

For unparalleled
Connections

RELXTM
COMPOSITES
PIPE SOLUTIONS



ABOUT

Reliance Industries Ltd (RIL), one of the most prestigious and largest organisations in India, has diversified into various businesses across the globe like energy, textiles, oil & gas, petrochemicals, telecommunication, retail, media & entertainment, advanced materials and composites etc. It is India's largest and most profitable private sector company.

The company is ranked 106th on the 'Fortune Global 500' list of the world's biggest organization as of 2019 and ranked 3rd in top Global Energy companies by 'S&P Global Platts' in 2017.

Reliance Industries Limited has now ventured into FRP/CFRP composites market to cater to the emerging needs of various industrial segments like Power & Renewable Energy, Oil & Gas, Electrical & Electronics, Telecommunication, Defence, Aviation, Ship building, Mass Transportation, Automobile, Roads & Infrastructure, Construction & Disaster Management, Industrial & Municipal piping, etc. Equipped with experienced team & revolutionary world class technology, RIL has launched into the market with new product segment.



Vadodara Composites Division



RELX™ PIPES - POWERED BY SOME UNIQUE DIFFERENTIATORS

- Only organization in the world having all composite manufacturing processes at single site
- Backward integration into Resin, Fabric & Carbon fibre
- Talent with knowledge & skills in composites manufacturing & design backed by world class Technology & Application development centers of Reliance

STRUCTURED TO OPTIMISE SOLUTIONS

- Tech Fabric • Resin • Pultrusion • Fabrication • Filament winding
- Mass transport • Windmill blade • Carbon fibre • R&D lab



REINFORCED POLYMER COMPOSITE PIPING SYSTEM

- Reinforced Polymer Composite Piping System has many unique characteristics that distinguish itself from conventional metallic materials and even other plastics.
- The single most reason why people go for Reinforced Polymer Composites (GRP/FRP) is the total corrosion resistance that this material offers. Well-engineered GRP pipelines can be totally forgotten after installation for its life periods without periodic maintenance.
- International Codes and specifications are available for GRP pipe design, construction, testing and installation. We have the expertise to design GRP pipes for different operating conditions in accordance with the relevant national and international standards like IS, ASTM, AWWA, DIN, BS. All service requirements are met by the GRP pipes in total, by suitable and appropriate design.
- On the cost front, with optimum engineering and productivity matching the best of industries worldwide, we can compete with steel, ductile iron and other conventional piping material.
- It is these characteristics that make Reinforced Polymer Composite Piping System the choice for many end use applications:
 - Seawater Intake and Outfall lines
 - Chlorination systems
 - Effluent/portable/brine water transmission lines
 - Seawater cooling systems
 - Potable water trunk lines
 - Irrigation pipe systems
 - Sewer/drainage/pipe systems (Industrial/chemical/sanitary/storm water)
 - Firewater systems















BACKED BY HI-TECH MANUFACTURING PROCESSES

Reinforced Polymer Composite Piping System is manufactured from Filament Winding Process which enables the strength to distribute in desired directions thereby optimizing the orthotropic nature of the composites. Pipes manufactured using this process are used for above the ground and underground installations, with gravity flow, medium and high internal pressures. Vadodara Composites Division has Helical and Continuous Filament Winding machines which have different processes and advantages.



SINGLE PRODUCT, MULTIPLE ADVANTAGES

- | | |
|--|---|
|  Durable and corrosion resistant |  Does not produce rust or scale-suitable for potable water |
|  Low weight |  No Cathodic protection required |
|  No external or internal coatings required |  Flow efficiency allows downsizing |
|  Design life of 50 years |  Zero maintenance cost |
|  Low internal friction, resulting into low operational (pumping) cost |  Constant hydraulic characteristics over time |
|  Low life-cycle costs |  UV resistant |
|  Suitable for high service pressure and temperatures |  Easy and reliable jointing mechanism Suitable for above ground and underground applications |



WIDE RANGE TO CATER EVERY NEED

Process	Helical Filament Winding (HFW)	Continuous Filament Winding (CFW)
Diameter	200-2800 mm	300-3000 mm
Length	6-12m Random Lengths Available	6-12m Random Lengths Available
Pressure Class (PN)	200 - 1000mm - 6, 9, 12, 15 1000 - 1500mm - 6, 9 1500 - 3000mm - 6	
Stiffness Class (SN)	B (124 kPa) C (248 kPa) D (496 kPa)	
Joint Types	Butt & Wrap (100-3000 mm) Double Bell Coupler (150-3000 mm) Socket & Spigot (450-900 mm)	

RELIANCE GRP PIPING SYSTEM, PROVIDING SOLUTIONS TO DIVERSE INDUSTRY

Reliance corrosion resistant GRP products meet the demanding needs of industry to transport corrosive and non-corrosive fluids for various applications, viz.

- Oil & Gas industry: offshore and onshore such as crude oil transmission lines, water injection, multiphase fluids
 - Irrigation pipe systems
 - Sewer and drainage pipe systems for industrial, chemical, sanitary and storm water
- Firewater systems
 - Paper and printing industry
 - Power and desalination: seawater intake and outfall, cooling water lines, brine



