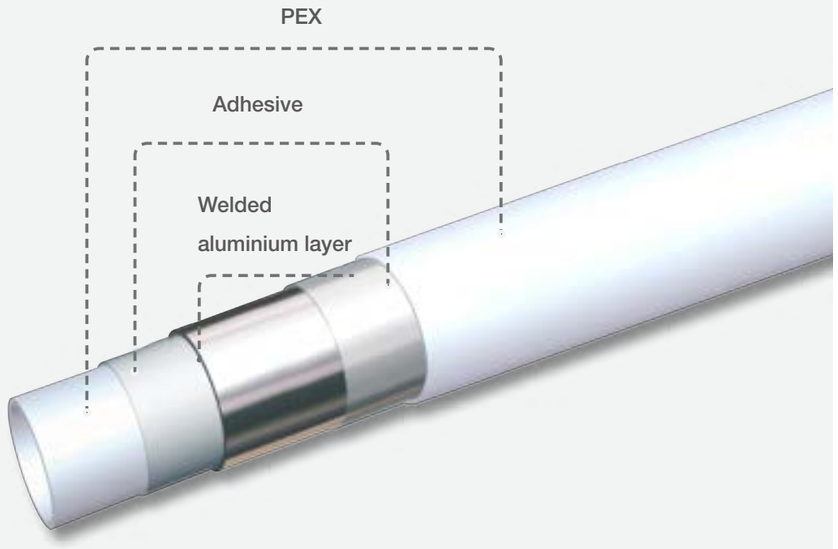
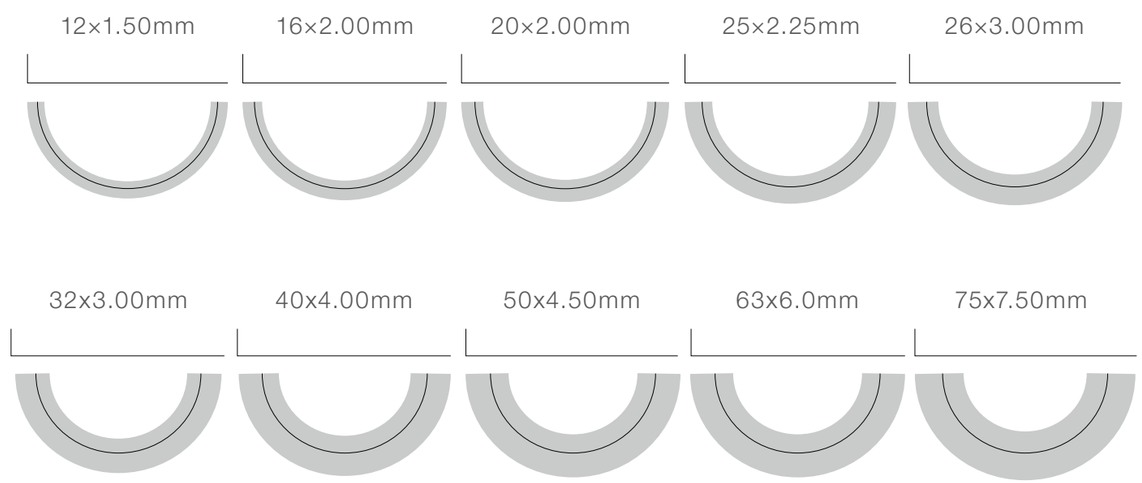


Advantages

- High pressure and temperature resistant. 10 bar / 95°C.
- Very flexible, yet dimensionally stable
- Lightweight and easy to install
- Low thermal linear expansion
- Impermeable to oxygen and light
- Corrosion resistant
- Low pressure loss due to smooth inner layer
- Hygienic

Technical Data

Nominal size(D x e)		12×1.5	14×2.0	16×2.0	18×2.0	20×2.0	25×2.5	26*3.0	32×3.0	40x4.0	50x4.5	63x6.0	75x7.5
Outside diameter (mm)		12	14	16	18	20	25	26	32	40	50	63	75
Tolerance of Outer diameter (mm)	Min	12	14	16	18	20	25.2	26	32	40	50	60.6	70.7
	Max	12.25	14.2	16.2	18.2	20.2	25.2	26.2	32.2	40.4	50.5	63	75
Inside diameter(mm)		9	10	12	14	16	20	20	26	32	41	51	60
Tolerance of Inner diameter (mm)	Min	8.6	9.9	11.9	13.9	15.9	19.9		25.9	30.9	39.4	49.3	57.7
	Max	8.85	10.2	12.2	14.2	16.2	20.2		26.2	31.9	40.8	50.8	59.7
Pipe thickness (mm)		1.7	2	2	2	2	2.5	3	3	4	4.5	6	7.5
Tolerance of pipe thickness (mm)	Min	1.7	2	2	2	2	2.4	2.9	2.9	4	4.5	6	7.5
	Max	2	2.25	2.25	2.25	2.25	2.7	3.2	3.2	4.6	5.2	6.8	8.5
Roughness(mm)	0.0007												
Density(g/cm3)	0.926~0.959												
Modulus of elasticity(MPa)	7200												
Thermal conductivity(w/mK)	0.45												
Coefficient of thermal expansion(mm/mK)	0.025												
Max. working temperature	95												
Max. working pressure	10bar												



Applications

The RIIFO multilayer pipes can be used for different applications. Key applications include plumbing and heating systems for residential, commercial or industrial buildings:

Drinking water:

As a pipe for hot and cold water distribution of every drinking water quality.

Heating:

As a pipe for high temperature heating systems like radiators within the prescribed load values. System separation is required for specific systems like solar and district heating.

Radiant heating and cooling systems:

As a pipe for low temperature heating and cooling systems.

Compressed air:

As a compressed air pipe in systems with preceding oil filter (oil-free).

Rain water:

As a rain water piping system inside buildings and seperately installed from the drinking water installation. The pH-value of the water must be higher than 6.

Other applications:

The pipe can be used for many other applications and with other media. Please contact us for more information.

Classification service conditions

The performance requirements for multilayer piping systems conforming to ISO 21003 are specified for four different application classes.

The selection of the applicable class conforming to the table shall be agreed upon by the parties concerned for any application. Each application class shall be combined with a design pressure, PD, of 4 bar, 6 bar, 8 bar or 10 bar, as applicable (1 bar = 0,1 MPa).

Application class	Design temperature T_D °C	Time[b] at T_D	T_{max}	Time at T_{max}	T_{mal}	Time at T_{mal}	Typical field of application
1a	60	49	80	1	95	100	Hot water supply(60℃)
2a	70	49	80	1	95	100	Hot water supply(70℃)
4b	20 plus cumulative	2,5	70	2,5	100	100	Underfloor heating and low-temperature radiators
	40 plus cumulative	20					
	60	25					
5b	20 plus cumulative	14	90	1	100	100	High-temperature radiators
	60 plus cumulative	20					
	80	10					

A. A country may select either class 1 or class 2 in conformity with its national regulations.

B. Where more than one design temperature for time and associated temperature appears for any class, they should be aggregated. "Plus cumulative" in the table implies a temperature profile of the mentioned temperature over time (e.g. the design temperature profile for 50 years for class 5 is 20 °C for 14 years followed by 60 °C for 25 years, 80 °C for 10 years, 90 °C for 1 year and 100 °C for 100 h). NOTE - For values of T_D, T_{max} and T_{mal} in excess of those in the table, this International Standard does not apply.

Pipe Pressure Loss

Calculation formula

$$r = f * \frac{L}{D} * \rho * \frac{V^2}{2}$$

$$\frac{1}{\sqrt{f}} = -2log\left(\frac{e}{3.7D} + \frac{2.51}{Re\sqrt{f}}\right)$$

$$Re = \frac{\rho * V * D}{\mu}$$

Where:

r= head loss, Pa
f= friction factor
ρ = density of the fluid, kg/m3
V= the mean velocity of the fluid,
m/s D= the pipe inter diameter, m
L=pipe length,m
e=relative roughness
Re=Reynolds number
μ=dynamic viscosity, Pa·s

