

# FIBREGLASS PRODUCTS



**SHENGLI LTD**

5 Ossian St, Ahuriri, Napier 4110, New Zealand  
[www.shengli.asia](http://www.shengli.asia)





Establishing and maintaining high quality international trade relationships between China and the World.





# OVERVIEW

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Shengli Ltd prides itself in being a global supplier of an extensive range of industrial and infrastructure equipment and materials. Our products are manufactured to the finest level through our Chinese affiliates, providing a standard of quality for a price which exceeds customer expectations.

Incorporated in November 1999, Shengli Ltd first appeared as a joint venture between Shandong Shengli (a highly reputable Chinese government owned company and a leader in many agricultural and industrial fields) and Atkin Management Ltd (a New Zealand based trade consulting company). Shengli Ltd has since flourished, providing services throughout the world and with subsidiaries of its own.

With the emergence of China as an open economy, Shandong Shengli expanded into international markets and established representation within the Western business world—New Zealand was selected as an appropriate country to base its international operations.

New Zealand has extensive international acceptance as a reputable trading country, and was the first country to officially accept China as being an open economy.

There were many other factors which influenced the decision, such as New Zealand's heavy reliance on effective international trade and the subsequent development in being the first country to form a Free Trade Agreement with China.

The decision has proven to be a good one, and has resulted in extremely effective global supply lines, both for the large China corporations linked to Shengli Ltd and also for our customers throughout the world.

Our company is proud to carry the endorsement of the Chinese Embassy in New Zealand for our endeavours in establishing and maintaining high quality trade relationships between China and New Zealand. This success quickly developed internationally to where

we are now – a strong company which provides an extensive range of China's quality products and services to customers throughout the world.



