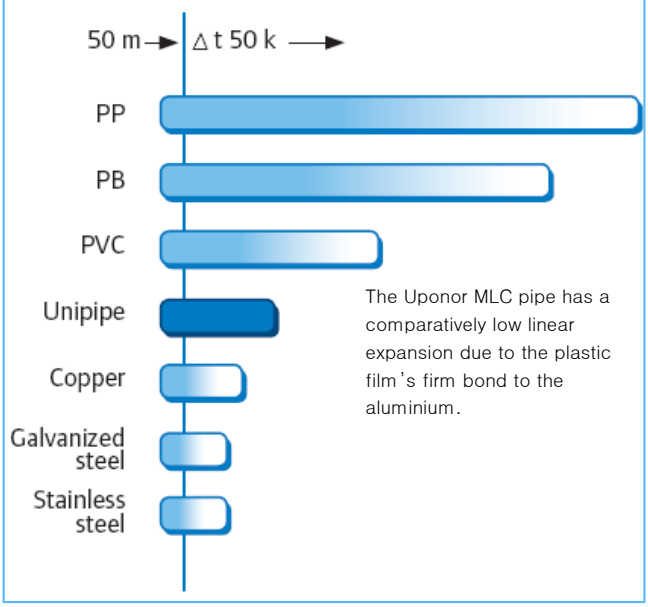


Water Pressure & Temperature Chart

Uponor multi-layer composite pipes have a life expectancy of minimum 50 years with correct



Internal pressure rupture strength (Hydrostatic stress diagram)



The Uponor MLC pipe has a comparatively low linear expansion due to the plastic film's firm bond to the aluminium.

The loading capacity of the connections is tested in regular tensile tests. In addition to continuous pipe testing in the laboratory, every MLC pipe coil is tightness-tested under pressure.

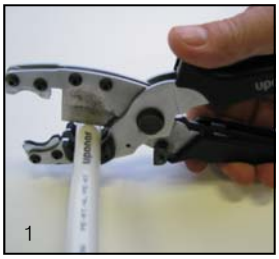
Pipe friction tables

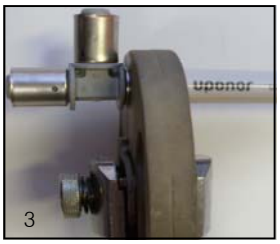
Pipe friction table, heating ΔT= 20 K (70℃/50℃)

Pipe friction resistance for water as a function of warming or mass flow rate at a mean water temperature of 60℃ and a spread of ΔT= 20 K (70℃/50℃)

* Note: You can find additional pipe friction tables for other operating temperatures available for download at www.uponor.de

OD x s ID V/l		16 x 2 mm 12 mm 0.11 l/m	
Q W	m kg/h	v m/s	R Pa/m
200	9	0.02	1
400	17	0.04	5
600	26	0.06	9
800	34	0.09	15
1000	43	0.11	21
1200	52	0.13	29
1400	60	0.15	38
1600	69	0.17	47
1800	78	0.19	58
2000	86	0.22	69
2200	95	0.24	82
2400	103	0.26	95
2600	112	0.28	109
2800	121	0.30	124
3000	129	0.32	140
3200	138	0.34	156
3400	146	0.37	173
3600	155	0.39	192
3800	164	0.41	210
4000	172	0.43	230
4200	181	0.45	250
4400	189	0.47	271
4600	198	0.50	293
4800	207	0.52	316
5000	215	0.54	339
5200	224	0.56	363
5400	233	0.58	388
5600	241	0.60	414
5800	250	0.62	440
6000	258	0.65	467
6200	267	0.67	494
6400	276	0.69	522
6600	284	0.71	551
6800	293	0.73	581
7000	301	0.75	611
7500	323	0.81	690
8000	344	0.86	773
8500	366	0.91	860
9000	388	0.97	951
9500	409	1.02	1046
10000	431		
10500	452		
11000	474		
11500	495		
12000	517		
12500	538		
13000	560		
13500	581		
14000	603		
14500	624		





EASY AS 1 2 3

Q = power in Watt v = flow rate in metres/second

R = pipe friction resistance in pascal/metre (100 Pa = 1hPa=1 mbar, 1hPa ~ 10mm wc)

Pipe friction tables

Pipe friction table, heating ΔT= 20 K (70℃/50℃)

Pipe friction resistance for water as a function of warming or mass flow rate at a mean water temperature of 60℃ and a spread of ΔT= 20 K (70℃/50℃)

OD x s **ID** **V/l**		**20 x 2.25 mm** **15.5 mm** **0.19 l/m**		**25 x 2.5 mm** **20 mm** **0.31 l/m**		**32 x 3 mm** **26 mm** **0.53 l/m**	
Q W	m kg/h	v m/s	R Pa/m	v m/s	R Pa/m	v m/s	R Pa/m
1000	43	0.06	6	0.04	2	0.02	1
2000	86	0.13	21	0.08	6	0.05	2
3000	129	0.19	42	0.12	13	0.07	4
4000	172	0.26	68	0.15	21	0.09	6
5000	215	0.32	101	0.19	30	0.11	9
6000	258	0.39	138	0.23	41	0.14	12
7000	301	0.45	181	0.27	54	0.16	16
8000	344	0.52	229	0.31	68	0.18	20
9000	388	0.58	281	0.35	84	0.21	24
10000	431	0.64	338	0.39	101	0.23	29
11000	474	0.71	400	0.43	119	0.25	34
12000	517	0.77	466	0.46	139	0.28	40
13000	560	0.84	537	0.50	160	0.30	46
14000	603	0.90	612	0.54	182	0.32	52
15000	646	0.97	692	0.58	205	0.34	59
16000	689	1.03	775	0.62	230	0.37	66
17000	732			0.66	256	0.39	73
18000	775			0.70	283	0.41	81
19000	818			0.74	311	0.44	89
20000	861			0.77	341	0.46	98
21000	904			0.81	372	0.48	106
22000	947			0.85	404	0.50	115
23000	990			0.89	437	0.53	125
24000	1033			0.93	471	0.55	135
25000	1077			0.97	506	0.57	145
26000	1120			1.01	543	0.60	155
27000	1163			1.05	580	0.62	166
28000	1206			1.08	619	0.64	177
29000	1249			1.12	659	0.66	188
30000	1292			1.16	700	0.69	200
32000	1378			1.24	785	0.73	224
34000	1464			1.32	875	0.78	249
36000	1550			1.39	969	0.83	276
38000	1636			1.47	1067	0.87	304
40000	1722			1.55	1169	0.92	333
42000	1809					0.96	363
44000	1895					1.01	395
46000	1981					1.05	427
48000	2067					1.10	461
50000	2153					1.15	496
52000	2239					1.19	532
54000	2325					1.24	569
56000	2411					1.28	607
58000	2498					1.33	646
60000	2584					1.38	686
62000	2670					1.42	728
64000	2756					1.47	770
66000	2842					1.51	814
68000	2928					1.56	859
70000	3014					1.60	905

Warranty

DO NOT TAKE ANY INSTALLATION RISKS.

UPONOR OFFERS A 10 YEAR WARRANTY WHEN ALL UPONOR PIPE, FITTINGS AND TOOLS ARE USED.

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simply more

For any additional Uponor information please visit www.uponor.de or www.uponor.com
Visit our website www.huntheat.com.au for all product information