Pressure loss table of PEX/AL/PEX Pipe water temperature = 70°C

		1014		1216		1418		1620		2025		2632		3240		4150		5163		6075	
Power (kW)	Flow (l/h)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)
1	42	0.15	0.45	0.10	0.23	0.08	0.13	0.06	0.08	0.04	0.03	0.02	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.00
2	84	0.30	1.47	0.21	0.74	0.15	0.42	0.12	0.25	0.07	0.11	0.04	0.04	0.03	0.02	0.02	0.01	0.01	0.00	0.01	0.00
3	126	0.45	2.95	0.31	1.49	0.23	0.84	0.17	0.51	0.11	0.22	0.07	0.08	0.04	0.04	0.03	0.02	0.02	0.01	0.01	0.00
4	168	0.59	4.87	0.41	2.46	0.30	1.38	0.23	0.84	0.15	0.37	0.09	0.14	0.06	0.06	0.04	0.03	0.02	0.01	0.02	0.01
5	210	0.74	7.21	0.52	3.64	0.38	2.04	0.29	1.24	0.19	0.54	0.11	0.20	0.07	0.09	0.04	0.04	0.03	0.02	0.02	0.01
6	252	0.89	9.93	0.62	5.00	0.46	2.81	0.35	1.70	0.22	0.74	0.13	0.28	0.09	0.13	0.05	0.05	0.03	0.02	0.02	0.01
7	294	1.04	13.03	0.72	6.56	0.53	3.68	0.41	2.23	0.26	0.97	0.15	0.36	0.10	0.17	0.06	0.07	0.04	0.03	0.03	0.02
8	336	1.19	16.51	0.83	8.30	0.61	4.65	0.46	2.81	0.30	1.22	0.18	0.46	0.12	0.21	0.07	0.08	0.05	0.04	0.03	0.02
9	378	1.34	20.34	0.93	10.23	0.68	5.72	0.52	3.46	0.33	1.50	0.20	0.56	0.13	0.26	0.08	0.10	0.05	0.05	0.04	0.02
10	420	1.49	24.52	1.03	12.32	0.76	6.89	0.58	4.17	0.37	1.80	0.22	0.67	0.15	0.31	0.09	0.12	0.06	0.05	0.04	0.03
11	462	1.63	29.05	1.14	14.59	0.83	8.16	0.64	4.93	0.41	2.13	0.24	0.80	0.16	0.37	0.10	0.14	0.06	0.06	0.05	0.03
12	504	1.78	33.92	1.24	17.03	0.91	9.52	0.70	5.75	0.45	2.48	0.26	0.93	0.17	0.43	0.11	0.17	0.07	0.07	0.05	0.04
13	546	1.93	39.12	1.34	19.63	0.99	10.97	0.75	6.63	0.48	2.86	0.29	1.07	0.19	0.49	0.11	0.19	0.07	0.09	0.05	0.05
14	588	2.08	44.65	1.45	22.40	1.06	12.51	0.81	7.56	0.52	3.26	0.31	1.21	0.20	0.56	0.12	0.22	0.08	0.10	0.06	0.05
15	630	2.23	50.52	1.55	25.33	1.14	14.14	0.87	8.54	0.56	3.68	0.33	1.37	0.22	0.63	0.13	0.25	0.09	0.11	0.06	0.06
16	672	2.38	56.68	1.65	28.42	1.21	15.86	0.93	9.58	0.59	4.13	0.35	1.54	0.23	0.70	0.14	0.28	0.09	0.12	0.07	0.07
17	714	2.53	63.19	1.75	31.67	1.29	17.67	0.99	10.67	0.63	4.59	0.37	1.71	0.25	0.78	0.15	0.31	0.10	0.14	0.07	0.07
18	756	2.68	70.01	1.86	35.08	1.37	19.56	1.05	11.81	0.67	5.08	0.40	1.89	0.26	0.87	0.16	0.34	0.10	0.15	0.07	0.08
19	798	2.82	77.14	1.96	38.64	1.44	21.55	1.10	13.00	0.71	5.60	0.42	2.08	0.28	0.95	0.17	0.38	0.11	0.17	0.08	0.09
20	841	2.97	84.59	2.06	42.36	1.52	23.61	1.16	14.25	0.74	6.13	0.44	2.28	0.29	1.04	0.18	0.41	0.11	0.18	0.08	0.10
21	883	3.12	92.35	2.17	46.23	1.59	25.77	1.22	15.54	0.78	6.68	0.46	2.48	0.30	1.14	0.19	0.45	0.12	0.20	0.09	0.11
22	925	3.27	100.41	2.27	50.25	1.67	28.00	1.28	16.89	0.82	7.26	0.48	2.70	0.32	1.23	0.19	0.49	0.13	0.21	0.09	0.12
23	967	3.42	108.78	2.37	54.43	1.74	30.32	1.34	18.28	0.85	7.86	0.51	2.92	0.33	1.33	0.20	0.52	0.13	0.23	0.09	0.13
24	1009	3.57	117.45	2.48	58.75	1.82	32.73	1.39	19.73	0.89	8.48	0.53	3.15	0.35	1.44	0.21	0.57	0.14	0.25	0.10	0.14
25	1051	3.72	126.42	2.58	63.22	1.90	35.21	1.45	21.23	0.93	9.12	0.55	3.38	0.36	1.55	0.22	0.61	0.14	0.27	0.10	0.15
26	1093	3.86	135.70	2.68	67.85	1.97	37.78	1.51	22.77	0.97	9.78	0.57	3.63	0.38	1.66	0.23	0.65	0.15	0.29	0.11	0.16
27	1135	4.01	145.27	2.79	72.62	2.05	40.43	1.57	24.36	1.00	10.46	0.59	3.88	0.39	1.77	0.24	0.70	0.15	0.31	0.11	0.17
28	1177	4.16	155.14	2.89	77.53	2.12	43.16	1.63	26.00	1.04	11.16	0.62	4.14	0.41	1.89	0.25	0.74	0.16	0.33	0.12	0.18
29	1219	4.31	165.30	2.99	82.59	2.20	45.97	1.68	27.69	1.08	11.88	0.64	4.40	0.42	2.01	0.26	0.79	0.17	0.35	0.12	0.19
30	1261	4.46	175.75	3.10	87.80	2.28	48.86	1.74	29.43	1.11	12.63	0.66	4.68	0.44	2.13	0.27	0.84	0.17	0.37	0.12	0.20
31	1303	4.61	186.50	3.20	93.15	2.35	51.83	1.80	31.21	1.15	13.39	0.68	4.96	0.45	2.26	0.27	0.89	0.18	0.39	0.13	0.21
32	1345	4.76	197.54	3.30	98.65	2.43	54.88	1.86	33.05	1.19	14.17	0.70	5.25	0.46	2.39	0.28	0.94	0.18	0.41	0.13	0.22
33	1387	4.90	208.87	3.41	104.28	2.50	58.00	1.92	34.93	1.23	14.97	0.73	5.54	0.48	2.53	0.29	0.99	0.19	0.44	0.14	0.24
34	1429			3.51	110.06	2.58	61.21	1.97	36.85	1.26	15.80	0.75	5.85	0.49	2.67	0.30	1.05	0.19	0.46	0.14	0.25
35	1471			3.61	115.99	2.65	64.50	2.03	38.82	1.30	16.64	0.77	6.16	0.51	2.81	0.31	1.10	0.20	0.48	0.14	0.26
36	1513			3.72	122.05	2.73	67.86	2.09	40.84	1.34	17.50	0.79	6.48	0.52	2.95	0.32	1.16	0.21	0.51	0.15	0.28
37	1555			3.82	128.26	2.81	71.30	2.15	42.91	1.37	18.38	0.81	6.80	0.54	3.10	0.33	1.22	0.21	0.53	0.15	0.29
38	1597			3.92	134.60	2.88	74.82	2.21	45.02	1.41	19.29	0.84	7.13	0.55	3.25	0.34	1.27	0.22	0.56	0.16	0.30
39	1639			4.03	141.09	2.96	78.41	2.26	47.18	1.45	20.21	0.86	7.47	0.57	3.40	0.34	1.33	0.22	0.59	0.16	0.32
40	1681			4.13	147.72	3.03	82.08	2.32	49.39	1.49	21.15	0.88	7.82	0.58	3.56	0.35	1.40	0.23	0.61	0.17	0.33
41	1723			4.23	154.48	3.11	85.83	2.38	51.64	1.52	22.11	0.90	8.17	0.60	3.72	0.36	1.46	0.23	0.64	0.17	0.35

Mediun: Water 1 mbar/m = 100 Pa/m Heating max. : 1 m/s Plumbing max. : 3 m/s.

Pressure loss table of PEX/AL/PEX Pipe water temperature = 70°C

		1014		1216		1418		1620		2025		2632		3240		4150		5163		6075	
Power (kW)	Flow (l/h)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)
42	1765			4.34	161.39	3.19	89.66	2.44	53.93	1.56	23.09	0.92	8.53	0.61	3.89	0.37	1.52	0.24	0.67	0.17	0.36
43	1807			4.44	168.43	3.26	93.56	2.50	56.27	1.60	24.08	0.95	8.90	0.62	4.05	0.38	1.59	0.25	0.70	0.18	0.38
44	1849			4.54	175.61	3.34	97.54	2.55	58.66	1.63	25.10	0.97	9.27	0.64	4.22	0.39	1.65	0.25	0.73	0.18	0.39
45	1891			4.64	182.87	3.41	101.59	2.61	61.09	1.67	26.14	0.99	9.65	0.65	4.39	0.40	1.72	0.26	0.75	0.19	0.41
46	1933			4.75	190.33	3.49	105.71	2.67	63.57	1.71	27.19	1.01	10.04	0.67	4.57	0.41	1.79	0.26	0.78	0.19	0.43
47	1975			4.85	197.91	3.56	109.92	2.73	66.09	1.75	28.27	1.03	10.44	0.68	4.75	0.42	1.86	0.27	0.82	0.19	0.44
48	2017			4.95	205.64	3.64	114.20	2.79	68.65	1.78	29.36	1.06	10.84	0.70	4.93	0.42	1.93	0.27	0.85	0.20	0.46
49	2059					3.72	118.57	2.84	71.26	1.82	30.47	1.08	11.25	0.71	5.12	0.43	2.00	0.28	0.88	0.20	0.48
50	2101					3.79	123.00	2.90	73.92	1.86	31.60	1.10	11.66	0.73	5.31	0.44	2.08	0.29	0.91	0.21	0.49
51	2143					3.87	127.50	2.96	76.62	1.90	32.75	1.12	12.09	0.74	5.50	0.45	2.15	0.29	0.94	0.21	0.51
52	2185					3.94	132.04	3.02	79.36	1.93	33.92	1.14	12.52	0.75	5.69	0.46	2.23	0.30	0.98	0.21	0.53
53	2227					4.02	136.69	3.08	82.15	1.97	35.11	1.17	12.95	0.77	5.89	0.47	2.30	0.30	1.01	0.22	0.55
54	2269					4.10	141.41	3.14	84.98	2.01	36.31	1.19	13.39	0.78	6.09	0.48	2.38	0.31	1.04	0.22	0.56
55	2311					4.17	146.21	3.19	87.85	2.04	37.54	1.21	13.84	0.80	6.29	0.49	2.46	0.31	1.08	0.23	0.58
56	2353					4.25	151.08	3.25	90.77	2.08	38.78	1.23	14.30	0.81	6.50	0.50	2.54	0.32	1.11	0.23	0.60
57	2395					4.32	156.03	3.31	93.74	2.12	40.04	1.25	14.76	0.83	6.71	0.50	2.62	0.33	1.15	0.24	0.62
58	2437					4.40	161.05	3.37	96.74	2.16	41.32	1.28	15.23	0.84	6.92	0.51	2.71	0.33	1.18	0.24	0.64
59	2480					4.47	166.14	3.43	99.79	2.19	42.62	1.30	15.71	0.86	7.14	0.52	2.79	0.34	1.22	0.24	0.66
60	2522					4.55	171.30	3.48	102.89	2.23	43.93	1.32	16.19	0.87	7.36	0.53	2.88	0.34	1.26	0.25	0.68
61	2564					4.63	176.54	3.54	106.03	2.27	45.27	1.34	16.68	0.89	7.58	0.54	2.96	0.35	1.30	0.25	0.70
62	2606					4.70	181.85	3.60	109.21	2.30	46.62	1.36	17.18	0.90	7.80	0.55	3.05	0.35	1.33	0.26	0.72
63	2648					4.78	187.23	3.66	112.43	2.34	47.99	1.39	17.68	0.91	8.03	0.56	3.14	0.36	1.37	0.26	0.74
64	2690					4.85	192.68	3.72	115.70	2.38	49.38	1.41	18.19	0.93	8.26	0.57	3.23	0.37	1.41	0.26	0.76
65	2732					4.93	198.21	3.77	119.01	2.42	50.78	1.43	18.70	0.94	8.49	0.57	3.32	0.37	1.45	0.27	0.79
66	2774							3.83	122.33	2.45	52.21	1.45	19.23	0.96	8.73	0.58	3.41	0.38	1.49	0.27	0.81
67	2816							3.89	125.73	2.49	53.65	1.47	19.75	0.97	8.97	0.59	3.50	0.38	1.53	0.28	0.83
68	2858							3.95	129.17	2.53	55.11	1.50	20.29	0.99	9.21	0.60	3.60	0.39	1.57	0.28	0.85
69	2900							4.01	132.65	2.56	56.59	1.52	20.83	1.00	9.46	0.61	3.69	0.39	1.61	0.28	0.87
70	2942							4.06	136.17	2.60	58.09	1.54	21.38	1.02	9.71	0.62	3.79	0.40	1.66	0.29	0.90
71	2984							4.12	139.74	2.64	59.60	1.56	21.93	1.03	9.96	0.63	3.89	0.41	1.70	0.29	0.92
72	3026							4.18	143.35	2.68	61.14	1.58	22.50	1.05	10.21	0.64	3.99	0.41	1.74	0.30	0.94
73	3068							4.24	147.00	2.71	62.69	1.61	23.06	1.06	10.47	0.65	4.08	0.42	1.79	0.30	0.97
74	3110							4.30	150.69	2.75	64.26	1.63	23.64	1.07	10.73	0.65	4.19	0.42	1.83	0.31	0.99
75	3152							4.35	154.43	2.79	65.84	1.65	24.22	1.09	10.99	0.66	4.29	0.43	1.87	0.31	1.01
76	3194							4.41	158.21	2.82	67.45	1.67	24.81	1.10	11.26	0.67	4.39	0.43	1.92	0.31	1.04
77	3236							4.47	162.03	2.86	69.07	1.69	25.40	1.12	11.52	0.68	4.50	0.44	1.96	0.32	1.06
78	3278							4.53	165.89	2.90	70.71	1.72	26.00	1.13	11.79	0.69	4.60	0.45	2.01	0.32	1.09
79	3320							4.59	169.79	2.94	72.36	1.74	26.61	1.15	12.07	0.70	4.71	0.45	2.06	0.33	1.11
80	3362							4.64	173.74	2.97	74.04	1.76	27.22	1.16	12.35	0.71	4.81	0.46	2.10	0.33	1.14
81	3404							4.70	177.73	3.01	75.73	1.78	27.84	1.18	12.63	0.72	4.92	0.46	2.15	0.33	1.16
82	3446							4.76	181.76	3.05	77.44	1.80	28.46	1.19	12.91	0.73	5.03	0.47	2.20	0.34	1.19

