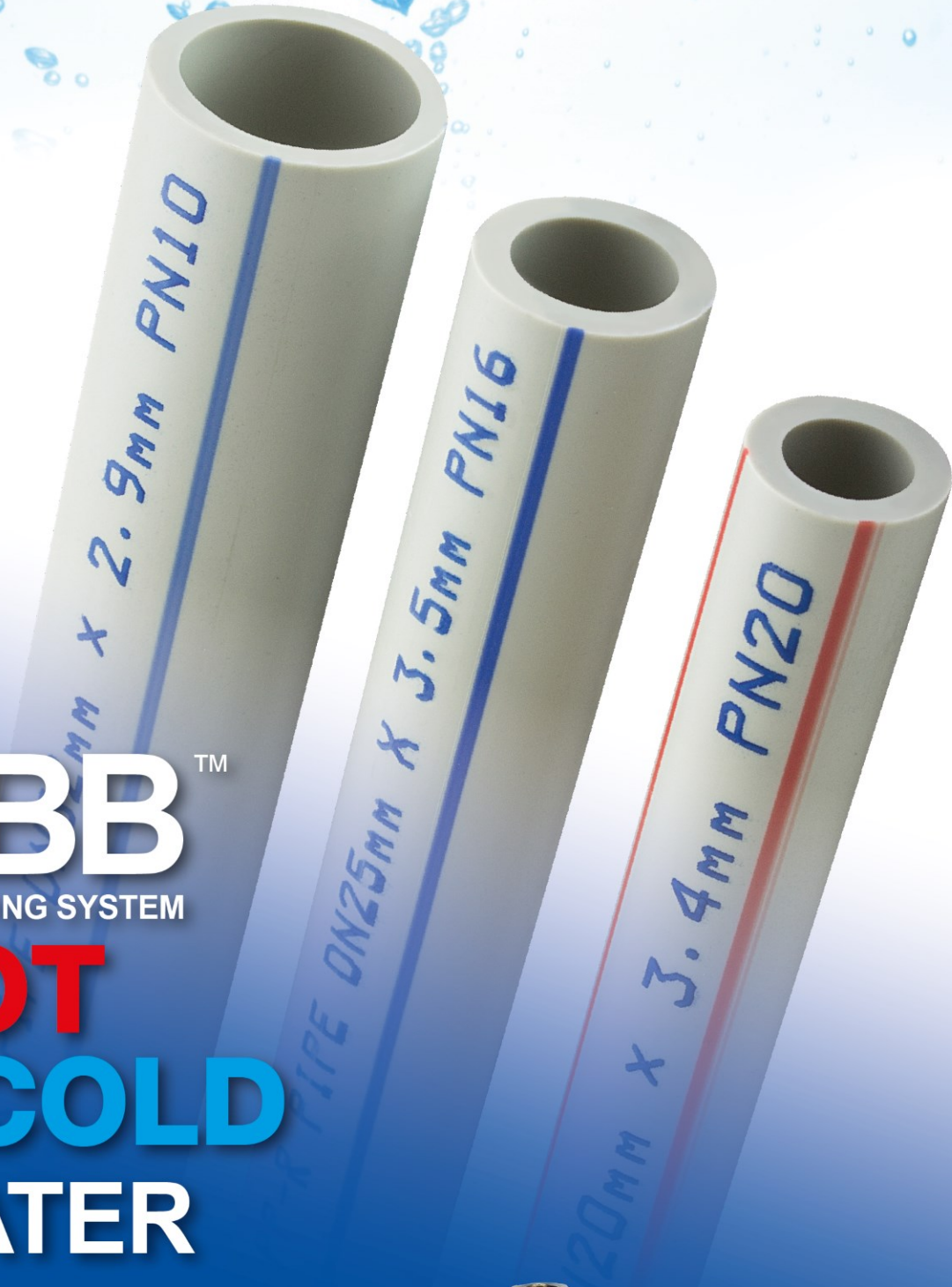


**BBB**™ THE PREFERRED BRAND  
FOR PIPING

**BINA PLASTIC**  
INDUSTRIES SDN BHD  
(Co.No. 54840-T)



**BBB**™

PP-R PIPING SYSTEM

**HOT**  
& **COLD**  
**WATER**



## **BBB™** **PP-R PIPING SYSTEM**

With the rising demand for quality houses and buildings, good internal plumbing system is equally expected to play its role for the overall expectations of the owners. Hence the introduction of BBB PP-R pipes and fittings which offers continuous clean water, non-leakage, non-clogging and easy installation. Advantages of BBB PP-R pipes and fittings offers the following benefits:

