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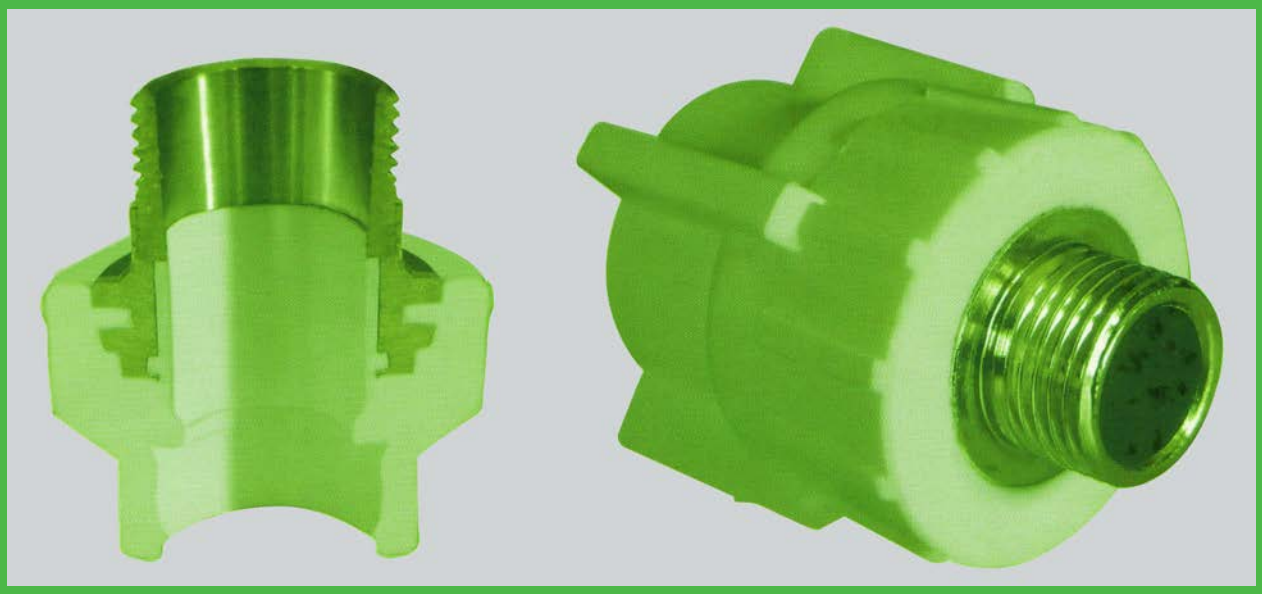
PPRC Pipes and Fittings



Jeddah Polymer pipe is used with Jeddah Polymer Fittings..!

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PPRC Pipes have been developed as an alternative to galvanised pipes, and with their ability to operate in in-door sanitary installations and central heating systems, their light weight, their anti-scaling property, have now replaced galvanised pipes almost completely.

The raw materials used in the production of PPRC pipes are classified according to their resistance to heat, pressure and chemical agents, as Homo-polymer (Type 1), Copolymer (Type 2) and Random Copolymer (Type 3). The raw material used in the production of PPRC Pipe and its fittings by "Jeddah Polymer" is Polypropylene Random Copolymer (PPRC). PPRC pipes and their fittings are manufactured according to (DIN 8077-8078). The raw material is procured from companies,which are recognised worldwide for their quality in the sector. The most significentfeature of this raw material is its high resistance to high temperatures and chemical agents. Its resistance to high temperatures enables the pipes manufactured from thisraw material to be successfully used in hot water systems. Since the monomer structureof random copolymer exhibits a random chemical chain, the products manufacturedfrom it do not allow any biological substance to reside in them. Consequently, randomcopolymer products are provided with such superior characteristics that they do notcause any colouring and or undesirable taste and odour.

PPRC Pipes covered with foil: They have been designed particularly for use in central heating systems. The aluminium foil within the pipe structure reduces the coefficient of thermal expansion of pipe, thereby preventing any sagging.

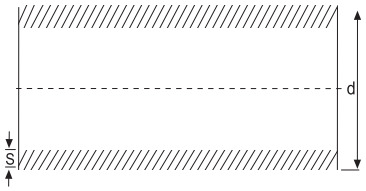
The PPRC pipes have the following advantages over the galvanised pipes: Much longer physical service life, lower thermal conductivity, faster joining operations and installation works, safer sealing at the joints, higher resistance to chemicals, not spoiling the taste of water, not causing any undesirable odours, and non-cancerogenic.

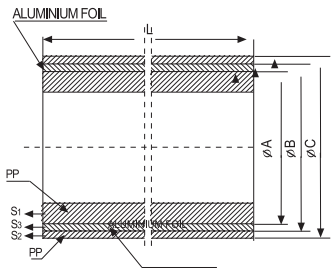
PPRC Pipe

Ød(mm)	s(mm)	L(mm)	Weight g/m
20	3.4	4	0.172
25	4.2	4	0.266
32	5.4	4	0.434
40	6.7	4	0.671
50	8.4	4	1.050
63	10.5	4	1.650
75	12.5	4	2.340
90	15.0	4	3.360
110	18.4	4	5.040

PPRC Pipe Covered With Foil

Outside Diameter	Wall Thickness S1	S2	S3	ØA	ØB	ØC	L (m)	Weight g/m
Ø 20	3.4	1	0.15	20	20.3	22.3	4	0.198
Ø 25	4.2	1	0.15	25	25.3	27.3	4	0.293
Ø 32	5.4	1	0.15	32	32.3	34.3	4	0.453
Ø 40	6.7	1.2	0.15	40	40.3	42.7	4	0.720
Ø 50	8.4	1.5	0.15	50	50.3	53.3	4	1.105
Ø 63	10.5	1.5	0.15	63	63.3	66.3	4	1.750
Ø 75	12.5	1.5	0.15	75	75.3	78.3	4	2.780
Ø 90	15.0	2	0.15	90	90.6	94.1	4	3.625
Ø 110	18.4	2	0.15	110	110.7	114.3	4	5.350





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Characteristics of PPRC Pipes

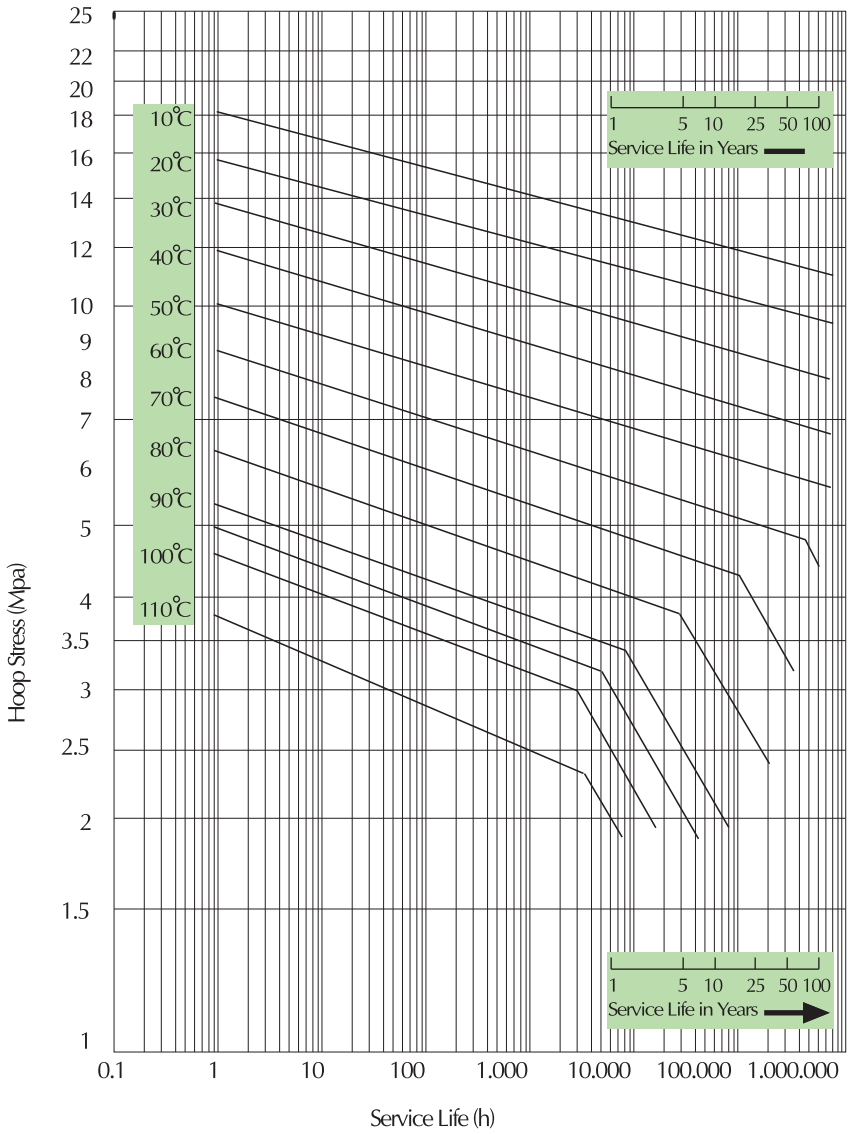
General Information on PPRC Pipes

- They are resistant to chemical agents.
- They are resistant to corrosion; therefore no rusting and scaling occurs.
- As they prevent penetration of UV (Ultraviolet) rays, they do not allow the growth of bacteria and algae inside them.
- They do not change the odour and taste of water.
- There is no reduction in diameter at welding points.
- They ensure 70% saving in mounting, with no mounting waste.
- They are suitable for use at temperatures ranging between -20 °C and +95 °C.
- They have a service life of 50 years when used at a temperature of 20 °C at a pressure of 25 atm.

