

## Technical Data

Nominal size(D x e)	12x1.5	14x2.0	16x2.0	18x2.0	20x2.0	25x2.5	26*3.0	32x3.0	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												

## 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



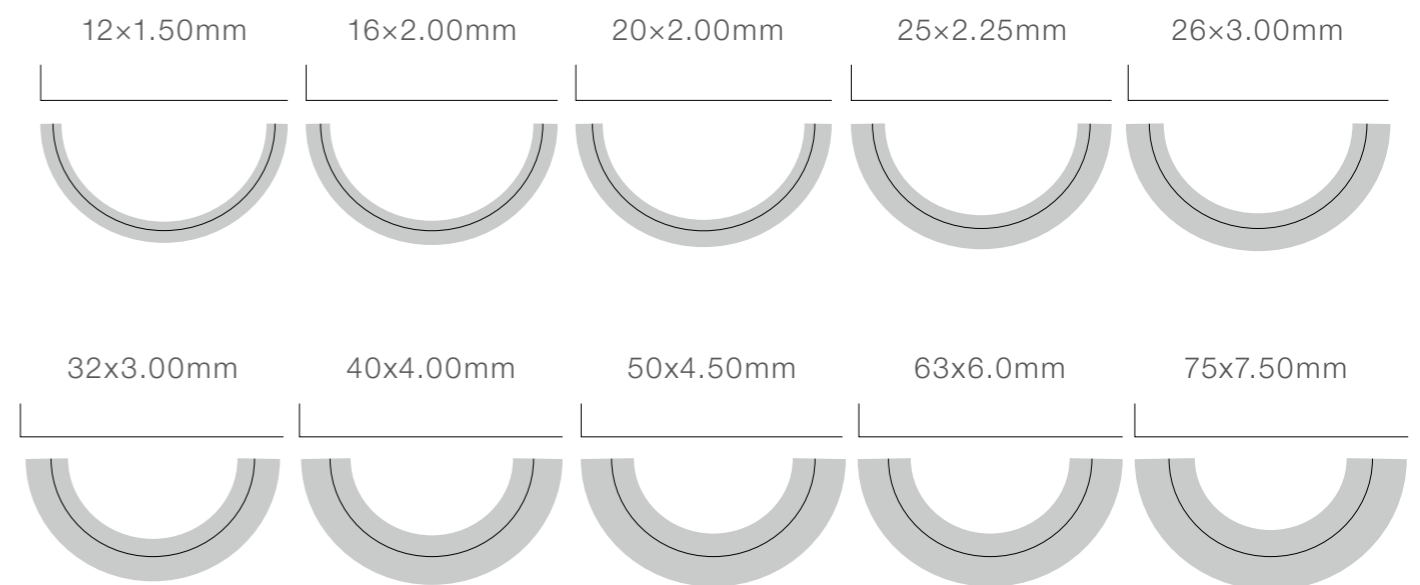
Corrosion resistant



Low pressure loss due to smooth inner layer



Hygienic



## 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.



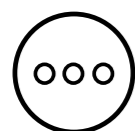
### Compressed air:

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



### Rain water:

As a rain water piping system inside buildings and separately 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 <sup>b</sup> 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°C )
2a	70	49	80	1	95	100	Hot water supply(70°C )
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.





