



PPR PIPES & FITTINGS

For Hot & Cold Water Plumbing Application

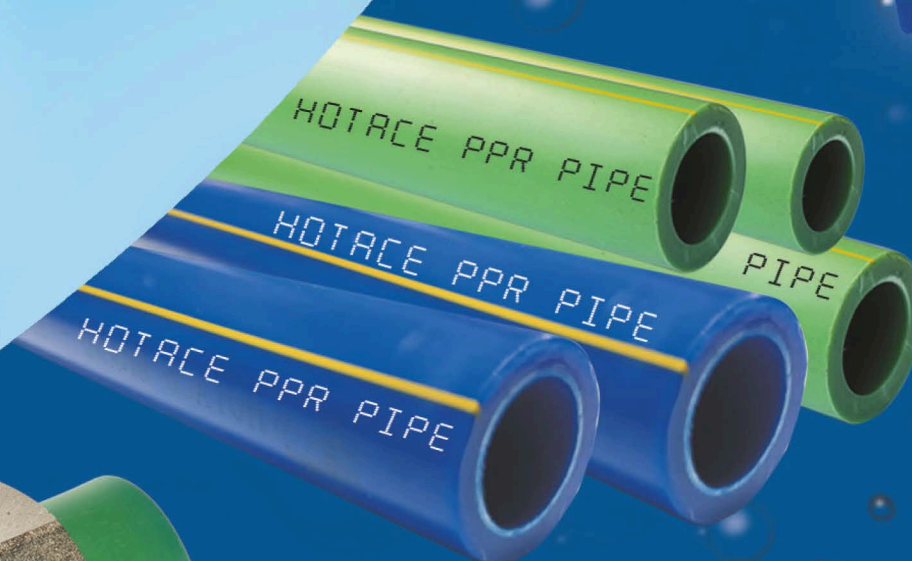
PRODUCTS CATALOGUE

AN ISO 9001, 14001 & 18001



CERTIFIED COMPANY

WRAS
Water Regulations Advisory Scheme **APPROVED PRODUCT**





INTRODUCTION

National Plastic Factory L.L.C

National Plastic Factory LLC. Established in the year 1992 in Muscat, Sultanate of Oman.

The company is certified with ISO 9001 QMS, 14001 EMS and OHSAS 18001 standards, and having manufacturing locations in Oman / UAE-Fujairah / Egypt-6th October City, under the division of Al Hosni Group International.

The Al Hosni Group found in the year 1975 with diversified line of industries, Hospitality, Infrastructure Development and investment portfolios.

Throughout the years National Plastic Factory developed and manufacturing, FMCG, Industrial and household plastic packaging products, and HOTACE Brand PPR pipes and fittings to various industries focusing on high quality and dependability having latest updated technology of machineries and professional team of technical staff.

Our superior quality PPR Pipes & Fittings meets the requirement of the following sectors like Residential, Commercial Buildings, Hospitals, Airports, Educational Institute Projects and Infrastructure development in GCC, Middle East & African Countries.

Our Superior HOTACE Brand PPR Pipe & Fitting Products having following Local Government and International Authority Approvals.

1. Oman Directorate General for Standards and Metrology Department of Lab.
2. RCA (Royal Court Affairs)
3. ROP (Royal Oman Police)
4. MOD (Ministry of Defense)
5. WRAS (Water Regulations Advisory Scheme)

We National Plastic Factory are constantly upgrading ourselves with the growing technology, experience and quality to meet the ever growing and innovative in Building materials & Construction market requirement and challenges of the local & internationally acclaimed companies in the region with stringent quality requirements.

The factory specialized in designing and developing all kind of plastic Building material products as per our customer requirement.

HOTACE Product Range:

- uPVC Electrical Conduits & Fittings
- uPVC Drainage, Sewerage Pipes & Fittings
- uPVC Soil & Ventilation Pipes & Fittings
- uPVC High Pressure Pipes & Fittings
- PPR Pipes & Fittings
- HDPE Pipes & Fittings
- Telephone Duct Pipes & Accessories
- GI Conduit & Fittings

THE COMPANY STRENGTH

EXPERIENCE



TECHNOLOGY



QUALITY

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STANDARDS & SPECIFICATIONS

HOTACE PP-R system is produced according to the following German standards

DIN 1988	Drinking water supply systems
DIN 8076	Metal Threaded joints testing methods
DIN 8077	Polypropylene pipes Dimensions
DIN 8078	Polypropylene pipes Testing Methods
DIN 16962	Polypropylene pipes Quality Controls and Connections
DIN 16928	Thermostatic Pipes, Pipe Connections
DIN 4109	Sound Insulation in building constructions
DIN 2999	Standards for fittings with threaded metallic inserts.
DVS 2206	Regulations for the welding of thermostatic material
DVS 2207	Welding of thermoplastic materials by means of Heating tools.

Raw Material

Specification of raw material used in production

Pipes and fittings of HOTACE system are made of polypropylene random copolymer, type 3 (PP-R). This material is known for its strength, stability and resistance to high temperatures. Physical and chemical properties of the material meet the special requirements of drinking water supply and heating systems.

HOTACE pipes and Fittings are suitable for potable water distribution systems in addition to a wide range of Hydrosanitary applications.

The exceptional heat stability of the polypropylene Random copolymer and its extraction resistance coupled with ease of installation make the PP-R system from Hotace a reliable piping system for hot and cold water applications.

Hotace PPR system is made from PP-R granules supplied by the world's renowned resin manufacturers.