Mediun: Water 1 mbar/m = 100 Pa/m Heating max. : 1 m/s Plumbing max. : 3 m/s.

Pressure loss table of PEX/AL/PEX Pipe water temperature = 70°C

		1014		1216		1418		1620		2025		2632		3240		4150		5163		6075	
Power (kW)	Flow (l/h)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)
83	3488							4.82	185.83	3.08	79.17	1.82	29.10	1.20	13.19	0.73	5.14	0.47	2.25	0.34	1.21
84	3530							4.88	189.94	3.12	80.91	1.85	29.73	1.22	13.48	0.74	5.26	0.48	2.30	0.35	1.24
85	3572							4.94	194.10	3.16	82.67	1.87	30.38	1.23	13.77	0.75	5.37	0.49	2.34	0.35	1.27
86	3614							4.99	198.30	3.20	84.45	1.89	31.03	1.25	14.07	0.76	5.48	0.49	2.39	0.36	1.29
87	3656									3.23	86.25	1.91	31.69	1.26	14.36	0.77	5.60	0.50	2.44	0.36	1.32
88	3698									3.27	88.06	1.93	32.35	1.28	14.66	0.78	5.71	0.50	2.50	0.36	1.35
89	3740									3.31	89.89	1.96	33.02	1.29	14.97	0.79	5.83	0.51	2.55	0.37	1.38
90	3782									3.34	91.74	1.98	33.70	1.31	15.27	0.80	5.95	0.51	2.60	0.37	1.40
91	3824									3.38	93.61	2.00	34.38	1.32	15.58	0.80	6.07	0.52	2.65	0.38	1.43
92	3866									3.42	95.49	2.02	35.07	1.34	15.89	0.81	6.19	0.53	2.70	0.38	1.46
93	3908									3.46	97.40	2.04	35.76	1.35	16.20	0.82	6.31	0.53	2.76	0.38	1.49
94	3950									3.49	99.32	2.07	36.46	1.36	16.52	0.83	6.43	0.54	2.81	0.39	1.52
95	3992									3.53	101.25	2.09	37.17	1.38	16.84	0.84	6.56	0.54	2.86	0.39	1.55
96	4034									3.57	103.21	2.11	37.88	1.39	17.16	0.85	6.68	0.55	2.92	0.40	1.58
97	4076									3.60	105.18	2.13	38.60	1.41	17.49	0.86	6.81	0.55	2.97	0.40	1.60
98	4119									3.64	107.16	2.15	39.33	1.42	17.81	0.87	6.94	0.56	3.03	0.40	1.63
99	4161									3.68	109.17	2.18	40.06	1.44	18.15	0.88	7.06	0.57	3.08	0.41	1.66
100	4203									3.72	111.19	2.20	40.80	1.45	18.48	0.88	7.19	0.57	3.14	0.41	1.69
101	4245									3.75	113.23	2.22	41.54	1.47	18.81	0.89	7.32	0.58	3.20	0.42	1.72
102	4287									3.79	115.29	2.24	42.30	1.48	19.15	0.90	7.46	0.58	3.25	0.42	1.76
103	4329									3.83	117.36	2.26	43.05	1.50	19.49	0.91	7.59	0.59	3.31	0.43	1.79
104	4371									3.86	119.46	2.29	43.82	1.51	19.84	0.92	7.72	0.59	3.37	0.43	1.82
105	4413									3.90	121.56	2.31	44.59	1.52	20.19	0.93	7.86	0.60	3.43	0.43	1.85
106	4455									3.94	123.69	2.33	45.36	1.54	20.54	0.94	7.99	0.61	3.49	0.44	1.88
107	4497									3.98	125.83	2.35	46.14	1.55	20.89	0.95	8.13	0.61	3.54	0.44	1.91
108	4539									4.01	127.99	2.37	46.93	1.57	21.24	0.95	8.27	0.62	3.60	0.45	1.95
109	4581									4.05	130.17	2.40	47.72	1.58	21.60	0.96	8.40	0.62	3.66	0.45	1.98
110	4623									4.09	132.36	2.42	48.52	1.60	21.96	0.97	8.54	0.63	3.73	0.45	2.01
111	4665									4.12	134.57	2.44	49.32	1.61	22.33	0.98	8.68	0.63	3.79	0.46	2.04
112	4707									4.16	136.80	2.46	50.13	1.63	22.69	0.99	8.82	0.64	3.85	0.46	2.08
113	4749									4.20	139.05	2.48	50.95	1.64	23.06	1.00	8.97	0.65	3.91	0.47	2.11
114	4791									4.24	141.31	2.51	51.77	1.65	23.43	1.01	9.11	0.65	3.97	0.47	2.14
115	4833									4.27	143.59	2.53	52.60	1.67	23.81	1.02	9.26	0.66	4.04	0.47	2.18
116	4875									4.31	145.88	2.55	53.44	1.68	24.18	1.03	9.40	0.66	4.10	0.48	2.21
117	4917									4.35	148.19	2.57	54.28	1.70	24.56	1.03	9.55	0.67	4.16	0.48	2.25
118	4959									4.38	150.52	2.59	55.13	1.71	24.95	1.04	9.70	0.67	4.23	0.49	2.28
119	5001									4.42	152.87	2.62	55.99	1.73	25.33	1.05	9.85	0.68	4.29	0.49	2.31
120	5043									4.46	155.23	2.64	56.85	1.74	25.72	1.06	10.00	0.69	4.36	0.50	2.35
121	5085									4.50	157.61	2.66	57.71	1.76	26.11	1.07	10.15	0.69	4.42	0.50	2.38
122	5127									4.53	160.01	2.68	58.59	1.77	26.50	1.08	10.30	0.70	4.49	0.50	2.42
123	5169									4.57	162.42	2.70	59.47	1.79	26.90	1.09	10.45	0.70	4.56	0.51	2.46

Mediun: Water 1 mbar/m = 100 Pa/m Heating max. : 1 m/s Plumbing max. : 3 m/s.