Technical Charateristics of PPRC Pipes

Charateristics		Unit	Test Method	Value
Density	+23°C	g/cm³	ISO 1183	0.909
Melt Flow Rate	MFR 190/5	g/10 min	ISO 1133	0.55
	MFR 230/2, 16	g/10 min	ISO 1133	0.30
	MFR 230/5	g/10 min	ISO 1133	1.20
Volume Flow index	MVR 230/2, 16	cm3/10 min	ISO 1133	0.4
Ultimate stress	(50 mm/min)	Mpa	ISO 527/1+2	25
Ultimate Linear	(50 mm/min)	%	ISO 527/1+2	10
Shore Hardness	(3 sec value)		DIN 53505	65
Charpy Impact Resistance	+23°C	kJ/m2	ISO 179/1eU	
	0°C	kJ/m2	ISO 179/1eU	
	-30°C	kJ/m2	ISO 179/1eU	43
Charpy Bit Impact Resistance Endurance	+ 23°C	kJ/m2	ISO 179/1eA	52
	0°C	kJ/m2	ISO 179/1eA	7
	-30°C	kJ/m2	ISO 179/1eA	2.5
Vicat Softening Point	VST/A/50	°C	ISO 306	132
	VST/B/50	°C	ISO 306	69
Melting Range		°C	DSC	150-160
Coefficient of Linear Expantion		1/K	DIN 53752	$1,5*10^{-4}$
Thermal Conductivity		W/mK	DIN 52612	0,24
Surfance Resistance		Ohm	DIN VDE 0303,T3	$>10^{14}$

Temperature-Pressure-Service Life Diagram for PPRC Pipes



Change in Service Life of PPRC PN 20 Pipes Depending on Temperature

Temperature °C	10	20	30	40	50	60	70	80	95
Service Life (Year)									
1	35.2	29.9	25.6	21.6	18.3	15.5	13.1	10.9	7.7
5	33.1	28.3	24.0	20.3	17.1	14.4	12.0	9.6	5.2
10	32.3	27.5	23.2	19.7	16.5	13.9	11.6	8.0	4.3
25	31.2	26.7	22.4	18.9	16.0	13.3	9.9	6.4	–
50	30.4	25.9	21.9	18.4	15.5	12.9	8.5	–	–
100	29.6	25.1	–	–	–	–	–	–	–

Working Pressure (Bar)

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Linear Expansion of PPRC Pipes

Beacause of their physical structure, the PPRC pipes elongate when they are heated and shirnk when subjected to cold temperatures.

For installations over a distance of 5 m, the linear expansion that is calculated by using the following formula should be taken into consideration.

$\Delta L = \alpha.L.\Delta t$ where;

ΔL = elongation (mm)

α = coefficient of Linear Expansion (α=0, 15mm/C for Material)

L = Length of Pipe

Δt = Temperature Difference

Table of Linear Expansion for PPRC Pipe

Lenght of Pipe	Temperature Difference Δt (℃)							
L(m)	10	20	30	40	50	60	70	80
1.0	1.50	3.00	4.50	6.00	7.50	9.00	10.50	12.00
2.0	3.00	6.00	9.00	12.00	15.00	18.00	21.00	24.00
3.0	4.50	9.00	13.50	18.00	22.50	27.00	31.50	36.00
4.0	6.00	12.00	18.00	24.00	30.00	36.00	42.00	48.00
5.0	7.00	15.00	22.50	30.00	37.50	45.00	52.50	60.00
6.0	9.00	18.00	27.00	36.00	45.00	54.00	63.00	72.00
7.0	10.50	21.00	31.50	42.00	52.50	63.00	73.50	84.00
8.0	12.00	24.00	36.00	48.00	60.00	72.00	84.00	96.00
9.0	13.50	27.00	40.50	54.00	67.50	81.00	94.50	108.00
10.0	15.00	30.00	45.00	60.00	75.00	90.00	105.00	120.00

Linear Expansion ΔL (mm)

Table of Linear Expansion for PPRC Pipe covered with Aluminium Foil

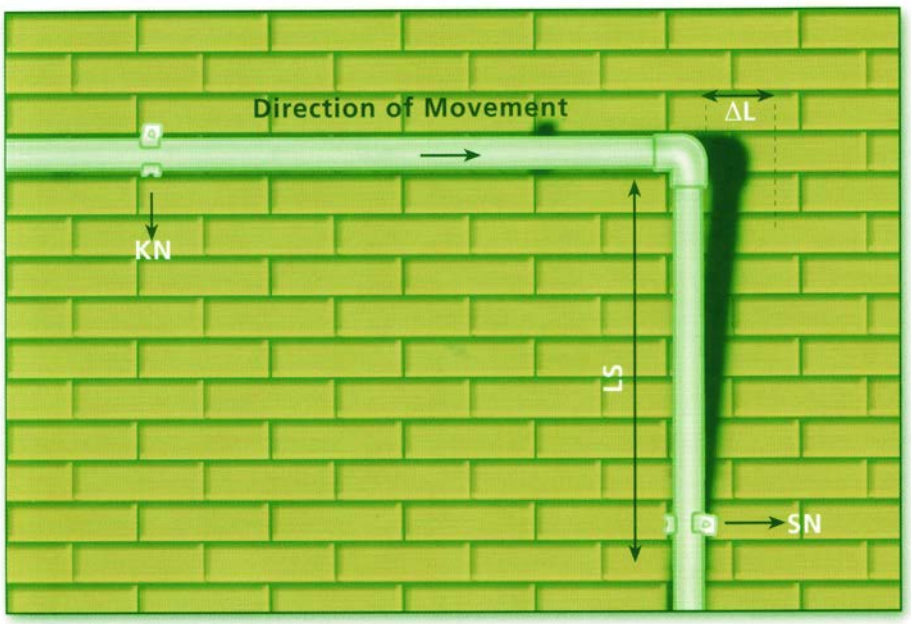
Lenght of Pipe	Temperature Difference Δt (℃)							
L(m)	10	20	30	40	50	60	70	80
1.0	0.30	0.60	0.90	1.20	1.50	1.80	2.10	2.40
2.0	0.60	1.20	1.80	2.40	3.00	3.60	4.20	4.80
3.0	0.90	1.80	2.70	3.60	4.50	5.40	6.30	7.20
4.0	1.20	2.40	3.60	4.80	6.00	7.20	8.40	9.60
5.0	1.50	3.00	4.50	6.00	7.50	9.00	10.50	12.00
6.0	1.80	3.60	5.40	7.40	9.00	10.80	12.80	14.40
7.0	2.10	4.20	6.30	8.40	10.50	12.60	14.70	16.80
8.0	2.40	4.80	7.20	9.60	12.00	14.40	16.80	19.20
9.0	2.70	5.40	8.10	10.80	13.50	16.20	18.90	21.60
10.0	3.00	6.00	9.00	12.00	15.00	18.00	21.00	24.00

Linear Expansion ΔL (mm)

Expansion Diagram for PPRC Pipes

In the Installation, free expansion pipes are provided so that the intallation will not be affected by the linear expansion of pipes due to differences in temperature.

