



الخليج لصناعة الانابيب [ش.ذ.م.م.] **GULF PIPE** INDUSTRIES (L.L.C)

Where Technology & Quality are integrated

Product Information Catalogue



CB-QMS-EMS-OHSMS-099

www.gulfpipes.com

Dubai . Abu Dhabi . Ras Al Khaima . Saudi Arabia . Oman



TABLE *of* CONTENTS

I	ABOUT US	02
1.	INTRODUCTION.....	03
	1.1 General.....	03
	1.2 Product Range - Pipes & Fittings.....	03
	1.3 Applicable International Codes and Standards.....	04
2	PRODUCT APPLICATIONS.....	04
3	PRODUCT FEATURES AND BENEFITS.....	05
4	PIPE CONSTRUCTION.....	05
	4.1 General.....	05
	4.2 Raw materials - Resins & Glass fibers.....	06
5	GRP/GRE PIPES & FITTINGS DESIGN.....	07
6	PHYSICAL AND MECHANICAL PROPERTIES.....	07
	6.1 Tolerances on Dimensions.....	07
	6.2 Hydraulic Characteristics.....	08
	6.3 U. V.Resistance.....	08
	6.4 Coefficient of Thermal Expansion.....	08
	6.5 Heat Conductivity.....	08
7	JOINING METHODS FOR PIPES & FITTINGS.....	08
	7.1 Tensile Load Resistant Joints.....	08
	7.2 Non-tensile Resistant Joints.....	10
8	FLANGED JOINTS.....	10
	8.1 General.....	10
	8.2 Flange Drilling Standards.....	11
	8.3 Notes on Flanges with 'O-Ring Seal.....	11
	8.4 Tightening of Flanges.....	11
9	PRODUCT DIMENSIONS - PIPES &FITTINGS.....	12
10	QUALITY CONTROL.....	19
	10. 1 Controlling Raw Materials.....	19
	10. 2 QC during production.....	19
	10. 3 QC of finished products.....	19
11	CERTIFICATIONS AND ACCREDITATIONS.....	21
12	HANDLING OF GRP/GRE PIPES.....	22
	12.1 Receiving.....	22
	12.2 Pipe Offloading.....	22
	12.3 Storing GPI Pipes on Site.....	23
13	MANHOLE LINERS AND TANK SHELLS.....	24
14	PRESSURE VESSELS & TANKS FOR AG & UG APPLICATIONS	25
	14.1 Pressure vessels.....	25
	14.2 Above Ground Fibre Glass Tanks.....	25
	14.3 Under Ground Fibre Glass Tanks.....	26
15.	FRP / GRP GRATINGS, HANDRAILS, PLATFORMS AND MANHOLE COVERS.....	29
	15.1 FRP / GRP Molded Gratings.....	29
	15.2 FRP / GRP Handrails.....	30
	15.3 FRP / GRP Platforms.....	31
	15.4 FRP / GRP Manhole Covers	31
16	CUSTOM FABRICATION.....	32
17	SITE SERVICES	33
18	TRADING ACTIVITIES.....	33



About Us

Established in 1995, our 29-year-old FRP manufacturing company has been a trusted leader in the industry, specializing in a wide range of high-quality products. From Process Equipments to Reaction Vessels, Storage Tanks, and Pollution Control Equipments including Scrubbers, Separators, Blowers, Ducts & Components, Stacks, Absorbers, Towers, Dryers, exhaust Systems, Pipes & Fittings, and more, we pride ourselves on

delivering top-notch solutions for various industrial needs. With a strong commitment to quality, innovation, and customer satisfaction, we strive to exceed

expectations and provide reliable products that meet the highest standards. Partner with us for all your FRP manufacturing needs and experience excellence in every product we deliver.

Vision

To be the leading provider of high-quality FRP products, driving innovation in the industry and exceeding customer expectations.



Mission

Our mission is to uphold the highest standards of quality and service in FRP manufacturing, constantly innovating to deliver sustainable solutions for our customers.



1. Introduction

1.1 General

GPI pipes for aboveground applications are Glass Reinforced Plastics (GRP/GRE) consisting of a thermosetting chemical-resistant resin and fiberglass reinforcements. The glass fiber reinforced polyester is a material belonging to the group of the composites. The composites are made up of a continuous phase (matrix of thermosetting resins) and a fibrous phase (glass fiber), responsible for the mechanical characteristics.

GRP pipes are flexible, corrosion resistant, and can be used for a wide range of applications, such as cooling water, industrial waste water and effluents, fire water lines, seawater lines, acid cleaning, and chlorination lines.



1.2 Product Range-Pipes & Fittings

GPI pipes are manufactured using the filament winding process, according to the International Standards listed below, with nominal internal diameters ranging from 25 mm up to 2000 mm.

Available standard pressure classes are 3, 6, 10, 12 and 16 bar. Higher pressure classes are available upon request. Additionally, GPI pipes can be designed for use under vacuum conditions as well as for underground applications.



1.3 Applicable International Codes and Standards

ASTM D2996	Standard Specification for Filament-Wound "Fiberglass" (Glass-Fiber-ReinforcedThermosetting-Resin) Pipe.
ASTM D3262	Standard Specification for "Fiberglass" (Glass-Fiber-ReinforcedThermosetting-Resin) Sewer Pipe.
ASTM D3517	Standard Specification for "Fiberglass" (Glass-Fiber-ReinforcedThermosetting-Resin) Pressure Pipe.
ASTM D3754	Standard Specification for "Fiberglass" (Glass-Fiber-ReinforcedThermosetting-Resin) Sewer and Industrial Pressure Pipe.
AWWA C950	Fiberglass Pressure Pipe.
AWWA M45	Fiberglass Pipe Design Manual.
ASME B31.1	Power Piping.
ASME B31.3	Process Piping.
ISO 14692	Petroleum and Natural Gas Industries-Glass-reinforced plastics-piping
BS EN 1796	Plastics Piping Systems for Water Supply With or Without Pressure - Glass - Reinforced Thermosetting Plastics (GRP Based on Unsaturated Polyester Resin (UP).
BS EN 14364	Plastics Piping Systems for Drainage and Sewerage With or Without Pressure - Glass - Reinforced Thermosetting Plastics (GRP) Based on Unsaturated Polyester Resin (UP) - Specifications for Pipes, Fittings and Joints.



2. Product Applications

GPI pipe can be used in the below pressure and gravity systems.

- Sanitary sewers
- Storm water
- Potable water
- Raw water
- Irrigation
- Industrial wastes and effluents
- Seawater transmission
- Fire protection
- Cooling water
- Chilled water lines etc.



3. Product Features and Benefits

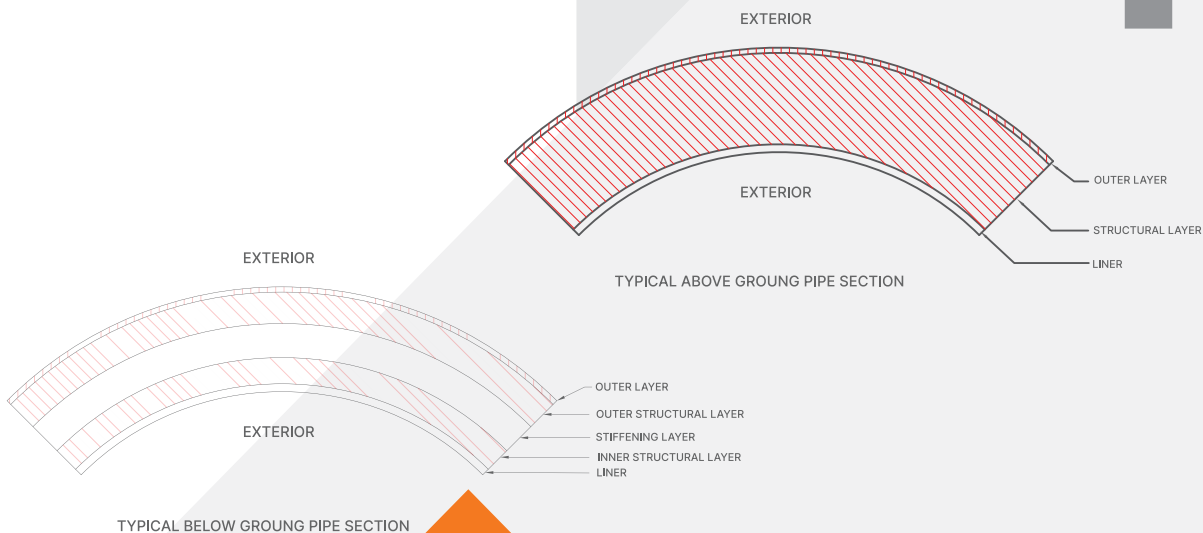
Product Feature	Benefits
Light weight compared to traditional material. 1/4th the weight of ductile iron and 1/10th of pre stressed concrete pipe.	<ul style="list-style-type: none"> • Installation is easier compared to steel or DI pipes • No need for expensive handling equipment. • Lower transportation cost
Highly corrosion resistant composite material is used for manufacture of the pipes	<ul style="list-style-type: none"> • Expenses for corrosion protection are completely eliminated. Eg. cathodic protection, pipe coating, wrapping etc. • Low maintenance costs. • Flow characteristics remain unchanged during the design life and more.
Long life	<ul style="list-style-type: none"> • Design life is 20-30 years as standard.
Manufactured in long sections	<ul style="list-style-type: none"> • Fewer joints means lower assembly time and associated costs
Smooth inside surface	<ul style="list-style-type: none"> • Operating costs are reduced since less pumping energy is required due to low friction of the pipe surface. • Lower cleaning costs due to less slime build up
Pipe specifications comply with international standards	<ul style="list-style-type: none"> • Assures high quality product specifications.
Double Bell Coupling joints with elastomeric REKA askets	<ul style="list-style-type: none"> • Ease of joining, reducing installation time • Accommodates small changes in the line direction without fittings or differential settlement

4.1 General

The pipe is a composite laminate consisting of a corrosion resistant liner, a structural layer and an exterior resin rich layer.