Shengli is proud to carry the endorsement of the Chinese Embassy in New Zealand



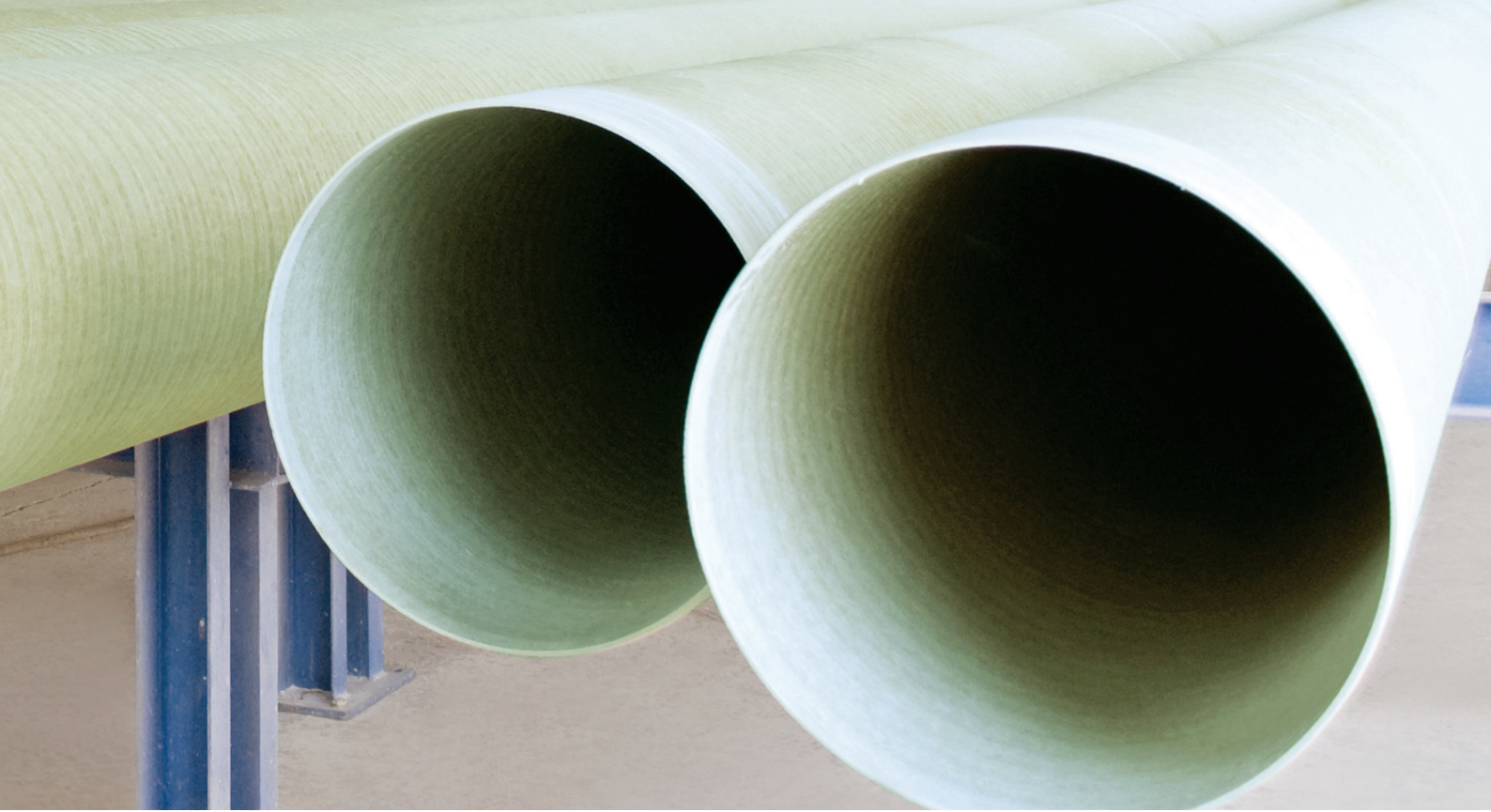
# FIBREGLASS PRODUCTS BY SHENGLI LTD

Our FRP products are manufactured by the Shengli Xinda Industrial Group Co Ltd, which is a material enterprise born in Shengli Oilfield. The factory's main areas of business cover three major industries: composite materials; anti-corrosion processing; and manufacturing and service.

Shengli Xinda Group has four business divisions: Petroleum Equipment, Composite Material, GRP and Production. The Research & Development centre of the group is both the Engineering Technical Research and the Enterprise Technical Centre for Shandong Province.

Shengli Xinda Group is a member of both the National Composite Material Association and the Industrial Anti-corrosion Association. It is a highly technical new enterprise of Shandong

Province. The provincial-level enterprise is of good credit-worthiness and a star enterprise of patents. The provincial-level company boasts AAA enterprise of good behaviour certification. The Group has achieved API certification, CCS (China Classification Society) certification and ISO9000 Quality, Environment and Vocational Health 3-in-1 certification, as well as Class B National EPC qualification for petrochemical equipment and pipeline installation. By the end of 2012, Shengli Xinda Group had obtained 180 various patents including: their high-pressure GRP pipeline which is a famous brand product of Shandong Province; their GRP vessel, a key new national product; their downhole GRP tubing, listed in the National Torch Programme of 2011; and their sand inclusion GRP pipeline, recommended by the State Ministry of Construction.



The corrosion resistant and eccentric wear resistant products of Shengli Xinda Group have been widely used in oilfield gathering systems, oily water reinjection systems, chemical industries, circulated water project in power plants, flue gas desulfurisation projects in power plants, municipal water supply and sewerage works, pipe network for wastewater treatment plant, etc.

Markets of Shengli Xinda Group have extended to include the water supply and drainage market in Shengli Oilfield, Zhongyuan Oilfield, Jiangnan Oilfield, Xibei Oilfield and Jiangsu Oilfield of Sinopec, and Changqing Oilfield, Xinjiang Oilfield, Huabei Oilfield, Dagang Oilfield, Jidong Oilfield, Yumen Oilfield and Qinghai Oilfield, Liaohe Oilfield and Yanchang Oilfield of CNPC, and Shandong Province, Beijing City, Jiangsu Province,

Henan Province, as well as West Asia, Middle East, Europe and America, etc.