Pressure loss table of PEX/AL/PEX Pipe water temperature = 70°C

		1014		1216		1418		1620		2025		2632		3240		4150		5163		6075	
Power (kW)	Flow (l/h)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)
124	5211									4.61	164.86	2.73	60.35	1.80	27.30	1.10	10.61	0.71	4.62	0.51	2.49
125	5253									4.64	167.30	2.75	61.24	1.81	27.70	1.11	10.76	0.71	4.69	0.52	2.53
126	5295									4.68	169.77	2.77	62.14	1.83	28.11	1.11	10.92	0.72	4.76	0.52	2.56
127	5337									4.72	172.25	2.79	63.04	1.84	28.51	1.12	11.08	0.73	4.83	0.52	2.60
128	5379									4.76	174.75	2.81	63.95	1.86	28.92	1.13	11.23	0.73	4.89	0.53	2.64
129	5421									4.79	177.26	2.84	64.87	1.87	29.33	1.14	11.39	0.74	4.96	0.53	2.68
130	5463									4.83	179.79	2.86	65.79	1.89	29.75	1.15	11.55	0.74	5.03	0.54	2.71
131	5505									4.87	182.34	2.88	66.72	1.90	30.17	1.16	11.72	0.75	5.10	0.54	2.75
132	5547									4.90	184.90	2.90	67.65	1.92	30.59	1.17	11.88	0.75	5.17	0.54	2.79
133	5589									4.94	187.49	2.92	68.59	1.93	31.01	1.18	12.04	0.76	5.25	0.55	2.83
134	5631									4.98	190.08	2.95	69.54	1.95	31.44	1.18	12.21	0.77	5.32	0.55	2.87
135	5673											2.97	70.49	1.96	31.87	1.19	12.37	0.77	5.39	0.56	2.90
136	5715											2.99	71.45	1.97	32.30	1.20	12.54	0.78	5.46	0.56	2.94
137	5758											3.01	72.41	1.99	32.73	1.21	12.71	0.78	5.53	0.57	2.98
138	5800											3.03	73.38	2.00	33.17	1.22	12.88	0.79	5.61	0.57	3.02
139	5842											3.06	74.36	2.02	33.61	1.23	13.05	0.79	5.68	0.57	3.06
140	5884											3.08	75.34	2.03	34.05	1.24	13.22	0.80	5.75	0.58	3.10
141	5926											3.10	76.33	2.05	34.49	1.25	13.39	0.81	5.83	0.58	3.14
142	5968											3.12	77.32	2.06	34.94	1.26	13.56	0.81	5.90	0.59	3.18
143	6010											3.14	78.32	2.08	35.39	1.26	13.73	0.82	5.98	0.59	3.22
144	6052											3.17	79.33	2.09	35.84	1.27	13.91	0.82	6.05	0.59	3.26
145	6094											3.19	80.34	2.10	36.30	1.28	14.08	0.83	6.13	0.60	3.30
146	6136											3.21	81.36	2.12	36.75	1.29	14.26	0.83	6.21	0.60	3.34
147	6178											3.23	82.38	2.13	37.21	1.30	14.44	0.84	6.28	0.61	3.39
148	6220											3.25	83.41	2.15	37.68	1.31	14.62	0.85	6.36	0.61	3.43
149	6262											3.28	84.44	2.16	38.14	1.32	14.80	0.85	6.44	0.62	3.47
150	6304											3.30	85.48	2.18	38.61	1.33	14.98	0.86	6.52	0.62	3.51
151	6346											3.32	86.53	2.19	39.08	1.34	15.16	0.86	6.60	0.62	3.55
152	6388											3.34	87.58	2.21	39.56	1.34	15.34	0.87	6.68	0.63	3.60
153	6430											3.36	88.64	2.22	40.03	1.35	15.53	0.87	6.76	0.63	3.64
154	6472											3.39	89.71	2.24	40.51	1.36	15.71	0.88	6.84	0.64	3.68
155	6514											3.41	90.78	2.25	40.99	1.37	15.90	0.89	6.92	0.64	3.73
156	6556											3.43	91.85	2.26	41.48	1.38	16.08	0.89	7.00	0.64	3.77
157	6598											3.45	92.94	2.28	41.96	1.39	16.27	0.90	7.08	0.65	3.81
158	6640											3.47	94.03	2.29	42.45	1.40	16.46	0.90	7.16	0.65	3.86
159	6682											3.50	95.12	2.31	42.94	1.41	16.65	0.91	7.24	0.66	3.90
160	6724											3.52	96.22	2.32	43.44	1.41	16.84	0.91	7.33	0.66	3.94
161	6766											3.54	97.33	2.34	43.94	1.42	17.03	0.92	7.41	0.66	3.99
162	6808											3.56	98.44	2.35	44.44	1.43	17.23	0.93	7.49	0.67	4.03
163	6850											3.58	99.56	2.37	44.94	1.44	17.42	0.93	7.58	0.67	4.08
164	6892											3.61	100.68	2.38	45.44	1.45	17.62	0.94	7.66	0.68	4.12

Mediun: Water 1 mbar/m = 100 Pa/m Heating max. : 1 m/s Plumbing max. : 3 m/s.

Pressure loss table of PEX/AL/PEX Pipe water temperature = 70°C

		1014		1216		1418		1620		2025		2632		3240		4150		5163		6075	
Power (kW)	Flow (l/h)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)
165	6934											3.63	101.81	2.40	45.95	1.46	17.81	0.94	7.75	0.68	4.17
166	6976											3.65	102.94	2.41	46.46	1.47	18.01	0.95	7.83	0.69	4.22
167	7018											3.67	104.09	2.42	46.97	1.48	18.21	0.95	7.92	0.69	4.26
168	7060											3.69	105.23	2.44	47.49	1.49	18.41	0.96	8.00	0.69	4.31
169	7102											3.72	106.39	2.45	48.01	1.49	18.61	0.97	8.09	0.70	4.35
170	7144											3.74	107.54	2.47	48.53	1.50	18.81	0.97	8.18	0.70	4.40
171	7186											3.76	108.71	2.48	49.05	1.51	19.01	0.98	8.26	0.71	4.45
172	7228											3.78	109.88	2.50	49.58	1.52	19.21	0.98	8.35	0.71	4.50
173	7270											3.80	111.06	2.51	50.11	1.53	19.41	0.99	8.44	0.71	4.54
174	7312											3.83	112.24	2.53	50.64	1.54	19.62	0.99	8.53	0.72	4.59
175	7354											3.85	113.43	2.54	51.17	1.55	19.83	1.00	8.62	0.72	4.64
176	7397											3.87	114.62	2.55	51.71	1.56	20.03	1.01	8.71	0.73	4.69
177	7439											3.89	115.82	2.57	52.25	1.57	20.24	1.01	8.80	0.73	4.73
178	7481											3.91	117.03	2.58	52.79	1.57	20.45	1.02	8.89	0.73	4.78
179	7523											3.94	118.24	2.60	53.33	1.58	20.66	1.02	8.98	0.74	4.83
180	7565											3.96	119.46	2.61	53.88	1.59	20.87	1.03	9.07	0.74	4.88
181	7607											3.98	120.68	2.63	54.43	1.60	21.08	1.03	9.16	0.75	4.93
182	7649											4.00	121.91	2.64	54.98	1.61	21.29	1.04	9.25	0.75	4.98
183	7691											4.02	123.14	2.66	55.54	1.62	21.51	1.05	9.35	0.76	5.03
184	7733											4.05	124.38	2.67	56.09	1.63	21.72	1.05	9.44	0.76	5.08
185	7775											4.07	125.63	2.69	56.65	1.64	21.94	1.06	9.53	0.76	5.13
186	7817											4.09	126.88	2.70	57.21	1.64	22.15	1.06	9.63	0.77	5.18
187	7859											4.11	128.14	2.71	57.78	1.65	22.37	1.07	9.72	0.77	5.23
188	7901											4.13	129.40	2.73	58.35	1.66	22.59	1.07	9.82	0.78	5.28
189	7943											4.16	130.67	2.74	58.92	1.67	22.81	1.08	9.91	0.78	5.33
190	7985											4.18	131.95	2.76	59.49	1.68	23.03	1.09	10.01	0.78	5.38
191	8027											4.20	133.23	2.77	60.06	1.69	23.25	1.09	10.10	0.79	5.43
192	8069											4.22	134.52	2.79	60.64	1.70	23.48	1.10	10.20	0.79	5.49
193	8111											4.24	135.81	2.80	61.22	1.71	23.70	1.10	10.29	0.80	5.54
194	8153											4.27	137.11	2.82	61.81	1.72	23.92	1.11	10.39	0.80	5.59
195	8195											4.29	138.41	2.83	62.39	1.72	24.15	1.11	10.49	0.81	5.64
196	8237											4.31	139.72	2.84	62.98	1.73	24.38	1.12	10.59	0.81	5.69
197	8279											4.33	141.04	2.86	63.57	1.74	24.60	1.13	10.69	0.81	5.75
198	8321											4.35	142.36	2.87	64.16	1.75	24.83	1.13	10.78	0.82	5.80
199	8363											4.38	143.69	2.89	64.76	1.76	25.06	1.14	10.88	0.82	5.85
200	8405											4.40	145.02	2.90	65.36	1.77	25.29	1.14	10.98	0.83	5.91
201	8447											4.42	146.36	2.92	65.96	1.78	25.52	1.15	11.08	0.83	5.96
202	8489											4.44	147.70	2.93	66.56	1.79	25.76	1.15	11.18	0.83	6.01
203	8531											4.46	149.06	2.95	67.17	1.79	25.99	1.16	11.28	0.84	6.07
204	8573											4.49	150.41	2.96	67.78	1.80	26.22	1.17	11.39	0.84	6.12
205	8615											4.51	151.77	2.98	68.39	1.81	26.46	1.17	11.49	0.85	6.18

Mediun: Water 1 mbar/m = 100 Pa/m Heating max. : 1 m/s Plumbing max. : 3 m/s.

