

Glass Fiber Reinforced PP-R Multilayer Composite Pipes

Safe and Practical for
All Hot water and Heating Applications



wavin

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Glass Fiber Reinforced PP-R Multilayer Composite Pipes

Glass Fiber multilayer pipes are produced from PP-R raw material according to EN15874-2 European Standard. Pipes with better compressive strength and lower thermal expansion should be preferred in hot water applications. Wavin Composite pipes offer suitable solutions for such tasks.

Table 1: Properties of PP-R Raw Material

Features	Data	Unit	Test Method	Value
Density	+23°C	g/cm3	ISO 1183	0,90-0,91
Melt Flow Index	MFR 230/5	g/10 dak.	ISO 1133	0,4-0,6
	MFR 230/2,16	g/10 dak.	ISO 1183	0,2-0,5
	MFR 230/5	g/10 dak.	ISO 1133	0,8-1,3
Yields Stress	50 mm/dak.	Mpa	ISO 527	23-28
Elongation at Yield	50 mm/dak.	%	ISO 527	>10
Tensile Moculus	secant	Mpa	ISO 527	850
Bell Indetitaion Hardness D	132 N/30s	Nmm2	ISO 2039/1	48
Shore Hardness D	(3 sec value)	-	DIN 53505	65
Charpy Impact Strength	+23°C	KJ/m2	ISO 179/1eU	No Breakage
	0	KJ/m2	ISO 179/1eU	No Breakage
	-30°C	KJ/m2.	ISO 179/1eU	43
Charpy Notched Impact Strength	+23°C	KJ/m2	ISO 179/1eU	22
	0	KJ/m2	ISO 179/1eU	4
	-30°C	KJ/m2	ISO 179/1eU	2,5
Vicat Softening Temperature	VST / A /50	°C	ISO 360/A	132
Melting Range	-	°C	DSC	140-150
Thermal Conductivity	-	W/Mk	DIN 52612	0,24
Coefficient of Linear Thermal Expansion (20-90 C)	-	1/K	DIN 53752	1,5.10-4
Surface Resistance	-	Ohm	DIN vde 0303	> 1014



Table 2: Service Life Of PPR Pipe

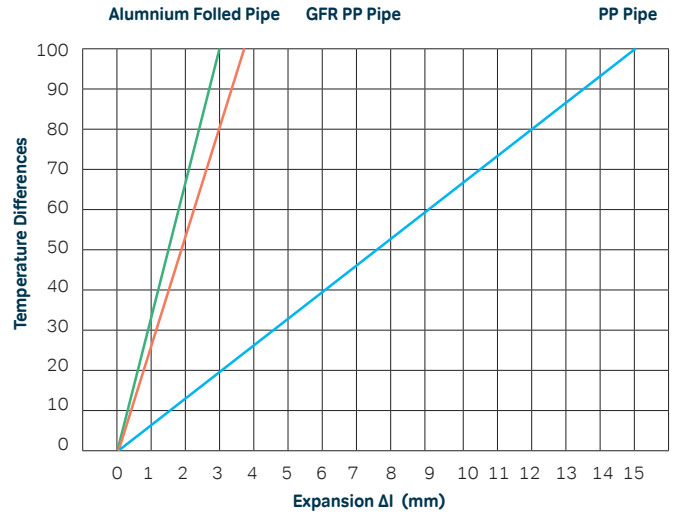
Temperature °C	Service Life in Years	Nominal Pressure (Bar)	
		S 2,5 SDR 6 PN25	S3,2 SDR 7,4 PN20
10	1	35,1	27,8
	5	33,0	26,2
	10	32,2	25,6
	25	31,1	24,7
	50	30,3	24,1
20	100	29,6	23,5
	1	29,9	23,7
	5	28,1	22,3
	10	27,4	21,7
	25	26,4	21,0
30	50	25,7	20,4
	100	25,0	19,9
40	1	25,4	20,2
	5	23,8	18,9
	10	23,2	18,4
	25	22,3	17,7
	50	21,7	17,2
50	100	21,1	16,8
	1	21,6	17,1
	5	20,2	16,0
	10	19,6	15,5
	25	18,8	15,0
60	50	18,3	14,5
	100	17,8	14,1
70	1	18,2	14,5
	5	17,0	13,5
	10	16,5	13,1
	25	15,9	12,6
	50	15,4	12,2
80	100	14,9	11,8
	1	15,4	12,2
	5	14,3	11,3
	10	13,9	11,0
	25	13,3	10,5
95	50	12,9	10,2
	1	12,9	10,3
	5	12,0	9,5
	10	11,6	9,2
	25	10,0	8,0
100	50	8,5	6,7
	1	10,8	8,6
	5	9,6	7,6
	10	8,1	6,4
	25	6,5	5,1
110	1	7,6	6,1
	5	5,2	4,1
	10	4,3	3,4

