

Bhagawati Gas Limited

FRP/GRP PIPE

Bhagawati International Ltd. (BIL) has been promoted by 30-year-old Bhagawati Group of Industries having interests in Industrial Gases, International Trading and Software development.



BIL has now ventured into the production of Glass Re-inforced GRP Pipes, which are now fast replacing the conventional pipes due to various advantages GRP Pipes offer over them.

A CNC operated Filament Winding plant has been established in 8000 Sq. mtrs area at Greater Noida in UP to meet the growing demand

SALIENT FEATURES OF THE PRODUCT:

1. State of the art Production Facilities: Pipes are manufactured as per International Standards like ABM! using CNC, - Filament Winding Machines.

High Pressure Rating: High Hoop strength and specific stiffness results in pipes that can withstand pressures upto 50 kg/cm²

Light Weight: Composite has higher unidirectional strength than metal but weighs only one fourth of steel.

Custom Built Product: Designed and tailor made Piping system from 50 mm to 1800 mm diameter to suit Plant layout and operating conditions.

Economical: Cost Effective in comparison even with Cast Iron, PVC Pipes, DI and Steel Pipes

Diversified product Range: All types of Filament Wound Composite products using different resins and fibers can be manufactured.

Excellent Hydraulic Characteristics - due to high value of ISO, these

have low thermal and electrical conductivity.

Maintenance Free. No internal and external coating is required.

Not attacked by moulds and rodents.

ALL PIPES SHALL BE DESIGNED AS PER THE FOLLOWING PROCEDURE!

1. Selection of liner and resin system based on corrosion data
2. Design of winding pattern and laminate thickness based on pressure, stiffness and flexural load.
3. Design optimization using application of standards.
4. Finite Element Analysis using proprietary software for calculating stress.
5. Windability check by simulation.

FILAMENT WINDING SOFTWARE:

Based on the desired laminate structure, the process simulation system is able to calculate the optimal part program.

A27B, Sector-16, NOIDA (U.P.) 201301, INDIA
Phone: +91-120-4749901, 9891388782

Bhagawati Gas Limited

THE PROGRAM OFFERS:



- 1) High degree of automation
- 2) Effective process simulation
- 3) Multiple optimization possibilities
- 4) Accurate fibre positioning
- 5) Repeatable winding patterns
- 5) Smooth machine movements
- 7) Increased productivity
- 8) Defined impregnation of the fibers
- 9) Uniform fibre tension and hence consistent quality

TESTING FACILITIES:

- 1) UNIVERSAL TESTING MACHINE Meant for measuring
Longitudinal Tensile Strength Longitudinal Tensile Modulus
Apparent Elastic Modulus Compressive Strength



- 2) HOOP TENSILE TESTING MACHINE - SPLIT DISC
Meant for measuring
- Hoop Tensile Strength
- 3) STIFFNESS CLASS TESTING MACHINE
- To determine the stiffness of Pipe from SN 2500 - 5000
- 4) HYDROSTATIC TESTING MACHINE- Accurate pressure control for integrating the liner with composite reinforcement.
- Hydrostatic Leak tightness test at twice the rated Pressure as per AWWA C-950. - Burst test facilities available.
- 5) LABORATORY FACILITY-



1. Analytical Balance
2. BARCOL Hardness Tester
3. Spark Tester
4. Viscosity Testing
5. Heat Deflection with shoring device
6. Bender Solubility time tester

A27B, Sector-16, NOIDA (U.P.) 201301, INDIA
Phone: +91-120-4749901, 9891388782

Bhagawati Gas Limited

7. Wetting time tester

APPLICATIONS

INDUSTRIAL AND CHEMICAL:	OIL AND GAS:
Brine transmission	Oil and gas gathering & transmission Salt water disposal
Chemical processing	Water injection and separation Kerosene, Petrol & Other fuels PULP AND PAPER:
Corrosive liquid transmission Desalination	Black, Green, White and Waste liquor Acid lines
Food	Caustic lines
Pharmaceutical	Bleached pulp
Vent lines	Chlorinated Water and Wet chlorine UM
Floor & Root Drain onci Down souulti Sludge lines	Slurry & Mud
Acid handling	Alum Chlorine Dioxide
Chlorine/Caustics	WATER & WASTEWATER :
Sewage & Waste Treatment Condensate Return linos Underground Fire Mains	Feed Piping
Conduit & Utility lines	Effluent lines
OFF SHORE:	Potyme rfeeti Chlorine water Waterlines (plant, potable) Carbon slurry
Caissonscolumnn piping	Aeration lines
Fire water including fire protection Injection and D isposal Well Tubing Submersible pump column piping Drilling Mud and Chem ical lines	Tube well screen Pipe
POWER PLANT:	Linor For sewer Rehabilitation
Chemical feed	REFINERY:
Oil Waste	Chemical lines
Coal Pile Runoff	Tank Battery piping
Fly Ash& Bottom Ash Slurry Pensiccks for Hycile Protects	Loading and unloading lines Acid resistant pipes

