



EPP Composites Pvt. Ltd.



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### Plant - 1 : GRP Piping Division

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### Plant - 3 : Building Products Division

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### Plant - 2 : Chemical Plants & Equipment Division

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### Plant - 4 : Pultrusion Division

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GRP  
GRE  
Pipe

# Innovative Engineering, Renovating Life





## Glass Reinforced Plastic Past to Present



We are a society, which is over utilizing the plastic. Different types of thermoplastics such as PVC, PE and PVDF etc. have become an integral part of activities. Such an over utilization has given new incarnation to plastic called GRP i.e. Glass Reinforced Plastic. GRP products are thermally stable and belong to thermoset plastic family. GRP is the composite material of glass and resin. Exceptionally high strength of glass fibre is bonded with the corrosion resistant resin to form GRP products. Due to this GRP succeeded in establishing itself as an alternate and ideal material for wide range of industrial applications. Initially the GRP Pipes were available in smaller diameter only, subsequent to the further development over the next few years in the GRP Pipe Industry, larger diameters were made available & because of its inherent highly anti- corrosive properties. It found ready acceptance in the chemical process industry also. It is surprising that traditional materials of construction have proved too costly or technically inadequate in comparison with GRP.

It was in 1948 that the fibreglass pipes were introduced for the first time. In those early days oil industries were attracted towards the application of pipes and today also it forms a major segment of application. Cost effectiveness and corrosion resistance were the benefits of fibreglass pipes over the few costly materials such as special Alloy steel and stainless steel. With the passage of time by 1990s fibreglass pipes were accepted for water distribution, transmission and sewerage applications.

Today EPP GRP pipes come with tailor made solutions and great design flexibility over and above the standard pipe diameters and fittings. This has put the GRP pipes at the apex level of selection for various applications of conduction, connection and protection.





## Overview

EPP Composites Pvt. Ltd. is one of the leading global players in the rapidly growing composite industry. The company has achieved a reputed position with more than two decades of focus on quality and customer service. Since 1986, Research & Development of new products remains a primary aim at EPP which has today resulted into multi divisional activities.

We are renowned for manufacturing of GRP / GRE Pipes, Fittings & Liners for various applications, as per the National, International Standards / Specifications. Our extensive range of product are inclusive of GRP / GRE Pipes, Fittings & Liners, FRP Cooling Towers / Scrubbers / Blowers / Hoods / Ducts & Chimneys, FRP Storage Tanks, various FRP Pultruded products, FRP Cable Trays, FRP Bath Tubs & Counter Basins, FRP Doors & Roofing Sheets, etc

An ISO 9001:2008 certified, manufacturing facilities have been extended over an area of more than 23,225 sq mtr. EPP has also installed latest filament winding machines, Resin transfer moulding machines, Spray up machines, Compression Moulding facility and Hand lay up process. EPP's involvement from design to commissioning in detailed project and engineering job has made it possible to develop their own designing capacity. We are able to offer consolidated and concrete proposals as per the requirement of our customers with good hold and reputation with specialist designer and associates.

Young and versatile personalities, Mr. Siddharth Shah and Mr. Jayraj Shah along with the team of skilled and experienced engineers, marketing personnel, technicians and supporting professionals has made it possible to achieve a compounded growth rate of 120%.



## Design & Engineering Capabilities

Dedicated design and engineering capabilities have been developed at EPP keeping in mind the complex characteristics of composite material. Each tailor made EPP GRP/GRE pipe is made by the experienced team of engineers with advance engineering technology for variety of applications. All aspects of design, engineering and manufacturing are rigorously monitored by trained and experienced experts to maintain our commitment to quality.

EPP GRP/GRE pipe manufacturing process starts with unique process called "design to the technology" computer analysis and modelling including relevant variables like internal pressure, external pressure, specific gravity or density of fluid etc. This process produces an efficient, safe and quality pipe which is in line with the laid down specifications or tolerances rate.







## Manufacturing Capabilities

Advanced 2 axis and 4 axis CNC filament winding technologies are used for manufacturing of EPP GRP/GRE pipe. Filament winding process is pipe fabrication method which utilises continuous glass strand roving that is pre-saturated in a resin bath and helically wound around a rotating mandrel at a specified winding angle, which is generally 55°. The winding process is continuous in bi-directional layers until the desired wall thickness is achieved. This winding angle of 55° will provide optimum 2:1, hoop to axial ratio. GRP/GRE pipes manufactured by filament winding show better physical properties in comparison with other method like hand-layup etc. Thus, GRP/GRE pipe will have longer service life without incremental cost of supply.