These granules are pre-colored and have excellent heat resistance, physical and chemical properties to suit applications such as potable water distribution and heating systems.

The PPR is one of the most secure materials because it does not transmit odor or taste, toxic substances or chemicals to water. It is nontoxic, hygienically perfect and it is harmless because it does not corrode, does not splint and does not crush. The PPR is in all effect ecological because it does not produce solid, liquid and gas wastes.

MECHANICAL & THERMAL PROPERTIES OF PPR

Properties of Unit PP-R value		Unit	PP-R value	Test method
Density		g/cm ³	0.90	ISO 1183
Met Flow Rate (230°C/2,16kg)		g/10min	0.30	ISO 1133 Condition 12
Coefficient of Linear Thermal Expansion		1/K	1.5x10 ⁻⁴	DIN 53752
Thermal Conductivity		W/m K	0.24	DIN 52612
Modulus of Elasticity in tension (1mm/min)		MPa	900	ISO 527
Charpy's Impact Strenght, notched	+23°C	kJ/m2	20	ISO 179
	0°C	kJ/m2	4	
	-23°C	kJ/m2	2	

FIELDS OF APPLICATION

The PPR system from Hotace can be used for:

- Hot and cold potable water piping networks in residential and commercial buildings. i.e. Hospitals, Hotels, Offices, School buildings etc.
- Chilled water networks in air conditioning systems, as an effective light weight and corrosion free substitute for steel pipes.
- Transport of wide range of chemicals in the industry.
- Irrigation systems for gardens.
- Piping networks for rain water utilization systems.
- Piping networks for swimming pool facilities.
- Compressed air installations.



Advantages & main features of HOTACE PPR System

- Extended durability due to the high resistance to aggressive elements.
- Non-toxic and physiologically harmless material.
- Resistance to bacterial attack thus enabling safe potable water distribution.
- Resistance to wide range of chemicals, therefore no corrosion in service lines.
- High impact strength & Cost effective pipeline network.
- Heat preservation and energy - saving abilities. The heat conductivity of PP-R pipes are much lesser than Metals and hence offer significantly lower levels of heat loss for transporting fluids.
- High acoustic insulation against fluid noise. The fluid low and hydraulic shocks within the building create Noise which can be avoided by use of the noise absorption ability of PP-R materials.
- Light weight easy to handle material compared to the metallic piping systems (1/9 of the steel specific Gravity).
- Convenient and reliable installation methods. The PP-R pipes can even be installed in suspended form under ceiling without problems of deletion.
- Easy interconnection over a complex network.
- Safe environment as PPR is a recyclable material.
- Extremely easy and quick install to pipes and Fittings lightness and by using our Welding Machine .
- The molecular composition of HOTACE PP-R does not allow the limestone formation into the piping avoiding the decrease of the load. Their smooth inner wall prevents any formation of calcareous scaling.
- Low load losses the compact, smooth and homogeneous structure of inner walls of the pipes and Fittings Reduces pressure loss to a minimum.

Specifications and Technical Data

Service Life

HOTACE PPR pipes and fittings service life can be calculated through the formula given below.

$$\delta = \frac{p \times (d-s)}{20 \times s}$$

Which:

P = working pressure (bar)

d = outside diameter (mm)

s = wall thickness (mm)

δ = hoop stress (N/mm²)

$$\delta = \frac{p \times (d-s)}{20 \times s}$$

$$\delta = \frac{10 \times (20 - 3.4)}{20 \times 3.4} = 2.4 \text{ N/mm}^2$$

On the graph it's found the intersection Point of 80 C curve and 2.4 N/mm hoop stress. Draw a vertical line to find the life span for Current application, which is around 25 years.

Example:

