

# indo green<sup>®</sup> PP-R

## Hot and Cold water system

The Supreme Industries Ltd., is an acknowledged leader of India's plastic industry. It is credited with pioneering several path breaking products and has valuable experience in providing innovative and cost effective piping solution. Company's objective is to meet the growing needs of its clientele in water, waste management and infrastructure sector through specially developed high performance range of piping products. The innovative product portfolio offered by Supreme is extensive in range and application and comprises a variety of pipes and a vast spectrum of fittings totaling around 7000 diverse products. Together these constitute the most comprehensive range in the industry that caters almost every conceivable need and application. Company has been a torch bearer in transition from conventional products to advance plastics piping products in the country and has been termed as "Trend Setters of Plastic Piping Products".

Supreme is pioneer in introducing PP-R piping system in India with indigenously manufactured complete range of pipes and fittings with necessary heating tools and accessories. Supreme indo green PP-R is made from PP-R type-3 supplied by reputed European suppliers which have bodycote certification. Indo green pipes and fittings are approved and listed by W.R.A.S., UK and recently it is endorsed with a most reputed DVGW certification from Germany, thus signifying its quality, performance and suitability for potable water application. Indo green PP-R is the most ideal solution for housing sector. It is superior solution for any hot and cold water and approved by MCGM.



## The System

Supreme indo green PP-R is designed for hot and cold water application and it is the most suitable system for all plumbing applications. Besides plumbing, this system can be used for varieties of applications like air distributions, radiator heating etc. The specific chemical structure of indo green PP-R provides the well balanced mechanical properties and superior long term heat resistance. The system is in use for more than 25 years in Europe, the Gulf, China and Russia, and gaining good acceptance across the world. Indo green is approved and listed by W.R.A.S., UK and recently it has been endorsed with most reputed DVGW certification from Germany, thus signifying its quality, performance and suitability for potable water application. Indo green PP-R is the most ideal solution for housing sector. It is superior solution for any hot and cold water and approved by MCGM.

## Material Properties

- Density at 23 °C : 0.909 g/cm<sup>3</sup>
- Softening temperature : 131.3 °C
- E - modulus : 808 Mpa
- Coefficient of thermal conductivity : 0.21 W/m °C
- Impact strength : 23 °C - No break, 0 °C - 160 KJ/m<sup>2</sup>
- Coeff. of linear thermal expansion : 0.12 mm/m °C

## Fields of Application

Indo green PP-R is designed for hot and cold water supply and heating applications and it is suitable for different applications enlisted below.

- Hot and cold water supply in residential, industrial, commercial and public projects
- Solar heater applications
- Drinking water and liquid foods
- Watering systems for greenhouses and gardens
- Transportation of aggressive fluids
- Water purifying plants
- Radiator heating
- Traditional heating systems
- Air distribution and compressed air systems
- Chilled water and air conditioning

## Unique Features

**Light weight, easy and quick assembly** - Which results in extensive saving on time and labour.

**Ideal and safest system for carrying drinking water** - PP-R is absolutely free from corrosion and negative biological effects. It does not break down even under the harshest of water conditions; hence the quality of water never deteriorates. It is in full compliance with the International standards on the use of plastics materials for the transportation of potable water.

**Safe and watertight joints** - Joints are prepared by polyfusion welding are homogeneous, integral and watertight, which lasts for long time.

### Excellent resistance to corrosion and chemical attacks -

PP-R pipes and fittings are stable against the majority of known aggressive and toxic chemicals, aggressive soils and fluids in the external environment.

**Low thermal conductivity** - Which results in saving on insulation cost, thereby reducing overall operational costs.

**Free from scaling** - Due to the unique properties like extremely smooth surface, non-polar nature of the material and low surface energy of the PP-R. Limestone or other deposits cannot form and hence there is no scaling or blockage in the pipelines throughout the life of the piping system, irrespective of water quality.

**High impact strength** - Indo green PP-R has a very good impact strength and hence no possibility of breakage.

**Long operational durability** - Indo green system ensures a minimum 50 years of trouble free performance.

**Overall economy** - This system is most cost effective than any other plumbing system. Moreover, due to savings in installation and insulation cost, this system is even comparable with standard make class-B.G.I. piping system.

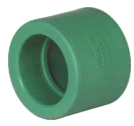
Besides above stated benefits, it has very good resistance to frost, abrasion and stray current and is considered to be most suitable in seismic area's.

## Pipe Dimensions as per IS 15801 specifications

Nominal Size (mm)	Outer Diameter (D) in mm		SDR-11 (PN 10)		SDR-7.4 (PN 16)		SDR-6 (PN 20)	
			Wall Thickness (t) in mm		Wall Thickness (t) in mm		Wall Thickness (t) in mm	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
20	20.0	20.3	1.90	2.30	2.80	3.30	3.40	4.00
25	25.0	25.3	2.30	2.80	3.50	4.10	4.20	4.90
32	32.0	32.3	2.90	3.40	4.40	5.10	5.40	6.20
40	40.0	40.4	3.70	4.30	5.50	6.30	6.70	7.60
50	50.0	50.5	4.60	5.30	6.90	7.80	8.30	9.40
63	63.0	63.6	5.80	6.60	8.60	9.70	10.50	11.80
75	75.0	75.7	6.80	7.70	10.30	11.60	12.50	14.00
90	90.0	90.9	8.20	9.30	12.30	13.80	15.00	16.70
110	110.0	110.9	10.00	11.20	15.10	16.90	18.30	20.40
160	160.0	161.5	14.60	16.30	21.90	24.30	26.60	29.50