Pipe Construction

4.





4.2 Raw materials - Resins & Glass fibers

The type of resins used in the manufacturing of GPI pipes are given below. Generally, pressure and temperature requirements govern the resin system selection; therefore, maximum service temperatures can change depending on the service requirements. For more information please consult GPI Engineers.

Orthophthalic: It is normally used in the fabrication of the structural layer of the laminates, since due to its properties and excellent wettability it confers the laminate good mechanical properties.

Isophthalic: It is normally used in the fabrication of the liner (inner barrier) of the laminates, since they cover the light corrosions and moderate temperatures and they are applicable for conducting drinking water, seawater, waste water, industrial or sanitary water and for many other slightly critical services.

Vinylester: For industrial uses, with involvement of severe service conditions: Humid-hot chlorine, oxidant acids, sodium hypochlorite, concentrated organic acids, hydrochloric acid contaminated with aromatic hydrocarbons, etc., the maximum service temperature being 100°C depending on the chemical conditions. There exists a wide range valid for higher temperatures.

Epoxy: Epoxy resin is used to manufacture Glass Reinforced Epoxy (GRE) pipes. GRE pipes are known to have excellent mechanical properties and resistance to chemical attacks including acids, neutral salts, and operate under a temperature reaching 110 °C.

Glass Fiber: The mechanical resistance of the composite will depend on the quantity, type, position and orientation of the glass fiber reinforcement, the latter being a chemically inert material and with high tensile strength (almost 18,000 kg/ cm², higher than that of the best steels).

In the fabrication of piping and fittings of GPI GRP, three basic glass types are used:

Glass "C" It has a good inertia with respect to chemical corrosion.

Glass "E" of excellent mechanical and electrical properties.

Glass "ECR" with excellent corrosion resistance.

The typical glass reinforcements used are:

Surface veil "C": Consisting of glass fibers dispersed at random in the form of a sheet, used as reinforcement of the first corrosion-proof layer of the laminate since it allows for a high content of resin.

Synthetic veil: The same as the previous one but based on synthetic glass fibers, indicated for specific uses.

Mats of cut filaments "E": Fabricated with filaments cut in the form of a fabric with the corresponding binding agent compatible with the resin. They are used as specific reinforcement and in the Hand Lay up Process for the fabrication of fittings.

Roving fabric "E": Fabricated with roving filaments directly in the form of a fabric. They are used as specific reinforcements and in the Hand Lay up Process for the fabrication of fittings.

Direct Roving "E": In the form of continuous filaments with the same stress in all the filaments used in the Process of Filament winding, as pipe reinforcement.



5. GRP/GRE Pipes & Fittings Design



GPI is capable of designing FRP Solid piping and fittings for Underground (U/G), Aboveground (A/G) piping systems based on various standards such as ASTM, AWWA, BS, ASME & ISO. The design can be done using flexible coupling joint, tensile resistant joint systems or combination of both. Above ground pipe thicknesses are based on pressure and stiffness requirements. Buried pipes are designed based on of AWWA M45, Section 5.7.5. The pipe calculation generally covers live and dead load effects on the pipe in addition to the effect of internal pressure and vacuum level on the adequacy of the pipe for buckling, combined strain levels, allowable stresses ...etc.



6. Physical and Mechanical Properties

6.1 Tolerances on Dimensions

Dimension	Specification	Tolerance
Pipe inside Diameter (ID)	Equal to DN	4 mm or 1.0%.
Length	3, 10 or 11.8 meters	± 25 mm
Roundness Deviation	Pipes shall be round	+1.0%
End Squareness and End Plainness	Ends shall be both square to axis of the pipe and plane	Not more than 2 mm + 0.005 x DN



6.2 Hydraulic Characteristics

Pipe wall friction factors:

- Darcy, Fanning, Weisbach $f = 0.010$ to 0.018
- Hazen Williams $C = 140$ to 150
- Manning $n = 0.0095$ to 0.012

6.3 U.V. Resistance

GPI pipes contain a U.V. inhibitor in their structure. This layer offers sufficient protection against U.V. radiation. If needed epoxy based paints can be used.

6.4 Coefficient of Thermal Expansion

The approximate co-efficient of thermal expansion of GRP pipe is 24 to 30×10^{-6} mm/mm/Deg. C

6.5 Heat Conductivity

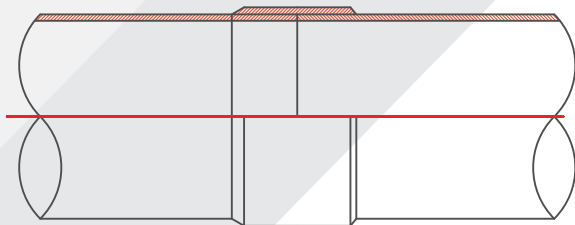
Heat conductivity value is 0.30 to 0.35 W/m K

7 Joining Methods for Pipes & Fillings

7.1 Tensile Load Resistant Joints

There are two types of joining systems:

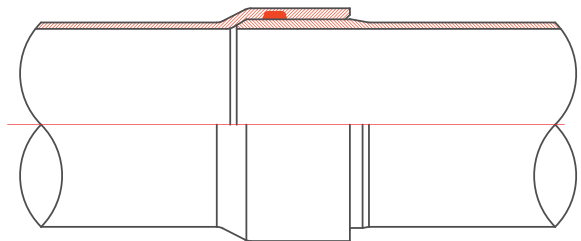
1. Joints which can take axial loads due to internal pressure and bending loads.
2. Non-tensile resistant joints where axial forces should be absorbed by anchors/thrust restraints.



(a) Bell/Spigot Joints-Cylindrical

This rigid joint consists of a slightly conical bell end and a cylindrical spigot end. It has an adhesive bonding joint, two components cemented, relatively low working pressure and is used for small diameter pipes.

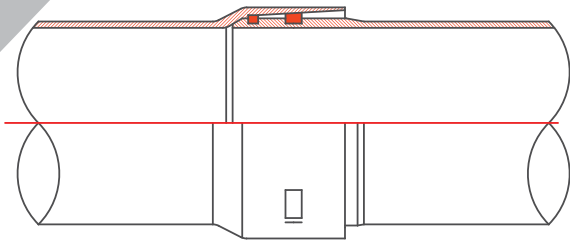
Pressure range: 8 - 32 bars
Diameter range: 80 - 400 mm



(b) Bell / Spigot -Tapered

This rigid joint is similar to the Bell/Spigot-Cylindrical joint with one exception that it has tapered bell and spigot and its working pressure is high. Failure is most often encountered at the straight (90°) end of the socket when dealing with cylindrical joint system. This is due to the "sudden" transition from a high stiffness section (joint area) to a low stiffness section (pipe section). The use of tapered bell and spigot ensures that the joint will perform better (no failure) and less material is being used.

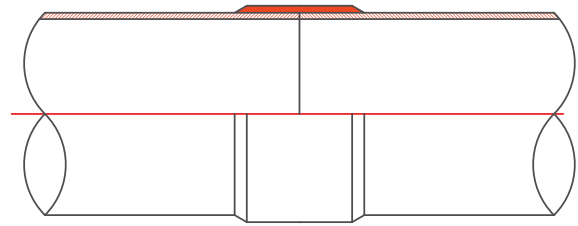
Pressure range: 8 - 50 bars
Diameter range: 80 - 600 mm



(c) Rubber Seal Lock Joint

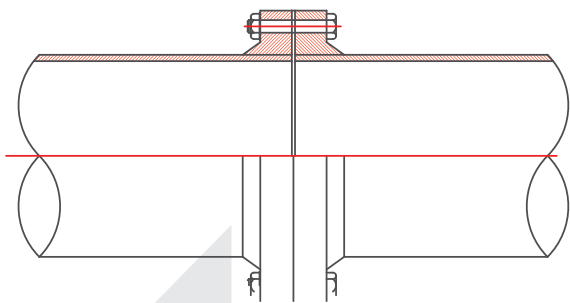
This type of joint consists of an integral socket end and a machined spigot end. The rubber ring (called O-ring for its round shape) is positioned on the spigot end and serves as a seal. Care should be well taken on the spigot outer surface where the O-ring is to be installed. This area must be free of defects. The locking strip is inserted through a rectangular opening on the socket end. This joint is flexible and allows for some axial movement as well as some angular deflection.