## Quality & Testing Capabilities

EPP GRP/GRE pipe is manufactured with a commitment to quality and strict adherence to ISO 7370(1983), ASTM D 3517 (1986), ASTM D 2992 (1987), ASTM 3681 (1994), ASTM D 3754, ANSI/AWWA C 950 (1981), AWWA M 45 (2002), BS 5480 (1990), IS 12709 (1994) & IS 14402 (1996) design and testing standards and approvals from national and international authorities. We are confident of the quality of our products and services.

Over and above the monitoring by various authorities, our product passes through different stringent quality test at various stages during the manufacturing process. Besides exceptional control on raw materials, testing is integral to the manufacturing process. EPP GRP/GRE pipe is tested with in-house tests like Longitudinal Strength Test, Hoop Tensile Strength Test, Stiffness Test, Beam Strength Test, Hydro Test, Pipe Soundness Test etc to check the various properties after manufacturing.





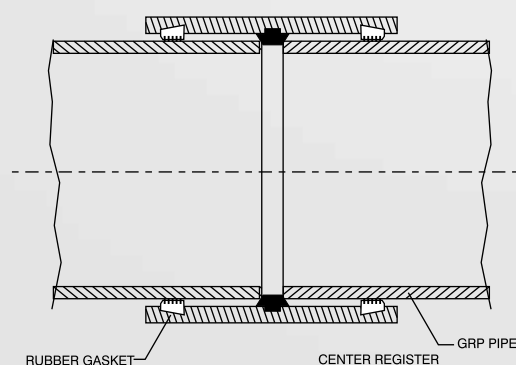
# Jointing Details

EPP GRP pipe joints are broadly divided into following two major categories:

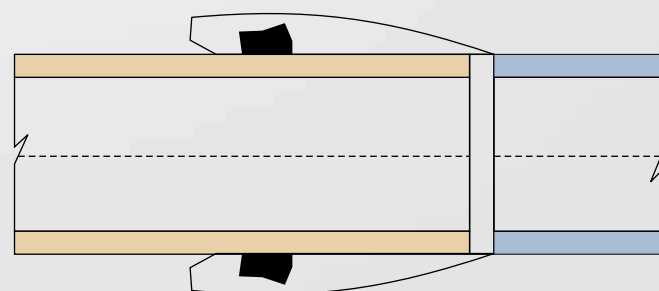
## 1 Unrestrained joints, that can resist hoop pressure only.

**a. Double Bell Coupling Joint** – There are 3 grooves in a coupling. The centre groove is for the EPDM Centre Registers, which prevent damage to the edges of the pipes, during jointing. The two end grooves are for the EPDM Rubber Gaskets. These gaskets are either 4 / 6 lipped and provide 100 % leak – proof joint.

**b. Bell & Spigot Joint** – It has a groove either on the spigot or in the bell to retain an elastomeric gasket that shall be the sole element of the joint to provide the water-tightness. The socket end of this joint is an integral filament wound part of the pipe. The spigot end is a machined part on which the O-ring seal is positioned.



1.a



1.b

## 2 Restrained joints, that can resist both longitudinal forces and hoop pressure.

### a. Butt & strap joint

Butt and strap is a permanent joint which is accepted and used around the globe for joining the GRP pipe. It consists of hardening of impregnated glass, chop strand mat, woven roving mat and tissues and it is laminated according to specified thickness and width depending upon the design pressure class, thus offering the continuity in hoop and axial directions.

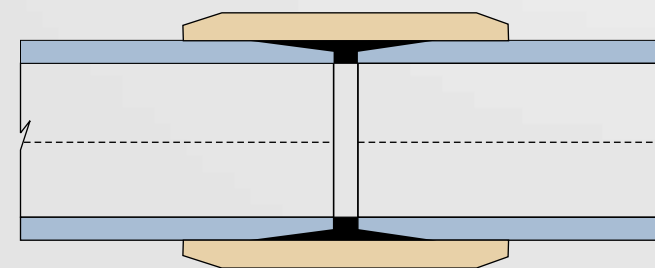
### b. Flanged joint

These joints are again classified into the following two parts

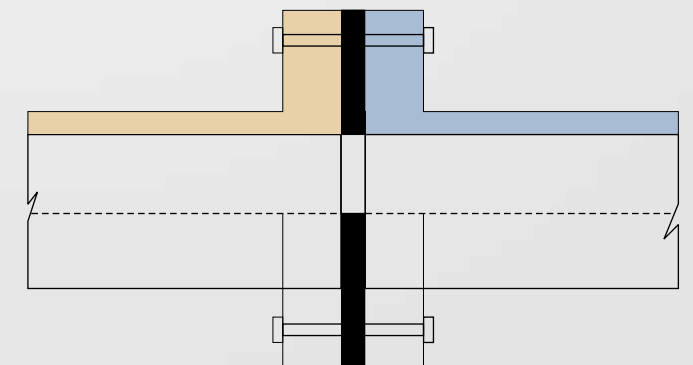
#### I) Fixed flanged

#### II) Stub end with steel loose flange

Type of joint	Size range (mm)	End load resistant
- Butt and strap joint	300-2800	Yes
- GRP flange joint	300-1800	Yes
- Coupling joint	300-2800	No