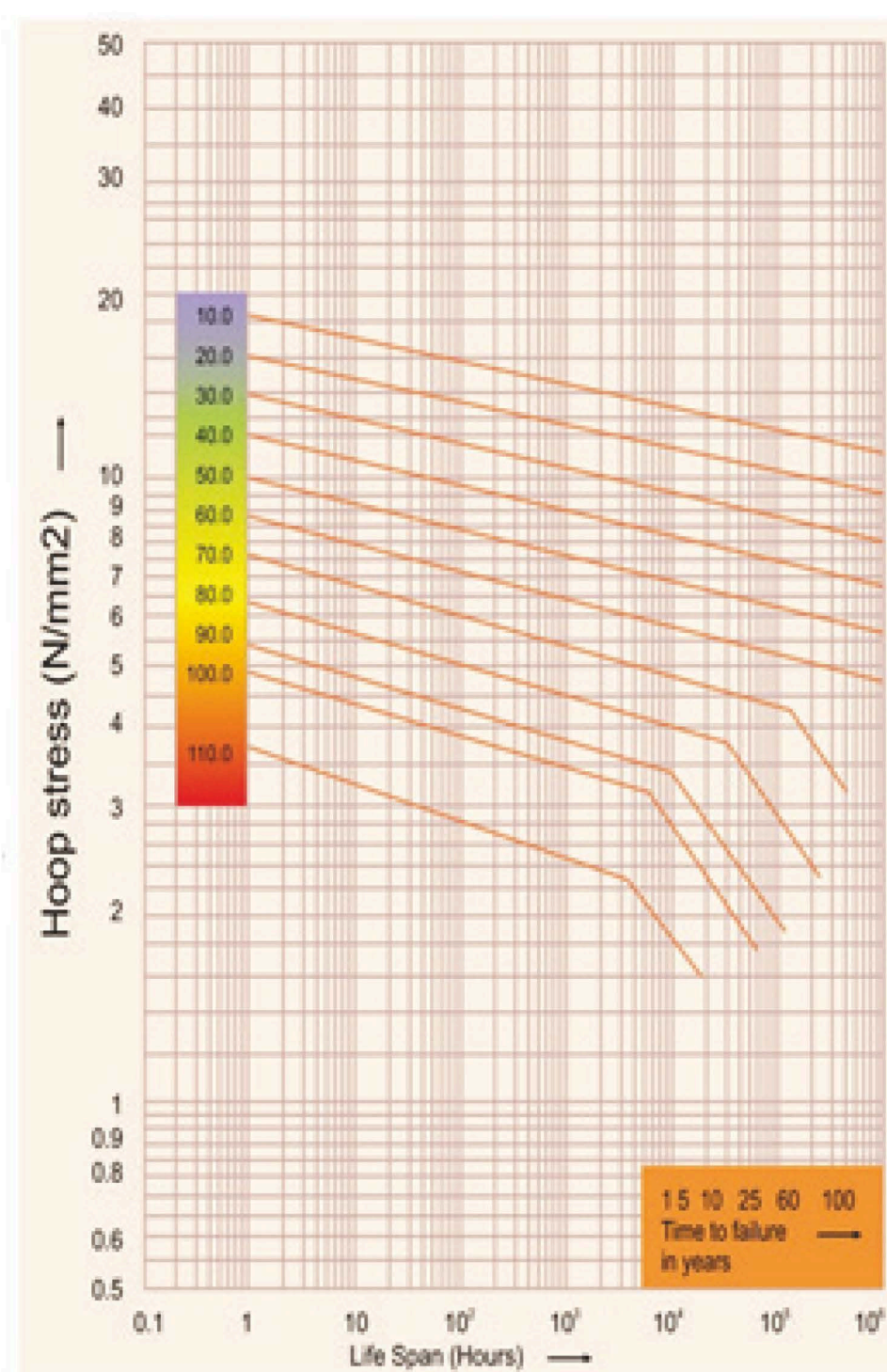
Working temperature = 80C

Working pressure = 10 bar

Outside diameter = 20mm

Wall thickness = 3.4 mm

What is the life span = ?



Service life of Hotace PP-R Pipes

Hotace permissible Working pressure

The table below shows the life span parameters of Hotace PP-R Pipes & Fittings. The working pressure of Hotace PP-R Pipes & Fittings can be calculated based on temperature and intended life span.

Example:

$$p = \frac{20 \times s \times \delta}{d-s}$$

Based on the Service Life graph, we may calculate the corresponding expansion of Hotace PP-R Pipes in 20 years at 80C in this manner:
 δ : 2.5 N/mm²

$$p = \frac{20 \times 3.4 \times 2.6}{20 - 3.4} = 10.65 \text{ bar}$$

Applying this figure to the formula and by dividing this figure to a safety factor of 1:5 will result to figure of maximum working pressure.

$$P_{\max} = \frac{P}{sf} \quad P_{\max} = \frac{10.65}{1.5}$$

$$P_{\max} = 7.1 \text{ bar}$$

Example:

Intended life span = 25 years

Outside diameter = 20 mm

Wall tickness = 3.4 mm

Working temperature = 20°C and 25 years curve is plotted on long-term behaviour of PPR. The ordinate of the plotted point (on DIN 8077, 1996-04) shows a hoop stress of 9.8 N/mm²

The corresponding permissible pressure is obtained through the given formula below:

$$p = \frac{9.8 \times 20 \times 3.4}{(20 - 3.4)} = 40.14 \text{ bars}$$

$$P_{\max} = \frac{P}{sf} = \frac{40.14}{1.5} = 26.76 \text{ bars}$$

Temperature (°C)	Service Life	Nominal Pressure(bar)		
		PN 16	PN 20	PN 25
20 °C	1	23.8	30.0	37.8
	5	22.3	28.0	35.4
	10	21.7	27.0	34.4
	25	21.1	26.5	33.4
	50	20.4	25.7	32.4
30 °C	1	20.2	25.5	32.1
	5	19.0	23.1	30.1
	10	18.3	23.1	29.1
	25	17.7	22.3	28.1
	50	17.3	21.8	27.4
40 °C	1	17.1	21.5	27.7
	5	16.0	20.2	25.4
	10	15.6	19.6	24.7
	25	15.0	18.8	23.7
	50	14.5	18.3	23.1
50 °C	1	14.5	18.3	23.1
	5	13.5	17.0	21.4
	10	13.1	16.5	20.7
	25	12.6	15.9	20.0
	50	12.2	15.4	19.4
60 °C	1	12.2	15.4	19.4
	5	11.4	14.3	18.0
	10	11.0	13.8	17.4
	25	10.5	13.3	16.7
	50	10.1	12.7	16.0
70 °C	1	10.3	13.0	16.4
	5	9.5	11.9	15.0
	10	9.3	11.7	14.7
	25	8.0	10.1	12.7
	50	6.7	8.5	10.7
80 °C	1	8.6	10.9	13.7
	5	7.6	9.6	12.0
	10	6.3	8.0	10.0
	25	5.1	6.4	8.0
95 °C	1	6.1	7.7	9.7
	5	4.0	5.0	6.3