Pressure loss table of PEX/AL/PEX Pipe water temperature = 70°C

		1014		1216		1418		1620		2025		2632		3240		4150		5163		6075	
Power (kW)	Flow (l/h)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)
206	8657											4.53	153.14	2.99	69.00	1.82	26.69	1.18	11.59	0.85	6.23
207	8699											4.55	154.52	3.00	69.62	1.83	26.93	1.18	11.69	0.85	6.29
208	8741											4.57	155.89	3.02	70.23	1.84	27.17	1.19	11.80	0.86	6.34
209	8783											4.60	157.28	3.03	70.86	1.85	27.41	1.19	11.90	0.86	6.40
210	8825											4.62	158.67	3.05	71.48	1.86	27.65	1.20	12.00	0.87	6.45
211	8867											4.64	160.07	3.06	72.11	1.87	27.89	1.21	12.11	0.87	6.51
212	8909											4.66	161.47	3.08	72.74	1.87	28.13	1.21	12.21	0.88	6.57
213	8951											4.68	162.88	3.09	73.37	1.88	28.38	1.22	12.32	0.88	6.62
214	8993											4.71	164.29	3.11	74.00	1.89	28.62	1.22	12.42	0.88	6.68
215	9036											4.73	165.71	3.12	74.64	1.90	28.86	1.23	12.53	0.89	6.74
216	9078											4.75	167.14	3.14	75.28	1.91	29.11	1.23	12.63	0.89	6.79
217	9120											4.77	168.57	3.15	75.92	1.92	29.36	1.24	12.74	0.90	6.85
218	9162											4.79	170.00	3.16	76.56	1.93	29.60	1.25	12.85	0.90	6.91
219	9204											4.82	171.45	3.18	77.21	1.94	29.85	1.25	12.96	0.90	6.96
220	9246											4.84	172.90	3.19	77.86	1.95	30.10	1.26	13.06	0.91	7.02
221	9288											4.86	174.35	3.21	78.51	1.95	30.35	1.26	13.17	0.91	7.08
222	9330											4.88	175.81	3.22	79.16	1.96	30.61	1.27	13.28	0.92	7.14
223	9372											4.90	177.27	3.24	79.82	1.97	30.86	1.27	13.39	0.92	7.20
224	9414											4.93	178.75	3.25	80.48	1.98	31.11	1.28	13.50	0.92	7.26
225	9456											4.95	180.22	3.27	81.14	1.99	31.37	1.29	13.61	0.93	7.32
226	9498											4.97	181.70	3.28	81.81	2.00	31.62	1.29	13.72	0.93	7.37
227	9540											4.99	183.19	3.29	82.47	2.01	31.88	1.30	13.83	0.94	7.43
228	9582													3.31	83.14	2.02	32.14	1.30	13.94	0.94	7.49
229	9624													3.32	83.81	2.02	32.40	1.31	14.05	0.95	7.55
230	9666													3.34	84.49	2.03	32.65	1.31	14.17	0.95	7.61
231	9708													3.35	85.17	2.04	32.92	1.32	14.28	0.95	7.67
232	9750													3.37	85.84	2.05	33.18	1.33	14.39	0.96	7.73
233	9792													3.38	86.53	2.06	33.44	1.33	14.50	0.96	7.79
234	9834													3.40	87.21	2.07	33.70	1.34	14.62	0.97	7.86
235	9876													3.41	87.90	2.08	33.97	1.34	14.73	0.97	7.92
236	9918													3.43	88.59	2.09	34.23	1.35	14.85	0.97	7.98
237	9960													3.44	89.28	2.10	34.50	1.35	14.96	0.98	8.04
238	10002													3.45	89.98	2.10	34.76	1.36	15.08	0.98	8.10
239	10044													3.47	90.67	2.11	35.03	1.37	15.19	0.99	8.16
240	10086													3.48	91.37	2.12	35.30	1.37	15.31	0.99	8.23

Mediun: Water 1 mbar/m = 100 Pa/m Heating max. : 1 m/s Plumbing max. : 3 m/s.

Pressure loss table of PEX/AL/PEX Pipe water temperature = 35°C

		1014		1216		1418		1620		2025		2632		3240		4150		5163		6075	
Power (kW)	Flow (l/h)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)
1	171	0.60	5.91	0.42	3.00	0.31	1.69	0.24	1.03	0.15	0.45	0.09	0.17	0.06	0.08	0.04	0.03	0.02	0.01	0.02	0.01
2	342	1.21	19.79	0.84	9.98	0.62	5.61	0.47	3.40	0.30	1.48	0.18	0.56	0.12	0.26	0.07	0.10	0.05	0.05	0.03	0.03
3	513	1.81	40.39	1.26	20.34	0.93	11.39	0.71	6.90	0.45	2.99	0.27	1.12	0.18	0.52	0.11	0.21	0.07	0.09	0.05	0.05
4	684	2.42	67.20	1.68	33.79	1.23	18.90	0.94	11.44	0.60	4.95	0.36	1.85	0.24	0.85	0.14	0.34	0.09	0.15	0.07	0.08
5	855	3.02	99.92	2.10	50.17	1.54	28.05	1.18	16.95	0.76	7.32	0.45	2.73	0.30	1.25	0.18	0.50	0.12	0.22	0.08	0.12
6	1026	3.63	138.31	2.52	69.39	1.85	38.75	1.42	23.41	0.91	10.10	0.54	3.76	0.35	1.73	0.22	0.68	0.14	0.30	0.10	0.16
7	1197	4.23	182.21	2.94	91.34	2.16	50.98	1.65	30.78	1.06	13.26	0.63	4.94	0.41	2.26	0.25	0.89	0.16	0.39	0.12	0.21
8	1368	4.84	231.49	3.36	115.96	2.47	64.68	1.89	39.03	1.21	16.80	0.72	6.25	0.47	2.86	0.29	1.13	0.19	0.50	0.13	0.27
9	1538			3.78	143.19	2.78	79.83	2.13	48.15	1.36	20.71	0.80	7.69	0.53	3.52	0.32	1.39	0.21	0.61	0.15	0.33
10	1709			4.20	172.98	3.08	96.39	2.36	58.12	1.51	24.98	0.89	9.27	0.59	4.24	0.36	1.67	0.23	0.73	0.17	0.40
11	1880			4.62	205.30	3.39	114.35	2.60	68.92	1.66	29.60	0.98	10.98	0.65	5.02	0.40	1.97	0.26	0.87	0.18	0.47
12	2051					3.70	133.69	2.83	80.54	1.81	34.58	1.07	12.82	0.71	5.85	0.43	2.30	0.28	1.01	0.20	0.55
13	2222					4.01	154.38	3.07	92.98	1.96	39.90	1.16	14.78	0.77	6.75	0.47	2.65	0.30	1.16	0.22	0.63
14	2393					4.32	176.41	3.31	106.22	2.12	45.55	1.25	16.87	0.83	7.69	0.50	3.02	0.33	1.33	0.24	0.72
15	2564					4.63	199.77	3.54	120.25	2.27	51.55	1.34	19.08	0.89	8.70	0.54	3.41	0.35	1.50	0.25	0.81
16	2735					4.94	224.44	3.78	135.06	2.42	57.87	1.43	21.41	0.94	9.76	0.58	3.83	0.37	1.68	0.27	0.91
17	2906							4.01	150.66	2.57	64.53	1.52	23.86	1.00	10.87	0.61	4.26	0.40	1.87	0.29	1.01
18	3077							4.25	167.02	2.72	71.51	1.61	26.43	1.06	12.04	0.65	4.72	0.42	2.07	0.30	1.12
19	3248							4.49	184.15	2.87	78.82	1.70	29.11	1.12	13.26	0.68	5.19	0.44	2.28	0.32	1.23
20	3419							4.72	202.04	3.02	86.44	1.79	31.92	1.18	14.53	0.72	5.69	0.46	2.49	0.34	1.35
21	3590							4.96	220.69	3.17	94.39	1.88	34.84	1.24	15.85	0.76	6.20	0.49	2.72	0.35	1.47
22	3761									3.33	102.65	1.97	37.87	1.30	17.23	0.79	6.74	0.51	2.95	0.37	1.60
23	3932									3.48	111.22	2.06	41.02	1.36	18.66	0.83	7.30	0.53	3.20	0.39	1.73
24	4103									3.63	120.11	2.15	44.28	1.42	20.14	0.86	7.87	0.56	3.45	0.40	1.87
25	4274									3.78	129.31	2.24	47.66	1.48	21.66	0.90	8.47	0.58	3.71	0.42	2.01
26	4445									3.93	138.81	2.33	51.15	1.54	23.24	0.94	9.08	0.60	3.98	0.44	2.15
27	4615									4.08	148.63	2.41	54.75	1.59	24.87	0.97	9.72	0.63	4.25	0.45	2.30
28	4786									4.23	158.75	2.50	58.46	1.65	26.55	1.01	10.37	0.65	4.54	0.47	2.45
29	4957									4.38	169.17	2.59	62.28	1.71	28.28	1.04	11.04	0.67	4.83	0.49	2.61
30	5128									4.53	179.90	2.68	66.21	1.77	30.06	1.08	11.73	0.70	5.13	0.50	2.78
31	5299									4.69	190.93	2.77	70.25	1.83	31.89	1.11	12.45	0.72	5.44	0.52	2.94
32	5470									4.84	202.26	2.86	74.40	1.89	33.77	1.15	13.17	0.74	5.76	0.54	3.11
33	5641									4.99	213.89	2.95	78.66	1.95	35.69	1.19	13.92	0.77	6.09	0.55	3.29
34	5812											3.04	83.02	2.01	37.66	1.22	14.69	0.79	6.42	0.57	3.47
35	5983											3.13	87.49	2.07	39.69	1.26	15.47	0.81	6.76	0.59	3.65
36	6154											3.22	92.07	2.13	41.76	1.29	16.28	0.84	7.11	0.60	3.84
37	6325											3.31	96.76	2.18	43.87	1.33	17.10	0.86	7.47	0.62	4.03
38	6496											3.40	101.55	2.24	46.04	1.37	17.94	0.88	7.83	0.64	4.23
39	6667											3.49	106.45	2.30	48.25	1.40	18.80	0.91	8.21	0.65	4.43
40	6838											3.58	111.46	2.36	50.51	1.44	19.67	0.93	8.59	0.67	4.64
41	7009											3.67	116.57	2.42	52.82	1.47	20.57	0.95	8.98	0.69	4.85
42	7180											3.76	121.78	2.48	55.17	1.51	21.48	0.98	9.38	0.71	5.06
43	7351											3.85	127.10	2.54	57.57	1.55	22.41	1.00	9.78	0.72	5.28
44	7522											3.94	132.52	2.60	60.02	1.58	23.36	1.02	10.19	0.74	5.50
45	7692											4.02	138.05	2.66	62.51	1.62	24.33	1.05	10.61	0.76	5.73

Mediun: Water 1 mbar/m = 100 Pa/m Heating max. : 1 m/s Plumbing max. : 3 m/s.