2.a



2.b



## Classification

Our Pipes, Fittings & Liners are **ID** based and cover a wide range of applications and sizes;

- **DN** – Diameters from **25 mm to 3000 mm**
- **PN** – Pressure Classes **3, 6, 9, 12 & 15 Bar**. Higher Pressure Classes are also available, on request.
- **SN** – Stiffness Classes **62, 124, 248 & 496 kPa**. Higher Stiffness Classes are also available, on request.
- **L** – Length from **2 mtrs to 12 mtrs**.

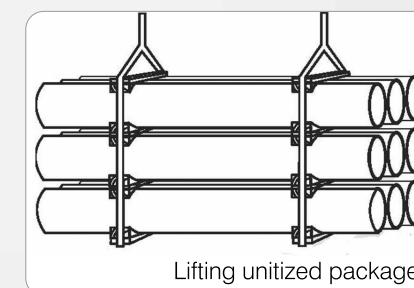
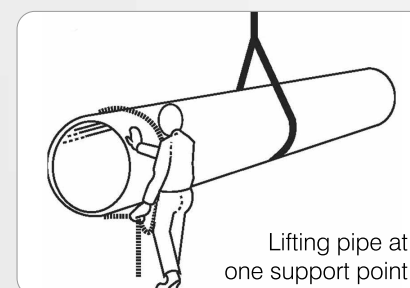
## Stacking

After successful hydro testing of the pipes, the pipes are then carefully stacked in the plant, prior to despatch. Wooden rafters are laid out at the bottom as well as between the intermediate layers. Precaution is taken in the number of layers stacked, so that there is no overburden load on the bottommost pipes. If such precaution is not taken, the bottommost pipes can get deformed thereby causing damage to the laminate structure.

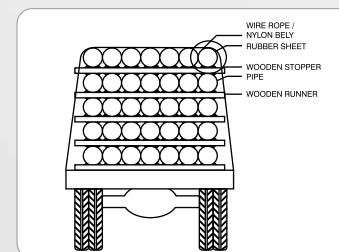


## Despatch

When handling single pipes, for loading purposes, pliable straps, slings or rope are used to lift. Steel cables or chains are not used to lift or transport the pipe. Pipe sections can be lifted with only one support point.



Unitized loads are handled using a pair of slings as shown. We never lift a non-unitized stack of pipes as a single bundle. Non-unitized pipes are loaded and handled separately (one at a time).



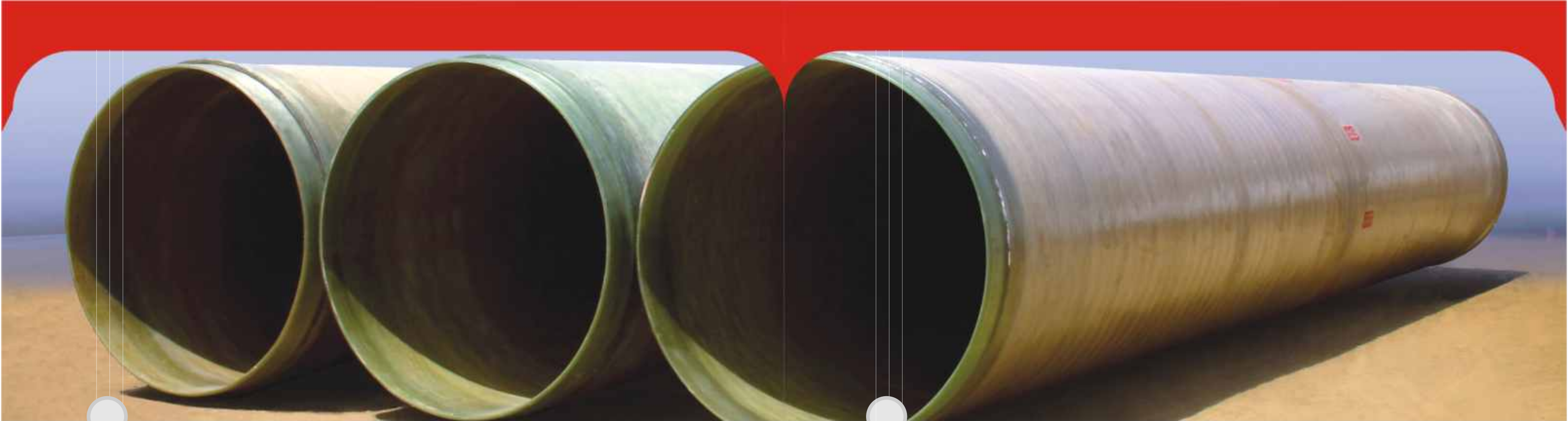
### Transportation of Pipes

All pipe sections are supported on flat timbers, spaced at a maximum 4 metres with a maximum overhang of 2 metres, on the vehicle. The pipes are chocked to maintain stability and separation. Avoid abrasion. Maximum permissible stack height on a vehicle is approximately 3.0 metres. The pipes are strapped to the vehicle over the support points

using pliable straps or rope. Never use steel cables or chains without adequate padding to protect the pipes from abrasion. Bulges, flat areas or other abrupt changes of curvature are not permitted. Transportation of pipes outside of these limitations may result in damage to the pipes.