**Life Durations:** Over 50 years in temperatures up to 90°C and operating pressure from 6 to 26 bars.

**Hydraulic Pressure Resistance:** BBB PP-R pipes show resistance under very high pressure (more than 100 bars)

**Low Thermal Penetrability:** BBB PP-R has very low thermal penetrability in hot and freezing water

**Chemical Resistance:** BBB PP-R shows high resistance to most chemicals and can be used in chemical laboratories

**Mechanical Resistance:** BBB PP-R pipes have very good resistance in mechanical strength making it hard to break or crack

**Endurance in corrosion:** BBB PP-R shows remarkable endurance to corrosion even in areas where the water is very hard. The materials remain constant

**Low Friction:** The texture of the material and it's smooth internal surface ensures minimum friction, thereby maintaining constant pressure and non-clogging.

**Certificates:** BBB PP-R are certified by SIRIM and SPAN under ISO standards EN ISO 15874

### Types of pipes available **BBB PP-R PIPES**

**FOR  
COLD WATER**



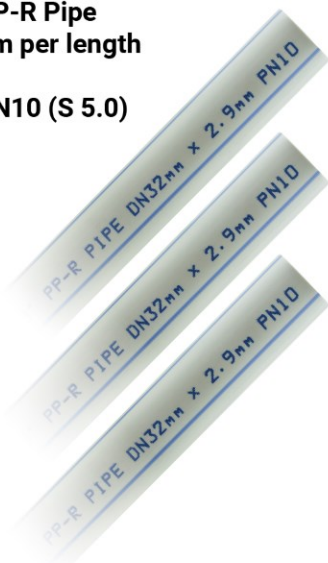
**FOR  
HOT WATER**



# PP-R Pipes Specification

## PP-R Pipe 4m per length

### PN10 (S 5.0)



Outer Diameter (OD) (mm)	Min. Wall Thickness (mm)	Internal Diameter (ID) (mm)	Packing Per Bag (pc)
20	1.9	16.2	25
25	2.3	20.4	15
32	2.9	26.2	12
40	3.7	32.6	8
50	4.6	40.8	5
63	5.8	51.4	4
75	6.8	61.4	1
90	8.2	73.6	1
110	10.0	90.0	1

## PP-R Pipe 4m per length

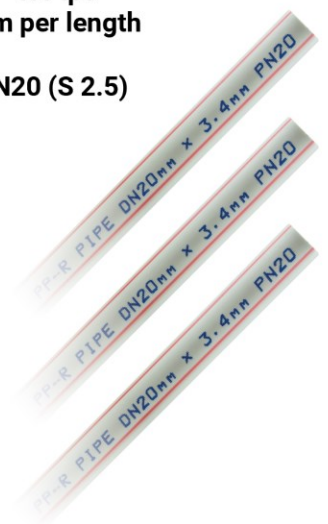
### PN16 (S 3.2)



Outer Diameter (OD) (mm)	Min. Wall Thickness (mm)	Internal Diameter (ID) (mm)	Packing Per Bag (pc)
20	2.8	14.4	25
25	3.5	18.0	15
32	4.4	23.2	12
40	5.5	29.0	8
50	6.9	36.2	5
63	8.6	45.8	4
75	10.3	54.4	1
90	12.3	65.4	1
110	15.1	79.8	1

## PP-R Pipe 4m per length

### PN20 (S 2.5)



Outer Diameter (OD) (mm)	Min. Wall Thickness (mm)	Internal Diameter (ID) (mm)	Packing Per Bag (pc)
20	3.4	13.2	25
25	4.2	16.6	15
32	5.4	21.2	12
40	6.7	26.6	8
50	8.3	33.4	5
63	10.5	42.0	4
75	12.5	50.0	1
90	15.0	60.0	1
110	18.3	73.4	1