*Security Factor (C): 1,5

Features of Glass Fiber Reinforced PP-R Multilayer Composite Pipes

- Consists of PPR inner and outer layers and a special mixture of Glass Fiber (GF) PP middle layer.
- The glass fiber reinforced (GFR) layer within the two PPR layers reduces the pipe's thermal extension. The GFR pipes can provide all performance features which solid wall pipe have. Service life and conditions may be checked from relevant tables (Table2) due to operating pressure and temperature.
- Glass fiber reinforced (GFR) pipe has similar thermal expansion coefficient with aluminum stabil PPR pipe has. (Graphic 1)
- The mixture of Polypropylene and Glass Fiber minimizes elongation from heat. That is why installation requires less bracketing and fixing points.
- Alternative solution to conventional pipe systems suitable for e.g., cooling and air conditioning systems, sanitary installations, industrial pipeline construction and rainwater utilization systems.

Graphic 1: Elongation of various PP pipes



Complied Standards	DIN 8077/8078, EN 15874-2, TS 13715	
Pressure Class	SDR 7,4	SDR 6
Diameter Range	20-125	20-125

Why choose Wavin Glass Fiber Reinforced PP-R Multilayer Composite Pipes?

- 1 Easy to install
- 2 Saving on Time
- 3 Cost-Efficient
- 4 Less Expansion
- 5 Compliance to European Standards
- 6 Reliable Technology High Quality

Advantages of GFR Pipes:

- GFR PPR pipe elongates less during the heat changes.
- Unlike aluminium foiled pipes; there is no need to shave the end of the pipe. The welding process should begin directly. This provides ease of installation.
- Can be easily used for hot water systems
- It is a lighter product compared to metal pipes. Therefore, it is easy to carry and install. The linear coefficient of thermal expansion value is small. (0,035mm/WmK). Less bracketing is necessary compared to solid wall pipes.
- Due to the glass fiber reinforced layer, thermal conductivity is smaller than solid wall pipe. that is why less insulation will be enough.
- It does not cause a change in the color, smell or the taste of water. It has a hygienic structure.

Wavin TR Plastik Sanayi A.Ş.

Factory :

P: (+90) 322 999 10 00
Güzelevler Mah. Girne Bul.
No: 294/A Pk: 57
01321 Yüreğir / ADANA
(Ceyhan Yolu Üzeri 7. Km)

Adana Branch Office:

P: (+90) 322 999 11 54
Güzelevler Mah. Girne Bul.
No: 294/A Pk: 57
01321 Yüreğir / ADANA
(Ceyhan Yolu Üzeri 7. Km)

İstanbul Branch Office:

P: (+90) 216 999 14 00
Hukukçular Towers A Blok
K: 4 Mustafa Kemal Paşa
Cad. Seyit Gazi Sok. No: 66
Cevizli Mah.
34865 Kartal / İSTANBUL

Ankara Branch Office:

P: (+90) 312 815 49 20 (4 Hat)
İşçi Blokları Mahallesi, Mevlana
Bulvarı (Konya Yolu Üzeri),
Ege Plaza No:182/B
06530 Balgat / ANKARA

İzmir Branch Office:

P: (+90) 232 458 60 43 (4 Hat)
Ege Perla, Çınarlı Mahallesi
Ozan Abay Caddesi
No: 10 Kat: 3 D: 35
35170 Konak / İZMİR

Public Relation:

Adana: (+90) 322 999 11 44
İstanbul: (+90) 322 999 11 22
Ankara: (+90) 322 999 11 33
İzmir: (+90) 322 999 11 11
Wavin Academy: (+90) 322 999 13 33

wavin

An Orbia business.

wavin.tr.info@wavin.com
www.wavin.com.tr