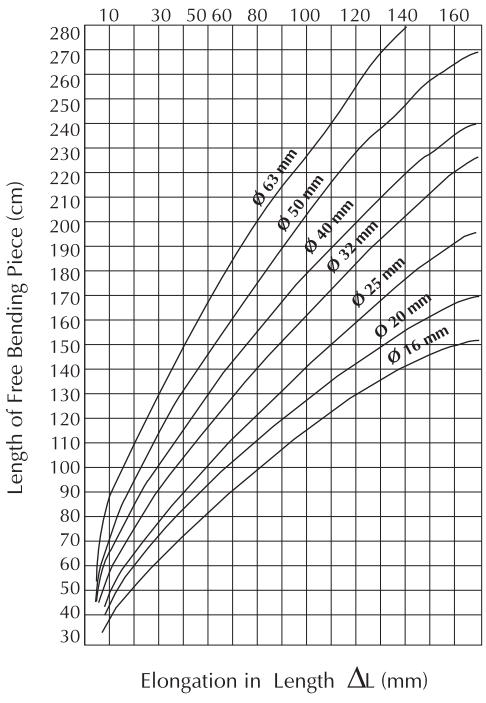
Length of Free Bending Piece



The length of free bending piece is calculated using the following formula:

$$Lf : C\sqrt{D.\Delta L}$$

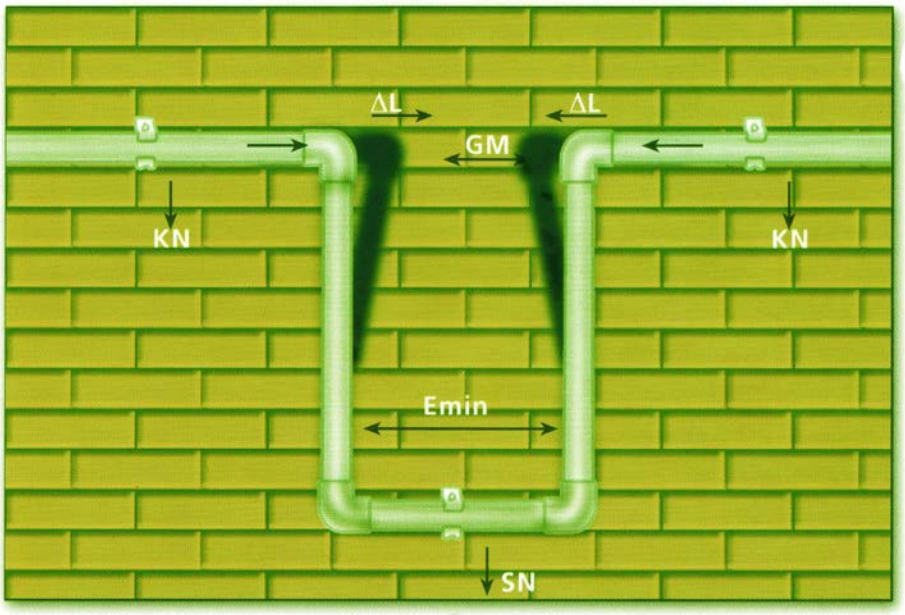
ΔL : Amount of Elongation (from Table 1) (mm)
D : Outside Diameter of Pipe
LF : Length of Free Bending Piece (mm)
C : Specific Constant of Material (C=30)
KN : Sliding Point
SN : Fixed Point



Expansion of PPRC Pipes

Width of Expansion Rooms

In case where the linear expansion cannot be compensated by a change in direction, an expansion room must be arranged as shown in the following figure.



Calculation of Minimum width of Expansion room:
Using the values for the temperature difference and length of pipe, elongation, ΔL, is found from Table 1.

When subjected to heat, the installation will exhibit on expansion of ΔL at each end (total expansion 2ΔL). Considering that elongation may increase due to the differences in temperature, a 150 mm distance of safety (GM) is provided.

Accordingly, the minimum width of expansion room will be 150+2ΔL. Where:

GM : Safety Distance (mm)
Emin : Minimum Width of Expansion Room (mm)
KN : Sliding Point
SN : Fixed Point

Pipe Clamp Spacings for PPRC Pipes

The Spacing for pipe clamps in horizontally laid PPRC pipes are determined using the table below.

It would be advantageous if the same spacings can be used for vertical installations as for horizontal installations.

Fixed Points : The fixed points will prevent the uncontrollable movements in the intallation, and at the same time, they will divide the whole installation into small expansion sections. In selecting the location of fixed points, factors such as the elongation of pipe, its weight, the type of liquid inside the pipe and other types of loads
are important.

The fixed points must be strong enough to resist the thrust of free bending piece. They should be located so that any changes of direction in the installation would allow for expansion.

The fixed points must be intstalled by fixing the pipes tightly at any point in the installation. For this purpose, couplings or a double-end fastening system should be used. In the application of double-end fastening system, the muff (socket) and fitting welding points are used.

Pipe Clamps Spacings for PPRC Pipes

Temperature Difference (℃)	Outside Diameter of Pipe (mm)								
	20	25	32	40	50	63	75	90	110
0	70	85	105	140	165	190	205	220	250
20	50	60	75	100	120	140	150	160	180
30	50	60	75	100	120	140	150	160	180
40	50	60	70	90	110	130	140	150	170
50	50	60	70	90	110	130	140	150	170
60	50	55	65	85	100	115	125	140	160
70	50	50	60	80	95	105	115	125	140
Clamp spacing (cm)									

Pipe Clamps Spacings for PPRC Pipes

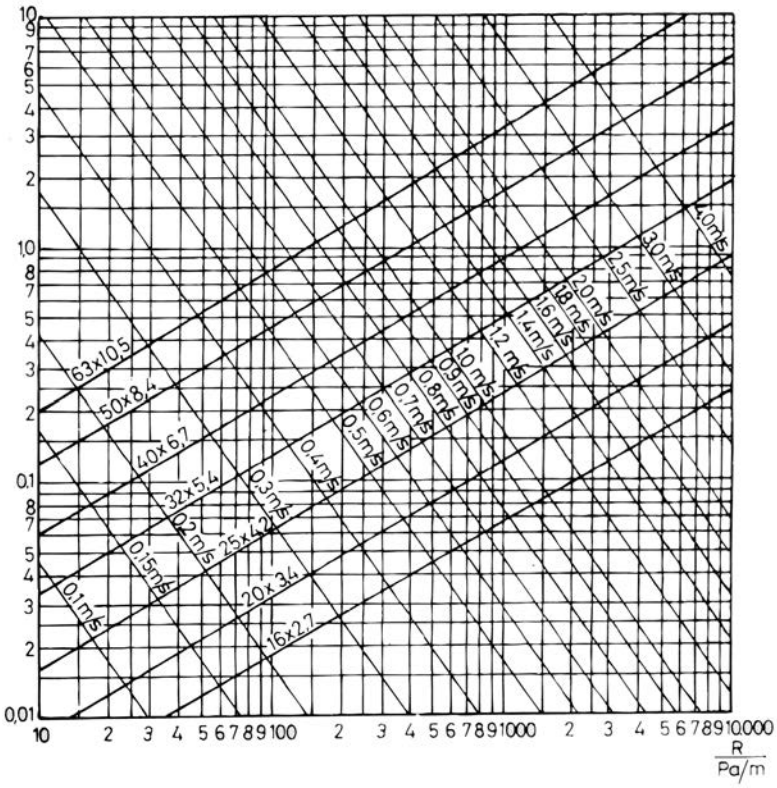
Temperature Difference (℃)	Outside Diameter of Pipe (mm)								
	20	25	32	40	50	63	75	90	110
0	155	170	195	220	245	270	285	300	325
20	120	130	150	170	190	210	220	230	250
30	120	130	150	170	190	210	220	230	240
40	110	120	140	160	180	200	210	220	210
50	110	120	140	160	180	200	210	220	210
60	100	110	130	150	170	190	200	210	200
70	90	100	120	140	160	180	190	200	200
Clamp spacing (cm)									

Diameter Selection for PPRC Pipes

In Water installations, the diameter of pipes are determined according to the anticipated water pressure and flow. The average rate of flow is calculated on the basis of these two factors. The following diagram demonstrates the pressure drop per meter of PPRC pipe as a function of flow.

Diagram showing the Pressure Drop in PPRC PN 20 Pipe.

V= ℓ/ sn

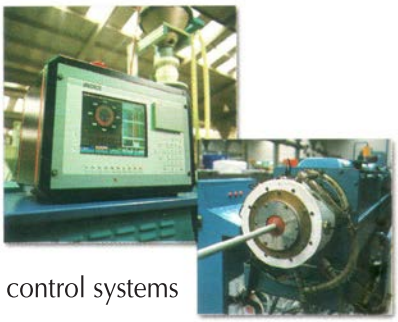


Production and Quality Control

In Jeddah Polymer , the production of PPRC pipes and fittings as realised using the original PPR-C Type 3 raw material.

The machines used in the production of pipes are equipped with ultrasonic measurement control systems which perform all measurement controls of pipes and adjust the machines accordingly.