Pressure range: 8 - 32 bars
Diameter range: 80 - 1400 mm



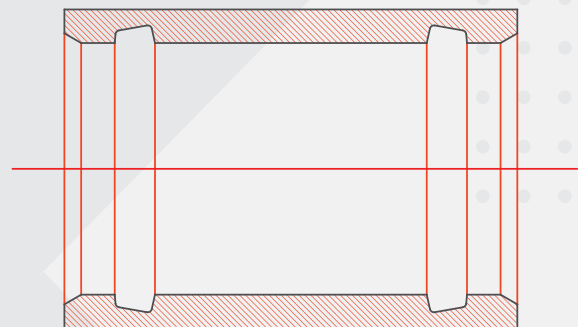
(d) Laminated Joint (LJ)

This is made by use of hand lay-up laminations (Butt & Wrap) of two plain end pipes. This joint is rigid and does not allow for any axial movement or angular deflection. A very good grinding of the spigot outer surface to reach the structure of the pipe for excellent bonding between glass structures. The lamination thickness and bond length are standard and should be respected. This joining system is available for all ranges of diameters.



(e) Flanged Joint (FJ)

This rigid joint is usually used to enable connections with steel pipes and to allow for easy assembly and dismantling of process lines. Flanged joints are mainly used inside valve chambers and pumping stations. A gasket is placed between the two flat faces of the flange to ensure proper sealing. This joint system is almost available for all ranges of diameters and can take pressure up to 50 bars.



(f) Double Bell Coupling

Short pipes are joined using double bell coupling. The sealing of the joint is achieved by the compression of two elastomeric gaskets when the joint is assembled.



7.2 Non-tensile Resistant Joints

(a) Rubber Seal Joint (RSJ)

This joint has the same configuration as the RSLJ without the need for a locking strip. Moreover, RSJ allows for a greater amount of axial movement and angular deflection than does the RSLJ.

Pressure range: 8 - 32 bars
Diameter range: 80 - 1400 mm



(b) Mechanical Coupler

The mechanical coupler is used with plain end pipes. The sealing is maintained through the installation of two rubber rings between the coupler and the pipes. It is almost available at all pipe diameters and can take pressure up to 50 bars.

8. Flanged Joints



8.1 General

Before assembling the Flanged Joints, all safety precautions need to be taken. Ensure that all necessary tools and materials are available.

The necessary tools for the assembly of flanges are:

- Ring spanner with the required bolt head size.
- Torque wrench with the required socket size.

GRP flanges are flat faced. These flanges must always be accurately aligned and not subject to any stress. On the GRP side of the flanged joint, the bolts and nuts must have washers to avoid exceeding the permitted surface pressure. As an alternative, a steel backing ring can be installed.





8.2 Flange Drilling Standards

Standard flanges are drilled to ASME B16.5 / B16.47 pattern. Other drilling standards are also available. (BSEN, API, MSS SP.)

8.3 Notes on Flanges with 'O-ring Seal

Standard flanges are drilled to ASME B16.5 / B16.47 pattern. Other drilling standards are also available. (BSEN, API, MSS SP.)

- Two flanges with an O-ring cannot be jointed to each other. In this case one of the flanges must have a flat face (non-grooved).
- The O-ring used for sealing may be made of EPDM or natural rubber with a shore hardness of 70 ± 5 .

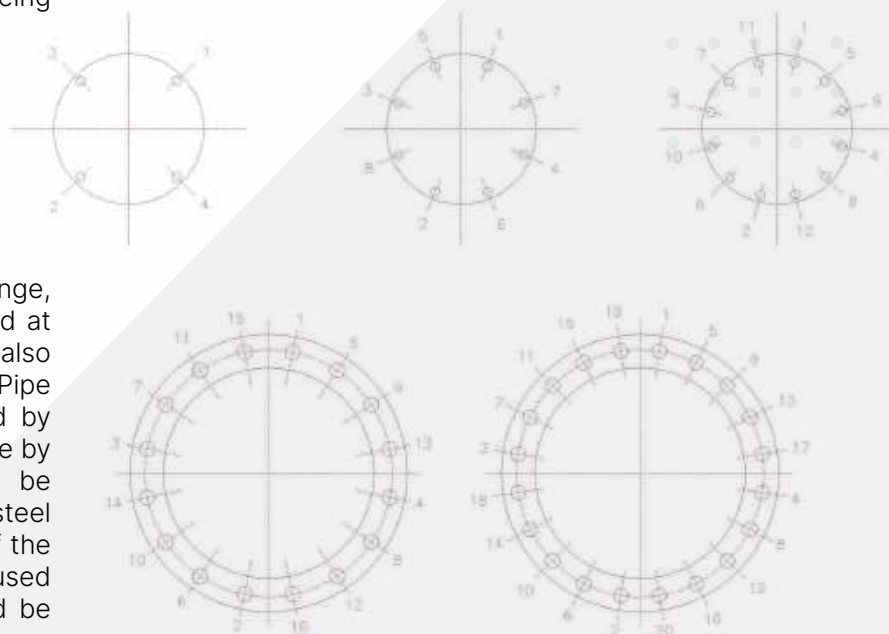
8.4 Tightening of Flanges

ASTM D4024 standard shall be followed for the bolt torquing sequence.

Fiberglass flanges must always be installed tension free. Therefore, flanges must be accurately aligned. Pipelines must never be pulled by means of the flange bolts. If a Fiberglass pipeline is connected to a metal line, this metal line must be anchored to prevent any movements or loads being transmitted to the Fiberglass line.

Tightening of the bolts of a flanged joint shall be executed first diagonally, and then clockwise:

- Diagonally as per the bolt torque sequence described in ASTM D4024 and shown on Figure. Bolts shall be tightened, following the bolt torque sequence, first up to 60% of the recommended value and second up to 100% of the recommended value.
- Clockwise using the recommended bolt torque. This step has to be repeated until all bolts have been assembled at the prescribed bolt torque.
- In case bolts are not properly lubricated, or when the flange joint is not sealing, it is allowed to increase the bolt torque value up to a maximum of 150% of the recommended bolt torque.
- Bolts and nuts must have washers to avoid exceeding the permitted surface stress.
- Flanges must be properly aligned and shall not be subjected to any overload to meet each other.



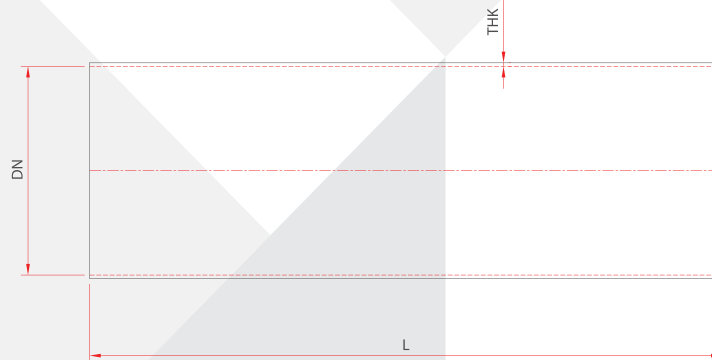
Valve Support

If a GPI flange is connected to a steel flange, the support should preferably be situated at the side of the steel flange. This is also applicable for underground applications. Pipe sections should not become overloaded by the weight of the accessories, for example by soil settlement. One suggestion would be concrete supports provided with steel connections, able to carry the full load of the valve. Also bending and torque forces caused by opening and closing of valves should be absorbed. Hand operated butterfly valves can be supported or mounted in a manhole.



9. Product Dimensions - Pipes & Fittings

ABOVE GROUND PIPE SPECIFICATIONS



ABOVE GROUND PIPE

DN (mm)	LENGTH L (mm)	6 BAR		10 BAR		12 BAR		16 BAR	
		Thk (mm)	Wt (kg/m)	Thk (mm)	Wt (kg/m)	Thk (mm)	Wt (kg/m)	Thk (mm)	Wt (kg/m)
25	3000	4	0.6	4	0.6	4	0.6	4	0.6
40	3000	4	1	4	1	4	1	4	1
50	3000	4	1.2	4	1.2	4	1.2	4	1.2
65	3000	4	1.5	4	1.5	4	1.5	4	1.5
80	6000	4.5	2.1	4.5	2.1	4.5	2.1	4.5	2.1
100	6000	4.5	2.6	4.5	2.6	4.5	2.6	4.5	2.6
125	6000	4.5	3.3	4.5	3.3	4.5	3.3	4.5	3.3
150	6000	4.5	3.9	4.5	3.9	4.5	3.9	4.5	3.9
200	12000	4.5	5.1	4.5	5.1	4.5	5.1	4.8	5.5
250	12000	4.5	6.4	4.8	6.8	5.3	7.6	5.7	8.2
300	12000	4.6	4.6	5.5	9.4	6.1	10.4	6.6	11.3
350	12000	5.2	10.3	6.2	12.3	6.9	13.8	7.5	15
400	12000	5.7	12.9	6.9	15.7	7.8	17.8	8.4	19.2
450	12000	6.3	16.1	7.6	19.4	8.6	22.1	9.3	23.9
500	12000	6.9	19.6	8.4	23.9	9.4	26.8	10.2	29.1
600	12000	8	27.2	9.8	33.4	11	37.6	12	41.1
700	12000	9.2	36.5	11.2	44.5	12.7	50.6	13.8	55.1
800	12000	10.3	46.7	12.7	57.1	14.3	65.1	15.6	71.1
900	12000	11.4	58.1	14.1	72.1	15.9	81.4	17.4	89.3
1000	12000	12.6	71.3	15.5	88	17.6	100.2	19.2	109.4
1200	12000	14.8	100.5	18.4	125.4	20.9	142.7	22.8	155.9
1400	12000	17.1	135.5	21.2	168.5	24.1	191.9	26.4	210.6
1600	12000	19.4	175.7	24.1	218.9	27.4	249.4	30.1	274.4
1800	12000	21.6	220	27	275.8	30.7	314.3	33.7	345.6
2000	12000	23.9	270.5	29.9	339.4	34	386.7	37.3	424.9