**Note:** 1. Pipes are offered in Indo green (IG) colour with standard length of 3.0 meter, duly packed in plastic bags. 2. Non standard length of 4.0 meter and 6 meter can be offered against bulk requirements. 3. All dimensions unless otherwise specified are in mm. 4. 160mm pipe is offered as per ISO 15874

## Fittings



Coupler



Elbow 90°



Reducing Elbow



Elbow 45°



Equal Tee



Reducing Tee



Cross Tee



Reducer Male/Female



Reducer Female/Female



End Cap



Female Threaded Elbow 90°



Female Threaded Elbow 90° with supporting device



Female Threaded Tee



Male Threaded Elbow 90°



Male Threaded Tee



Female Threaded Joint (FTA)



Male Threaded Joint (MTA)



M.T.A. (Plastic)



Union



Union - Female Threaded



Union - Male Threaded



Union (SxS)



Union - Female Threaded (SxFT)



Union - Male Threaded (SxMT)



All Plastic Weld in Saddle



Weld in Saddle - Female Threaded



Weld in Saddle - Male Threaded



Adapter with Integral Flange



Flange Adapter



PP-R Flange



Metal Flange



Ball Valve



Concealed Valve



Screw Tap with Handwheel



Bypass Bend



Tank Connector (MTxFT)



Tank Connector (MTxSp) (F)



Circuit Testing Plug



Circuit Testing Plug (F)



Threaded Plug



Hole Repairing Plug



Pipe Clip (Plastic)



Metal Clamp with Rubber Seal



Expansion Loop (F)



Bend 90° (F)



Bypass Bend (F)



Offset Bend (F)

## Socket / Polyfusion Equipment and Accessories



Matrices-Paired



Matrix - Non - Paired



Drill Bit for Weld in Saddle



Polyfusion Device SPD 2600



Polyfusion Device SPD 3800



Matrixes for Weld in Saddle



Hole Repairing Matrixes



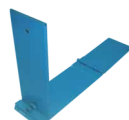
Polyfusion Device SPD 41200



Polyfusion Device 90° SPD 5600



Pipe Cutter (European make)



Mounting Stand (for PFD)



Pipe Scraper



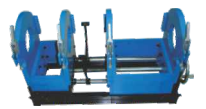
Heating Plate for Butt Welding SPD 61800



Rotating Cutter



Assembly Jig



Butt Welding Machine

## Thermal Expansion of the System

In PP-R, deformation due to expansion are absorbed due to "low elastic modulus" of the pipe material. Therefore no real problems are envisaged due to expansion in concealed installations. In case of external applications on ceiling or walls, where long lengths are installed, the effects of expansion contractions shall be considered while assembly of indo green system. This problem can be solved either by using suitable expansion loops or clamps. (for more detail please refer to our assembly regulation manual)

## Heat Loss and Insulation Requirements

Due to the low thermal conductivity of indo green PP-R (0.21 W/m °C) normally it may not be necessary to insulate, when used for hot water concealed application. However, for application where central boiler is used for distribution of hot water, and the circulation of hot water being continuous, it is necessary to insulate distribution lines to prevent excessive loss of heat and energy wastage.

## Polyfusion Welding

Joints of the indo green pipes and fittings are usually jointed together by poly-fusion welding, which is a fundamental property of this system. This process consists of mixing of melted material of external surface of the pipe and internal surface of the fitting, after heating them up to 260 °C to 280 °C on the small welding machine called poly-fusion device. Properly made welded joint, when cut through, shows no traces of contact surface between two elements i.e. pipe and fitting in the entire volume of joint. Thus fusion process gives homogeneous, integral, long lasting, leak proof joints.

## Joining Procedure

**Cutting** - Cut the pipe square to the required length by cutter. Deburr the cut end if necessary. Pipe ends must be clean cut at right angles.

**Cleaning** - Prior to welding, the pipe and fitting should be dried and properly cleaned.

**Marking** - Mark the required insertion depth (welding depth) on the pipe with the help of suitable marker.

**Heating** - Ensure that the indicator light on the welding device signals that the device is hot enough (260-280 °C) for welding. First weld can be made after 5 minutes when heating light gets off. Heat the pipe and fitting on the polyfusion device as per the recommended heating times. (The heating time starts, when pipe and fitting have been pushed to the correct welding depth on the matrices.) While heating the pipe and fitting in the matrices, apply slight pressure from both sides.

**Welding** - After specified heating time, remove the pipe and fitting out of the matrices. Do not turn or twist the pipe or fitting while pushing in to the matrices and pulling out of the matrices. Heated end of pipe should be pushed in to the flared end of the hot fitting down to the previously marked depth.

**Cooling** - After the specified cooling time, the joint gets a first stiffness, after this phase next joint can be made.

**Concealed Work** : While doing concealed bathroom work, it is easier to make the required network on floor by proper measurement of different pipe lengths. To avoid misalignment, guiding marks on pipes and fittings should be referred.



## Polyfusion welding times according to DVS 2207 norms

Pipe Size (mm)	16	20	25	32	40	50	63	75	90	110
Heating time (min) seconds	5	5(3)*	7(4)	8(4)	12(6)	12(9)	24(12)	30(15)	40(20)	50(25)
Working time (max) time of removal, seconds	4	4	4	6	6	6	8	8	8	10
Cooling time (min) minutes	2	2	2	4	4	4	6	6	6	8
Depth of welding (mm)	13	14	15	16	18	20	24	26	29	32.5

Bracketed values are for PN 10 pipes

- Any specifications can change without prior notice.
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