# PP-R Fittings Specification

SOCKET	Size (mm)	Packing
	20	100
25	50	
32	50	
40	25	
50	10	
63	8	
75	8	
90	6	
110	2	



ELBOW 45°	Size (mm)	Packing
	20	100
25	50	
32	50	
40	20	
50	10	
63	6	
75	4	
90	2	
110	2	



ELBOW 90°	Size (mm)	Packing
	20	100
25	50	
32	25	
40	15	
50	10	
63	6	
75	4	
90	2	
110	1	



EQUAL TEE	Size (mm)	Packing
	20	50
25	50	
32	25	
40	20	
50	8	
63	6	
75	2	
90	2	
110	1	



REDUCING BUSH	Size (mm)	Packing
	25 x 20	100
32 x 20	100	
32 x 25	50	
40 x 20	50	
40 x 25	50	
40 x 32	50	
50 x 20	20	
50 x 25	20	
50 x 32	25	
50 x 40	25	
63 x 20	20	
63 x 25	20	
63 x 32	15	
63 x 40	20	
63 x 50	15	
75 x 63	8	
90 x 63	8	
90 x 75	8	
110 x 63	2	
110 x 75	2	
110 x 90	2	



END CAP	Size (mm)	Packing
	20	100
25	100	
32	50	
40	20	
50	25	
63	10	



STOP VALVE	Size (mm)	Packing
	20	10
25	10	
32	10	



# PP-R Fittings Specification

## REDUCING TEE



Size (mm)	Packing
25 x 20 x 25	50
32 x 20 x 32	20
32 x 25 x 32	20
40 x 20 x 40	20
40 x 25 x 40	20
40 x 32 x 40	20
50 x 20 x 50	8
50 x 25 x 50	10
50 x 32 x 50	8
50 x 40 x 50	8
63 x 25 x 63	6
63 x 32 x 63	6
63 x 40 x 63	6
63 x 50 x 63	6
75 x 25 x 75	2
75 x 32 x 75	2
75 x 40 x 75	2
75 x 50 x 75	2
75 x 63 x 75	2
90 x 32 x 90	2
90 x 40 x 90	2
90 x 50 x 90	2
90 x 63 x 90	2
110 x 50 x 110	1
110 x 63 x 110	1

## FIANGE ADAPTOR



Size (mm)	Packing
40	25
50	20
63	10
75	6
90	8
110	4

## THREADED FEMALE COUPLING



Size (mm x inch)	Packing
20 x (1/2)	20
20 x (3/4)	20
25 x (1/2)	20
25 x (3/4)	20
32 x (3/4)	20
32 x (1)	10
40 x (1 1/4)	6
50 x (1 1/2)	4
63 x (2)	4

## THREADED MALE COUPLING



Size (mm x inch)	Packing
20 x (1/2)	20
20 x (3/4)	20
25 x (1/2)	20
25 x (3/4)	20
32 x (3/4)	10
32 x (1)	10
40 x (1 1/4)	6
50 x (1 1/2)	4
63 x (2)	4

## THREADED FEMALE ELBOW 90°



Size (mm x inch)	Packing
20 x (1/2)	20
20 x (3/4)	20
25 x (1/2)	20
25 x (3/4)	20
32 x (3/4)	10
32 x (1)	10

## THREADED MALE ELBOW 90°



Size (mm x inch)	Packing
20 x (1/2)	20
20 x (3/4)	20
25 x (1/2)	20
25 x (3/4)	20
32 x (3/4)	10
32 x (1)	10

## THREADED FEMALE TEE



Size (mm x inch)	Packing
20 x (1/2)	20
25 x (1/2)	20
25 x (3/4)	20
32 x (3/4)	10
32 x (1)	10

## THREADED MALE TEE



Size (mm x inch)	Packing
20 x (1/2)	20
25 x (1/2)	20
25 x (3/4)	20
32 x (3/4)	10
32 x (1)	10

# Characteristics

## Raw Material

BBB PP-R pipes and fittings are manufactured using high quality Polypropylene Random Co-polymer resins. Its physical and chemical properties make it a versatile piping system in a wide range of applications in different industries.

Its advantages over other PP type 1 or 2 and other thermoplastic pipes in the potable water industries are its high impact strength and resistance to high temperatures.