With an understanding of quality gained by the ISO 9001 Certificate, all products are tested for internal pressure, impact resistance, tensile strength and elongation under heat, and are offered for use with Jeddah Polymer Quality Assurance after passing all required tests and approved.



ultra sonic measurement control systems

Assembly Technique for PPRC Pipes

Cut the pipe in a direction perpendicular to the axis of pipe, using only a special pipe cutter. Check to see that the welding machine has reached a

temperature of 260°C. Make sure that the dies used are clean. Push both the pipe and fitting simultaneously towards the welding die, without turning on the same axis. For information on the duration of welding and cooling periods, see the welding information table.

Join the pipe and fitting removed from the die at once, without turning. Don't process any welded pieces that have not completed their cooling period.

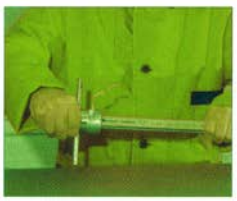
Assembly Technique for PPRC Pipes

Cut the pipe in a direction perpendicular to the axis of pipe, using only a special pipe cutter. Check to see that the welding machine has reached a

temperature of 260°C. Make sure that the dies used are clean.

Push both the pipe into a foil stripping apparatus adjusted according to the diameter of the pipe.

By turning the apparatus, strip the aluminium foil until the point of rest inside the apparatus is reached.



If any piece of foil is left on the pipe surface during foil stripping operation, make sure to remove it completely.

Push both the pipe and fitting simultaneously towards the welding die, without turning on the same axis. For information on the duration of welding and cooling periods, see the welding information table.

Join the pipe and fitting removed from the die at once, without turning. Don't process any welded pieces that have not completed their cooling period.

Assembly Technique for PPRC Pipes

Welding and Test Method of PPRC Pipes

Welding Information

Outside diameter	Depth of Welding(mm)	Duration of Heating Period (sec)		Waiting Period (sec)	Duration of Welding Period (sec)	Duration of Cooling Period (min)
20	14	5	8	4	6	2
25	15	7	11	4	10	2
32	17	8	12	6	10	4
40	18	12	18	6	20	4
50	20	12	18	6	20	4
63	26	24	36	8	30	6
75	29	30	45	8	30	6
90	32	40	60	8	40	6
110	35	50	75	10	50	8

* If the temperature of medium is below+5℃,
the duration of heating must be increased by 50%

Test of the system before delivery

For the quality control of the system, following test procedure should be applied after the installation of the PPRC pipes.

- Close all the valves in the system.
- Firstly,the main valve should be opened a little bit while the system is filled. The air is released at the most distant and highest point in order to avoid powerful pressure strokes.
- A separate test is made by switching each valve on.
- Pressure test is made in two steps.

First Step;
Entire system is tested for leakage at 1.5 times hihger pressure from maximum foreseen pressure for 30 minutes. At 10th and 20 th minutes any pressure loss or leakage is observed. Pressure is raised again. There should not be any pressure loss higher than 0,6 bar or leakages at any point.

Second Step;
1,5 times higher pressure is applied for two hours. This time 0.2 bar and any leakage should be avoided.

- Is the manometer displays a pressure loss higher than the values above then it means that there is leakage in the system. The pipe on which the leakage is observed should be controlled and changed or re- squeezed.
- Entire system should be washed prior to use.
- The lines that will not be used should be closed and evacuated against freezing.

CLASSIFICATION ACCORDING TO RESISTANCE TO EFFECTS OF CHEMICALS

NAME OF CHEMICAL	CONCENTRATION %	20℃	60℃	100℃
Aluminium Chloride	Sat. sol	D	D	
Aluminium Nitrate	Sat. sol	D	D	
Aluminium Sulfate	Sat. sol	D	D	
Ammonia, dry gas	Tp-s	D	D	
Ammonia, Liquid	Tp-l	D	D	
Ammonium Acetate	Sat. sol	D	D	D
Ammonium Carbonate	Sat. sol	D	D	D
Ammonium Nitrate	Sat. sol	D	D	D
Ammonium Phosphate	Sat. sol	D	D	D
Ammonium Sulphate	Sat. sol	D	D	D
Acetik Acid	Up to 10	D	D	D
	50	D	D	SD
Aceton	Tp-l	D	D	
Copper Salts	Tp-l	D	D	D
Barium Salts	Tp-l	D	D	D
Benzene	Tp-l	SD	DZ	DZ
Benzyl alcohol	Tp-l	D	SD	
Gasoline (fuel)	W. sol.	DZ	DZ	DZ
Benzonic Acid	Sat.sol	D	D	
Beer	W.sol	D	D	
Bromine, gas	Tp-g	DZ	DZ	DZ
Bromine, liquid	Tp-l	DZ	DZ	DZ
Butone, gas	Tp-g	D	D	
Mercury	Tp-l	D	D	
Zinc Chloride	Sat. sol	D	D	
Zinc Nitrate	Sat. sol	D	D	
Zinc Sulfate	Sat. sol	D	D	
Ethanol	95	D	D	
Ethyl Acetate	Tp-l	SD	DD	DZ
Ethyl Ether	Tp-l	D	SD	
Fosforik acid	Up to 50	D	D	D
	50-75	D	D	
Fructose	Sol.	D	D	D
Formaldehyde	Up to 40	D	D	
Formic Acid	10	D	D	SD
	10-85	D	DZ	
Glycerin	Tp-l	D	D	D
Glucose	Sol.	D	D	D
Hexane	Tp-l	D	SD	
Heptane	Tp-l	SD	DZ	DZ
Hydrogen Peroxide	Up to 30	D	SD	
Hydrochloric Acid	Up to 20	D	D	D
	Concentrated	D	SD	SD
Hydrochloric Acid, dry gas	Tp-g	D	D	
Urine		D	D	
Isopropyl Alcohol	Tp-l	D	D	D
Camphor oil	Tp-l	DZ	DZ	DZ
Calcium Carbonate	Suspention	D	D	D
Calcium Chlorine	Sat. sol	D	D	D
Carbon Dixoide, gas	Tp-g	D	D	
Carbon Monoxide gas	Tp-g	D	D	
Chlorine, dry gas	Tp-g	DZ	DZ	DZ
Chlorinated Water	Sat. sol	D	SD	
Cholroform	Tp-l	SD	DZ	DZ
Aqua regia		DZ	DZ	DZ
Xylenes	Tp-l	DZ	DZ	DZ
Lactic Acid	Up to 90	D	D	
Magnesium Salts	Sat. sol	D	D	

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Resistance of PPRC Pipes Against the Effects of Chemicals

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Resistance of PPRC Pipes Against the Effects of Chemicals

	CONCENTRATION %	A 20°60 °	PP 20 °60 °100 °	
Diesel oil		R	RL	
Methyl Alcohol	Tp-l	R		
Fruit Juice	Sat. sol	R	R	R
Ink	Sat. sol	R	R	
Nitric Acid	5	R	RL	
	10-30	R	NR	NR
	>50	NR	NR	NR
Nitrobenzene	Tp-l	R	RL	
Paraffin	Tp-l	R	R	NR
Paraffin Oil (F65)	Tp-l	R	RL	NR
Petroleum		R	RL	
Propane, gas	Tp-g	R	R	
Vinegar		R	RL	
Citric Acid	Sat.sol	R	R	R
Sodium Hydroxide	10-60	R	R	R
Sodium Carbonate	Up to 50	R	R	RL
Sodium Chloride	Sat. sol	R	R	
Sea, Water		R	R	R
Mineral Water		R	R	R
Sulfuric Acid	Up to 10	R	R	R
	10-30	R	R	
	50-96	R	RL	NR
Milk	W. sol	R	R	
Wines and Sprits	W. sol	R	R	
Toluene	Tp-l	RL	NR	NR
Trichloroethylene	Tp-l	NR	NR	NR
Urea	Sat.sol	R		
Olive Oil	W.sol	R	R	RL

ABBREVIATIONS AND SYMBOLS USED

Tp-l	:	Technically pure, liquid
Tp-g	:	Technically pure, gas
Sat. sol.	:	Saturated solution
W. sol.	:	Working solution having a concentration most widely used in industrial applications
Sol.	:	Solution
R	:	Resistant
RL	:	Resistant with limitation, may exhibit slight sign
of		corrosion
NR	:	Nonresistant

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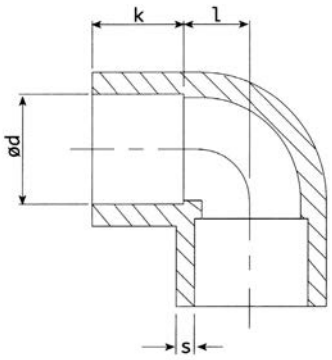
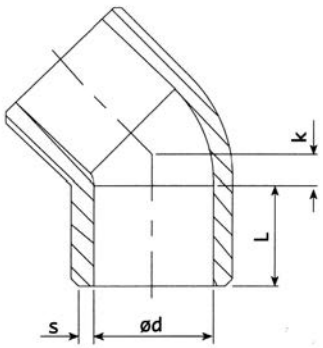
Ø d (mm)	l(mm)	k(mm)	Weight kg/Piece
20	16	12	0.014
25	18	15	0.023
32	20	18	0.040
40	22	21	0.068
50	26	26	0.128
63	29	34	0.231
75	32	40	0.365
90	46	35.5	0.638
110	56	41.5	1.115