Permissible Working Pressure for HOTACE PP-R Pipes

HOTACE PPR PIPES - PN16

Product complies with DIN 8077 & 8078 STD. Available Colour Green & Blue



Size in mm	Standard Length Mts	Tolerance mm	Wall Thickness	Tolerance of Thickness	Inside Diameter MM	Pcs/ Pack (No's)
20.00	4.000	+0.3	2.8	+0.5	14.4	25
25.00	4.000	+0.3	3.5	+0.6	18	25
32.00	4.000	+0.3	4.4	+0.7	23.2	15
40.00	4.000	+0.4	5.5	+0.8	29	10
50.00	4.000	+0.5	6.9	+0.9	36.2	5
63.00	4.000	+0.6	8.6	+1.1	45.8	4
75.00	4.000	+0.7	10.3	+1.3	54.4	3
90.00	4.000	+0.9	12.3	+1.5	65.4	2
110.00	4.000	+1	15.1	+1.8	79.8	1
125.00	4.000	+1.2	17.1	+2.0	90.8	1

HOTACE PPR PIPES - PN20

Product complies with DIN 8077 & 8078 STD. Available Colour Green & Blue



Size in mm	Standard Length Mts	Tolerance mm	Wall Thickness	Tolerance of Thickness	Inside Diameter MM	Pcs/ Pack (No's)
20.00	4.000	+0.3	3.4	+0.6	13.2	25
25.00	4.000	+0.3	4.2	+0.7	16.6	25
32.00	4.000	+0.3	5.4	+0.8	21.2	15
40.00	4.000	+0.4	6.7	+0.9	26.6	10
50.00	4.000	+0.5	8.4	+1.1	33.4	5
63.00	4.000	+0.6	10.5	+1.3	42.0	4
75.00	4.000	+0.7	12.5	+1.5	50	3
90.00	4.000	+0.9	15	+1.8	60	2
110.00	4.000	+1	18.3	+2.1	73.4	1
125.00	4.000	+1.2	20.8	+2.3	83.4	1

HOTACE PPR PIPES - PN25

Product complies with DIN 8077 & 8078 STD. Available Colour Green & Blue



Size in mm	Standard Length Mts	Tolerance mm	Wall Thickness	Tolerance of Thickness	Inside Diameter MM	Pcs/ Pack (No's)
20.00	4.000	+0.3	4.1	+0.7	11.8	25
25.00	4.000	+0.3	5.1	+0.8	14.8	25
32.00	4.000	+0.3	6.5	+0.9	19.0	15
40.00	4.000	+0.4	8.1	+1.1	23.8	10
50.00	4.000	+0.5	10.1	+1.3	29.8	5
63.00	4.000	+0.6	12.7	+1.5	37.6	4
75.00	4.000	+0.7	15.1	+1.8	44.8	3
90.00	4.000	+0.9	18.1	+2.1	53.8	2
110.00	4.000	+1	22.1	+2.5	65.8	1
125.00	4.000	+1.2	25.1	+2.8	74.8	1

HOTACE PPR FITTINGS (PN25)

Product complies with DIN 8077 & 8078 STD. Available Colour green & Blue



REDUCER AVAILABLE SIZE IN MM

SIZE	Std.Pack Qty.	SIZE	Std.Pack Qty.	SIZE	Std.Pack Qty.
25x20	1000	63X25	200	90x40	90
32x20	500	63X32	200	90x50	90
32x25	500	63X40	200	90x63	90
40x20	400	63X50	120	90x75	50
40x25	380	75X20	100	110x40	50
40x32	300	75X25	100	110x50	50
50x20	270	75X32	100	110x63	50
50x25	200	75X40	100	110x75	50
50x32	200	75X50	100	100x90	36
50x40	180	75X63	100		
63x20	200	90X32	90		



REDUCING TEE AVAILABLE SIZE IN MM

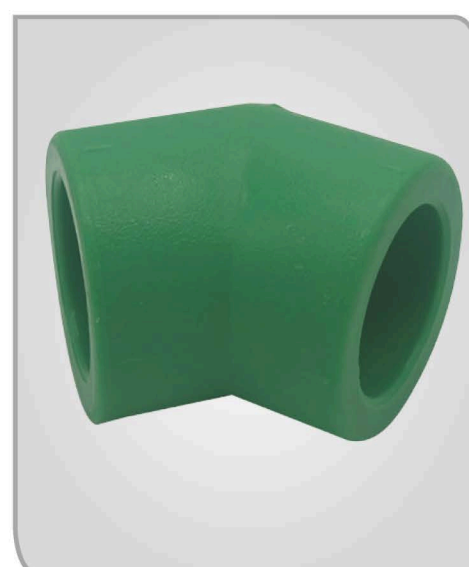
SIZE	Std.Pack Qty.	SIZE	Std.Pack Qty.	SIZE	Std.Pack Qty.
25x20x25	150	63x25x63	72	90x40x90	90
32x20x32	60	63x32x63	72	90x50x90	24
32x25x32	60	63x40x63	70	90x63x90	24
40x20x40	30	63x50x63	14	90x75x90	24
40x25x40	30	75x20x75	50	110x40x110	16
40x32x40	30	75x25x75	50	110x50x110	18
50x20x50	120	75x32x75	50	110x63x110	16
50x25x50	65	75x40x75	50	110x75x110	14
50x32x50	20	75x50x75	40	110x90x110	12
50x40x50	24	75x63x75	40		
63x20x63	80	90x32x90	30		