PRODUCT SPECIFICATIONS

Diameter	50 mm to 1800 mm
Pressure	Upto 60 Kg/cm ²

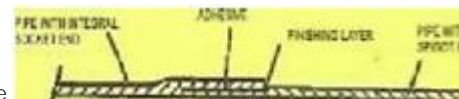
A27B, Sector-16, NOIDA (U.P.) 201301, INDIA
Phone: +91-120-4749901, 9891388782

Bhagawati Gas Limited

Length	12 Meters Maximum
Resin	Vinyl ester, Epoxy, Isophthalic Polyester
Glass Fibre	E- Glass, C- Glass
Liner Thickness	1.2 to 2.5 mm depending on requirement
Design Standards	BIS 12709/14402, ASTM, ASME/ANSI B31.3, AWWA 0950, AWWA M45 and as per Customer requirement.
Type a joints	
a) Unrestrained	
- Bell and Spigot joint	Bond, Tee, Elbow, Cross, Y's Flanges, Blind
- Hanging joint	Flanges, Curved, Couplers.
Restrained	
Coupling Joint, Butt Wrap	

JOINTING SYSTEM

1) BELL & SPIGOT JOINT:



In this joint the male end of one pipe is inserted into the female end of the adjacent pipe and secured well with each other by using adhesive.



A properly made joint is very much stronger against internal pressure and axial tension than the parent material.

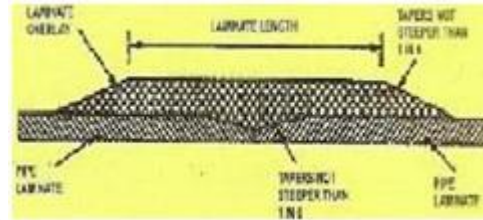
This type of joint is being used widely for pipe diameter ranging from 25 MM to 400 MM.

2) SOCKET JOINT:

This type of joint is being used widely for Pipe diameter ranging from 150 MM to 400 MM. It is very simple as the plain ends of two pipes are inserted in a coupling or socket and joined using specially prepared adhesive.

3) BUTT & WRAP JOINT:

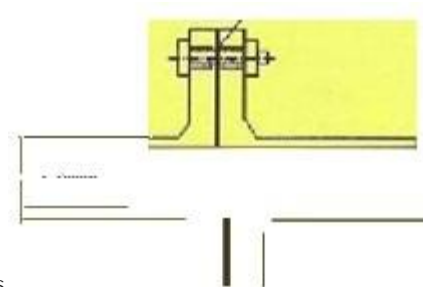
Bhagawati Gas Limited



This type of joint is applicable for pipe of all diameters.

Ends of two pipes, or pipe and fittings, are butted together end secured using resin impregnated Chopped Strand mat or Woven Rovings, which is wrapped around the area and cured.

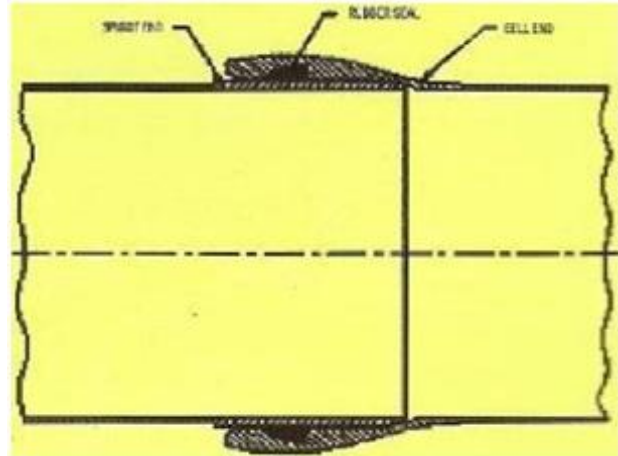
4) FLANGED JOINT:



Pipes of all diameters can be connected, using this type of joint. Pipes can be manufactured either with fixed flanges or with stub end and lodos fIANDea. Flange dimensions will be as per ANSI-B 16.5, except the thickness, which will vary based on the pressure and stress. Then two flange ends can be bolted together with suitable gasket. Tabulated flanges are also available which can be joined with the pipes or pipe fittings in the field using Butt & Wrap method.

5) ELASTOMERIC SEALED JOINT:

Bhagawati Gas Limited



This type of joint consists of pipes with grooved ends connected by a coupler with corresponding grooves. The leak proof joints are provided by rubber O-rings which are fitted at the pipe ends and the "key" made of acetyl plastic is inserted in the groove between the coupler and the pipe. The pipe can be disconnected only if the "key" is removed. These joints can be provided for all diameters.