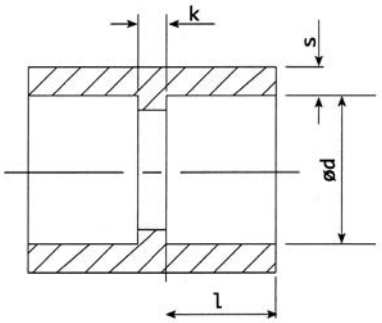
Elbow (90 ℘)

Ø d (mm)	l(mm)	k(mm)	Weight kg/Piece
20	17	5	0.013
25	19	6	0.018
32	22	7	0.031
40	24	9	0.050



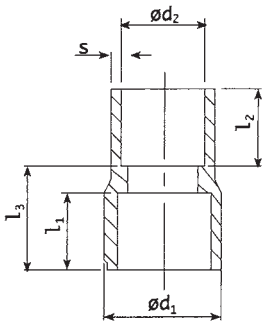
Elbow (45 ℘)

Ø d (mm)	l(mm)	k(mm)	Weight kg/Piece
20	16	4	0.010
25	18	4	0.014
32	20	4	0.030
40	22	6	0.041
50	25	6	0.065
63	30	6	0.128
75	32	6	0.210
90	35.5	6	0.340
110	41.5	6	0.562



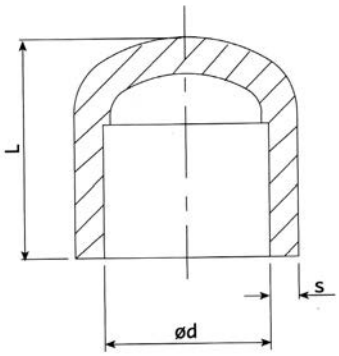
Socket

Tip	Ø d_1 (mm)	Ø d_2 (mm)	l_1 (mm)	l_2 (mm)	l_3 (mm)	Weight kg/Piece
25-20	24.2	19.2	15	16	20	0.013
32-20	31.2	19.2	17	16	32	0.016
32-25	31.2	24.2	17	17	20	0.009
40-20	39.2	19.2	19	16	32	0.026
40-25	39.2	24.2	19	18	25	0.027
40-32	39.2	31.2	19	20	20	0.031
50-20	49.2	19.2	22	16	32	0.037
50-25	49.2	24.2	22	18	20	0.038
50-32	49.2	31.2	22	20	32	0.043
50-40	49.2	39.2	22	22	25	0.047
63-25	62.2	24.2	26	18	20	0.069
63-32	62.2	31.2	26	20	32	0.074
63-40	62.2	39.2	26	22	20	0.076
63-50	62.2	49.2	26	26	32	0.084
75-50	74.2	49.2	30	26	45	0.125
75-63	74.2	62.2	39	30	50	0.155
90-75	90	74.25	35.5	31	50	0.258
110-90	110	89.2	41.5	35.5	56	0.415



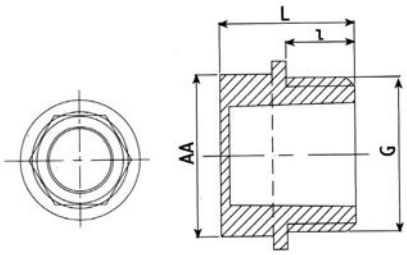
Reducer

Cap



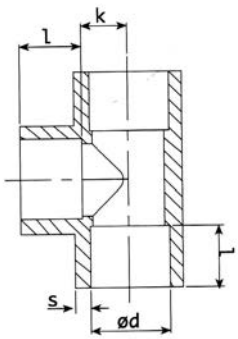
Ø d (mm)	s (mm)	l (mm)	k (mm)	Weight kg/Piece
20	6.2	16	40	0.013
25	6.2	18	47	0.015
32	7.2	20	64	0.026
40	7.3	22	75	0.034
50	6.0	25	40	0.048
63	8.0	30	50	0.090
75	12.5	32	67	0.190
90	35.5	80	80	0.274
110	41.5	95	95	0.600

Plug



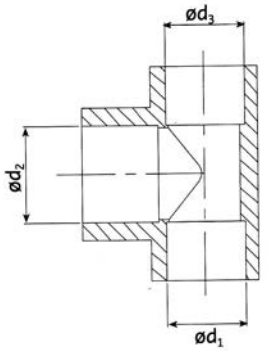
Ø d (mm)	s	l (mm)	k	Weight kg/Piece
20	1/2	23	22	0.007
25	3/4	23	24	0.008

TEE Piece



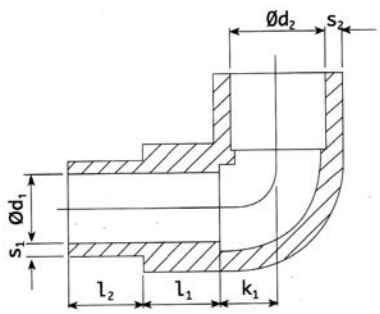
Ø d (mm)	s (mm)	l (mm)	k (mm)	Weight kg/Piece
20	15	12	5.3	0.025
25	19	12	5.3	0.030
32	21	16	6.7	0.065
40	22	21	6.7	0.190
50	25	27	8.6	0.160
63	29	34	10.3	0.294
75	32	41	12.5	0.478
90	35.5	46	15.0	0.795
110	41.5	56	18.5	0.855

Reducer TEE



Type	Ø d_1 (mm)	Ø d_2 (mm)	Ø d_3 (mm)	Weight kg/Piece
25-20-20	24.2	19.2	19.2	0.029
25-20-25	24.2	19.2	24.2	0.033
32-20-20	31.2	19.2	19.2	0.056
32-20-32	31.2	19.2	31.2	0.056
32-25-20	31.2	24.2	19.2	0.039
32-25-32	31.2	24.2	31.2	0.058
40-20-40	39.2	19.2	39.2	0.080
40-25-40	39.2	24.2	39.2	0.081
40-32-40	39.2	31.2	39.2	0.085

Tild Elbow



Ø d (mm)	k (mm)	l_1 (mm)	l_2 (mm)	Weight kg/Piece
20	12	16	16	0.024
25	15	16	16	0.038

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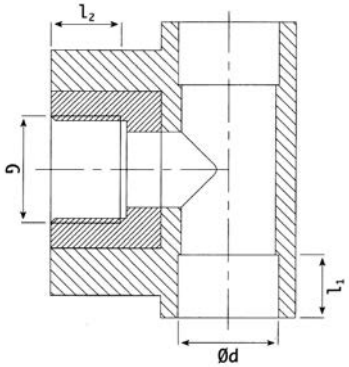
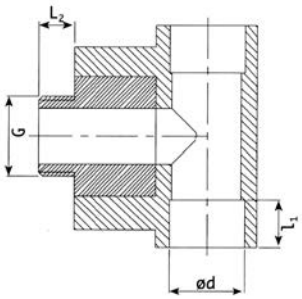
Ø d (mm)	G″ inch	l_1 (mm)	l_2 (mm)	Weight kg/Piece
20	1/2	15	12	0.060
20	3/4	15	12	0.085
25	1/2	19	12	0.078
25	3/4	19	12	0.090
32	3/4	20	12	0.125



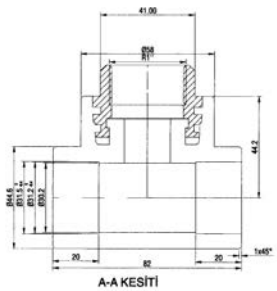
TEE Round (Female Threaded)

Ø d (mm)	G″ inch	l_1 (mm)	l_2 (mm)	Weight kg/Piece
20	1/2″	15	12	0.076
25	3/4″	15	12	0.130



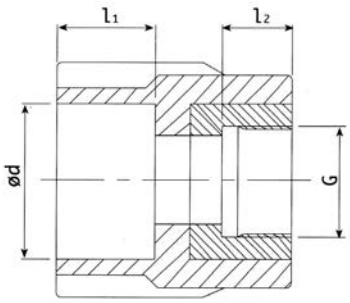
TEE Round (Male Threaded)