UNDER GROUND PIPE SPECIFICATIONS



UNDER GROUND PIPE

STIFFNESS CLASS SN.2500

Nominal Diameter	SPIGOT OD SP OD		Pressure Class					
			PN - 6		PN - 10		PN - 16	
(mm)	(mm)	(max)	Thk (mm)	Wt (kg/m)	Thk (mm)	Wt (kg/m)	Thk (mm)	Wt (kg/m)
350	378	379	4.7	13.36	4.6	12.32	4.6	12.80
400	412	413	5.2	16.08	5.0	13.88	4.8	14.87
450	463	464	5.8	10.27	5.5	18.90	6.4	18.27
500	514	515	6.3	23.17	6.0	21.33	6.8	21.31
600	616	617	7.5	32.68	6.9	29.15	6.7	28.47
700	718	719	8.0	41.34	7.9	39.25	7.8	38.42
800	820	821	9.4	53.01	8.7	49.12	8.8	47.31
900	922	923	10.7	65.45	10.0	61.47	9.7	47.54
1000	1024	1025	11.8	81.32	11.1	74.72	10.7	74.00

STIFFNESS CLASS SN.5000

Nominal Diameter	SPIGOT OD SP OD		Pressure Class					
			PN - 6		PN - 10		PN - 16	
(mm)	(mm)	(max)	Thk (mm)	Wt (kg/m)	Thk (mm)	Wt (kg/m)	Thk (mm)	Wt (kg/m)
350	378	379	5.8	15.50	5.6	14.74	5.3	15.58
400	412	413	6.2	16.82	6.1	17.66	5.9	17.80
450	463	464	7.3	21.93	6.8	22.86	6.7	21.98
500	514	515	8.0	27.35	7.4	25.63	7.1	25.34
600	616	617	9.5	40.22	8.9	36.68	8.4	34.94
700	718	719	10.6	53.00	10.2	48.58	9.8	47.07
800	820	821	12.0	68.58	11.5	62.33	10.9	58.74
900	922	923	13.5	86.21	12.8	77.43	12.2	73.53
1000	1024	1025	15.0	103.56	14.1	93.35	13.5	92.32

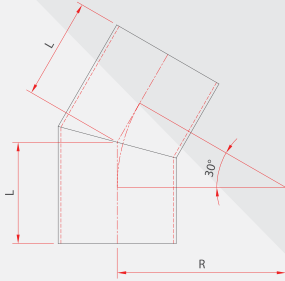
STIFFNESS CLASS SN.10000

Nominal Diameter	SPIGOT OD SP OD		Pressure Class					
			PN - 6		PN - 10		PN - 16	
(mm)	(mm)	(max)	Thk (mm)	Wt (kg/m)	Thk (mm)	Wt (kg/m)	Thk (mm)	Wt (kg/m)
350	378	379	7.3	18.49	7.1	17.76	6.6	16.86
400	412	413	8.0	23.44	7.9	21.49	7.4	20.90
450	463	464	8.9	28.02	8.6	28.84	8.2	26.31
500	514	515	9.6	34.12	9.3	32.08	9.1	30.61
600	616	617	11.7	47.76	11.1	45.79	10.6	42.63
700	718	719	13.6	64.06	12.8	62.05	12.1	57.33
800	820	821	15.5	82.90	14.6	78.04	13.9	74.78
900	922	923	17.2	103.44	16.4	98.36	15.5	93.48
1000	1024	1025	18.8	125.39	18.2	120.62	17.4	114.9



FITTINGS - ELBOWS

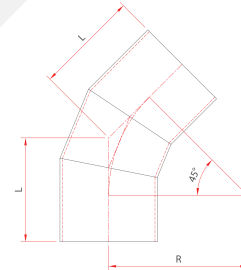
Elbows are mitered pipe sections joined by glass laminate to take full axial thrust. Small diameters elbow (400mm and below) can be made by hand laminate (Sweep). The standard dimensions of mitered elbows are as per the table below ($R=1.5xD$). Short Radius Elbows ($R=1.0D$) can also be fabricated as per the requirements.



30 DEG MITERED ELBOW

30° MITERED ELBOW

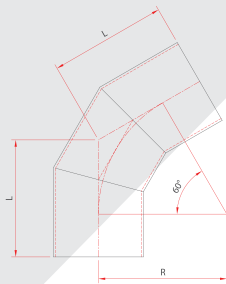
Nominal Diameter	(mm)	(max)
400	600	400
450	675	400
500	750	450
600	900	500
700	1050	550
750	1125	550
800	1200	600
900	1350	650
1000	1500	650



45 DEG MITERED ELBOW

45° MITERED ELBOW

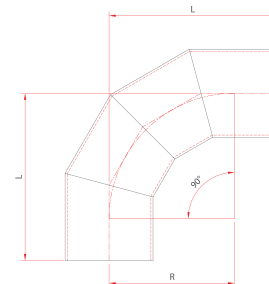
Nominal Diameter	(mm)	(max)
400	600	450
450	675	500
500	750	525
600	900	625
700	1050	700
750	1125	750
800	1200	800
900	1350	850
1000	1500	900



60 DEG MITERED ELBOW

60° MITERED ELBOW

Nominal Diameter	(mm)	(max)
400	600	500
450	675	550
500	750	600
600	900	750
700	1050	850
750	1125	925
800	1200	1000
900	1350	1100
1000	1500	1200



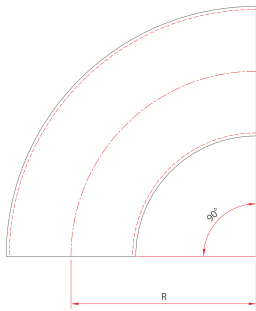
90 DEG MITERED ELBOW

90° MITERED ELBOW

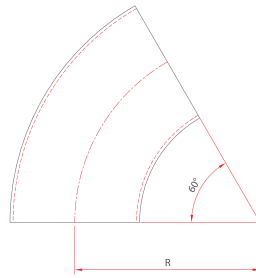
Nominal Diameter	(mm)	(max)
400	600	700
450	675	800
500	750	900
600	900	1100
700	1050	1300
750	1125	1400
800	1200	1500
900	1350	1650
1000	1500	1800



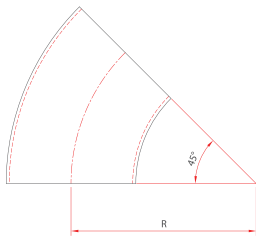
SWEEP ELBOWS



90° SWEEP ELBOW



45° SWEEP ELBOW



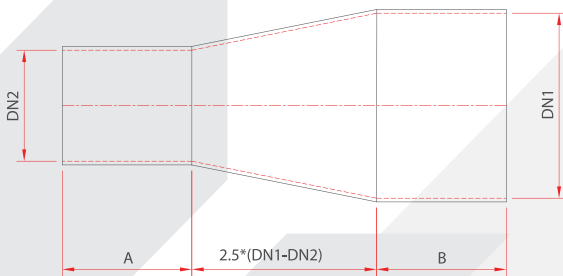
60° SWEEP ELBOW

Elbow with flanged end, spigot end can be supplied as per requirement.

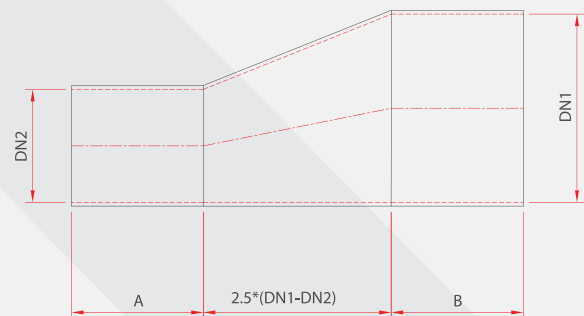
DN	R
20	75
25	75
40	120
50	150
80	160
100	150
150	225
200	300
250	375
300	450
350	525
400	600
500	750
600	900
700	1050

REDUCER

Reducers are fittings that connect two different pipe diameters. The standard reducers are made eccentric and concentric to the pipe center. The joint between pipes and reducers is glass laminate.