Pressure loss table of PEX/AL/PEX Pipe water temperature = 35°C

		1014		1216		1418		1620		2025		2632		3240		4150		5163		6075	
Power (kW)	Flow (l/h)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)
46	7863											4.11	143.68	2.72	65.05	1.65	25.31	1.07	11.04	0.77	5.96
47	8034											4.20	149.42	2.77	67.64	1.69	26.31	1.09	11.48	0.79	6.19
48	8205											4.29	155.26	2.83	70.27	1.73	27.33	1.12	11.92	0.81	6.43
49	8376											4.38	161.20	2.89	72.95	1.76	28.37	1.14	12.37	0.82	6.67
50	8547											4.47	167.25	2.95	75.68	1.80	29.43	1.16	12.83	0.84	6.92
51	8718											4.56	173.39	3.01	78.45	1.83	30.50	1.19	13.29	0.86	7.17
52	8889											4.65	179.64	3.07	81.27	1.87	31.59	1.21	13.77	0.87	7.42
53	9060											4.74	185.99	3.13	84.13	1.91	32.70	1.23	14.25	0.89	7.68
54	9231											4.83	192.45	3.19	87.04	1.94	33.82	1.26	14.74	0.91	7.95
55	9402											4.92	199.00	3.25	89.99	1.98	34.96	1.28	15.23	0.92	8.21
56	9573													3.31	92.99	2.01	36.12	1.30	15.73	0.94	8.48
57	9744													3.37	96.03	2.05	37.30	1.32	16.25	0.96	8.76
58	9915													3.42	99.12	2.09	38.49	1.35	16.76	0.97	9.04
59	10086													3.48	102.25	2.12	39.71	1.37	17.29	0.99	9.32
60	10257													3.54	105.43	2.16	40.93	1.39	17.82	1.01	9.60
61	10428													3.60	108.65	2.19	42.18	1.42	18.36	1.02	9.89
62	10598													3.66	111.92	2.23	43.44	1.44	18.91	1.04	10.19
63	10769													3.72	115.23	2.27	44.72	1.46	19.46	1.06	10.49
64	10940													3.78	118.59	2.30	46.02	1.49	20.03	1.07	10.79
65	11111													3.84	121.99	2.34	47.33	1.51	20.60	1.09	11.10
66	11282													3.90	125.44	2.37	48.66	1.53	21.17	1.11	11.41
67	11453													3.96	128.93	2.41	50.01	1.56	21.76	1.13	11.72
68	11624													4.01	132.47	2.45	51.38	1.58	22.35	1.14	12.04
69	11795													4.07	136.04	2.48	52.76	1.60	22.95	1.16	12.36
70	11966													4.13	139.67	2.52	54.16	1.63	23.55	1.18	12.68
71	12137													4.19	143.33	2.55	55.57	1.65	24.17	1.19	13.01
72	12308													4.25	147.05	2.59	57.00	1.67	24.79	1.21	13.35
73	12479													4.31	150.80	2.63	58.45	1.70	25.41	1.23	13.68
74	12650													4.37	154.60	2.66	59.92	1.72	26.05	1.24	14.02
75	12821													4.43	158.44	2.70	61.40	1.74	26.69	1.26	14.37
76	12992													4.49	162.33	2.73	62.90	1.77	27.34	1.28	14.72
77	13163													4.55	166.26	2.77	64.41	1.79	28.00	1.29	15.07
78	13334													4.61	170.23	2.81	65.95	1.81	28.66	1.31	15.42
79	13505													4.66	174.25	2.84	67.50	1.84	29.33	1.33	15.78
80	13675													4.72	178.31	2.88	69.06	1.86	30.01	1.34	16.15
81	13846													4.78	182.42	2.91	70.64	1.88	30.69	1.36	16.51
82	14017													4.84	186.56	2.95	72.24	1.91	31.38	1.38	16.89
83	14188													4.90	190.76	2.99	73.86	1.93	32.08	1.39	17.26
84	14359													4.96	194.99	3.02	75.49	1.95	32.79	1.41	17.64
85	14530															3.06	77.14	1.98	33.50	1.43	18.02
86	14701															3.09	78.80	2.00	34.22	1.44	18.41
87	14872															3.13	80.48	2.02	34.95	1.46	18.80
88	15043															3.17	82.18	2.05	35.68	1.48	19.19
89	15214															3.20	83.89	2.07	36.42	1.49	19.59
90	15385															3.24	85.62	2.09	37.17	1.51	19.99

Mediun: Water 1 mbar/m = 100 Pa/m Heating max. : 1 m/s Plumbing max. : 3 m/s.

Pressure loss table of PEX/AL/PEX Pipe water temperature = 35°C

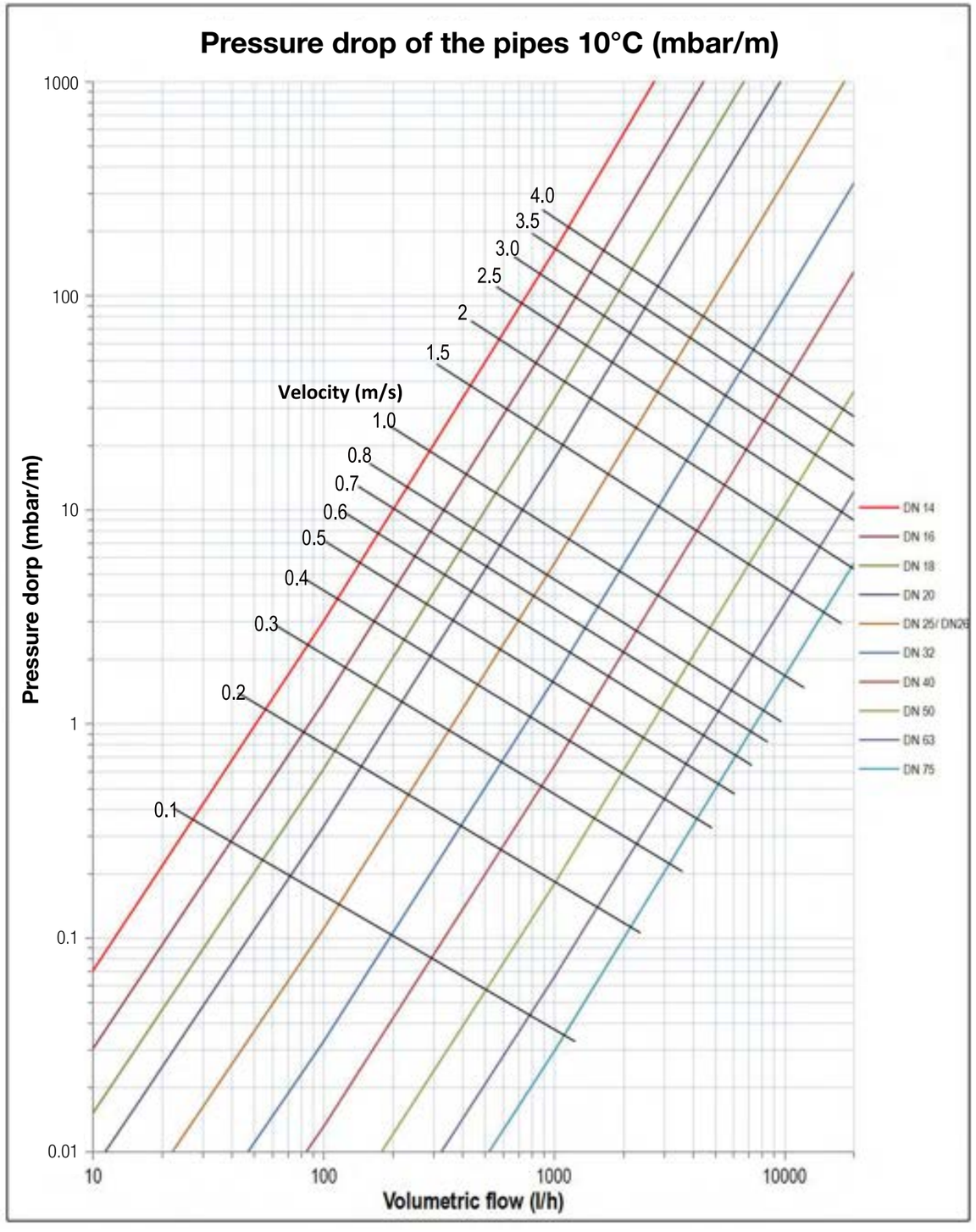
		1014		1216		1418		1620		2025		2632		3240		4150		5163		6075	
Power (kW)	Flow (l/h)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)
91	15556															3.27	87.37	2.12	37.92	1.53	20.39
92	15727															3.31	89.13	2.14	38.69	1.55	20.80
93	15898															3.34	90.91	2.16	39.46	1.56	21.21
94	16069															3.38	92.71	2.18	40.23	1.58	21.63
95	16240															3.42	94.52	2.21	41.01	1.60	22.05
96	16411															3.45	96.35	2.23	41.80	1.61	22.47
97	16582															3.49	98.19	2.25	42.60	1.63	22.90
98	16752															3.52	100.05	2.28	43.40	1.65	23.33
99	16923															3.56	101.93	2.30	44.22	1.66	23.77
100	17094															3.60	103.82	2.32	45.03	1.68	24.20
101	17265															3.63	105.73	2.35	45.86	1.70	24.65
102	17436															3.67	107.65	2.37	46.69	1.71	25.09
103	17607															3.70	109.59	2.39	47.53	1.73	25.54
104	17778															3.74	111.55	2.42	48.37	1.75	25.99
105	17949															3.78	113.52	2.44	49.22	1.76	26.45
106	18120															3.81	115.51	2.46	50.08	1.78	26.91
107	18291															3.85	117.52	2.49	50.95	1.80	27.37
108	18462															3.88	119.54	2.51	51.82	1.81	27.84
109	18633															3.92	121.58	2.53	52.70	1.83	28.31
110	18804															3.96	123.63	2.56	53.59	1.85	28.79
111	18975															3.99	125.70	2.58	54.48	1.86	29.26
112	19146															4.03	127.79	2.60	55.38	1.88	29.75
113	19317															4.06	129.89	2.63	56.29	1.90	30.23
114	19488															4.10	132.01	2.65	57.20	1.91	30.72
115	19658															4.14	134.14	2.67	58.12	1.93	31.21
116	19829															4.17	136.29	2.70	59.05	1.95	31.71
117	20000															4.21	138.46	2.72	59.98	1.96	32.21
118	20171															4.24	140.64	2.74	60.92	1.98	32.71
119	20342															4.28	142.83	2.77	61.87	2.00	33.22
120	20513															4.32	145.05	2.79	62.83	2.02	33.73
121	20684															4.35	147.28	2.81	63.79	2.03	34.25
122	20855															4.39	149.52	2.84	64.76	2.05	34.77
123	21026															4.42	151.78	2.86	65.73	2.07	35.29
124	21197															4.46	154.06	2.88	66.71	2.08	35.81
125	21368															4.50	156.35	2.91	67.70	2.10	36.34
126	21539															4.53	158.66	2.93	68.70	2.12	36.87
127	21710															4.57	160.98	2.95	69.70	2.13	37.41
128	21881															4.60	163.32	2.98	70.71	2.15	37.95
129	22052															4.64	165.68	3.00	71.72	2.17	38.49
130	22223															4.68	168.05	3.02	72.74	2.18	39.04
131	22394															4.71	170.44	3.05	73.77	2.20	39.59
132	22565															4.75	172.84	3.07	74.81	2.22	40.14
133	22735															4.78	175.26	3.09	75.85	2.23	40.70
134	22906															4.82	177.69	3.11	76.90	2.25	41.26
135	23077															4.86	180.14	3.14	77.95	2.27	41.83

