VINLAND

ARCHITECTS AND DESIGNS

HIGH-QUALITY PPRC | HDPE | PVC PIPES | FITTINGS

Abstract

Vinland & Potential parters will focus on the sales of high-quality PPRC, HDPE, and PVC pipes and fittings, providing innovative solutions for the construction and infrastructure sectors.

We are proud distributors for the Polytech pipe company.

The pipes produced under the Polytech brand are known for their durability, flexibility, and longevity, proudly bearing the “Made in Nigeria” label, which reflects the engineering and manufacturing prowess of our nation. By utilizing the latest technologies, our Polytech factory aims to exceed quality standards not only in Nigeria but also in regional and global markets. For every pipe that is produced in Nigeria is not just a product but an investment in Nigeria's future.

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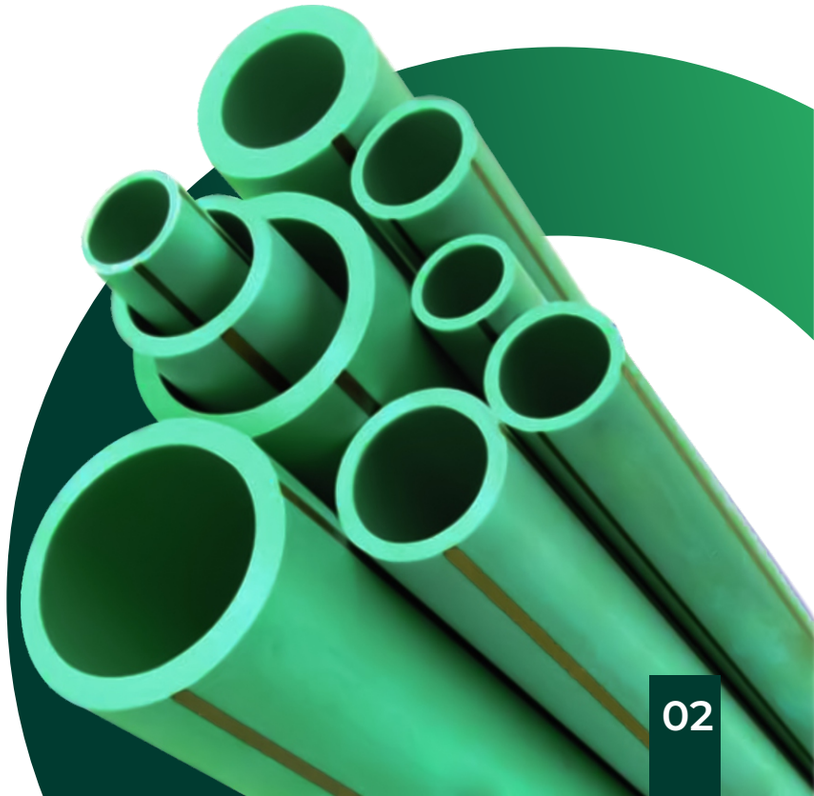


PPRC

(Polypropylene Random Copolymer)

Pipe and fittings are produced using PP Random Copolymer (PP-R). PP Random Copolymer is commonly used in drinking water installations, hot water, floor and radiator heating systems and every kind of industrial liquid distribution systems.

PP-R has a lot of advantages over other plastics such as; long life duration, high resistance to pressure and heat,better flexibility, high acoustic and thermal insulaton, high molecular weight, low MFI.

PP-R confirms the requirements of ASTM F 2389, DIN 8077, DIN 8078, EN ISO 15874 standards.

Technical Specifications

Table : Technical Specifications

Characteristics		Unit	Test Method	Values
Density	+23°C	g/cm3	ISO 1183	0.909
Melt Flow index (MFI)	190°C/5Kg	g/10 min	ISO 1133	0.4-0.6
	230°C/2.16Kg	g/10 min	ISO 1133	0.2-0.5
	230°C/5Kg	g/10 min	ISO 1133	0.8-1.3
Tensile Stress at yield (23°C)	(50 mm/min)	Mpa	ISO 527	25
Tensile Strain at Yield	(50 mm/min)	%	ISO 527	10
Flexural Modules	+23°C	N/mm2	ISO 527	800
Charpy Impact Strength (notched)	+23°C	KJ/m2	ISO 179	>15
	0°C	KJ/m2	ISO 179	>5
Charpy Impact Strength (Unnotched	0°C	KJ/m2	ISO 179	No Break
Vicat Softening Point	(1 kg)	°C	ASTM D 1525 ISO 306 DIN 53460	130
	(5 kg)	°C		60
Melting Range		°C	Polirazing Microscope	140-150
Linear Thermal Expansion Co efficient		1/K	DIN 53752	1.5 X 10-4
Thermal Conductivity		W/mk	DIN 52612	0.24
Hardness (Shore D)	(3 sec Value)		ISO 868	65
Pipe Friction Factor				0.007