Shengli Xinda Group utilises the “Wild Goose Culture” as its own enterprise culture. The corporate mission is to create value for our customers, to provide opportunities for our employees, to bring benefits to our shareholders and to shoulder responsibilities to society. Shengli Xinda Group is ready to co-operate with you through Shengli Ltd and create a win-win future.



# PRODUCT INDEX

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High-Pressure Fibreglass Line Pipe	7
Low-Pressure GRP Line Pipe	12
Glass Fibre Reinforced Plastic Mortar Pipe	14
FRP Fittings	16
GRE Tubing	17
GRE Casing	18
Connection Options	19
Storage Tanks	20
Large GRP Storage Tanks	21
Small GRP Storage Tanks	22
GRP Pressure Vessel	23
Pultrusion Products	24
Pultruded Glass Fibre Sections	25
Mould Pressing Products	30

# HIGH PRESSURE FIBREGLASS LINE PIPE

Glass fibre reinforced thermosetting resin pipeline manufactured by micro-controlled filament winding of epoxy resin and high-strength glass fibre roving.

## Production Range

- Diameter: DN40-DN600;
- Pressure rating: 3.45MPa - 34.5MPa

## Product standard

- API SPEC 15HR-2001 Specification for high pressure fibreglass line pipe
- SY/T 6267-2006 Specification for high pressure fibreglass line pipe

## Range of Application

- Wastewater transmission or wastewater treatment pipeline
- High-pressure delivery line for petroleum, natural gas, saline water, CO<sub>2</sub> and H<sub>2</sub>S
- Connecting pipes for storage tanks and fire hoses



## Product Characteristics

- Excellent mechanical and physical properties, light weight and high-strength
- Good corrosion resistance and long service life
- No buildup of scale and wax and no secondary contamination
- Very smooth inner wall and good flowability of media
- Good temperature resistance and can fully meet the requirement of oil production and injection processes
- Favourable compressive properties; the normal working pressures are 3.45MPa to 34.5MPa
- Easy installation and low comprehensive costs

# PRODUCT PARAMETERS

## 1. Acid anhydride epoxy GRE line pipe (design as per API-15HR)

### Physical properties

Density: 121.74 lbs/ft<sup>3</sup>

Density: 1.95 g/cm<sup>3</sup>

Specific gravity: 2.0

### Flow coefficient

Hazen-Williams factor: C=150

Absolute roughness: 0.00021" (0.0053mm)

### Thermodynamic properties

Heat conductivity coefficient:

0.23BTU/ft/hr/°F (0.40W/m°C)

Coefficient of linear expansion:

$6.1 \times 10^{-5}$ in/in/°F  $14 \times 10^{-6}$ mm/mm°C

### Elastic coefficient

Hoop elastic modulus:  $3.5 \times 10^6$ psi (24.1GPa)

Axial elastic modulus:  $1.7 \times 10^6$ psi (11.9GPa)

Poisson ratio (minimum): 0.38

Nominal Diameter	Rated Pressure		Thread Spec	ID	OD	Nominal Wall Thickness	Minimum Bending Radius	Nominal Length
(mm) (in)	MPa (psi)		(in)	(mm)	(mm)	(mm)	(m)	(m)
DN40 1 1/2	12	1750	1.9	38	43.2	2.6	26	9
	14	2000		38	44.6	3.3	26	
	16	2300		38	45.9	4.0	26	
	20	2900		38	47.2	4.6	26	
	22	3200		38	48.6	5.3	26	
	25	3600		38	49.9	5.9	26	
DN50 2	10	1500	2 3/8	48	53.3	2.6	40	9
	12	1750		48	54.6	3.3	40	
	14	2000		48	55.9	4.0	42	
	18	2600		48	57.2	4.6	42	
	20	2900		48	58.6	5.3	42	
	22	3200		48	59.9	5.9	42	
	25	3600		48	62.5	7.3	44	
DN65 2 1/2	7	1000	2 7/8	60	65.2	2.6	48	9
	10	1500		60	66.6	3.3	48	
	12	1750		60	67.9	4.0	50	
	14	2000		60	69.2	4.6	50	
	16	2300		60	70.6	5.3	50	
	18	2600		60	71.8	5.9	50	
	20	2900		60	73.2	6.6	52	
	22	3200		60	74.6	7.3	52	
	25	3600		60	75.8	7.9	54	



