

PPR Pipes
The right choice for
hot and cold water applications

Reliance Industries Limited

Reliance Industries Limited is India's largest private sector company and the only private sector company from India to feature in the 2005 Fortune Global 500 list. The Group's activities span exploration and production of oil and gas, petroleum refining and marketing, petrochemicals (polymers, polyester, fibre intermediates and chemicals), retailing and textiles.

Reliance Polymers

Reliance Polymers is one of the world's largest producers of polymers with a current capacity of 3.5 MMT per annum and massive expansion plans underway. It operates world-scale plants for Polypropylene (PP), Polyethylene (PE) and Polyvinyl Chloride (PVC) using state-of-the-art technology and setting global benchmarks in product quality and services.

A wide range of grades in each of the categories provides diverse applications across packaging, agriculture, automotive, housing, healthcare, water and gas transportation and consumer durables. Superior technological strengths, strong focus on R&D, latest IT-enabled services to support supply chain management, and end-to-end solutions offered across the value chain, bear testimony to its commitment to customer satisfaction.

Polypropylene



Being the 7th largest manufacturer of Polypropylene (PP) in the world, with a capacity of over 1.8 MMT per annum, Reliance Polymers offers a wide

range of Homopolymer, Random and Impact Copolymer grades.

Homopolymer grades from Reliance Polymers are available in a wide range of melt flows and molecular weight distribution. They are used extensively in flexible applications used for commodity and industrial packaging (TQPP, woven fabric, BOPP and Cast Film).

Reliance Polymers has customised Impact Copolymers that are available in a diversified range of Impact and MFI to suit the needs of injection moulding, thermoforming, blow moulding, extrusion coating and compounding.

Reliance Polymers offers Random Copolymer for pipes and pipes fittings, sheets, blow moulding and injection moulding.

It is recommended to use 0.3-0.4 MFI Random Copolymer grade for pipes, pipe fittings, plumbing and industrial applications.

Applications of Repol PPR Pipes

- Hot and cold potable water installations
- Sanitary lines
- Pipe networks for compressed air plants
- Water purifying plants
- Lines for conveying liquid food products
- Conveying air pressure
- Pipes for aggressive fluids like acids and alkaline solutions
- Radiator heating pipes
- Under floor heating pipes



Advantages of using Repol PPR resin grades for pipes

Low thermal conductivity

The thermal conductivity of PPR is very low, thus making it possible to reduce heat loss/gain in hot/cold water supply systems.

Long life

The PPR piping system is usually designed to last over 50 years at ambient temperatures.

No scaling

Unlike metal pipes, PPR does not support scaling.

Reduced pressure losses

The inner surface of pipes and fittings has a very low frictional resistance compared to traditional pipes, thus reducing distribution pressure losses.

Abrasion resistance

Compared to traditional systems, PPR piping assures very high resistance against abrasion by hard particles, ensuring long life.

Resistance to electrolysis

PPR is inert to most electrolytes over a wide range of temperatures.

Reduced installation time

Lightweight and very easy to join.



Features of PPR Pipes

Metal (GI and Copper), plastic (PPR, CPVC, Polybutylene) and composites are predominantly used for plumbing applications.

Among plastic pipes, the PPR pipe is the most popular in plumbing across the world. The PPR pipe was developed in Europe in the early 1990s. It is manufactured from Random Copolymer Polypropylene resin by extrusion process and injection moulding is used for the fittings. It has a service life of up to 50 years.

Repol PPR pipes can deliver hot water at 95°C with a pressure of 1.2 MPa making them the ideal plastic for both cold and hot water use. Pipes and fittings made from Polypropylene Random Copolymer exhibit superior performance for hot and cold water plumbing of residential buildings, commercial complexes, offices and hotels.



Plumbing Pipe Performance Comparison

Properties	PPR	Steel	GI	Copper
Diameter Range	16-200	15-630	15-250	5-500
Service Life (years)	>50	<15	<25	<30
Corrosion and Abrasion Resistance	Very Good	Fair	Fair	Fair
Easiness in production of pipes and fittings	Very Easy	Difficult	Difficult	Difficult
Easiness in laying (Easiest: 100 Hardest: 0)	100	25	25	40
Inner Surface Smoothness	Excellent	Smooth	Smooth	Smooth
Chemical Resistance	Excellent	Fair	Fair	Fair
Joining Reliability (Max:100, Min: 0)	100	0-80	0-80	0-50
State of pipe when inside water freezes	Does not burst	Bursts	Bursts	Bursts

Handling of Repol PPR Pipes

- It is much easier to handle and install Repol PPR pipes v/s the heavier, rigid, metallic or concrete pipe segments, allowing for huge cost advantages in the installation process
- PPR Pipes are able to structurally withstand impacts especially in cold weather installations when other pipes are more prone to cracks and breaks

Repol PPR resin – The right choice for pipes

Over the past several years, the use of PPR pipes has increased dramatically based on factors such as the pipe's strength, durability, joint integrity and long term cost effectiveness. Results show that forward-thinking municipalities, communities and people are realising that the future of water management relies on the best technology. Pipes made from Repol PPR are of the highest quality, being the most technologically advanced, making Repol PPR resin the right choice for the manufacture of pipes and fittings.