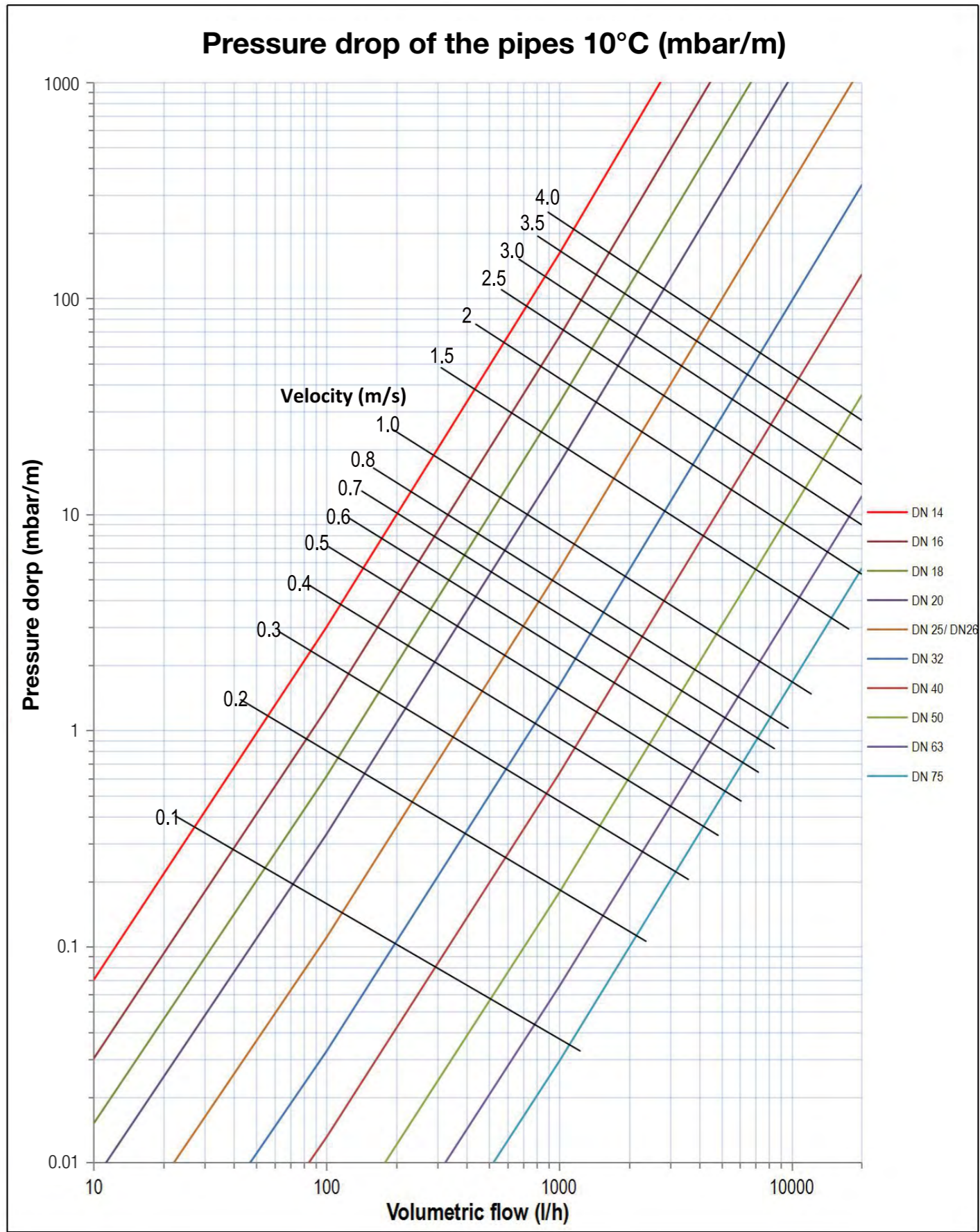






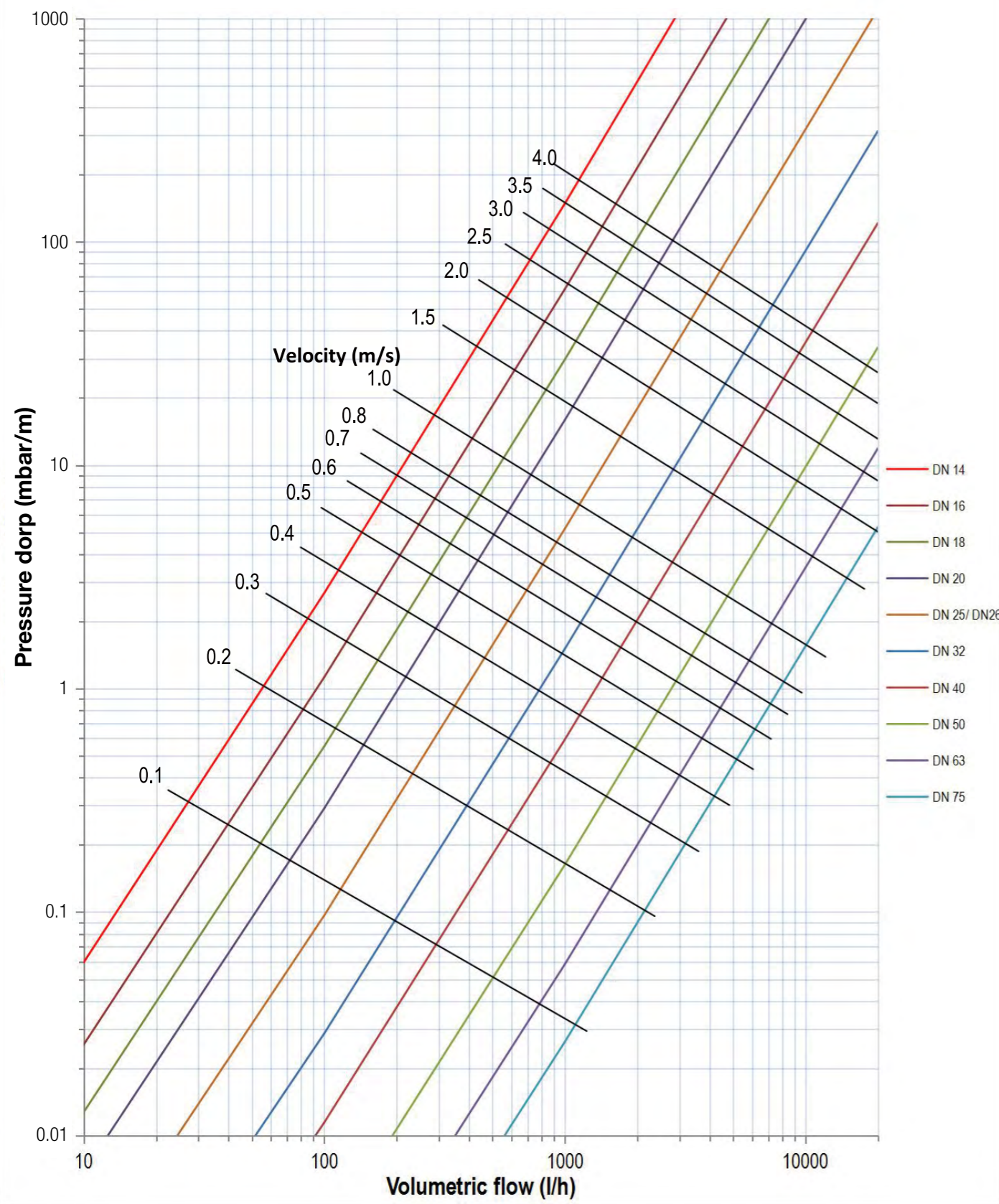
Pressure loss table of PEX/AL/PEX Pipe water temperature = 35°C																					
Power (kW)	Flow (l/h)	1014		1216		1418		1620		2025		2632		3240		4150		5163		6075	
		Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	ΔP (mbar/m)	Speed (m/s)	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.