Mediun: Water 1 mbar/m = 100 Pa/m Heating max. : 1 m/s Plumbing max. : 3 m/s.

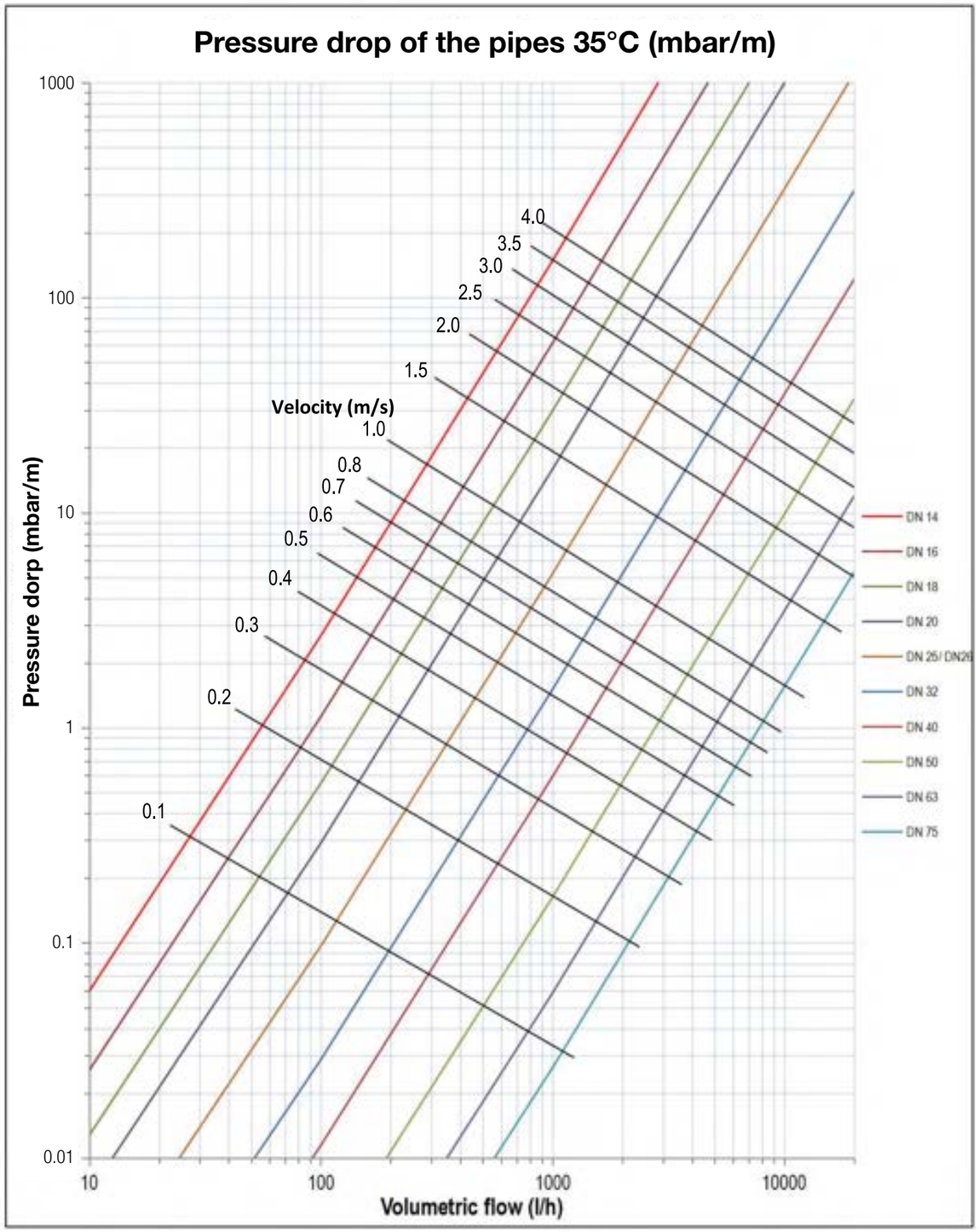
Pressure loss table of PEX/AL/PEX Pipe water temperature = 35°C

		1014		1216		1418		1620		2025		2632		3240		4150		5163		6075	
Power (kW)	Flow (l/h)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)
136	23248															4.89	182.61	3.16	79.02	2.28	42.39
137	23419															4.93	185.09	3.18	80.09	2.30	42.97
138	23590															4.96	187.59	3.21	81.16	2.32	43.54
139	23761															5.00	190.10	3.23	82.24	2.33	44.12
140	23932																	3.25	83.33	2.35	44.70
141	24103																	3.28	84.43	2.37	45.29
142	24274																	3.30	85.53	2.38	45.88
143	24445																	3.32	86.64	2.40	46.47
144	24616																	3.35	87.75	2.42	47.07
145	24787																	3.37	88.88	2.44	47.67
146	24958																	3.39	90.01	2.45	48.27
147	25129																	3.42	91.14	2.47	48.88
148	25300																	3.44	92.28	2.49	49.49
149	25471																	3.46	93.43	2.50	50.10
150	25642																	3.49	94.59	2.52	50.72
151	25812																	3.51	95.75	2.54	51.34
152	25983																	3.53	96.92	2.55	51.97
153	26154																	3.56	98.10	2.57	52.59
154	26325																	3.58	99.28	2.59	53.23
155	26496																	3.60	100.47	2.60	53.86
156	26667																	3.63	101.66	2.62	54.50
157	26838																	3.65	102.86	2.64	55.14
158	27009																	3.67	104.07	2.65	55.79
159	27180																	3.70	105.29	2.67	56.44
160	27351																	3.72	106.51	2.69	57.09
161	27522																	3.74	107.74	2.70	57.75
162	27693																	3.77	108.97	2.72	58.40
163	27864																	3.79	110.21	2.74	59.07
164	28035																	3.81	111.46	2.75	59.73
165	28206																	3.84	112.72	2.77	60.40
166	28377																	3.86	113.98	2.79	61.08
167	28548																	3.88	115.24	2.80	61.76
168	28718																	3.91	116.52	2.82	62.44
169	28889																	3.93	117.80	2.84	63.12
170	29060																	3.95	119.09	2.86	63.81
171	29231																	3.97	120.38	2.87	64.50
172	29402																	4.00	121.68	2.89	65.19
173	29573																	4.02	122.99	2.91	65.89
174	29744																	4.04	124.30	2.92	66.59
175	29915																	4.07	125.62	2.94	67.30
176	30086																	4.09	126.95	2.96	68.01
177	30257																	4.11	128.28	2.97	68.72
178	30428																	4.14	129.62	2.99	69.43

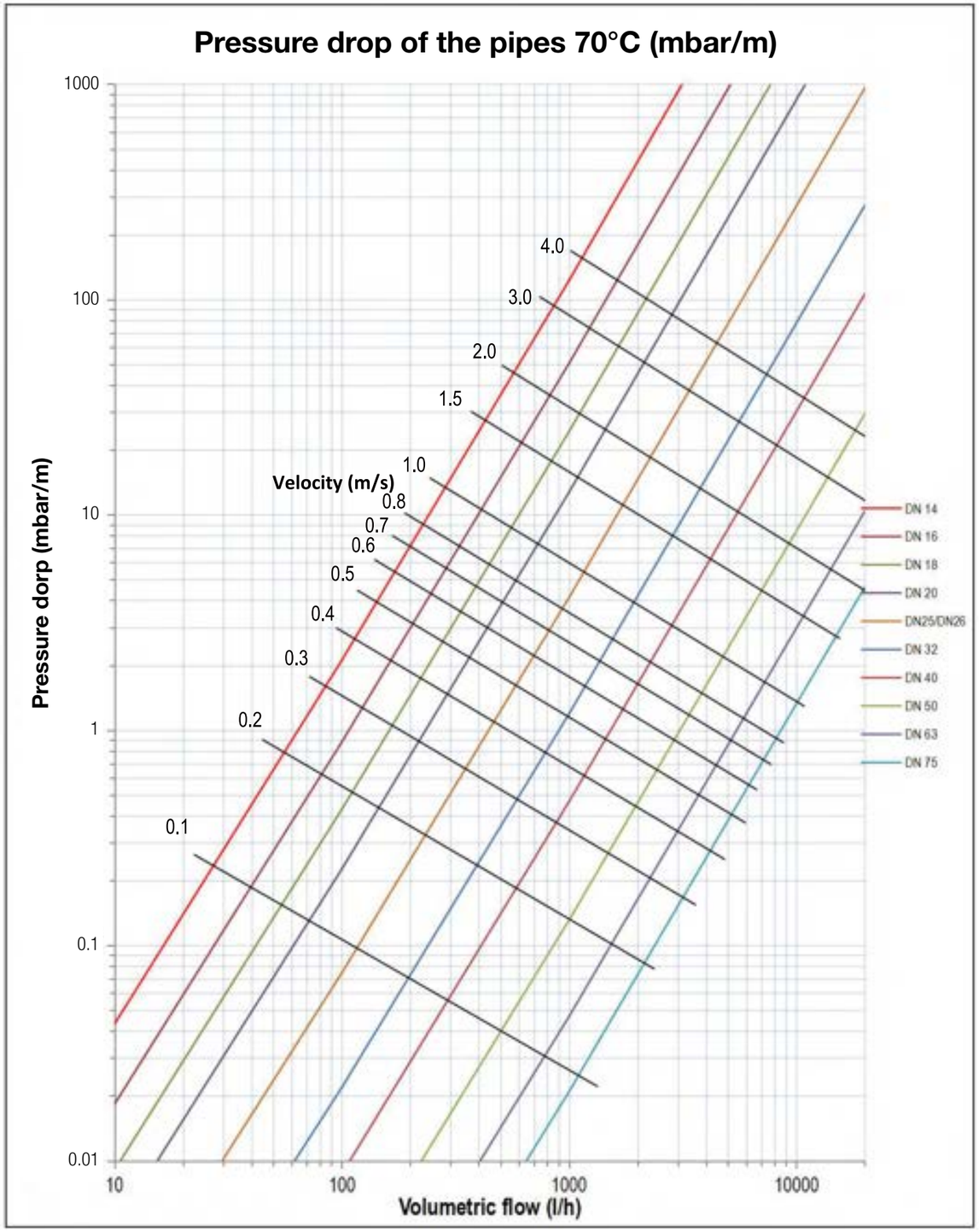
Mediun: Water 1 mbar/m = 100 Pa/m Heating max. : 1 m/s Plumbing max. : 3 m/s.