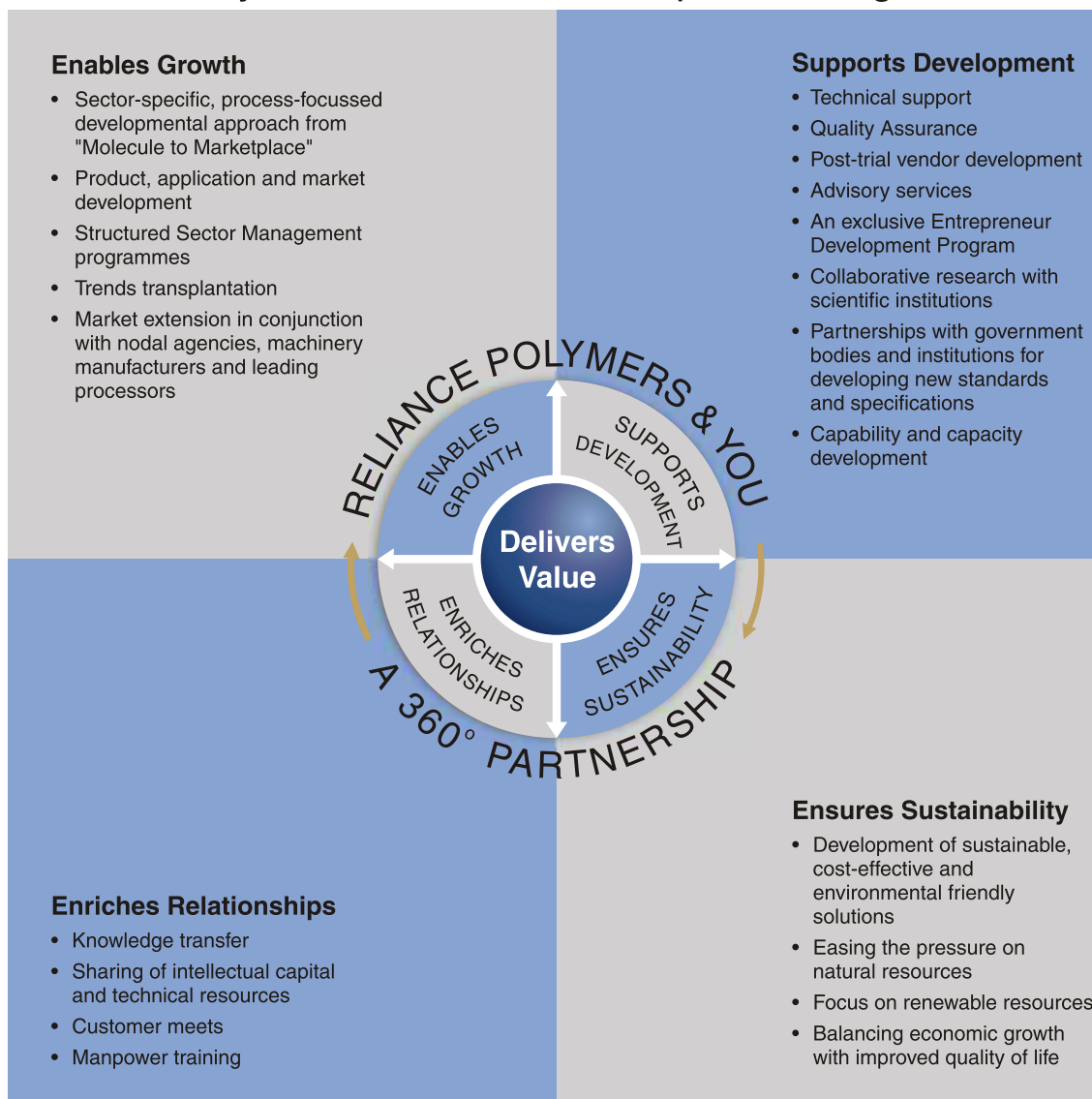
Make the right choice

Since the early 1970s, plastics have gained an excellent reputation for reliability – some pipes have been in continuous pressure service for more than twenty-five years now.

Repol PPR (Polypropylene Random Copolymer) is used to produce pipes and tubing for a variety of domestic and industrial hot and cold water applications. It offers all the advantages of plastics like overall durability, lightweight, corrosion resistance and flexibility. In addition, it is designed to resist temperatures and pressures encountered in hot water systems.



Reliance Polymers – 360° Partnership Delivering Value



Reliance
Industries Limited

Growth is Life

PP Business Development Group, Reliance Industries Limited,
Swastik Mill Compound, V.N. Purav Marg, Chembur, Mumbai-400 071. Tel.: (022) 6767 7000.
E-mail: pp_businessdevelopment@ril.com
Website: www.ril.com

For more information, contact: **Ahmedabad:** Saffron Towers, Block No. 101 to 106, Near Panchvati, Behind Centre Point, Ambawadi, Ahmedabad-380 006. Tel.: (079) 4002 1230 - 36. **Chennai:** JVL Plaza, 5th Floor, 501, Anna Salai, Teynampet, Chennai-600 018. Tel.: (044) 4318 5000 - 04. **Kolkata:** 22, Camac Street, 3rd Floor, Block D, Kolkata-700 016. Tel.: (033) 4001 3400. **Mumbai:** 4th Floor, 2000, Fortune 2000, C-3, G-Block, Bandra Kurla Complex, Mumbai-400 051. Tel.: (022) 4061 4600. **New Delhi:** International Trade Tower, 10th Floor, Nehru Place, New Delhi -110 019. Tel.: (011) 4651 1200.

• The information and data presented herein is true and accurate to the best of our knowledge. No warranty or guarantee expressed or implied, is made regarding performance or other wise. This information and data may not be considered as a suggestion to use our products without taking into account existing patents, or legal provisions or regulations, whether national or international. • The user of any information and/or data is advised to obtain the latest details from any of the offices of the company or its authorised agents, as the information and/or data is subject to change based on the research and development work undertaken by the company.