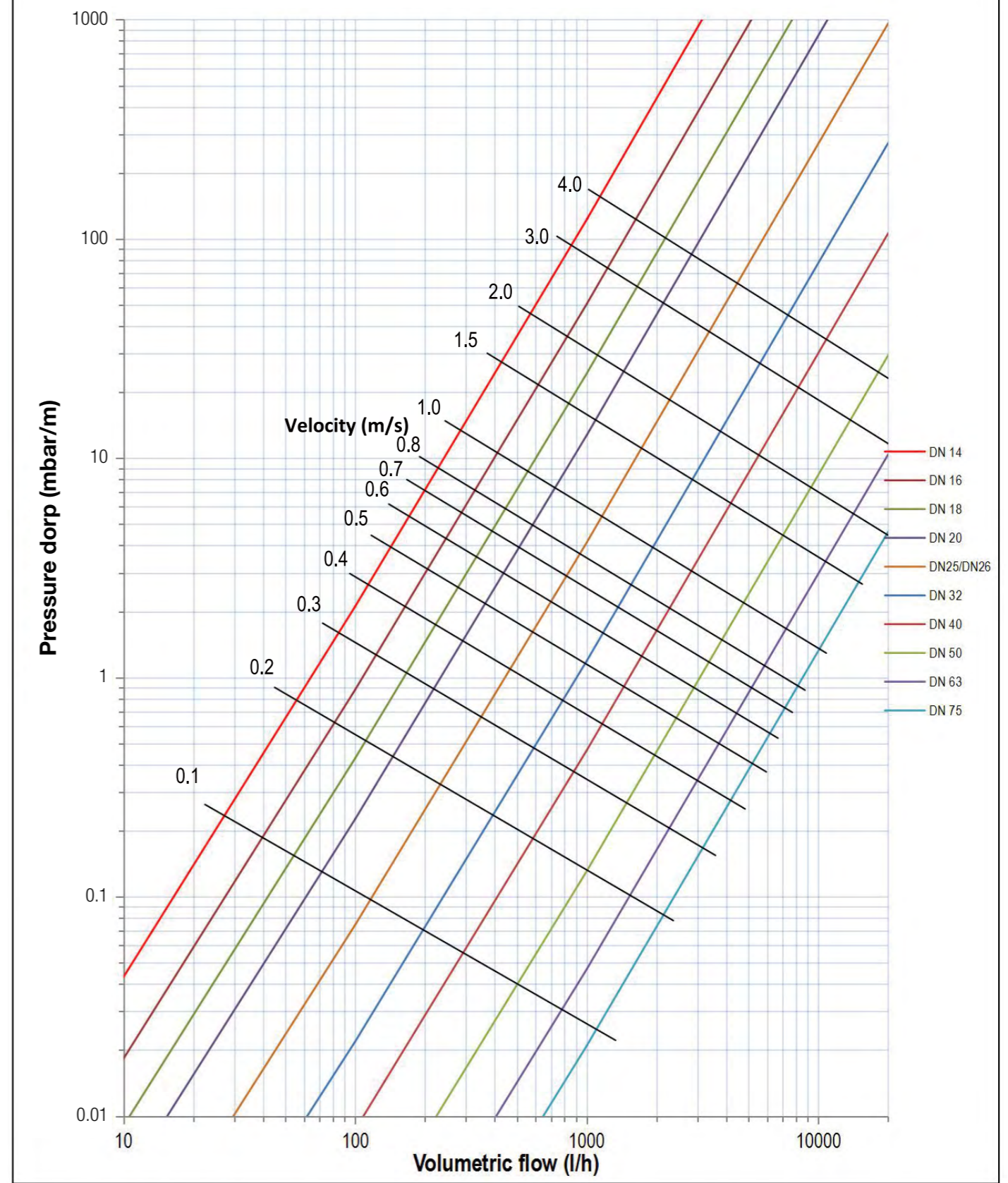




**Pressure drop of the pipes 35°C (mbar/m)**

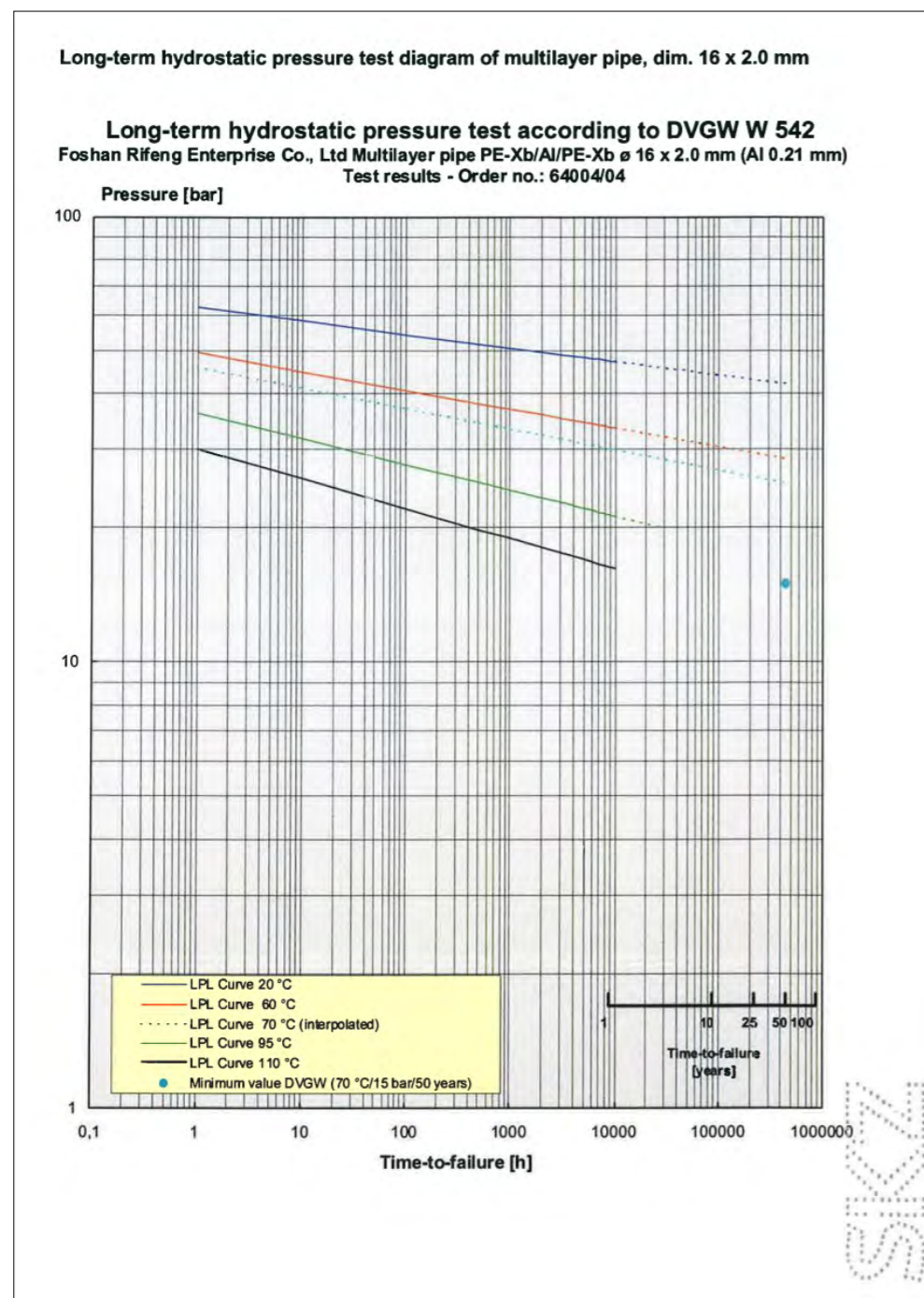


**Pressure drop of the pipes 70°C (mbar/m)**



## 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, performed 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 an insulating layer. The insulating layer consists of round extruded polyethylene foam with a closed cell structure. The polyethylene foam has a sturdy foil coating of vapour tight polyethylene coloured in red or blue. This outer layer protects the foam against possible damage.

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

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



### Advantages:

- Excellent insulation properties
- Prevents condensation
- Accommodates 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 13501 Thickness:** 6, 9, 13 mm - 20 mm and ticket on demand

**Colours PE-shield:** Red and blue - grey or other colours on demand.

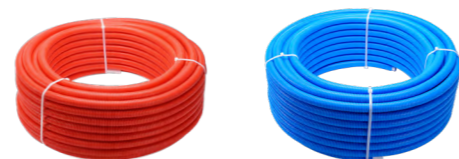


## 6.1.7 Pipes with corrugated conduit

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



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.