Pressure drop of the pipes 35°C (mbar/m)

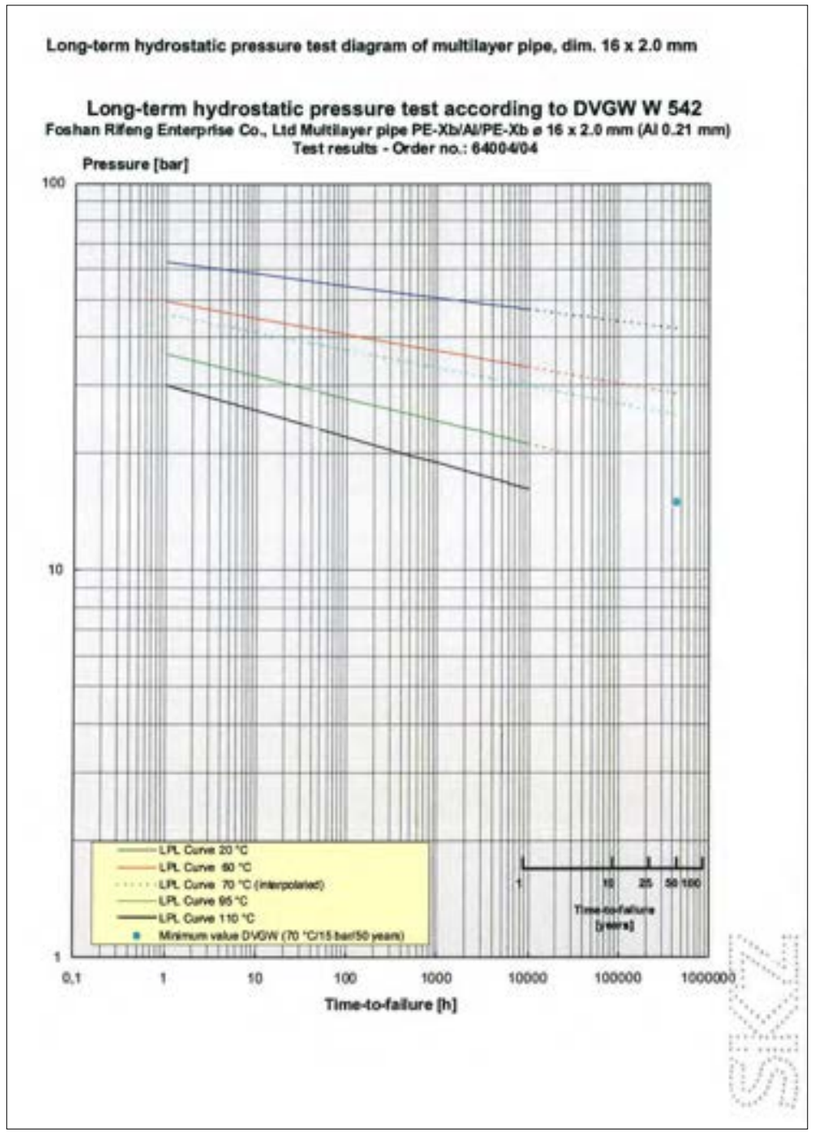


Pressure drop of the pipes 70°C (mbar/m)



6.1.7 Long term behaviour

The service life of the multilayer pipe is determined by the temperature and the pressure at which the water is transported through the pipe. To simulate the working life, there are specific tests conducted by specialized test centers. The below diagram shows the result of such a test, preformed by SKZ (das Kunststoff-Zentrum) in Germany in order to obtain the German DVGW (Deutsche Vereinigung des Gas- und Wasserfaches) certification. The blue dot in the diagram shows the minimum requirement of DVGW: a pipe must be able to withstand a pressure of 1.5 its working pressure (15bar) after 50 years and at a constant water temperature of 70C. Our multilayer pipe performs much better than what is required. This again confirms the quality of the product: the multilayer pipe has a service life of minimum 50 years.



6.1.7 Preinsulated pipes

The Riifo preinsulated multilayer pipes consist of multilayer pipes foreseen with aninsulating layer. The insulating layer consists of round extruded polyehtylene foam with aclosed cell structure. The polyethyelene foam has a sturdy foil coating of vapour tightpolyethylene coloured in red or blue. This outer layer protects the foam against possibledamage.

Compared to pipes insulated on site, the pipes preinsulated in the factory are time andcost saving; they ensure a much quicker installation. Moreover, the good thermalinsulation properties allow smaller outside pipe diameters.

Standard thicknesses of the insulating layers are 6, 8, 9, 10 and 13 mm. Thicker insulationis available on request. The preinsulated pipes are supplied in coils.

Advantages:

- Excellent insulation properties
- Prevents condensation
- Accomodates the expansion of the inner pipe
- Protects the inner pipe
- Prevents sound transmission
- Colour coded for hot and cold water
- Up to diameter 32

Thermal conductivity :	0.040 W/mK at +40°C, 0.036 W/mK at +10°C
Sound reduction - DIN 52218:	Up to 23 dB(A)
Water vapour diffusion resistance:	6315 mu-40°C to +100°C
Temperature resistance:	CL-s1-d0
Fire classification - EN 13501Thickness:	6, 9, 13 mm - 20 mm and ticket on demand
Colours PE-shield:	Red and blue - grey or other colours on demand.

6.1.7 Pipes with corrugated conduit

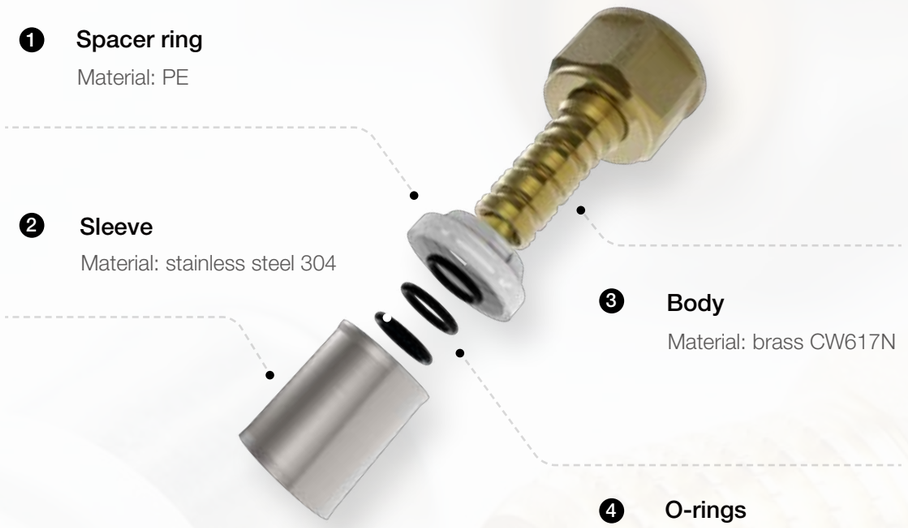
The Riifo corrugator or ribbed conduit is made out of high density polyethylene. The corrugator is at the same time flexible (axially) and rigid (radially). The corrugator is designed to protect the multilayer pipe against external mechanical damage. The layer of air in between the corrugator and medium pipe has an insulating effect and gives the inner pipe the possibility to expand when necessary. Multilayer pipes with corrugator are also called pipe in pipe installations: they reduce the potential risk of water damages and allow in some cases to replace the medium pipe. At penetration points in floors or walls, we recommend to protect multilayer pipes via a corrugator or via insulation. The corrugators are available in different colours. The dimensions of the corrugators are as follows (ID/OD): 20/25, 23/28, 30/34 and 38/34. They can protect multilayer composite pipes up to diameter 32. The corrugated pipes are supplied in coils.

Advantages:

- Protects the inner pipe against mechanical damage
- Flexible (axially) and rigid (radially)
- Accomodates the expansion of the inner pipe
- Insulating effect
- Allow in cases to replace the medium pipe
- Colour coded for hot and cold water
- Up to diameter 32

6.2 Multiprofile Press Fittings

6.21 Composition



❶ **Spacer ring**
Material: PE

❷ **Sleeve**
Material: stainless steel 304

❸ **Body**
Material: brass CW617N

❹ **O-rings**
Material: EPDM

6.22 Advantages

M — U - TH - H - RFz pressing profiles

The fitting is LBP and can still be adjusted after pressing.

Leak Before Press (LBP)

Three O-rings for excellent sealing performance

For multilayer, PE-X and PE-RT pipes: diameters 12 up to 75.