## Mechanical & Thermal Properties

Polypropylene Random Co-polymer (PP Type 3)

Propety		Test Method	Unit	Value
Viscosity Number J		ISO 1628 T3	cm <sup>3</sup> /g	430
Melt Flow Rate	MFR 190/5	ISO 1133 Condition 18	g/10 min	0.5
	MFR 230/2.16	ISO 1133 Condition 12	g/10 min	0.3
	MFR 230/5		g/10 min	1.5
Density at 23°C		ISO 1183	g/cm <sup>3</sup>	0.898
Crystalline Melting Temperature		DIN 53736 B2	°C	150-154
Tensile Stress At Yield		ISO 527	N/mm <sup>2</sup>	23
Tensile Strength At Break		Speed 50 mm/min	N/mm <sup>2</sup>	40
Elongation at Break		Test specimen 1B	%	>50
Ball Indentation Hardness		ISO 2039 T1 (132N)	N/mm <sup>2</sup>	43
Flexural Stress at 3.5%		DIN 53452	N/mm <sup>2</sup>	20
Outer Fiber Strain				
Modulus or Elasticity, Tensile Test		ISO 527	N/mm <sup>2</sup>	700
Shear Modulus	-10°C	ISO 537 Method A	N/mm <sup>2</sup>	1100
	0°C		N/mm <sup>2</sup>	770
	10°C		N/mm <sup>2</sup>	500
	20°C		N/mm <sup>2</sup>	370
	30°C		N/mm <sup>2</sup>	300
	40°C		N/mm <sup>2</sup>	240
	50°C		N/mm <sup>2</sup>	180
	60°C		N/mm <sup>2</sup>	140
Mechanical Strength Properties		DIN 8078		no failure
Determined by Impact Strength at 0°C				
Impact Strength	RT	ISO 179/1eU	kJ/m <sup>2</sup>	no failure
(Charpy)	0°C		kJ/m <sup>2</sup>	no failure
	-10°C		kJ/m <sup>2</sup>	no failure
Notched Impact Strength	RT	ISO 179/1eA	kJ/m <sup>2</sup>	20
(Charpy)	0°C		kJ/m <sup>2</sup>	4
	-20°C		kJ/m <sup>2</sup>	3
Coefficient of Linear Thermal Expansion		VDE 0304 Part 1&4	K <sup>-1</sup>	1.5x10 <sup>-4</sup>
Thermal Conductivity at 20°C		DIN 52612	W/mK	0.24
Specific Heat at 20°C		Adiabatic Calorimeter	kJ/kg K	2.0

ISO = International Organization for Standardization VDE = Verband Deutscher Elektrotechniker  
The test specimens were made and the test methods selected in accordance with DIN 16774, Part 2.

# Joining Methods



## Step 1

Cut the pipe to required length using a cutter, mark the welding depth on the pipe, ensure that the indicator light on the welding tool signals that the tool is hot enough (260°C) for welding.



## Step 2

Push the pipe and fitting into the welding adaptors, applying even strength at both ends. Do not twist or turn the pipe and fitting while pushing. Wait until heating time is reached.



## Step 3

When the welding heating time is reached, remove both pipe and fittings together, again without twisting or turning while pulling out of the welding adaptor. Almost immediately, push both pipe and fitting together until the depth is reached. It is possible to adjust the joints for more than 5 degrees during this time. Joint is now completed.



**Welding Machine Packing**



**Welding Machine  
20mm to 63mm**



**Welding Machine  
75mm to 110mm**

## Welding Depth, Heating, Welding and Cooling Time

The table below provides the necessary information for a good welding joint for various BBB pipe and fitting size.

Pipe Diameter (mm)	Welding Depth (mm)	Heating Time (sec.)	Welding Time (sec.)	Cooling Time (min.)
20	14.0	5	4	2
25	15.0	7	4	2
32	16.5	8	6	4
40	18.0	12	6	4
50	20.0	18	6	4
63	24.0	24	8	6
75	26.0	30	8	8
90	29.0	40	8	8
110	32.5	50	10	8

Note: Heating time starts when both pipe and fitting are pushed into correct depth. Welding time begins when joints are connected. Cooling time is the time taken for the joint to be completely cured. Never reduce cooling time by pouring water or other means.