CONCENTRIC REDUCER



ECCENTRIC REDUCER

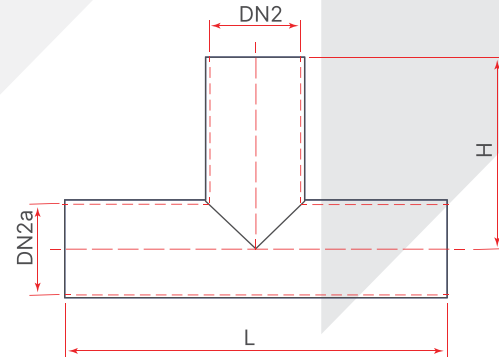
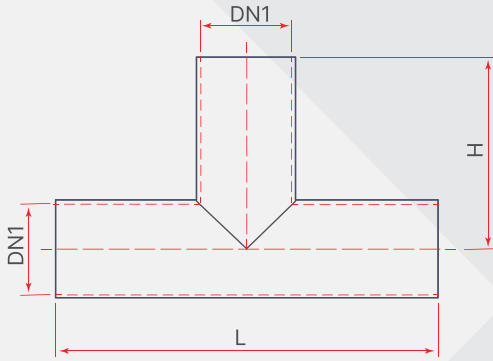
A = 150 or 0.5 * DN2 whichever is greater
 A = 150 or 0.5 * DN1 whichever is greater



TEE

Tees and pipe sections jointed by glass laminate to take full axial thrust. The standard dimensions of Tees are as per the below table.

Standard Equal & Unequal Tee Dimensions



EQUAL TEE

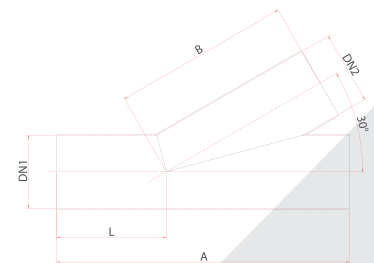
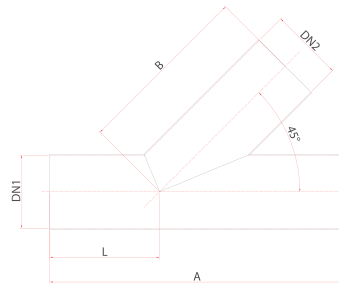
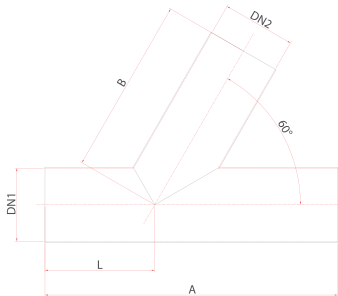
DN1	DN1	L	H
25	25	200	100
40	40	200	100
50	50	250	125
80	80	300	150
100	100	300	150
150	150	450	225
200	200	600	300
250	250	750	375
300	300	900	450
350	350	1050	525
400	400	1200	600
450	450	1350	675
500	500	1500	750
600	600	1800	900
700	700	2100	1050
800	800	2400	1200
900	900	2700	1350
1000	1000	3000	1500

UNEQUAL TEE

DN1	DN1	L	H
50	25	200	100
80	25 < DN2 < 50	300	100
100	25 < DN2 < 80	300	150
150	25 < DN2 < 100	400	200
200	25 < DN2 < 150	500	250
250	25 < DN2 < 100	600	300
	150 < DN2 < 200	750	375
300	25 < DN2 < 100	700	350
	150 < DN2 < 250	850	425
350	50 < DN2 < 150	800	400
	150 < DN2 < 300	1000	500
400	80 < DN2 < 150	950	475
	200 < DN2 < 350	1150	500
500	100 < DN2 < 200	1200	600
	250 < DN2 < 450	1400	700
600	150 < DN2 < 300	1200	600
	350 < DN2 < 500	1400	800
700	150 < DN2 < 300	1350	650
	350 < DN2 < 600	1650	800
800	150 < DN2 < 400	1600	800
	450 < DN2 < 750	2000	1000
900	200 < DN2 < 450	1800	900
	500 < DN2 < 800	2150	1100
1000	200 < DN2 < 450	2000	1000
	500 < DN2 < 900	2400	1200



WYE



45° & 60° WYE (DN2 > 0.5 x DN1)

Size	A	B	L
150	440	240	145
200	610	360	205
250	780	480	265
300	950	600	325
350	1120	720	385
400	1290	840	445
450	1460	960	505
500	1630	1080	565
600	1970	1320	685
700	2310	1560	805
800	2650	1800	925
900	2990	2040	1045
1000	3330	2280	1165

30° WYE (DN2 > 0.5 x DN1)

Size	A	B	L
150	500	530	120
200	700	673	177
250	900	817	234
300	1100	960	291
350	1300	1103	347
400	1500	1246	404
450	1700	1390	461
500	1900	1533	518
600	2300	1820	631
700	2700	2106	745
800	3100	2393	858
900	3500	2679	972
1000	3900	2966	1085

45° & 60° WYE (DN2 < 0.5 x DN1)

Size	A	B	L
150	335	218	93
200	470	290	135
250	605	363	178
300	740	435	220
350	875	508	263
400	1010	580	305
450	1145	653	348
500	1280	725	390
600	1550	870	475
700	1820	1015	560
800	2090	1160	645
900	2360	1305	730
1000	2630	1450	815

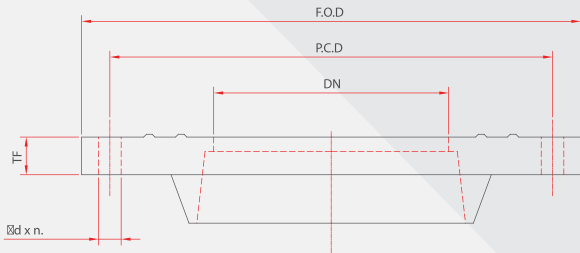
30° WYE (DN2 < 0.5 x DN1)

Size	A	B	L
150	350	390	45
200	500	487	77
250	650	583	109
300	800	680	141
350	950	777	172
400	1100	873	204
450	1250	970	236
500	1400	1067	268
600	1700	1260	331
700	2000	1453	395
800	2300	1646	458
900	2600	1840	522
1000	2900	2033	585

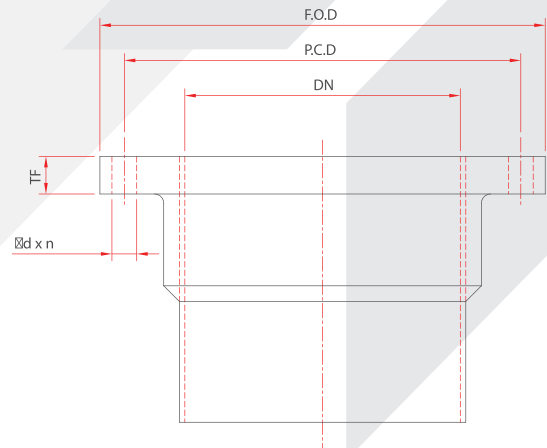


FLANGE JOINTS

The flange is a heavy collar made up of glass laminate impregnated with resin, where the laminate is bonding to one end of the



CONICAL BELL FLANGE
DN 300mm



FLAT FACE FLANGE
DN 350mm

Standard Equal & Unequal Tee Dimensions

Nominal Dia. DN	Flange Dia. FOD	Bolt Circle FCD	Hole Dia. Od	No. of Holes n	Flange Thick TF
15	89	60.5	16	4	20
20	99	70.0	16	4	20
25	115	79.4	16	4	30
40	135	98.5	16	4	30
50	160	120.6	18	4	35
65	180	139.7	18	4	35
80	200	152.4	18	4	40
100	235	190.4	18	8	40
125	255	215.9	23	8	45
150	285	241.3	23	8	45
200	350	298.5	23	8	45
250	410	361.9	27	12	55
300	485	431.8	27	12	55
350	535	476.3	30	12	55
400	600	539.8	30	16	60
450	635	577.9	33	16	65
500	700	635.0	33	20	70
600	815	749.3	36	20	75
700	930	863.6	36	28	80
750	985	914.4	36	28	85
800	1065	977.9	42	28	90
900	1170	1085.9	42	32	95
1000	1290	1200.2	42	36	100



10. Quality Control

Before, during and after manufacturing, GPI realizes rigorous quality controls conforming to relevant standards.

10.1 Controlling Raw Materials

Resins: Each barrel is submitted to a viscosity control. Similarly, a reactivity control is also realized, for checking the gel time and the exothermic peak in determined conditions of hardening, accelerating and working conditions. At the same time, the specific gravity is also controlled.

10.2 QC during production

Each pipe & fitting is produced according to a specific production sheet. Each single piece is registered when manufactured with the date of manufacturing, on individual number, the fittings type, DN, PN, resin used and the name of manufacturer



10.3 QC of finished products

Conforming to the international standards, systematic control realized on the following points:

Visual Inspection

Each fitting coming out of the production is visually controlled, based on an internal procedure from ASTM D-2563.

Weight Control, Dimensional Inspection

Each fittings weight is controlled and compared to the minimum weight resulting from calculation and depending upon this, its shape, its pressure class, the raw materials used, the type of connection... the minimum wall thickness is also controlled on each single piece, as well as dimension.



Glass content

The glass content and construction are regularly controlled by loss of ignition test for each type of manufacturing process (winding or laminating in a mould).

Geometrical Inspection

Geometrical controls are carried out on critical locations for the wall thickness. The outer diameter and length of a spigot, or the length and inner diameter of a socket, dimensional conformity of flanges and collars are also systematically controlled.

Hydro Testing

The standard pipes and fittings are subjected to hydro testing as part of quality control. The test pressures vary from 1.5 to 2 times the design rating. For site testing, the spools / pipeline are tested at 1.5 times design pressure. Hydro testing is also conducted as per the Inspection Test Plan agreed with the client depending on the site / process conditions.