Ø d (mm)	G″ inch	l_1 (mm)	l_2 (mm)	Weight kg/Piece
32	1″	20	13.5	0.205



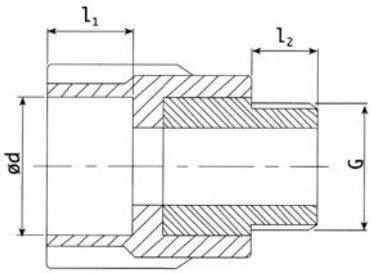
TEE Hexagonal (Female Threaded)

Ø d (mm)	G″ inch	l_1 (mm)	l_2 (mm)	Weight kg/Piece
20	1/2″	16	12	0.054
20	3/4″	18	12	0.067
25	1/2″	18	12	0.072
25	3/4″	18	12	0.085



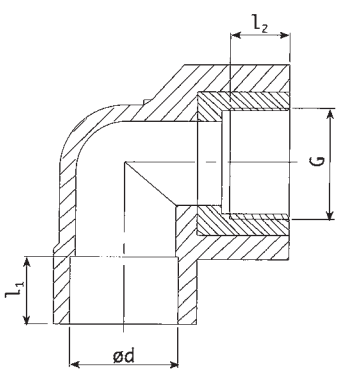
Socket Round (Female Threaded)

Ø d (mm)	G″ inch	l_1 (mm)	l_2 (mm)	Weight kg/Piece
20	1/2″	16	12	0.068
20	3/4″	18	14	0.123
25	1/2″	18	12	0.086
25	3/4″	18	14	0.101



Socket Round (Male Threaded)

Ø d (mm)	G″ inch	l_1 (mm)	l_2 (mm)	Weight kg/Piece
20	1/2″	16	12	0.054
20	3/4″	16	12	0.078
25	1/2″	18	12	0.060
25	3/4″	18	12	0.071
32	3/4″	20	12	0.099



Elbow Round (Female Threaded)

Pakistan Standards
CM/L-1777-A/2006®

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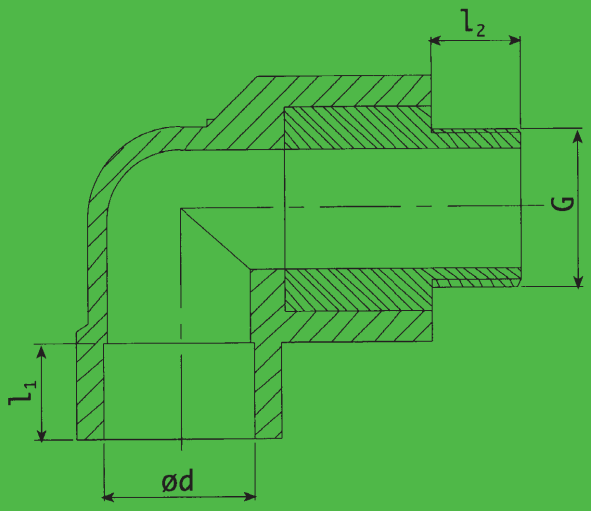
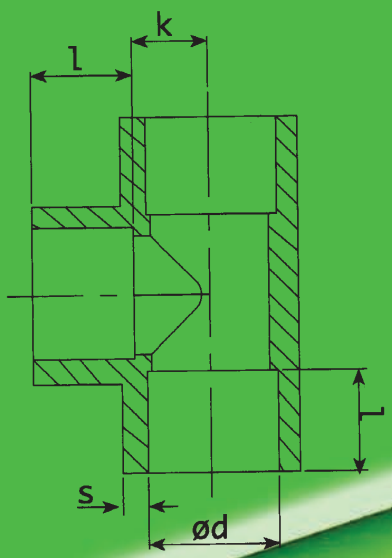
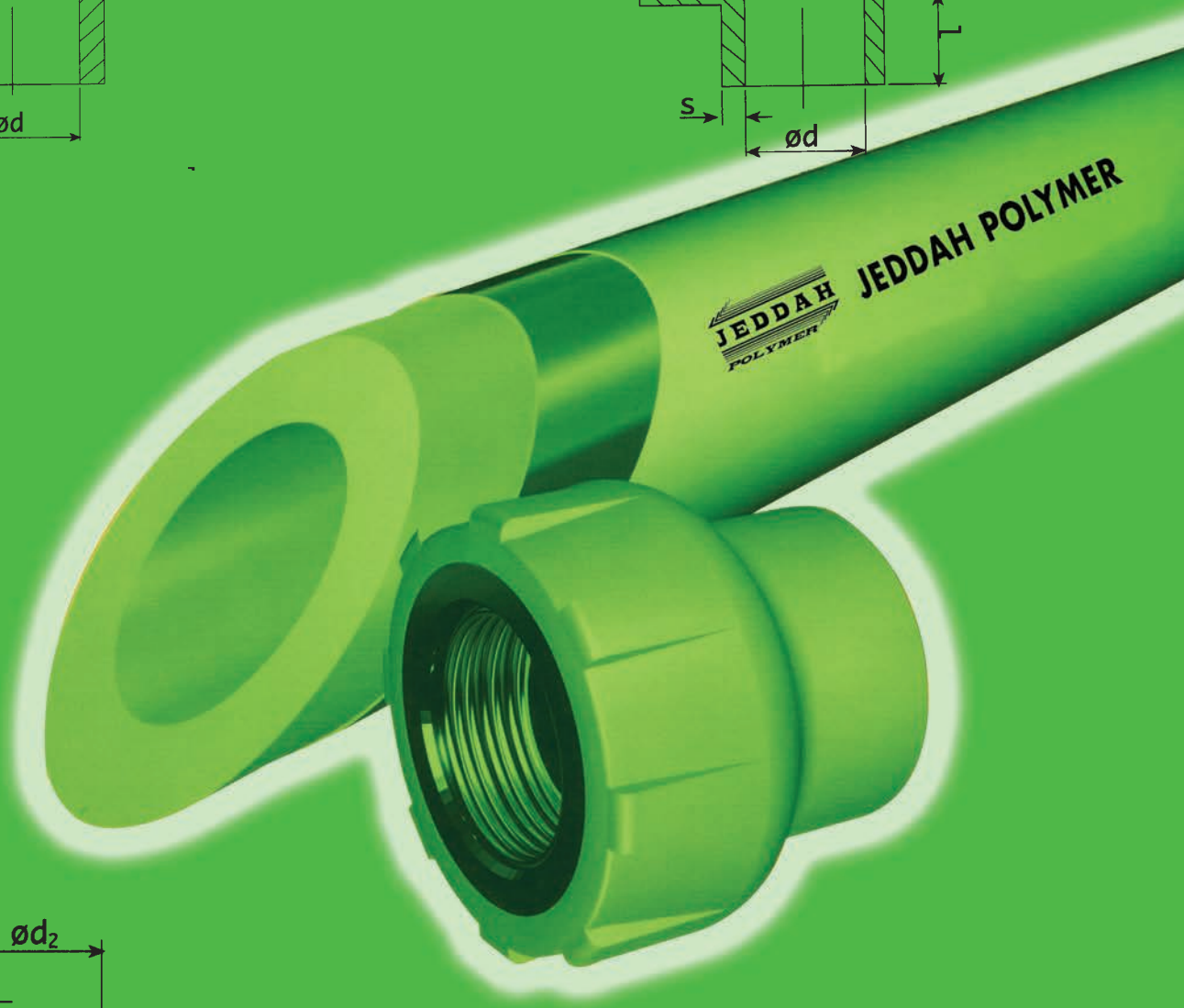
Manufacturer of UPVC, CPVC, PPRC, Cable duct Pipes and fittings

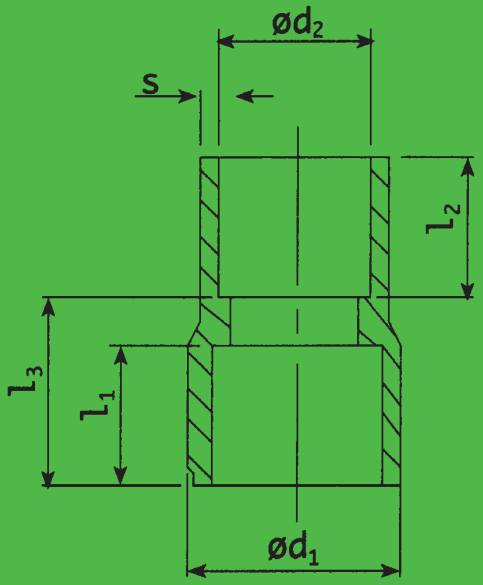
RINA
ISO 9001:2008 CERTIFIED
Member of CISQ Federation

