

**EXTRA CO**  
COMPOSITES INDIA PRIVATE LIMITED



# GLASS FIBER **REINFORCED** PIPES & FITTINGS

For Municipal & Industrial Applications

**LINED WITH TRUST AND  
REINFORCED WITH PERFECTION**



## ABOUT OUR COMPANY

Extraco Composites India Pvt Ltd., is a leading manufacturer in fibre glass industry, operating in accordance with the quality standards of ISO 9001:2015. Commitment to quality and customer satisfaction has always ensured successful completion of projects by providing a combination of reliable products and services. Much knowledge has been accumulated during the past two decades, resulting from extensive research, Product testing and providing advanced information on product performance.

The GRP Products & services provided by Extra Co. meet client requirements by providing long-term performance solution to the highest international standards.

## ACCREDITATIONS

Extra Co. has obtained the followings accreditations:

- ❖ ANSI/AWWA C950-01 Approval from TUV India Pvt. Ltd for GRP/GRE/ GRV Pipes & Fittings.
- ❖ ISO 9001 : 2015 Certified for Quality Management.



## QUALITY ASSURANCE POLICY - ISO 9001 : 2015

To build Quality into the processes with Continual Improvement, to the customers standards, for achieving defect free products on time, every time aiming at Total Customer Satisfaction, by involvement of personnel and upgradation of technology with commitment to satisfy applicable legal requirement.

## SALIENT FEATURES OF GRP PIPES

Glass Reinforced Plastics "GRP" or Reinforced Thermosetting Resin "RTR" pipes exhibit excellent adhesion, fatigue-resistance, impact strength, chemical-resistance and low shrinkage, leading to lesser stresses in the finished pipe, superior mechanical and chemical properties, long-term performance and excellent fatigue-resistance under cyclic loading.

### Different types of resins are used, leading to the following categories:

- ❖ **GRP** Using Isophthalic Resin in structural wall and Isophthalic in liner (where applicable). For both underground and aboveground applications, restrained and non-restrained systems, in media temperature upto 60°C.
- ❖ **GRV** Using Vinylester Resin throughout. For Industrial application where specific chemical resistance is required. Used mainly in aboveground applications in media temperature upto 85°C.
- ❖ **GRE** Using Epoxy Resin throughout. For industrial application in media temperature upto 120°C. Additional external protection can be applied to allow for additional fire-retardance.

## APPLICATIONS

- ❖ Water Transmission
- ❖ Sanitary Sewers
- ❖ Storm Water Systems
- ❖ Sewer Force Mains
- ❖ Effluent Water
- ❖ Manhole Liners
- ❖ Structural Manholes
- ❖ Pumping Stations
- ❖ NDM
- ❖ Thrust Boring
- ❖ Valve Chambers
- ❖ Fire Mains
- ❖ Water Desalination Plants
- ❖ Power plants
- ❖ Chemical and Petrochemical Industry
- ❖ Food Industries (Refineries and Breweries)

Applicable Standards	
AWWA C-950	AWWA M45
ASTM D 3754	IS 14402 : 1996
ASTM D 3262	IS 12709 : 1994
ASTM D 3517	BS 5480

## MANUFACTURING

EXTRALITE GRP/GRV/GRE pipes are manufactured on CNC filament winding machine monitored by a fully computerized system. The inner liner thickness of pipes is minimum 1mm, reinforced with 'C' glass veil and can be of higher thickness as required. The structural wall consists of glass rovings impregnated with Resin wound at precisely set helical winding patterns under uniform tension for the various designs. The outer finish consists of Resin topcoat.

GRP/GRV/GRE fittings required for various applications are provided by Extra Co. Using same material as pipe, formed to suit pipe size and end design, in required elbows, tees, unequal tees, concentric and eccentric reducers, flanges, blanks flanges, puddle flanges, couplings, saddles, wyes, crosses, end caps, etc. Special fittings can be made available upon request.

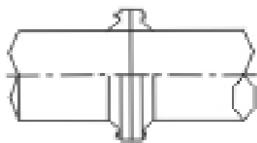
# JOINTING SYSTEM OF PIPES AND FITTINGS

## Restrained (Tensile Resistant)

- ❖ Flanged Joint
- ❖ Butt and wrap joint
- ❖ Rubber seal locked joint
- ❖ Adhesive joint

## Non-Restrained (Tensile Resistant)

- ❖ Bell and spigot
- ❖ Double bell coupling



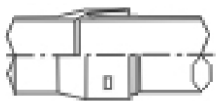
### Flanged Joint

To enable connections with steel and to allow for assembling and disassembling of process lines, Extralite pipes and fittings can be supplied with flanges, drilled in accordance with ANSL, BS DIN or other specifications. Special requirements can be met upon request.



