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# Glass Fiber Reinforced Polypropylene Composite Pipes

Safe and Practical for  
All Hot water and Heating Applications



**Mexichem.**  
Building & Infrastructure

**wavin**

**Pilsa**

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## Properties of Polypropylene Material

Features	Data	Unit	Test Method	Value
Density	+23 °C	g/cm <sup>3</sup>	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 1133	0,2-0,5
	MFR 230/5	g/10 dak.	ISO 1133	0,8-1,3
Yield Stress	50 mm/dak.	Mpa	ISO 527	23-28
Elongation at Yield	50 mm/dak.	%	ISO 527	>10
Tensile Modulus	secant	Mpa	ISO 527	850
Bell Indentation Hardness	132 N/30s	N/mm <sup>2</sup>	ISO 2039/1	48
Shore Hardness D	(3 sec value)		DIN 53505	65
Charpy Impact Strength	+23 °C	KJ/m <sup>2</sup>	ISO 179/1eU	No Breakage
	0	KJ/m <sup>2</sup>	ISO 179/1eU	No Breakage
	-30 °C	KJ/m <sup>2</sup>	ISO 179/1eU	43
Charpy Notched Impact Strength	+23 °C	KJ/m <sup>2</sup>	ISO 179/1eU	22
	0 °C	KJ/m <sup>2</sup>	ISO 179/1eU	4
	-30 °C	KJ/m <sup>2</sup>	ISO 179/1eU	2,5
Vicat Softening Temperature	VST / A / 50	°C	ISO 306/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 <sup>-4</sup>
Surface Resistance	-	Ohm	DIN VDE 0303	>10 <sup>14</sup>

## Pilsatherm Glass Fiber Reinforced Polypropylene Composite Pipe

- Consists of PPR inner and outer layers and a special mixture of Glass Fiber (GF) PP middle layer.
- The Glass Fiber Reinforced (GFR) within the two layers of PPR activates as an agent to reduce extension capability of the pipes nearly to the level of metal pipes. GFR pipe bears all of the physical in same pressure rating pipes and can be safely used under 10 bar pressure at 90°C liquid or air transmissions.
- Purpose of Pilsatherm GFR PPR Pipe is to present the advantages of PPR and Aluminium Foiled Stable Pipes.
- The mixture of Polypropylene and Glass Fiber minimizes elongation from heat.
- It provides high efficiency and ease of use.
- Alternative solution to conventional pipe systems suitable for e.g. cooling and air conditioning systems, sanitary installations, industrial pipeline construction and rainwater utilization systems.

Easy to install Saving on Time	Cost-Efficient Competitive Price	Production in Compliance to European Standards	Reliable Technology	High Quality
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## Advantages of GFR Pipes

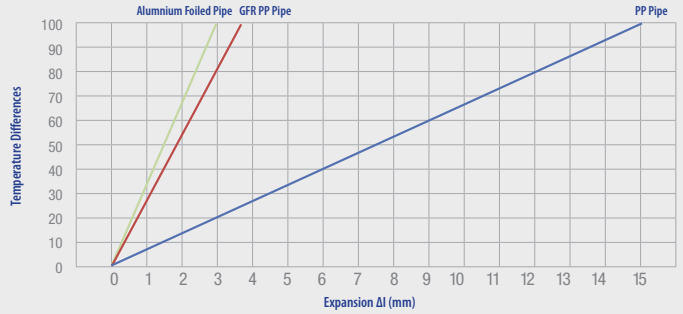
- GFR PPR pipe elongates less during the heat changes.
- Unlike aluminium foiled pipes; there is no need to shave the end of the pipe. Welding process should begin directly. This provides ease of install.
- The linear coefficient of thermal expansion is very low (0,035mm/mK); accordingly greater stability. In comparison to all plastic pipes; total quantity of clamps used is less, therefore total expenses reduces.
- Thermal transmission is 1.10 W/mK. This is lower than iron, copper and aluminium foiled PP pipes.
- It is extremely light; therefore it is easy to transport, easy to install.
- It does not cause a change in the color, smell or the taste of water. It has a hygienic structure.
- Can be easily used for hot water systems

## Service Life Of PPR Pipe

Temperature °C	Service Life in Years	Nominal Pressure (bar)	
		S 2,5 SDR 6 PN25	S 3,2 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
	100	29,6	23,5
20	1	29,9	23,7
	5	28,1	22,3
	10	27,4	21,7
	25	26,4	21,0
	50	25,7	20,4
	100	25,0	19,9
30	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
	100	21,1	16,8
40	1	21,6	17,1
	5	20,2	16,0
	10	19,6	15,5
	25	18,8	15,0
	50	18,3	14,5
	100	17,8	14,1

\*Security Factor (C): 1,5

## Elongation Graph of Pilsatherm GFR PPR Pipes



International Standards	DIN 8077/ 8078, EN 15874-2,TSEK 28	
Diameter Range	SDR 7,4	SDR 6
Pressure Class	20 - 125	20 - 125