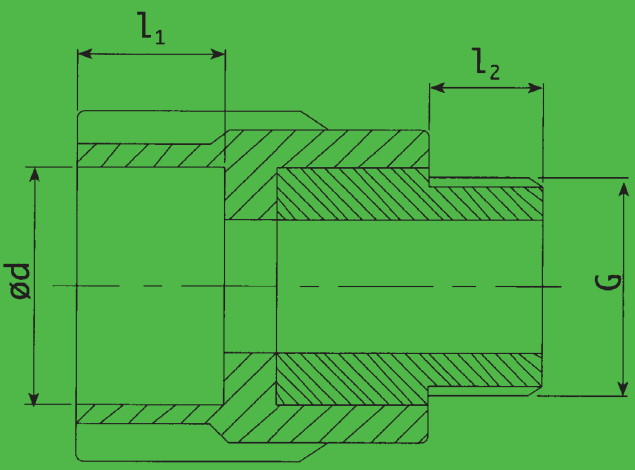
Plot No. 639/1, Block 22, F.B. Industrial Area Karachi, Pakistan
Tel : 92-21-36343666, 36365964, 36349181 FAX : 92-21-36363676
E-MAIL : jeddahpolymer4@gmail.com











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Certified Quality

RINA
www.rina.org

CERTIFICATE No. 25417/12/S

IT IS HEREBY CERTIFIED THAT THE QUALITY MANAGEMENT SYSTEM OF

JEDDAH POLYMER

PLOT 639/1, BLOCK 22, F.B. INDUSTRIAL AREA KARACHI PAKISTAN

IN THE FOLLOWING OPERATIONAL UNITS

PLOT 639/1, BLOCK 22, F.B. INDUSTRIAL AREA KARACHI PAKISTAN

IS IN COMPLIANCE WITH THE STANDARD

ISO 9001:2008

FOR THE FOLLOWING FIELD(S) OF ACTIVITIES

MANUFACTURE OF BUILDING MATERIAL (UPVC PIPE & FITTING, CPVC PIPE & FITTING, PPRC PIPE & FITTING, PVC CABLE DUCT)

Dr. Roberto Cavarra
(Managing Director)

First Issue 11.04.2012
Current Issue 11.04.2012
Expiry Date 11.04.2015

RINA Services S.p.A.

ACCREDIA

CISQ

IQNet
THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

IQNet and its partner
CISQ/RINA
hereby certify that the organisation

JEDDAH POLYMER

PLOT 639/1, BLOCK 22, F.B. INDUSTRIAL AREA KARACHI PAKISTAN
in the following operative units

PLOT 639/1, BLOCK 22, F.B. INDUSTRIAL AREA KARACHI PAKISTAN

for the following field of activities

MANUFACTURE OF BUILDING MATERIAL (UPVC PIPE & FITTING, CPVC PIPE & FITTING, PPRC PIPE & FITTING, PVC CABLE DUCT)

has implemented and maintains a

Quality Management System

which fulfils the requirements of the following standard

ISO 9001:2008

Registration Number: IT-81654

First Issue : 2012-04-11 Current Issue : 2012-04-13

René Wasme
President of IQNET

Gianrenzo Prati
President of CISQ

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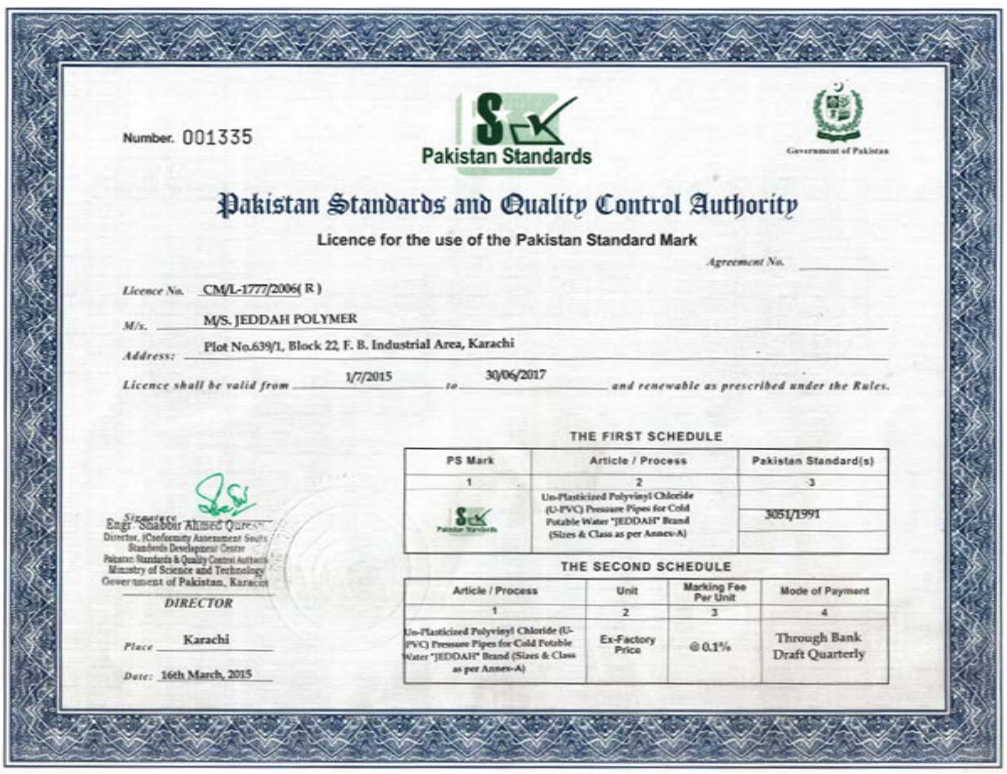

Number. 001335

Pakistan Standards

Government of Pakistan

Pakistan Standards and Quality Control Authority

Licence for the use of the Pakistan Standard Mark

Agreement No. _____

Licence No. CM/L-1777/2006(R)

M/s. M/S. JEDDAH POLYMER

Address: Plot No.639/1, Block 22, F. B. Industrial Area, Karachi

Licence shall be valid from 1/7/2015 to 30/06/2017 and renewable as prescribed under the Rules.

THE FIRST SCHEDULE

PS Mark	Article / Process	Pakistan Standard(s)
1	2	3
	Un-Plasticized Polyvinyl Chloride (U-PVC) Pressure Pipes for Cold Potable Water "JEDDAH" Brand (Sizes & Class as per Annex-A)	3051/1991

THE SECOND SCHEDULE

Article / Process	Unit	Marking Fee Per Unit	Mode of Payment
1	2	3	4
Un-Plasticized Polyvinyl Chloride (U-PVC) Pressure Pipes for Cold Potable Water "JEDDAH" Brand (Sizes & Class as per Annex-A)	Ex-Factory Price	@ 0.1%	Through Bank Draft Quarterly

Signature
Engr. Shabbir Ahmed Qureshi
Director, (Conformity Assessment Scheme)
Standards Development Centre
Pakistan Standards & Quality Control Authority
Ministry of Science and Technology
Government of Pakistan, Karachi

DIRECTOR

Place Karachi

Date: 16th March, 2015

Do's and Do not's
PPRC Pipes and Fittings

- Avoid Strikes, hits and strong impacts.
- Do not use Pipes that are deformed and have cracks on intersection points.
- Do not expose the Pipes to direct sunlight for long periods.
- Do not weld dirty pipes and fittings. Isolate the Pipes in exterior plumbing applications against UV rays and freezing.
- Use only sharp objects for cutting the Pipes.
- Turn Pipes and Fittings up to maximum 5' within 5 seconds following the welding
- Do not use excess hawser while squeezing the the armatures. (Use of teflon band is recommended)
- Avoidusing conic threaded parts in connections do not over squeeze.
- In situations where bending is necessary use 140 ℃ air instead of heating with flame.
- Apply leakage test after the installation.
- Protect the system against freezing during cold weathers.