Identification & Marking

All QC data is recorded. Each fitting gets an identification number when manufactured which allows tracing them and their data. Identification marking includes information like type of resin, nominal size, maximum working pressure and temperature. All these markings, together with GPI trade mark, are incorporated under the outer layer.





11. Certification

CERTIFICATE OF REGISTRATION

This is to certify that the Management System of

Gulf Pipe Industries L.L.C
 Head Office: P.O. Box: 66573, Office: No.403, Red Crescent Building, Al Garhoud, Dubai, United Arab Emirates.
 Factory Address: P.O. Box: 152862, Al Ghail Industrial Zone-NFZ, Ras Al Khaimah, United Arab Emirates.

has been assessed and registered by Veritas System Quality Certificates as conforming to the requirements of

ISO 9001:2015
Quality Management System

The Quality Management System is applicable to: **Fibre Glass Products Design and Manufacturing, Including Pipes, Fittings and Tanks.**

IAF/EA-NACE Code: 14-22.21 & 15-23.14

Certificate No : VSQC099-421241600
 Initial Certificate Date: 18-03-2024
 Surveillance and re-assessment date: 07-03-2025
 Re-certification due date: 07-03-2027

Authorized Signatory
 Veritas System
 Quality Certificates Issuing LLC
 P.O. Box: 152862, Ras Al Khaimah, Dubai, United Arab Emirates.

CERTIFICATE OF REGISTRATION

This is to certify that the Management System of

Gulf Pipe Industries L.L.C
 Head Office: P.O. Box: 66573, Office: No.403, Red Crescent Building, Al Garhoud, Dubai, United Arab Emirates.
 Factory Address: P.O. Box: 152862, Al Ghail Industrial Zone-NFZ, Ras Al Khaimah, United Arab Emirates.

has been assessed and registered by Veritas System Quality Certificates as conforming to the requirements of

ISO 14001:2015
Environmental Management System

The Environmental Management System is applicable to: **Fibre Glass Products Design and Manufacturing, Including Pipes, Fittings and Tanks.**

IAF/EA-NACE Code: 14-22.21 & 15-23.14

Certificate No : VSQC099-421241601
 Initial Certificate Date: 18-03-2024
 Surveillance and re-assessment date: 07-03-2025
 Re-certification due date: 07-03-2027

Authorized Signatory
 Veritas System
 Quality Certificates Issuing LLC
 P.O. Box: 152862, Ras Al Khaimah, Dubai, United Arab Emirates.

CERTIFICATE OF REGISTRATION

This is to certify that the Management System of

Gulf Pipe Industries L.L.C
 Head Office: P.O. Box: 66573, Office: No.403, Red Crescent Building, Al Garhoud, Dubai, United Arab Emirates.
 Factory Address: P.O. Box: 152862, Al Ghail Industrial Zone-NFZ, Ras Al Khaimah, United Arab Emirates.

has been assessed and registered by Veritas System Quality Certificates as conforming to the requirements of

ISO 45001:2018
Occupational Health & Safety Management System

The Occupational Health & Safety Management System is applicable to: **Fibre Glass Products Design and Manufacturing, Including Pipes, Fittings and Tanks.**

IAF/EA-NACE Code: 14-22.21 & 15-23.14

Certificate No : VSQC099-421241602
 Initial Certificate Date: 18-03-2024
 Surveillance and re-assessment date: 07-03-2025
 Re-certification due date: 07-03-2027

Authorized Signatory
 Veritas System
 Quality Certificates Issuing LLC
 P.O. Box: 152862, Ras Al Khaimah, Dubai, United Arab Emirates.

WRAS APPROVED

Approved for use in drinking water supply systems in accordance with the requirements of WRAS Approval Scheme.

Gulf Pipe Industries L.L.C
 P.O. Box: 152862, Al Ghail Industrial Zone-NFZ, Ras Al Khaimah, United Arab Emirates.

WRAS APPROVED

This is to certify that the products of Gulf Pipe Industries L.L.C. are approved for use in drinking water supply systems in accordance with the requirements of WRAS Approval Scheme.

WRAS APPROVED

This is to certify that the products of Gulf Pipe Industries L.L.C. are approved for use in drinking water supply systems in accordance with the requirements of WRAS Approval Scheme.

IN-COUNTRY VALUE CERTIFICATE

Certificate ID: 140777
 Issue Date: 18.03.2024
 Valid Until: 18.03.2024

Gulf Pipe Industries LLC

53.11%

Company Information
 Company Name: GULF PIPE INDUSTRIES LLC
 Financial Year End Date: 31.12.2023
 Company Address: P.O. Box: 152862, Ras Al Khaimah, United Arab Emirates.

For Copies of the Certifications
 Re: Gulf Pipe Industries LLC

Request to: Mr. Ali Al-Falaki



12. Handling of GRP/GRE pipes

12.1 Receiving

Generally pipes will be handed over to the Contractor or his representative at the factory or at the Job site or as agreed upon in the Contractor's purchase order. In the case of an Ex-works delivery, the pipes and fittings shall be loaded on the Contractor's trucks, by the factory loading staff. If the loading staff considers the transport of items unsuitable they will advise the contractor or his representative accordingly. Inspection is thoroughly made by the factory loading staff of the goods being loaded; nevertheless, the Contractor or his representative should make their own inspection of the goods during dispatch.

The Contractor should make the following inspection at the time of the reception of the goods:

- Each item should be inspected with care upon its arrival.
- Total quantity of pipes, fittings, etc. should be carefully checked against our delivery notes.
- Any damaged or missing item must be pointed out to the dispatcher or driver and noted on the delivery note.

Materials that have been damaged during transportation should be isolated and stored separately on site, until the material is checked by our site representative and repaired or replaced. Damaged material must not be used before it is repaired.

12.2 Pipe Offloading

Offloading at the jobsite must be carried out carefully under the control and responsibility of the Contractor. Care should be taken to avoid impact with any solid object (i.e. other pipes, ground stones, truck side etc...)

Offloading by Hand

Unloading by hand with two men should be done for small diameter pipes, not exceeding 60 kg.

Mechanical Offloading

Mechanical offloading is required for pipes heavier than 60 kg. Flexible slings or straps should be used combined with a mobile crane. It is recommended to use two slings or nylon lifting straps to hold and lift the pipes. Steel cables must not be used for lifting or handling GPI pipes. GPI Pipes can also be lifted with one sling or strap balanced in the middle with the aid of a guide rope.



Caution: Hooks must not be used at the pipe ends to lift the pipes, nor should the pipe be lifted by passing a rope or sling through it.



12.3 Storing GPI Pipes on Site

Distribution along the trench

Avoid placing the pipes where they can be damaged by traffic or blasting operation. Also avoid laying the pipes on sharp rocks or objects that may damage and affect their function. Store the pipes if possible on soft level ground (e.g. sand), timber bearers or sand bags.

Caution: Pipes must not be stored on rocks.

Storing in stock piles

Care must be taken that the storage surface has the same level, firm as possible and clear of rocks or solid objects that might damage the pipes. Store the pipes in separate stock-piles according to their class and nominal diameter. Pipes are to be placed on wooden timber at a maximum spacing of 6 meters. Any extraneous materials are to be removed from the area. Wooden wedges, used in order to prevent the pipe stack from sliding, should be placed on both sides of the stack, on the timber bearer, as shown in Figure.



Handling of Nested pipes

Pipes delivered in nested system (small pipes kept inside bigger pipes) should be handled with special care.

When handling nested pipes, never use only one sling or strap. Nested pipes must always be lifted using at least two straps or slings. A spreader bar will help to insure that the load is lifted at one level. Mobile lifting equipment should move slowly when handling nested pipes and all such movements should be kept to a minimum to ensure the safety of site personnel. The Contractor should ensure that the crane operator realizes that the nested pipes which is kept inside may slip out and fall during movement. All necessary precautions should be taken.

De-nesting a load is easily accomplished by inserting a forklift fork into a padded boom. Figure shows how this is accomplished. Ensure that the forklift capacity is adequate for the job. Proper padding is essential; rubber, several wraps of corrugated cardboard sheets, a PVC pipe or PE pipe slipped over the boom are all suitable options to avoid damaging the inside of the pipes.

The Forklift operator should lift the innermost pipe above the pipe around it sufficiently so the pipes do not touch each other when the inner pipe is being pulled out.



13. Manhole liners and Tank shells

Manhole liners and tank shells are constructed from a thermosetting chemical resistant polyester resin, glass fiber reinforcements, silica sand, and additives as required.

Manhole liners are mainly used in municipal projects and serve as an inside liner for a concrete surrounding. They can be provided as either loose liners or with "cover slabs" that have either a round or a square opening. Liners are available in diameters ranging from Ø 600 mm to Ø 4000 mm and have an ordinary wall thickness of 7.5 to 10 mm.

Tank shells serve as storage tanks for water, fuel and other chemicals. VE resin used for liner formation is known to have a very good chemical resistance that protects the inner surface of tanks from corrosive chemicals.

Silica sand is added as a filler and ribbing is a must to achieve a good stiffness value. The outer surface of tank shells is rough so as to have a better bonding to the later applied reinforcing material. Tank shells are available in diameters ranging from Ø 1200 mm to Ø 4000 mm and have a maximum wall thickness of 14 mm.