PPR Pipe Dimension and Tolerances According to DIN 8077

Outside Ø mm.	Tolerance mm.	Thickness mm.	Tolerance mm.	Inside Ø mm.	In" Inches
20	+0.3/-0	1.90	+0.3/-0	16.20	1/2"
25	+0.3/-0	2.30	+0.4/-0	20.40	3/4"
32	+0.3/-0	2.90	+0.4/-0	26.20	1"
40	+0.4/-0	3.70	+0.5/-0	32.60	1 1/4"
50	+0.5/-0	4.60	+0.6/-0	40.80	1 1/2"
63	+0.6/-0	5.80	+0.7/-0	51.40	2"
75	+0.7/-0	6.80	+0.8/-0	61.40	2 1/2"
90	+0.9/-0	8.20	+1.0/-0	73.60	3"
110	+1.0/-0	10.00	+1.1/-0	90.00	4"

Table 2: PPR Pipe Dimension and Tolerances According to DIN 8077 SDR 11 (Pn10)

Outside Ø mm.	Tolerance mm.	Thickness mm.	Tolerance mm.	Inside Ø mm.	In" Inches
20	+0.3/-0	2.80	+0.4/-0	14.00	1/2"
25	+0.3/-0	3.50	+0.5/-0	18.00	3/4"
32	+0.3/-0	4.40	+0.6/-0	23.20	1"
40	+0.4/-0	5.50	+0.7/-0	29.00	1 1/4"
50	+0.5/-0	6.90	+0.8/-0	36.20	1 1/2"
63	+0.6/-0	8.60	+1.0/-0	45.80	2"
75	+0.7/-0	10.30	+1.2/-0	54.40	2 1/2"
90	+0.9/-0	12.30	+1.4/-0	65.40	3"
110	+1.0/-0	15.10	+1.7/-0	79.80	4"

Table 3: PPR Pipe Dimension and Tolerances According to DIN 8077 SDR 7,4 (PN16)

Outside Ø mm.	Tolerance mm.	Thickness mm.	Tolerance mm.	Inside Ø mm.	In" Inches
20	+0.3/-0	3.40	+0.5/-0	13.20	1/2"
25	+0.3/-0	4.20	+0.6/-0	16.60	3/4"
32	+0.3/-0	5.40	+0.7/-0	21.20	1"
40	+0.4/-0	6.70	+0.8/-0	26.60	1 1/4"
50	+0.5/-0	8.30	+1.0/-0	33.40	1 1/2"
63	+0.6/-0	10.50	+1.2/-0	42.00	2"
75	+0.7/-0	12.50	+1.4/-0	50.00	2 1/2"
90	+0.9/-0	15.00	+1.7/-0	60.00	3"
110	+1.0/-0	18.30	+2.0/-0	73.40	4"

Table 4: PPR Pipe Dimension and Tolerances According to DIN 8077 SDR 6 (PN20)

Thermal Expansion in PPR Pipes

PPR pipes have an expansion coefficient that is much higher than the metal pipes. So, this characteristic should be taken into consideration during installations.

Calculation of thermal expansion is as follows:

$\Delta L = L * \Delta T *$

Were

ΔT = The difference between environmental temperature and water temperature in Kelvin degrees (K) or Celsius (°C).

ΔL = Variation of length in mm.

L = Initial length of the pipe in m.

α = Coefficient of linear thermal expansion. The value of is 1,5 *10-4 (K-1) for PPR pipes.