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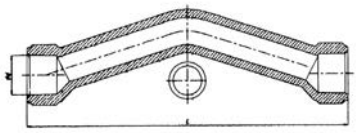
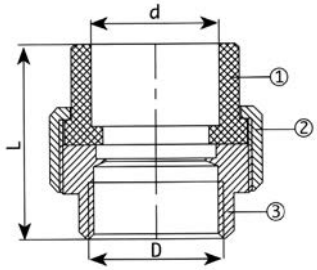
Matters to care for PPRC Pipes and Fittings

Bridge



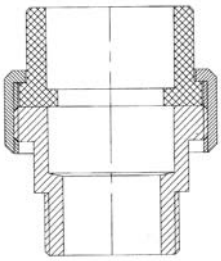
Ø d (mm)	L	Weight kg/Piece
20	160	0.035
25	200	0.065
32	300	0.138

Union Female Thread



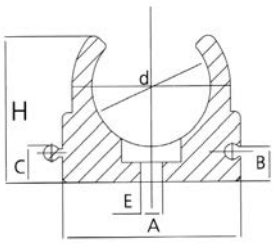
Ø d (mm)	D	L	Weight kg/Piece
20	1/2″	40	0.113
25	3/4″	45	0.208
32	1″	47.5	0.225
40	1/4″	51	0.365
50	1.1/2″		0.519
63	2″		0.835

Union Male Thread



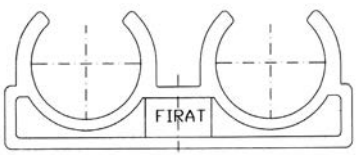
Ø d (mm)	D	Weight kg/Piece
20	1/2″	0.204
25	3/4″	0.406
32	1″	0.525
40	1/4″	0.650
50	1.1/2″	0.650
63	2″	0.881

Clip



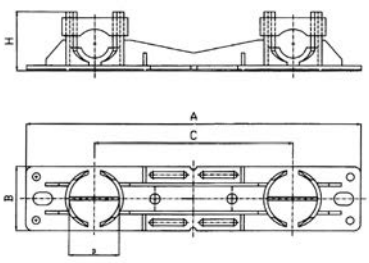
Ø d (mm)	d	C	B	E	A	L	Weight kg/Piece
20	19	9	8.75	5.5	30	27.3	0.005
25	24	9	8.75	5.5	36	31.5	0.006
32	30	9	8.75	5.5	45	36.7	0.009
40	39	9	8.75	5.5	54	44.7	0.010

Double Clip



Ø d (mm)	Ø d	L	H	Weight kg/Piece
25	24.8	60	29	0.013

Tap Connection Piece



Ø d (mm)	Ø d	H	B	A	C	Weight kg/Piece
46	24.8	46	50	260	154	0.625

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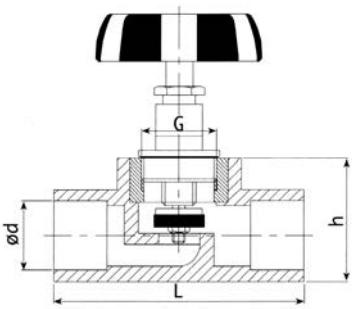
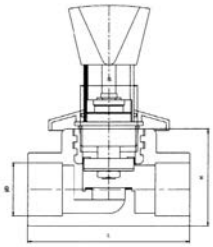
Ø d (mm)	G″ inch	h	L (mm)	Weight kg/Piece
20	1/2″	42.5	67	0.151
25	3/4″	45.5	88.4	0.208
32	1″	56.5	94	0.345



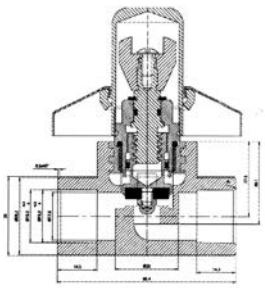
Stop Valve

Ø d (mm)	G″ inch	h	L (mm)	Weight kg/Piece
20	1/2″	42.5	67	0.433
25	3/4″	45.5	88.4	0.454
32	1″	88.4	94	0.600



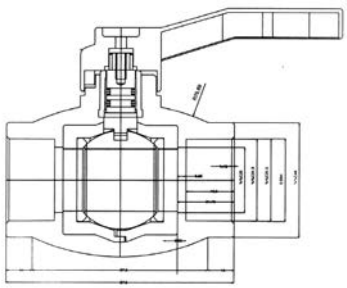
Chrome Lux Valve

Ø d (mm)	G″ inch	l_1 (mm)	l_2 (mm)	Weight kg/Piece
20	1/2″	42.5	67	0.248
25	3/4″	45.5	88.4	0.296
32	1″	56.5	94	0.427



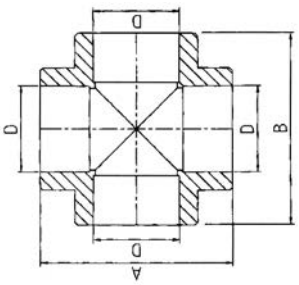
Chorme Lux Hidden Valve

Ø d (mm)	DØ	D1	L (mm)	Weight kg/Piece
20	1/2″	42.5	67	0.260
25	3/4″	45.5	88.4	0.360
32	1″	88.4	94	0.595



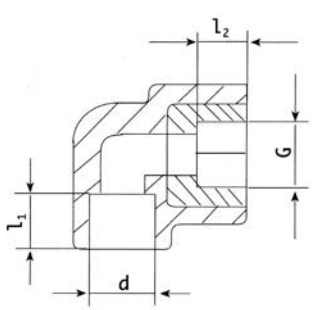
Ball Valve

Ø d (mm)	A	B	DØ	Weight kg/Piece
20	51	51	19.5	0.027
25	59	59	24.5	0.038
32	70	70	31.5	0.064



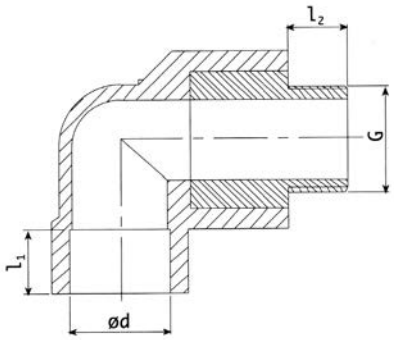
Cross TEE

Ø d (mm)	G″ inch	l_1 (mm)	l_2 (mm)	Weight kg/Piece
20	1/2″	16	12	0.066



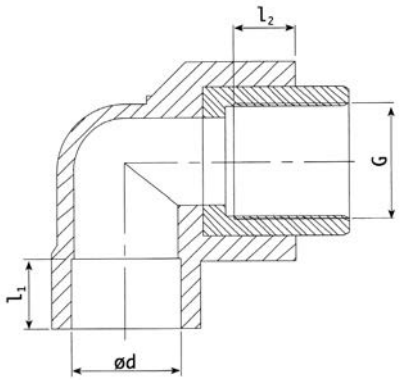
Elbow Under Plaster (Female Threaded)

Round Elbow (Male Threaded)



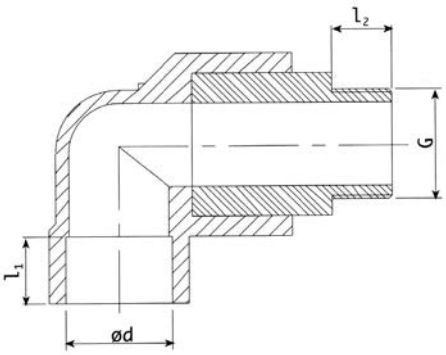
Ø d (mm)	G″ inch	l_1 (mm)	l_2 (mm)	Weight kg/Piece
20	1/2″	16	12	0.068
20	3/4″	16	14	0.078
25	1/2″	18	14	0.071
32	3/4″	20	14	0.125
25	3/4″	16	14	0.104

Elbow Hexagonal (Female Threaded)



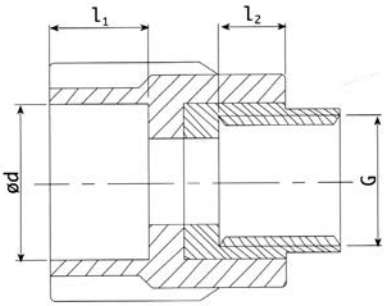
Ø d (mm)	G″ inch	l_1 (mm)	l_2 (mm)	Weight kg/Piece
32	1″	20	28	0.27

Elbow Hexagonal (Male Threaded)



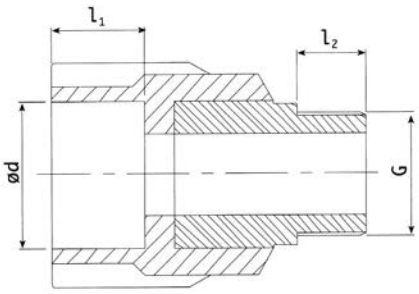
Ø d (mm)	G″ inch	l_1 (mm)	l_2 (mm)	Weight kg/Piece
32	1″	20	28	0.392

Socket Hexagonal (Female Threaded)



Ø d (mm)	G″ inch	l_1 (mm)	l_2 (mm)	Weight kg/Piece
32	1″	20	16	0.210
40	1.1/4″	22	18	0.400
50	1.1/2″	26	24	0.403
63	2″	30	28	0.661
75	2.1/2″	32	30	0.832

Socket Hexagonal (Male Threaded)



Ø d (mm)	G″ inch	l_1 (mm)	l_2 (mm)	Weight kg/Piece
32	1″	20	16	0.364
40	1.1/4″	22	18	0.664
50	1.1/2″	24	22	0.690
63	2″	30	28	0.727
75	2.1/2″	32	30	0.963