ELBOW 90°

AVAILABLE SIZE IN MM

SIZE	Std.Pack Qty.
20	250
25	160
32	90
40	45
50	24
63	16
75	45
90	24
110	16



ELBOW 45°

AVAILABLE SIZE IN MM

SIZE	Std.Pack Qty.
20	300
25	210
32	120
40	100
50	100
63	72
75	54
90	30
110	16



EQUAL TEE

AVAILABLE SIZE IN MM

SIZE	Std.Pack Qty.
20	160
25	100
32	60
40	36
50	60
63	50
75	24
90	20
110	10



SOCKET

AVAILABLE SIZE IN MM

SIZE	Std.Pack Qty.
20x20	350
25x25	220
32x32	110
40x40	75
50x50	120
63x63	90
75x75	78
90x90	56
110x110	32

HOTACE PPR FITTINGS (PN25)

Product complies with DIN 8077 & 8078 STD. Available Colour green & Blue



MALE ADAPTOR

AVAILABLE SIZE IN MM

SIZE	Std.Pack Qty.
20x1/2"	190
20x3/4"	220
25x1/2"	180
25x3/4"	100
32x1/2"	180
32x3/4"	100
32x1"	100
40x1-1/4"	45
50x1-1/2"	45
63x2"	32
75x2 1/2"	22
90x3"	12
110x4"	8



FEMALE ADAPTOR

AVAILABLE SIZE IN MM

SIZE	Std.Pack Qty.
20X1/2"	180
20X3/4"	250
25/1/2"	200
25X3/4"	180
32X1/2'	200
32X3/4"	180
32X1"	120
40X1-1/4"	40
50X1-1/2"	30
63X2"	40
75X2 1/2"	16
90X3"	12
110X4"	8



REDUCER ELBOW

AVAILABLE SIZE IN MM

SIZE	Std.Pack Qty.
25/20	650
32/20	450
32/25	320
40/32	180
50/32	100
50/40	100
63/50	60



FEMALE THREAD TEE

AVAILABLE SIZE IN MM

SIZE	Std.Pack Qty.
20X1/2"	225
20X3/4"	140
25X1/2"	90
25X3/4"	80
32X1/2"	60
32X3/4"	50
32X1"	40
40X1-1/4"	48



MALE THREAD TEE

AVAILABLE SIZE IN MM

SIZE	Std.Pack Qty.
20X1/2"	180
20X3/4"	220
25X1/2"	120
25X3/4"	110
32X1/2"	120
32X3/4"	180
32X1"	60
40X1-1/4"	40



FEMALE ELBOW

AVAILABLE SIZE IN MM

SIZE	Std.Pack Qty.
20X1/2"	180
20X3/4"	200
25X1/2"	200
25X3/4"	120
32X3/4"	110
32X1"	80
40X1-1/4"	60
50X1-1/2"	45



MALE ELBOW

AVAILABLE SIZE IN MM

SIZE	Std.Pack Qty.
20X1/2"	150
20X3/4"	100
25X1/2"	180
25X3/4"	80
32X1/2"	100
32X3/4"	90
32X1"	70
40X1-1/4"	45
50X1-1/2"	24



FEMALE ELBOW WITH DISK

AVAILABLE SIZE IN MM

SIZE	Std.Pack Qty.
20X1/2"	180
20X3/4"	200
25X1/2"	140
25X3/4"	120

HOTACE PPR FITTINGS (PN25)

Product complies with DIN 8077 & 8078 STD. Available Colour green & Blue



MALE ADAPTOR WITH UNION

AVAILABLE SIZE IN MM

SIZE	Std. Pack Qty.
20X1/2"	220
20X3/4"	220
25X3/4"	200
32X1	100
40X1-1/4"	60
50X1-1/2"	35
63X2"	25



FEMALE ADAPTOR WITH UNION

AVAILABLE SIZE IN MM

SIZE	Std. Pack Qty.
20X1/2"	250
20X3/4"	250
25X3/4"	210
32X1"	130
40X1-1/4"	60
50X1-1/2"	50
63X2	25



MALE ELBOW WITH DISC

AVAILABLE SIZE IN MM

SIZE	Std. Pack Qty.
20X1/2"	150
20X3/4"	100
25X1/2"	140
25X3/4"	110



FEMALE UNION

AVAILABLE SIZE IN MM

SIZE	Std. Pack Qty.
20	140
25	140
32	130
40	60
50	50
63	25



SPEHERICAL VALVE

AVAILABLE SIZE IN MM

SIZE	Std. Pack Qty.
20x20	110
25x25	70
32x32	50
40x40	28
50x50	20
63x63	12
75x75	5
90x90	1
110x110	1



STOP VALVE

AVAILABLE SIZE IN MM

SIZE	Std. Pack Qty.
20	100
25	70
32	55
40	35
50	14
63	14
75	5
90	1
110	1



NEW STOP VALVE

AVAILABLE SIZE IN MM

SIZE	Std. Pack Qty.
20	50
25	50
32	50



DOUBLE FEMALE ELBOW

AVAILABLE SIZE IN MM

SIZE	Std. Pack Qty.
20x1/2"	100
25x1/2"	100



CLIP

AVAILABLE SIZE IN MM

SIZE	Std. Pack Qty.
20	4000
25	3000
32	2000
40	1600



REPAIR 90 DEGREE ELBOW

AVAILABLE SIZE IN MM

SIZE	Std. Pack Qty.
20x20	1600
25x25	550
32x32	850



LONG END PLUG

AVAILABLE SIZE IN MM

SIZE	Std. Pack Qty.
1/2"	600
3/4"	600



FLANGE SOCKET

AVAILABLE SIZE IN MM

SIZE	Std. Pack Qty.
63	10
75	10
90	10

HOTACE PPR FITTINGS (PN25)