14. Pressure Vessels & Tanks for Above Ground and Under Ground Applications

14.1 Pressure Vessels

FRP Pressure vessels are manufactured as per the client requirements of capacity and site / process conditions.

FRP Pressure vessels can be manufactured with Polyester, Vinyl Ester, and Epoxy resins depending on the process requirements. Tanks can be designed and manufactured in compliance with international standards like ASME Sec-X of BPV code or BS 4994. The manufactured vessels are subjected to quality control tests and hydro testing.

Salient Features of the FRP pressure vessels are:

- Corrosion Resistant
- Light in Weight
- High Impact Strength
- Superior Outlook
- Easy to handle & Install
- Maintenance Free. middle with the aid of a guide rope.



14.2 Above Ground Fiberglass Tanks

Above ground fiber glass vessels and piping are widely used by municipalities and manufacturers because of their ability to handle corrosive chemicals. For instance, waste water treatment facilities use above ground fiber glass storage tanks and piping because they safely contain and transport harsh chemicals such as sodium hypochlorite (bleach), alum and ferric chloride. In addition, above ground fiberglass corrosion resistant stacks are used to ventilate waste water treatment facilities.

Manufacturing standards for Above Ground Tanks

GPI above ground tanks can be designed and manufactured to meet the following standards, as well as other customer requirements and specifications:

- American Society of Mechanical Engineers
- British & European Standards

Std : ASME RTP-1
Std : BS 4994, BS EN 13121



Applications of aboveground fiberglass tanks, piping and equipment include the storage of such diverse items as bleach, food, chemicals and brine, as well as the collection of refinery spills

GPI aboveground tanks may be ordered in single-wall or double-wall models, for a full range of seismic conditions, insulated or not, in diameters up to 4m, and in capacities up to 50,000 gallons. When an aboveground tank is ordered with saddles, legs or a skirt, these support components are also manufactured of fiberglass.

GPI aboveground tanks can be designed and manufactured with the following options:

- Vertical or horizontal models
- Open, flat or dome tops
- Flat-bottom, dish-bottom, cone-bottom or sloped-bottom
- Leg-supported, skirt-supported or saddle-supported
- Single-wall or double-wall models.

Typical accessories for GPI above ground fiberglass tanks

- Manways
- Hinged manways
- Mounting brackets
- Vents (gooseneck and mushroom)
- Flanged nozzles
- Ladders
- Lifting lugs
- Tie-down lugs
- Drains
- Work platforms and catwalks
- Handrails



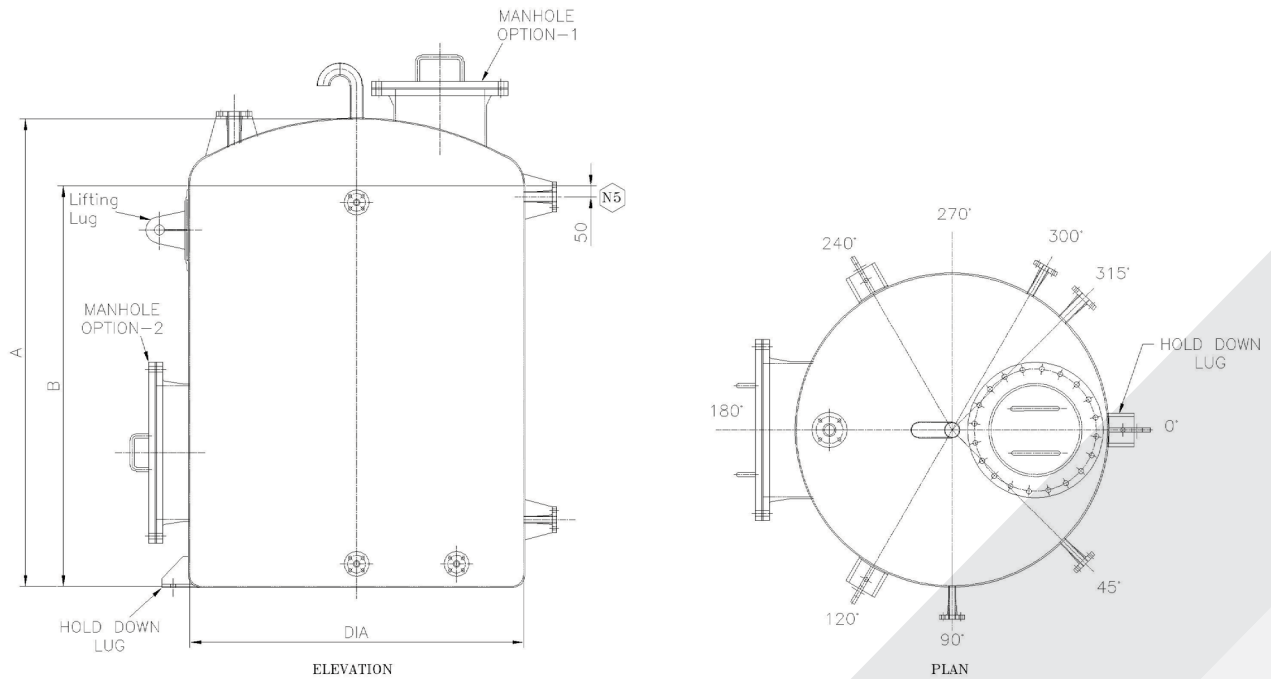
14.3 Under Ground Fiber Glass Tanks

Fiberglass underground fuel storage tanks can be used to store gasoline, aviation fuel, gasohol (90% gasoline and 10% ethanol mixture), jet fuel, diesel fuel, potable water or waste water at ambient underground temperatures, or fuel oil at temperatures not to exceed 65°C. American National Standard ANSI/UL 1316 are the Standard for Fiber Reinforced Plastic Underground Storage Tanks for Petroleum Products, alcohols and alcohol-gasoline mixtures. GPI produces tanks conforming to this standard.

GRP Tanks are made up of stiffened tank shell with end caps and provision for fuel intake and outlet and fuel metering devices. Tanks should be provided with pipe connections and man-ways. Tank shells are provided with ribbing to achieve a high stiffness level. The outer surface of the tank shell is rough, which ensures a very good bonding.



ABOVE GROUND VERTICAL TANK



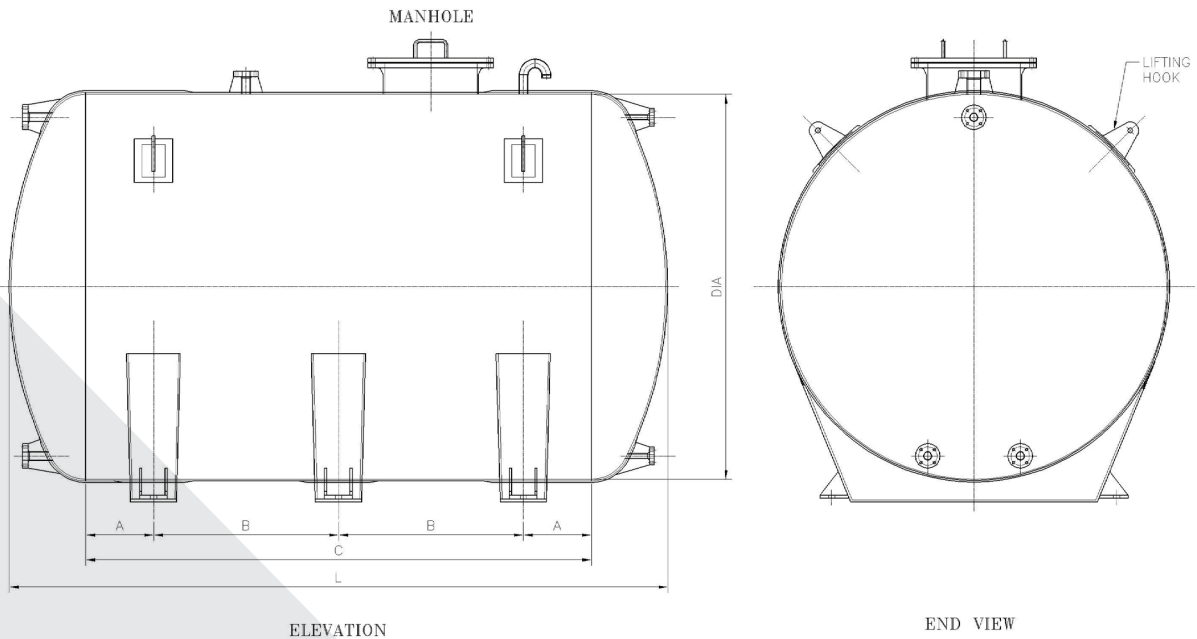
30° WYE (DN2 > 0.5 x DN1)

Model	Nominal Capacity (CuM)	DIA (mm)	Shell Height B (mm)	Total Height A (mm)
AGTV 12001	1	1200	1200	1440
AGTV 12003	3	1200	2960	3200
AGTV 16005	5	1600	2790	3110
AGTV 16006	6	1600	3285	3605
AGTV 18008	8	1800	3450	3810
AGTV 200010	10	2000	3490	3890
AGTV 200012	12	2000	4120	4520
AGTV 240015	15	2400	3620	4100
AGTV 240020	20	2400	4725	5205
AGTV 300025	25	3000	3840	4440
AGTV 300030	30	3000	4550	5150
AGTV 300035	35	3000	5260	5860
AGTV 360040	40	3600	4230	4950
AGTV 360050	50	3600	5220	5940
AGTV 360060	60	3600	6200	6920
AGTV 400070	70	4000	5870	6670
AGTV 400080	80	4000	6670	7470
AGTV 400090	90	4000	7470	8270
AGTV 4000100	100	4000	8260	9060
AGTV 4000125	125	4000	10250	11050
AGTV 4000150	150	4000	12240	13040

Note : Accessories are Ladder, Platform & Hand Rails.