Nominal Diameter	Rated Pressure		Thread Spec	ID	OD	Nominal Wall Thickness	Minimum Bending Radius	Nominal Length
(mm) (in)	MPa (psi)		(in)	(mm)	(mm)	(mm)	(m)	(m)
DN80 3	8.5	1250	3 1/2	76	82.5	3.3	60	9
	10	1500		69	77.0	4.0	60	
	12	1750		69	78.2	4.6	60	
	14	2000		69	79.6	5.3	60	
	16	2300		69	80.8	5.9	60	
	18	2600		69	83.6	7.3	62	
	20	2900		69	84.8	7.9	62	
	22	3200		69	86.2	8.6	62	
	25-JG	3600		69	88.2	9.6	64	
DN100 4	5.5	800	4 1/2	94	100.6	3.3	74	8.8
	7	1000		94	101.9	4.0	74	
	10	1500		94	104.5	5.3	74	
	12	1750		94	105.9	5.9	74	
	14	2000		94	108.5	7.3	74	
	16	2300		94	109.8	7.9	76	
	20	2900		94	112.5	9.2	76	
	25-JG	3600		94	116.0	11.0	76	
DN150 6	3.5	500	7	148.6	155.2	3.3	110	8.7
	5.5	800		148.6	159.2	5.2	110	
	7	1000		148.6	161.8	6.6	112	
	8.5-JG	1250		135	152.2	8.6	112	
	10-JG	1500		135	154.6	9.8	112	
	12-JG	1750		135	158.0	11.5	112	
DN200 8	3	400	8 5/8	194	201.9	4.0	130	8.6
	4.5	650		194	205.8	5.9	130	
	6	850		194	208.6	7.3	135	
	7-JG	1000	9 5/8	194	211.0	8.5	135	
	8.5-JG	1250		209	231.0	11.2	140	
	10-JG	1500		209	235.4	13.2	140	
DN250 10	2.5	350	10 6/8	250	258	4	170	8.6
	3	400		250	259.2	4.6	172	
	3.5	650		250	262	6	174	
	5.5	1000		250	267.2	8.6	178	
DN300 12	3.5	500	Socket Locking	300	316	8.0	210	11.2
	5.5	800		300	326	13.0	215	
DN400 16	3.5	500		400	422.6	11.3	235	
DN500 20	3.5	500		500	530	15.0	255	
DN600 24	3.5	500		600	638	19.0	275	

# PRODUCT PARAMETERS

## 2. Amine epoxy GRP line pipe (design as per API-15HR)

### Physical properties

Density: 112 lbs/ft<sup>3</sup>

Density: 1.8 g/cm<sup>3</sup>

Specific gravity: 1.8

### Flow coefficient

Hazen-Williams factor: C=150

Absolute roughness: 0.00021" (0.0053mm)

### Thermaldynamic properties

Heat conductivity coefficient:

0.23BTU/ft/hr/°F (0.40W/m°C)

Coefficient of linear expansion:

8.8×10<sup>-6</sup>in/in/°F (15.8×10<sup>-6</sup>mm/mm°C)

### Elastic coefficient

Hoop elastic modulus: 3.2×10<sup>6</sup>psi (22.8GPa)