ROBUST TECHNOLOGICAL CAPABILITIES, CERTIFIED PER GLOBAL STANDARDS

Applicable Standard	Description	Application	Diameter
IS 12709	Indian Standard for Glass fiber Reinforced Plastics(GRP) Pipes, Joints and Fittings for use for Potable Water Supply.	Water Pipe	200 - 3000 mm
IS 14402	Indian Standard for Glass fiber Reinforced Plastics (GRP) Pipes, Joints and Fittings for use for Sewerage, Industrial Waste and Water (Other Than Potable).	Sewage Pipe	200 - 3000 mm
ASTM D 3262	Standard Specification for 'Fiberglass' (Glass-Fiber-Reinforced Thermosetting-Resin) Sewer Pipe. Applicable for pipes 8 in. through 144 in. (200 mm through 3,600 mm) diameter with or without siliceous sand, and polyester or epoxy resin.	"Sewage Pipe (Storm water/ Industrial Waste)"	200 - 4000 mm
ASTM D 3517	Standard Specification for 'Fiberglass' (Glass-Fiber-Reinforced Thermosetting-Resin) Pressure Pipe. Applicable for pipes 8 in. through 144 in. (200 mm through 3,600 mm) diameter with or without siliceous sand, and polyester or epoxy resin.	"Pressure Pipe(Water): Maximum 450 Psi"	200 - 4000 mm
ASTM D 3754	"Standard Specification for 'Fiberglass' (Glass-Fiber-Reinforced Thermosetting-Resin) Sewer and Industrial Pressure Pipe.Applicable for 8 in. through 144 in. (200 mm through 3,600 mm) diameter, with or without siliceous sand, and polyester or epoxy resin."	"Sewage Pipe : max. 450 Psi (Storm water / Industrial Waste / Corrosive fluids)"	200 - 4000 mm
AWWA C 950	AWWA Standard for Fiberglass Pressure Pipe.	Pressure Pipe	200 - 3600mm
AWWA M 45	Fibre glass pressure pipe; water transmission system for above ground and ground application.	Water transmission (max 72 Psi)	25 - 3600 mm
ASTM D 4024	"Standard Specification for Machine Made 'Fiberglass' (Glass-Fiber- Reinforced Thermosetting-Resin) Flanges. Applicable from 1½ in. through 24 in. (13 mm through 600 mm) ANSI B16.5 150 lb (70 kg) bolt circle flanges."	FRP Flanges	-

PROVIDING QUALITY ASSURANCE WITH IN-HOUSE TESTING

DESTRUCTIVE

- Stiffness test
- Hoop tensile strength
- Axial tensile strength

NON-DESTRUCTIVE

- Hydro tester
- Dimensions test

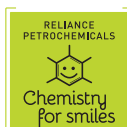
RELX™ GRP PIPES SCORE HIGH AS COMPARED TO CONVENTIONAL PIPING

Description	GRP Pipes	DI	MS Epoxy coated	HDPE
Corrosion resistance	Good	Very poor corrosion resistance. Hence inside cement lining and outside wrapping/ coating is required	Very poor corrosion resistance Cathodic protection is required	Good
Weight	Light in weight	4 times higher than GRP	4 times higher than GRP	Weight is higher than GRP due to higher wall thickness
Life	GRP pipes are designed for 50 years of life	Due to corrosion the life of pipe is 15 - 20 years	Due to corrosion the life of the pipe is 10 - 15 years	Life of HDPE pipe is 10 – 15 years depend upon the service condition
Handling	Handling is very easy since very light in weight	Difficult, due to heavy weight	Difficult, due to heavy weight	Handling is very easy
Underground Application	Best design optimization possible with 50 years life.	The life of the underground DI pipe is reduced due to external corrosion	The life of the underground pipe is reduced due to external corrosion	Uneconomical design calling for very high thickness.
Maintenance	Less Maintenance is required	External coating may peel off in due course of time. Periodical maintenance is required.	External coating may peel off in due course of time. Periodical maintenance is required.	Repair is not possible
Cost	Initial & life-cycle cost benefits	10% - 20% higher than GRP	10% - 20% higher than GRP	Higher for 150 NB and above sizes



OUR RICH DOMAIN EXPERTISE REFLECTED IN OUR WIDE RANGE OF GRP PIPES

Dia	Process (NB)	Pipe (Meter)	PN (Bar)	Stiffness (Class)	Joint Types		
					Butt & Wrap	Double Bell Coupler	Socket & Spigot
200	HFW	6	6,9,12,15	#B #C #D	√	√	
250	HFW	9	6,9,12,15	#B #C #D	√	√	
300	HFW	12	6,9,12,15	#B #C #D	√	√	
350	HFW	12	6,9,12,15	#B #C #D	√	√	
400	HFW	12	6,9,12,15	#B #C #D	√	√	
450	HFW	12	6,9,12,15	#B #C #D	√	√	√
500	HFW	12	6,9,12,15	#B #C #D	√	√	√
600	HFW	12	6,9,12,15	#B #C #D	√	√	√
700	HFW/CFW	12	6,9,12,15	#B #C #D	√	√	√
750	HFW	12	6,9,12,15	#B #C #D	√		
800	HFW/CFW	12	6,9,12,15	#B #C #D	√	√	√
900	HFW/CFW	12	6,9,12,15	#B #C #D	√	√	√
1000	HFW/CFW	12	6,9,12,15	#B #C #D	√	√	
1100	HFW/CFW	12	6,9	#B #C #D	√	√	
1200	HFW/CFW	12	6,9	#B #C #D	√	√	
1400	HFW/CFW	6/12	6,9	#B #C #D	√	√	
1500	HFW/CFW	6/12	6,9	#B #C #D	√	√	
1600	CFW	12	6	#B #C #D	√	√	
1700	CFW	12	6	#B #C #D	√	√	
1800	HFW/CFW	6/12	6	#B #C #D	√	√	
2000	HFW/CFW	6/12	6	#B #C #D	√	√	
2100	HFW/CFW	6/12	6	#B #C #D	√	√	
2200	CFW	12	6	#B #C #D	√	√	
2400	HFW/CFW	6/12	6	#B #C #D	√	√	
2600	CFW	12	6	#B #C #D	√	√	
2800	HFW/CFW	6/12	6	#B #C #D	√	√	
3000	CFW	12	6	#B #C #D	√	√	



Manufacturing

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