### Lamination Joint

In general these joints will only be used for diameters over 400mm. The preparation of this rigid joint requires good craftsmanship.



### Rubber Seal Lock Joint

This type of joint consists of an integral filament wound socket end and a machined spigot end. The O-ring seal is positioned on the spigot end. The locking device is inserted through an opening in the socket end. It fits in a circumferential groove on the inner side of the socket end and rests against a shoulder on the spigot end. Extralite rubber seal lock joint allows for some axial movement as well as a certain angular deflection.



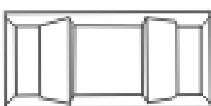
### Adhesive Joint

Pipes are produced with integral socket and spigot ends. Ends are slightly tapered. The inside of the socket matches with the outside of the machined spigot. The two-component of adhesive, namely, epoxy resin and hardener are supplied in appropriately sized cans in correct mixing ratio.



### Bell And Spigot Joint

The socket end of this joint is an integral filament wound part of the pipe. The spigot end is a machined part on which O-ring seal is positioned. The flexible joint allows for axial movement of the spigot in the socket and some permissible angular deflection.



### Double Bell Coupling

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

**NB:** Joint gaskets, and joint rings should be suitable for use in the prevailing climate, soil, ground water, or other media conditions. Rubbers generally used are - natural rubber, Nitrile rubber SBR or EPDM rubber.

## PRODUCT INFORMATION & APPLICATION

<b>1. Series : EX 100 - Oil Field Industry</b>	<ul style="list-style-type: none"> <li>❖ Pressure upto 32 bars</li> <li>❖ Diameter 50-300mm</li> <li>❖ Aboveground &amp; underground application</li> <li>❖ GRE pipes</li> </ul>
<b>2. Series : EX 200 - Chemical &amp; Petro-Chemical Industry</b>	<ul style="list-style-type: none"> <li>❖ Pressure upto 16 bars</li> <li>❖ Diameter 50-1200mm</li> <li>❖ Aboveground application</li> <li>❖ GRV pipes/GRE pipes</li> </ul>
<b>3. Series : EX 300- Water Supply</b>	<ul style="list-style-type: none"> <li>❖ Pressure upto 16 bars</li> <li>❖ Diameter 50-2000mm</li> <li>❖ Mainly underground application</li> <li>❖ GRP pipes</li> </ul>
<b>4. Series : EX 400 - Fire Protection System</b>	<ul style="list-style-type: none"> <li>❖ Pressure upto 32 bars</li> <li>❖ Diameter 50-300mm upto 32 bars</li> <li>❖ Diameter 400-600mm upto 25bars</li> <li>❖ GRE pipes</li> </ul>
<b>5. Series : EX 500 - Sewerage / Drainage</b>	<ul style="list-style-type: none"> <li>❖ Gravity and pressure 12 bars</li> <li>❖ Diameter 50-2000mm</li> <li>❖ 1.0-2.0mm thick Vinylester Resin liner</li> <li>❖ Structural wall Isophthalic</li> <li>❖ GRP pipes</li> </ul>
<b>6. Series : EX 600 - Power Stations &amp; Desalination Plants</b>	<ul style="list-style-type: none"> <li>❖ Pressure upto 16 bars</li> <li>❖ Diameter 50-1200mm</li> <li>❖ Special design for full vacuum and rigid coupling</li> <li>❖ GRV pipes / GRP pipes</li> </ul>

Pipe Stiffness	
1500 N/m <sup>2</sup>	10000 N/m <sup>2</sup>
2500 N/m <sup>2</sup>	12500 N/m <sup>2</sup>
5000 N/m <sup>2</sup>	15000 N/m <sup>2</sup>

NB : Other stiffness designs can be made available upon request

Pressure Class (Bar)	Inner Diameter (mm)			
	50 - 300	350 - 600	700 - 1200	Upto 2000
Gravity	✓	✓	✓	✓
6	✓	✓	✓	✓
12	✓	✓	✓	✓
16	✓	✓	✓	✓
25	✓	✓	–	–
32	✓	–	–	–

NB : Other pressure systems can be made available upon request. Diameters greater than 2000mm are also available.

**AVAILABLE STANDARD EXTRALITE SYSTEMS**



## QUALITY CONTROL & INSPECTION

EXTRALITE GRP/GRV/GRE pipes and fittings are subject to quality control testing / inspection and thorough checks. All incoming raw materials and finished products are

Following are in-house tests carried out on EXTRALITE GRP/GRV/GRE pipes and fittings.