ABOVE GROUND HORIZONTAL STORAGE TANK



Model	Nominal Capacity (CuM)	DIA (mm)	Shell Height B (mm)	Total Height A (mm)
AGTV 12001	1	1200	1200	1440
AGTV 12003	3	1200	2960	3200
AGTV 16005	5	1600	2790	3110
AGTV 16006	6	1600	3285	3605
AGTV 18008	8	1800	3450	3810
AGTV 200010	10	2000	3490	3890
AGTV 200012	12	2000	4120	4520
AGTV 240015	15	2400	3620	4100
AGTV 240020	20	2400	4725	5205
AGTV 300025	25	3000	3840	4440
AGTV 300030	30	3000	4550	5150
AGTV 300035	35	3000	5260	5860
AGTV 360040	40	3600	4230	4950
AGTV 360050	50	3600	5220	5940
AGTV 360060	60	3600	6200	6920
AGTV 400070	70	4000	5870	6670
AGTV 400080	80	4000	6670	7470
AGTV 400090	90	4000	7470	8270
AGTV 4000100	100	4000	8260	9060
AGTV 4000125	125	4000	10250	11050
AGTV 4000150	150	4000	12240	13040

Note : Accessories are Ladder, Platform & Hand Rails.



15. FRP / GRP GRATINGS, HANDRAILS, PLATFORMS AND MANHOLE COVERS

15.1 FRP / GRP MOLDED GRATING

FRP/GRP molded grating use high strength fiberglass roving as reinforcing material, together with unsaturated polyester resin. FRP GRATING has the best bi-direction mechanical properties, with good chemical resistance can be achieved by using superior polyester resin. FRP molded grating are widely used in the power generation, sewage treatment, oil refining and oceanographic survey fields as work floors, stair treads, and trench covers for loading frames. Apart from standard panels.

we can also produce gratings of different thickness, mesh and panel size. Surfaces available include concave top, smooth grating, gritted top, covered with grit, flat or decorative plating, etc.

FRP / GRP Molded gratings are plate like product consisting of regular mesh formed in large metal molds with hand laid glass fiber reinforce and cast up resin as matrix. Here at GPI we provide molded fiber glass grating which are strong mesh grating panel and are chemically inert.

These gratings are molded in one piece and feature a non slip walking surface. Fiber composites molded grating is significantly lighter in weight than metallic grating and high resin rich content provided long and virtually maintenance free performance with superior corrosion resistance and impact resistance. Constructed from glass reinforced thermoset resin, these molded grating is an excellent choice to replace conventional steel and aluminum flooring system in highly aggressive environment.

PROPERTIES

Mechanical:

Tensile Strength, Longitudinal:	400 - 450	N/mm ²
Flexural Stress, Longitudinal:	200 - 450	N/mm ²
Elastic Modulus, Flexural, Longitudinal:	15,000 - 30,000	N/mm ²
Compressive Strength:	150 - 300	N/mm ²
Impact Strength:	1 - 2	kl/M
Elongation at Rupture:	2	%
Hardness (Barcol 934-1):	50 - 60	
Specific Gravity:	1.7 - 1.9	

Electrical:

Dielectric Strength:	12	kV/mm
Volume Resistivity:	10 ¹⁰ - 10 ¹²	Ω/cm ²

Thermal:

Coefficient of Thermal Expansion:	8 - 10	10 ⁻⁶ /°K
Thermal Conductivity:	0.2 - 0.3	W/°K.M
Operating Temperature Range (resin dependent):	-70 to +120	°C

Fire:

B.S. 476	- Class 1
ASTM E84	- Class 1
IEC 60695	- 960 °C Max.

Smoke:

ASTM E662 - Ds at 1.5 min	= 0.68
ASTM E84	- Class A



15.2 FRP / GRP HANDRAILS

Handrails are fabricated from FRP pultrusion's with a fire retardant / non retardant polyester resin, 50% glass content and surface veil for protection against ultraviolet attack. All Handrail Systems feature high strength, lightweight and easy installation.

- Handrail Post – 50×50×6.35/
76×76×6.35mm Square Tube as per design.
- Handrail Top Rail – 50×50×6.35 /
76×76×6.35mm Square Tube.
- Handrail Middle Rail – 50×50×6.35/
76×76×6.35mm Square Tube.
- Handrail Connection – Internal Sleeve
with FRP / GRP Pin Ø8mm
- Post base – Side mounting and Surface
mounting for Square Tubes.
- Connection Hardware - Type 316
Stainless Steel bolts, nuts and washers.





15.3 FRP / GRP PLATFORMS

Gulfpipes' FRP / GRP Walkways, Platforms and Stairways are designed, engineered and custom fabricated by GPI in accordance with OSHA standards, Section 1910.24. GPI FRP / GRP Walkways, Platforms and Stairways are fabricated from fiberglass pultrusion profiles. Our products are available both non fire retardant and fire retardant that have Class 1 fire retardance, with an ASTM E-84 flame spread rating of 25 or less. Molded or Pultruded FRP Grating may be used on GPI Walkways, Stairways and Platform Systems.

GPI Walkways, Platforms and Stairways are made with UV stabilized polyester / vinyl ester resin having 50% glass content, Commonly available in two major colours - Grey and Yellow.

- Framing and Stringers = 203×55×9.5mm or 150×45×8mm Pultruded C - Sections.
- Vertical Supports = 203×55×9.5mm C - Section or 152×152×9.53mm I-section or 200×100×9.5mm I - Section.
- Bracings = 101×101×9.5mm or 76×76×6.35mm Angle
- Connection Hardware = Type 316 stainless steel bolts, nuts and washer.
- FRP Grating = 38×38 Square, 38mm deep panels, Molded FRP grating, with non-skid abrasive grit surface.
- Grating Hardware = Stainless steel 'M' or 'J' clips

15.4 FRP / GRP MANHOLE COVERS

GPI's FRP/GRP manhole covers are lightweight, low in price, and aesthetically pleasing in appearance. It can be colored at will and is easy to install and maintain. Because it has no recycling value, it completely solves the problem of anti-theft. Anti-aging agents such as ultraviolet stabilizers are added to make it UV resistant and service life doubled. Instead of using a steel skeleton for reinforcement, it is reinforced with fiberglass composite, which has compressive, bending, and impact

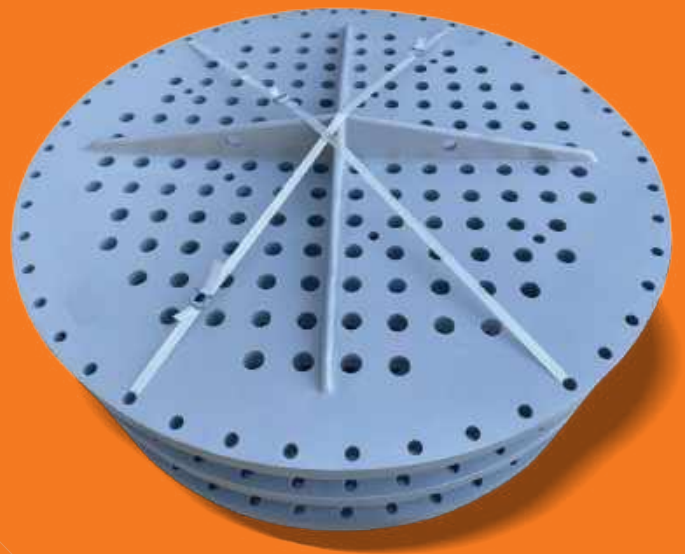
strength and toughness. GPI's manhole cover are designed as per BS EN124 standard and can reach the six load levels of national standards A15, B125, C250, D400, E600, and F900. These manhole covers are acid and alkali resistant, corrosion resistant, wear-resistant, and resistant to vehicle rolling without noise. The unique design of GPI's manhole covers solves the problems of traditional manhole covers such as running, jumping, and flipping.



16. Custom Fabrication

GPI is able to fabricate a wide range of engineered fiberglass structural products to meet specific customer requirements. Examples of this custom fabrication are

- Contact-molded tanks
- Scrubbers
- Ductwork
- Wastewater holding tanks
- Free-standing exhaust stacks
- Food-processing tanks
- Air stripping towers
- Brine makers
- Sea water intake tower screen
- GRP Channels
- Sludge Silo
- Gravity Sludge thickeners



17. Site Services

- Pipe joint laminations
- GRP lining for concrete tanks
- GRP lining for Manholes

18. Trading Activities

- Supply of HDPE Jacket pipes for Insulated pipes
- Supply of Plastic Road Barriers & Road Cones
- Supply of UPVC & CPVC Pipes & Fittings













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