Product complies with DIN 8077 & 8078 STD. Available Colour green & Blue



BALL VALVE

AVAILABLE SIZE IN MM

SIZE	Std.Pack Qty.
20	350
25	200
32	100
40	75
50	45
63	25



UNION BALL VALVE

AVAILABLE SIZE IN MM

SIZE	Std.Pack Qty.
20	350
25	125
32	70
40	
50	
63	



CROSS TEE

AVAILABLE SIZE IN MM

SIZE	Std.Pack Qty.
20	500
25	250
32	170
40	100
50	55
63	40



END CAP

AVAILABLE SIZE IN MM

SIZE	Std.Pack Qty.
20	500
25	300
32	200
40	150
50	60
63	45
75	100
90	85
110	32



UNION

AVAILABLE SIZE IN MM

SIZE	Std.Pack Qty.
20	640
25	200
32	140
40	150
50	120
63	60



LONG BYPASS BEND

AVAILABLE SIZE IN MM

SIZE	Std.Pack Qty.
20	250
25	180
32	120



SHORT BYPASS BEND

AVAILABLE SIZE IN MM

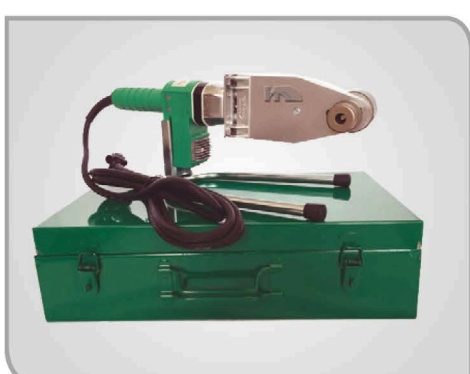
SIZE	Std.Pack Qty.
20	200
25	100
32	70



JOINT CLIP

AVAILABLE SIZE IN MM

SIZE	Std.Pack Qty.
20	900
25	600
32	400



WELDING MACHINE

AVAILABLE SIZE IN MM

SIZE RANGE
20 - 63
63 - 90
90 - 125



PIPE PLUG

AVAILABLE SIZE IN MM

SIZE	Std.Pack Qty.
1/2"	3600
3/4"	2000

Four-Step Fusion Process



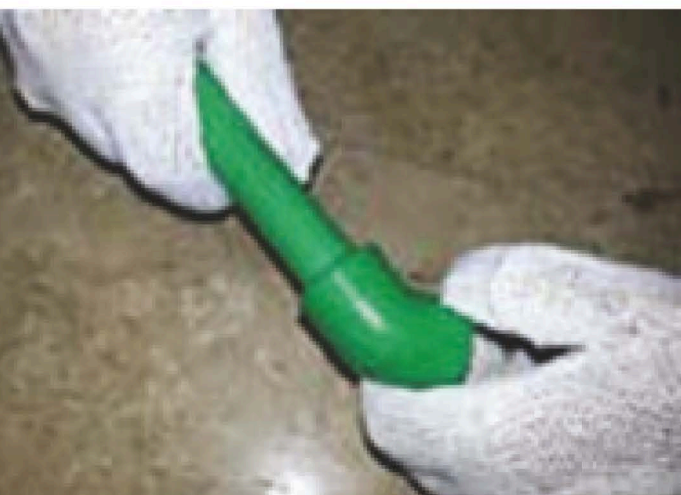
1. Mark the pipe

Mark the pipe for depth of penetration into the heater bush and fitting (see table). The mark must remain visible under heating and joining



2. Heat pipe & fitting

Push the pipe and the fitting into the heating tools. Once pipe and fitting are hot (after the correct time), pull out pipe and fitting very slowly.



3. Joint pipe & fitting

Joint the pipe & fitting and push the pipe until it reaches the mark (that has to stay outside).

During the jointing time the welded part of pipe and fitting must remain in, without any rotation.

During the cooling time, the welded part of pipe and fitting can be adjusted until cold.

4. Fusion inspection

Fusion inspection. The outer fusion seam must be inspected. The seam must be present all around the pipe.

Welding Of HOTACE PPR Pipes & Fittings

The table below provides the necessary information for a good welding joint for various Hotace Pipes & fitting sizes.

Pipe Diameter (mm)	Welding Depth (sec.)	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
125	40.0	60	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 completely cured. Never try to reduce cooling time by pouring water or by other means.

SUGGESTIONS FOR THE CORRECT HANDLING OF PP-R SYSTEM:

- Handle Pipes with care, and avoid hard impacts at the end of the pipes.
- Use suitable sharp cutting tools to cut the pipe with no burrs.
- Do not twist the pipe or the fitting after joining together. Alignment up to 5 degrees relative to the axis of the pipe can be done immediately after joining.
- Protect the pipes from sunlight and rain during storage and on site.
- Do not use a lame to bend the pipes; heating with hot air up to 140°C can be Used when needed.
- Use Teflon sealing tapes where necessary.
- Avoid heavy and sharp loads on the pipes.
- Follow the instructions for joining process.
- Follow the right techniques for expansion compensation.
- Always protect the pipes from direct exposure to sunlight by proper insulation or painting .
- When connecting two threaded Fittings, use reasonable quantity of Teflon Sealing tape and avoid using excess quantity.