Pipe Length L (m)	Linear Expansion Temperature Difference L (C									
	10	20	30	40	50	60	70	80	90	100
1	1.5	3	4.5	6	7.5	8	10.5	12	13.5	15
2	3	6	9	12	15	18	21	24	27	30
3	4.5	9	13.5	18	22.5	27	21.5	36	40.5	45
4	6	12	18	24	30	36	42	48	54	60
5	7	15	22.5	30	37.5	45	52.5	60	67.5	75
6	9	18	27	36	45	54	63	72	81	90
7	10.5	21	31.5	42	52.5	63	73.5	84	94.5	105
8	12.5	24	36	48	60	72	84	96	108	120
9	13.5	27	40	54	67.5	81	94.5	108	121.5	135
10	15	30	45	60	75	90	105	120	135	150

Table : Linear Expansion Table

Thermal Expansion of the Standart PP-R Pipe

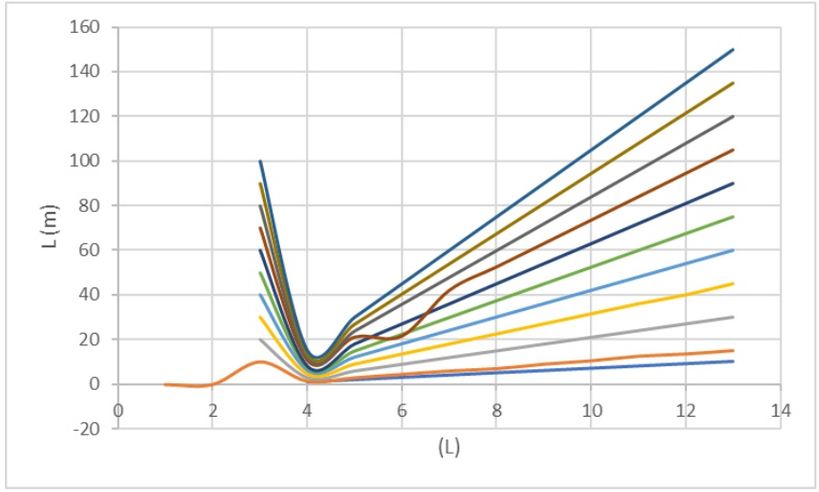


Figure : Thermal Expansion of the Standart PP-R Pipe

Welding Technique

The quality of an installation depends on the tightness, stability and lifetime of its connections. Fusion welding technique is safe because parts made of polypropylene create a homogenous connection within the process. When the welded joint cools down, it can be fully loaded. The resulting joints are very reliable, and they are as strong as the pipe itself. The pipe may even break before the socket welded joint under tension.

Welding takes only a few seconds. After cutting the pipe perpendicularly to its axis, both the pipes and the fittings (these must be clean if not please clean it with a cloth or alcohol-water solution) are heated with the welding machine (generally up to 260 °C +/- 10 °C) and they are joined wtihout twisting.

For proper connections please follow the table given:

Outer Diameter (mm)	Heating Time (Seconds)	Joining Time (Secs)	Cooling Time (Minutes)	Welding Depth (mm)
20	5	4	2	14.5
25	7	4	3	16
32	8	6	4	18
40	12	6	4	20.5
50	18	6	5	23.5
63	24	8	6	27.5
75	30	8	8	31
90	40	8	8	35.5
110	50	10	8	41.5
125	60	10	8	46.5

Table 6: Thermal Expansion of the Standart PP-R Pipe

PPRC PIPE

PPRC pipes are highly resistant to high temperatures and pressure, making them ideal for both hot and cold water systems. Their resistance to chemical substances also makes PPRC pipes suitable for industrial piping applications. Additionally, the smooth interior surface of our pipes minimizes flow losses, enhancing energy efficiency.

Pipes Water Supply

S/N	Material Description
1	1/2" pipe
2	3/4" pipe
3	1" pipe

Table 7: Water supply Pipes

MALE ELBOW

Male Threaded Elbows	
S/N	Material Description
1	1/2" x 1/2" male threaded elbow
2	3/4" x 1/2" male threaded elbow
3	3/4" x 3/4" male threaded elbow
4	1" x 1" male threaded elbow
5	1" x 3/4" male threaded elbow

90 ELBOW

Plain elbows (solvent weld/fusion type)	
S/N	Material Description
1	1/2" Elbow
2	3/4" Elbow
3	3/4" 45° Elbow
4	1" Elbow

90 ELBOW

Female Threaded Elbows	
S/N	Material Description
1	1/2" x 1/2" Female threaded elbow
2	3/4" x 1/2" Female threaded elbow
3	3/4" x 3/4" Female threaded elbow
4	1" x 1" Female threaded elbow
5	1" x 3/4" Female threaded elbow

MALE ADAPTOR

Male Adaptors	
S/N	Material Description
1	1/2" x 1/2" male Threaded Adaptor
2	3/4" x 1/2" male Threaded Adaptor
3	3/4" x 3/4" male Threaded Adaptor
4	1" x 3/4" male Threaded Adaptor
5	1" x 1" male Threaded Adaptor