S. No.	Type of Test	Standard for Test Method
1.	Wall thickness	ASTM D3517 / 3567 ; BS 5480 / 4549
2.	Visual inspection	ASTM D3517 / 2563 ; BS 54X0 4549
3.	Dimensional checks	ASTM D 3517 / 2567 ; BS 5480 / 4549
4.	Hydrostatic pressure test	ASTM D 3517 ; BS 5480
5.	Barco1 hardness	ASTM D 2583 ; BS 2782
6.	Constituent by weight % (LOI)	ASTM D 2584 ; BS 2782
7.	Stiffness test	ASTM D2412 ; BS 5480
8.	Split disk test (circumferential tensile strength)	ASTM D 2290 ; BS 5480
9.	Tensile strength (axial tensile strength)	ASTM D 638 ; BS 5480/2782
10.	Flexural strength	ASTM D 790 ; BS 5480 / 2782
11.	Compressive strength	ASTM D 695 ; BS 5480/2782
12.	Shear strength	ASTM D 2344
13.	Beam strength test	ASTM D 3517 ; BS 5480
14.	Hydrostatic design basis for pipes & fittings (static)	ASTM D 2992; BS 5480
15.	Strain corrosion test	ASTM D 3681; BS 5480
16.	Short-time hydraulic failure pressure of pipes	ASTM D 1599; BS 5480
17.	Water absorption	ASTM D 590 :BS 3532 / BS 2782
18.	Long-term Ring Bending Strain Test	ASTM D 5365
19.	Joint Tightness	ASTM D 4161
20.	Elastomeric Gasket	ASTM DF 477

## MECHANICAL & PHYSICAL PROPERTIES

Typical Mechanical and Physical of Extralite GRP/GRV /GRE Pipes and Fittings.

Type of Test	Value
Specific gravity	1580 - 1500 kg/m <sup>3</sup>
Hoop tensile strength	220-490 N/mm <sup>2</sup>
Axial tensile strength	40 - 50 N/mm <sup>2</sup>
Coefficient of thermal expansion	18 to 30 x 10 <sup>-6</sup> (mm/mm/°C)
Flexural modulus	13 800-20000 N/mm <sup>2</sup>
Compressive strength	208 - 364 N/mm <sup>2</sup>
Stiffness	1500- 15000 N/m <sup>2</sup>
Barcol hardness	40-50
Hoop modulus of elasticity	20 - 30 kN/mm <sup>2</sup>
Axial modulus of elasticity	06-10 kN/mm <sup>2</sup>
Thermal conductivity	0.2 - 0.35 W/m <sup>D</sup> C
Specific heat	921 J/Kg <sup>D</sup> K

## VISUAL PROPERTIES

The exterior surface of Extralite pipes and fittings shall be free of the following irregularities.

Property	DEFINITION
Fuzz	Glass fibres loosely adhering to the pipe & not wet out with resin.
Protruding fibres	Glass fibres sticking out from faces that are wet out with resin.
Resin runs	Runs of resin and sand on surface of pipe.
Dry area	Area in laminate with glass not wet out with resin.
Hand lay up ragged areas	Rough area at the edge of hand lay up.

## MARKING PIPES & FITTINGS

Pipes and fittings are clearly marked at Extra Co. factory with the following information.

- |                                    |                                       |
|------------------------------------|---------------------------------------|
| 1. Distinctive mark of manufacture | 1. Manufacturing standard             |
| 2. Date of manufacture             | 2. Stiffness (N/m) <sup>2</sup>       |
| 3. Class or pressure rating        | 3. Employer Name / Project / Contract |
| 4. Inner diameter                  | 4. Angle of Bends and Branches        |

## DELIVERY, STORAGE & HANDLING

Should be in accordance with Extra Co. recommendations. Please refer to Extra Co. Storage, Handling and Installation.

## INSTALLATION

Extra Co. Installation specifications have been developed to ensure proper performance according to the design requirements.

### ❖ Buried Installation

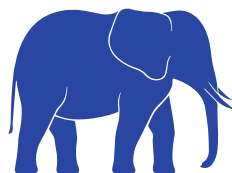
The customer shall ensure that buried pipes are installed in accordance to Extra Co. Handling and Installation Instructions.

### ❖ Above ground Installation

A complete engineering design is needed to ensure performance. The same is provided by highly qualified consulting houses in the following activities:

- Flexibility analysis
- Hydraulic calculations
- Surge analysis
- Dynamic analysis, vibration prediction and control of piping
- Support design
- Isometric drawings
- Design of GRP/GRV/GRE Systems

**Extralite Pipes & Fittings Qualify & Reliable  
Systems for a Guaranteed Performance**



# EXTRA CO

COMPOSITES INDIA PRIVATE LIMITED

## GET IN TOUCH



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