HANDLING

You must NOT	1. directly contact with hazardous chemical materials	2. subject the pipe ends to shock or impact	3. use pipes that are damaged or cracked at the interfaces
	4. twist pipe or fittings after joining	5. use conical threads	6. expose Hotace to UV radiation for a long period
You must	8. subject Hotace to heavy shocks or falling stones	9. use excessive amounts of hemp when sealing in fittings	10. heat with a naked flame
	1. only consider UV pipes for exposure to sun	2. handle Hotace with care	3. only use sharp tools to cut the pipe
You must	4. not correct by more than 5° after joining	5. only use fittings with parallel threads, not tighten too firmly	6. store Hotace sheltered from sun and rain
	8. protect exposed pipes from damage	9. only heat with hot air for bending, max bending temperature 140°C	10. use sealing tape or sealing compound; apply hemp moderately
You must	11. bind up contaminated pipes or fittings	1. only consider UV pipes for exposure to sun	2. handle Hotace with care
	3. only use sharp tools to cut the pipe	4. not correct by more than 5° after joining	5. only use fittings with parallel threads, not tighten too firmly
You must	6. store Hotace sheltered from sun and rain	7. use plastic plugs	8. protect exposed pipes from damage
	9. only heat with hot air for bending, max bending temperature 140°C	10. use sealing tape or sealing compound; apply hemp moderately	11. only install clean material

GUARANTEE CERTIFICATE

For HOTACE PPR pipes and fittings

National Plastic Factory LLC, hereby declares that HOTACE brand PPR Pipes & fittings confirms that the products covers with 15 years warranty from the date of manufacture/Purchase against any manufacturing defects & performance of plumbing system application.

National Plastic Factory LLC, shall not be liable for any incidental or consequential damages directly or indirectly arising or resulting from the sale, transportation, handling, installation or use of the products sold, nor for product losses, reinstallation or labor costs.

National plastic factory LLC, should be proven that the supplied HOTACE PPR pipes & fittings are defective during the warranty period, so that it will be either replaced or repaired at free of charges.

HOTACE brand PPR pipes & fittings shall not cover 15 years warranty due to following reasons:

1. Excessive pressure-temperature combination during operation than the specified.
2. Malfunction or improper use of line devices adversely affecting pipe performance.
3. Failure to adhere to National Plastic Factory's General Instruction Sheets concerning the proper handling, storage, installation and testing of the product.
4. Use of other than applicable and recommended Welding Machines.
5. National Plastic Factory must be notified of any defect prior to repair and such repair must be authorized by National Plastic Factory.
6. Purchaser must provide National Plastic Factory the opportunity to view and test pipe samples suspected to be defective including inspection of installation procedures and job site conditions.

NATIONAL PLASTIC FACTORY L.L.C





Approvals & Certificates

Sultanate of Oman
Ministry of Commerce and Industry
Directorate General for Standards and Metrology
Department of Laboratories
Muscat



سلطنة عُمان
وزارة التجارة والصناعة
الهيئة العامة للمواصفات والمقاييس
إدارة المختبرات
مسقط

TEST REPORT OF PPR PIPE AND FITTINGS

Laboratory No: 73786	Date report : 27/11/2017
Sample Submitted By : National Plastic Factory LLC Muscat	
Size of pipe & fitting : 25mm,PN 20 PN25 Welded Joint and Mechanical Joints	
Testing as per : DIN 16962 & 8077/8078	Date of test : 23/10/2017
	Description : DIN 16962 & DIN 8077/8078,PN20
Analyst : YAAOOB & IBRAHIM	Raw Materials: PPR 80,Grade RA 130E6015
Note: All these test are carried out in National plastic Factory LLC Laboratory and were scrutinized by physical laboratory staff of the Directorate General for Specification & Measurements, Ministry of Commerce & Industry.	

Sr. No	Parameter	Requirements	Test results	Remarks
01	Inside Diameter of Fitting in mm	24.20 - 24.50	24.30	Complies
02	Outside Diameter of fitting in mm	25.0 - 25.3	25.25 - 25.30	Complies
03	Wall Thickness in mm	4.2 - 4.9	4.40 - 4.60	Complies
04	Colour	Green	Green	Complies
05	Appearance	Smooth	Smooth	Complies
06	Hydrostatic Pressure resistance at (20° C,1 hr 64.61 bar)	No Failure during the test period	No Failure during the test period	Complies
07	Hydrostatic Pressure resistance at (95° C,1000 hr 14.13 bar)	No Failure during the test period	No Failure during the test period	Complies
08	Melt Flow Rate (230° C,2.16 Kg)	0.30g/10 min.	0.30 gm/10min.	Complies
09	Longitudinal Heat Reversion (%)	<2	1.5	Complies
10	Marking for Pipe & Fitting	As per DIN 8077/8078, DIN 16962	As per DIN 8077/8078, DIN 16962	Complies

Remarks: The above test results that submitted PPR pipe sample as tested complies with DIN 16962 and DIN 8077/8078 for tested parameter.

Yaqoob M. Al-Barwani
Physical & Const. Mat. Lab

Rahma D. Al-Balushi
Director of Laboratories



Amr Salah Al-Mandhari
Samples Receiving Se.

This report is subject to the terms & conditions stated at the back. يخضع هذا التقرير للشروط والأحكام المذكورة بالخلف.