MALE ELBOW

Male Threaded Elbows	
S/N	Material Description
1	1/2" x 1/2" male threaded elbow
2	3/4" x 1/2" male threaded elbow
3	3/4" x 3/4" male threaded elbow
4	1" x 1" male threaded elbow
5	1" x 3/4" male threaded elbow

90 ELBOW

Plain elbows (solvent weld/fusion type)	
S/N	Material Description
1	1/2" Elbow
2	3/4" Elbow
3	3/4" 45° Elbow
4	1" Elbow

90 ELBOW

Female Threaded Elbows	
S/N	Material Description
1	1/2" x 1/2" Female threaded elbow
2	3/4" x 1/2" Female threaded elbow
3	3/4" x 3/4" Female threaded elbow
4	1" x 1" Female threaded elbow
5	1" x 3/4" Female threaded elbow

MALE ADAPTOR

Male Adaptors	
S/N	Material Description
1	1/2" x 1/2" male Threaded Adaptor
2	3/4" x 1/2" male Threaded Adaptor
3	3/4" x 3/4" male Threaded Adaptor
4	1" x 3/4" male Threaded Adaptor
5	1" x 1" male Threaded Adaptor

REDUCTION

Reducers & Plain Sockets	
S/N	Material Description
1	1/2" x 3/4" Reducer
2	1/2" Socket
3	3/4" Socket
4	1" Socket

90 ELBOW

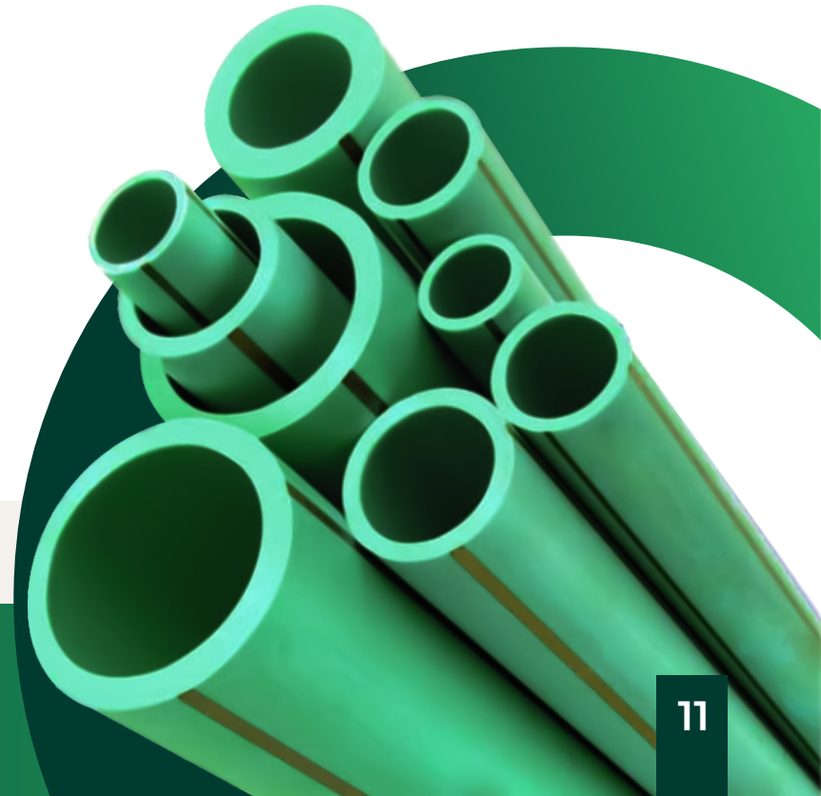
Reducers & Plain Sockets	
S/N	Material Description
1	1/2" x 3/4" Reducer
2	1/2" Socket
3	3/4" Socket
4	1" Socket

FEMALE ADAPTOR

Female Adaptors	
S/N	Material Description
1	1/2" x 1/2" Female Threaded Adaptor
2	3/4" x 1/2" Female Threaded Adaptor
3	3/4" x 3/4" Female Threaded Adaptor
4	1" x 3/4" Female Threaded Adaptor
5	1" x 1" Female Threaded Adaptor

TEE

Tee	
S/N	Material Description
1	3/4" x 1/2" Female threaded tee
2	3/4" x 1/2" Female battery tee
Plain tees (Equal & Reduced)	
S/N	Material Description
1	1/2" Equal Tee
2	3/4" Equal Tee
3	1" Equal Tee
4	3/4" -1/2" - 3/4" Equal Tee



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