If at any time during handling or unloading of the pipe, any damage such as a gouge, crack or fracture occurs, the pipe should be repaired before the section is installed. Please contact EPP immediately.





## Rehabilitation

Composites have found a unique niche for structural renovation of large diameter underground pipes. Single or multi-piece composite liners are being installed inside large-diameter circular and noncircular sewer mains / culverts / water pipelines — a pipe within a pipe — in situations where leak repair, corrosion and chemical resistance and improved hydraulic capacity are required, and where the host pipe is too large for a cured-in place pipe (CIPP) application.

Once installed in the host pipe and held in place with grout pumped into the annular gap, the liners provide a time saving structural repair option that can be implemented without excavation. The basis of composite liners comes from the work of the Water Research Centre in the U.K. during the 1970s and '80s, which resulted in the Sewer Rehabilitation Manual.

The liner acts as a “flexible structure” that will prevent further degradation while resisting both the loads induced during installation and the long-term hydrostatic loads imposed by groundwater pressure. A composite liner, made in multiple segments that are jacked or pulled into the large host pipe, invariably reduces the pipe cross-section slightly, which can impact hydraulic capacity — that is, how much water the pipe can carry. But, because the composite liner is smooth with a much lower coefficient of friction than the host pipe (e.g., corrugated steel, concrete or brick), water transport is more efficient so even with a smaller diameter, flow hydraulic capacity can be increased.



## Our Strengths

Our expertise & professionalism is proven in **design, manufacture, testing, successful installation, commissioning & maintenance of GRP/GRE Pipeline Projects on Turnkey basis.**

We are able to excel since we have / are,

- Relevant supportive software, machinery & equipment.
- Highly committed & experienced team of Engineers, Staff and Workers, in all relevant fields.
- Experience in all relevant National, International Standards & Specifications.
- Expertise in all relevant fields of GRP / GRE Pipes, Fittings & Liners.
- Dedicated to a continual path of learning and improvement through Research & Development.
- Build & maintain a healthy business relationship with our Customers and Suppliers.
- Committed to maintaining Quality & strict adherence to Project Schedules.







## Customer Service

On-site service and maintenance remains a critical part of every project. To cater this requirement of our clients at EPP we have 24 hours dedicated field service team which is always a call away for giving solutions and services. Our specially trained customer oriented engineers and technicians visit your site to carry out all functions related to line out, L/L/J, Installation, testing, commissioning, Operation, maintenance and all desired and necessary activities are looked into with due diligence.

EPP service crew has a reputation for being highly efficient and proactive for finding sound solutions to emergency situations. Whether it is critical repairs or regular maintenance, a problem of underground installation or above ground installations or unexpected obstacles, all kind of complications have been resolved by our team of well equipped engineers in a record time.

In today's competitive era EPP gets inspired by a saying "customer is king". Total customer orientation approach has been developed to streamline the development process, improve co-ordination and result in a better engineered project. Our approach works from the very basic of conceptualizing to completion of project with involvement of people who know the technology at par. At EPP our extensive experienced representatives offer a number of key customer services including in-depth technical support and product training. Short notice operational readiness is one of the emerging customer friendly features of our service department.

At EPP we believe in long term relation with customers as a result our service does not end with the completion of our project but we keep on advising them on how to achieve optimum performance of installed pipe system. This service attitude has resulted being repeat order by our satisfied customers.

## Applications

- **Raw / Potable Water** – Water Supply, Lift Irrigation, Penstock, Cooling Towers, etc.
- **Raw / Treated Sewerage** – Conveyance & Discharge lines, etc.
- **Industrial Effluents** – Conveyance & Discharge lines, etc.
- **Sea Water** – Desalination, Cooling Towers, etc.
- **RO / DM Water** – Desalination
- **Steam Condensate** – Chemical, Fertilisers, Pharmaceutical & Formulation Plants, etc.
- **Petro - Chemical Water** – Oil Separation, Fire fighting, etc.
- **Acid / Alkaline Solutions** – Chemical, Fertilisers, Pharmaceutical & Formulation Plants, etc.
- **Gases & Air** – Chemical, Fertilisers, Pharmaceutical & Formulation Plants, etc.