Sultanate of Oman
Ministry of Commerce and Industry
Directorate General for Standards and Metrology
Department of Laboratories
Muscat



سلطنة عُمان
وزارة التجارة والصناعة
الهيئة العامة للمواصفات والمقاييس
إدارة المختبرات
مسقط

TEST REPORT OF PPR PIPE AND FITTINGS

Laboratory No: 73784	Date report : 27/11/2017
Sample Submitted By : National Plastic Factory LLC Muscat	
Size of pipe & fitting : 20mm,PN 20 PN25 Welded Joint and Mechanical Joints	
Testing as per : DIN 16962 & 8077/8078	Date of test : 23/10/2017
	Description : DIN 16962 & DIN 8077/8078,PN20
Analyst : YAAOOB & IBRAHIM	Raw Materials: PPR 80,Grade RA 130E6015
Note: All these test are carried out in National plastic Factory LLC Laboratory and were scrutinized by physical laboratory staff of the Directorate General for Specification & Measurements, Ministry of Commerce & Industry.	

Sr. No	Parameter	Requirements	Test results	Remarks
01	Inside Diameter of Fitting in mm	19.2 - 19.5	19.30	Complies
02	Outside Diameter of fitting in mm	20.0 - 20.3	20.20 - 20.30	Complies
03	Wall Thickness in mm	3.4 - 4.0	3.70 - 3.80	Complies
04	Colour	Green	Green	Complies
05	Appearance	Smooth	Smooth	Complies
06	Hydrostatic Pressure resistance at (20° C,1 hr 65.54 bar)	No Failure during the test period	No Failure during the test period	Complies
07	Hydrostatic Pressure resistance at (95° C,1000 hr 14.33 bar)	No Failure during the test period	No Failure during the test period	Complies
08	Melt Flow Rate (230° C,2.16 Kg)	0.30g/10 min.	0.30 gm/10min.	Complies
09	Longitudinal Heat Reversion (%)	<2	1.5	Complies
10	Marking for Pipe & Fitting	As per DIN 8077/8078, DIN 16962	As per DIN 8077/8078, DIN 16962	Complies

Remarks: The above test results that submitted PPR pipe sample as tested complies with DIN 16962 and DIN 8077/8078 for tested parameter.

Yaqoob M. Al-Barwani
Physical & Const. Mat. Lab

Rahma D. Al-Balushi
Director of Laboratories



Amr Salah Al-Mandhari
Samples Receiving Se.

This report is subject to the terms & conditions stated at the back. يخضع هذا التقرير للشروط والأحكام المذكورة بالخلف.

Our Ref: GH/M1402002
Test Report: M 105662/B

16th July 2014

National Plastic Factory
PO Box 371
PC114
Muttrah
Muscat
Sultanate of Oman

WRAS
Water Regulations Advisory Scheme

WATER REGULATIONS ADVISORY SCHEME (WRAS)
MATERIAL APPROVAL

The material referred to in this letter is suitable for contact with wholesome water for domestic purposes having met the requirements of BS 6920-1:2000 'Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water'.

The reference relates solely to its effect on the quality of the water with which it may come into contact and does not signify the approval of its mechanical or physical properties for any use.

POLYPROPYLENE - COMPONENTS

5260

Hotace. Green coloured, injection moulded polypropylene fitting. For use with water up to 85°C.

APPROVAL NUMBER: 1405554
APPROVAL HOLDER: NATIONAL PLASTIC FACTORY

The Scheme reserves the right to review approval. This approval is valid between MAY 2014 and MAY 2019.

An entry, as above, will accordingly be included in the Water Fittings Directory on-line under the section headed, "Materials which have passed full tests of effect on water quality".

The Directory may be found at: www.wras.co.uk/directory

Yours faithfully

Jason Furnival
Approvals & Enquiries Manager
Water Regulations Advisory Scheme

Water Regulations Advisory Scheme Ltd,
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The Water Regulations Advisory Scheme Ltd
Registered in England No. 06003329
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Our Ref: GH/M1402002
Test Report: M 105662/A

16th July 2014

National Plastic Factory
PO Box 371
PC114
Muttrah
Muscat
Sultanate of Oman

WRAS
Water Regulations Advisory Scheme

WATER REGULATIONS ADVISORY SCHEME (WRAS)
MATERIAL APPROVAL

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The reference relates solely to its effect on the quality of the water with which it may come into contact and does not signify the approval of its mechanical or physical properties for any use.

POLYPROPYLENE - COMPONENTS

5260

Hotace. Green coloured, extruded polypropylene pipe. For use with water up to 85°C.

APPROVAL NUMBER: 1405553
APPROVAL HOLDER: NATIONAL PLASTIC FACTORY

The Scheme reserves the right to review approval. This approval is valid between MAY 2014 and MAY 2019.

An entry, as above, will accordingly be included in the Water Fittings Directory on-line under the section headed, "Materials which have passed full tests of effect on water quality".

The Directory may be found at: www.wras.co.uk/directory

Yours faithfully

Jason Furnival
Approvals & Enquiries Manager
Water Regulations Advisory Scheme

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An ISO 9001/QMS, 14001/EMS & OHSAS 18001



CERTIFIED COMPANY



Manufacturer & Supplier of "HOTACE" Brand product ranges :

- uPVC Drainage, Sewerage Pipes & Fittings
- uPVC Soil & Ventilation Pipes & Fittings
- PPR Pipes & Fittings
- GI Conduit & Accessories
- uPVC Electrical Conduit & Accessories
- uPVC High Pressure Pipes & Fittings
- HDPE Pipes & Fittings
- Plastic Packaging

The above products are approved all local government authorities & internationally reputed institutions as well as meeting international standards like Omani STD, Gulf STD, BSEN, ASTM, DIN etc.

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