Axial elastic modulus: 1.82×10<sup>6</sup>psi (12.6GPa)

Poisson ratio (minimum): 0.38

Nominal Diameter	Rated Pressure		Thread Spec	ID	OD	Nominal Wall Thickness	Minimum Bending Radius	Nominal Length
(mm) (in)	MPa (psi)		(in)	(mm)	(mm)	(mm)	(m)	(m)
DN40 1 1/2	10	1500	1.9	38	43.2	2.6	26	9
	12	1750		38	44.6	3.3	26	
	14	2000		38	45.9	4.0	26	
	16	2300		38	47.2	4.6	26	
	20	2900		38	48.6	5.3	26	
	22	3200		38	49.9	5.9	26	
	25	3600		38	52.5	7.2	26	
DN50 2	8.5	1250	2 3/8	48	53.3	2.6	40	9
	10	1500		48	54.6	3.3	40	
	12	1750		48	55.9	4.0	42	
	14	2000		48	57.2	4.6	42	
	16	2300		48	58.6	5.3	42	
	18	2600		48	59.9	5.9	42	
	20	2900		48	61.2	6.6	44	
	22	3200		48	62.5	7.3	44	
DN65 2 1/2	7	1000	2 7/8	60	65.2	2.6	48	9
	8.5	1250		60	66.6	3.3	48	
	10	1500		60	67.9	4.0	50	
	12	1750		60	70.6	5.3	50	
	14	2000		60	71.8	5.9	50	
	16	2300		60	73.2	6.6	52	
	18	2600		60	74.6	7.3	52	
	20	2900		60	77.2	8.6	52	
22	3200	60	78.5	9.2	54			

Nominal Diameter	Rated Pressure		Thread Spec	ID	OD	Nominal Wall Thickness	Minimum Bending Radius	Nominal Length
(mm) (in)	MPa (psi)		(in)	(mm)	(mm)	(mm)	(m)	(m)
DN80 3	7	1000	3 1/2	76	82.5	3.3	60	9
	8.5	1250		69	77.0	4.0	60	
	10	1500		69	79.6	5.3	60	
	12	1750		69	80.8	5.9	60	
	14	2000		69	83.6	7.3	62	
	16	2300		69	86.2	8.6	62	
	18	2600		69	88.2	9.6	64	
	20-JG	2900	69	93.0	12.0	66	8.8	
DN100 4	5.5	800	4 1/2	94	100.6	3.3	74	8.8
	7	1000		94	101.9	4.0	74	
	8.5	1250		94	104.5	5.3	74	
	10	1500		94	107.2	6.6	74	
	12	1750		94	109.8	7.9	76	
DN150 6	3.5	500	7	148.6	155.2	3.3	110	8.7
	5.5	800		148.6	159.2	5.2	110	
	7	1000		148.6	161.8	6.6	112	
	8.5-JG	1250		135	152.2	8.6	112	
	10-JG	1500		135	154.6	9.8	112	
	12-JG	1750		135	158.0	11.5	112	
DN200 8	3	400	8 5/8	194	201.9	4.0	130	8.6
	4.5	650		194	205.8	5.9	130	
	6	850		194	208.6	7.3	135	
	7-JG	1000		194	211.0	8.5	135	
	8.5-JG	1250	9 5/8	209	231.0	11.2	140	
	10-JG	1500		209	235.4	13.2	140	
DN250 10	2.5	350	10 6/8	250	258	4	170	8.6
	3	400		250	259.2	4.6	172	
	3.5	650		250	262	6	174	
	5.5	1000		250	267.2	8.6	178	
DN300 12	3.5	500	Socket Locking	300	316	8.0	210	11.2
	5.5	800		300	326	13.0	215	
DN400 16	3.5	500	Socket Locking	400	422.6	11.3	235	11.2
DN500 20	3.5	500		500	530	15.0	255	
DN600 24	3.5	500		600	638	19.0	275	

**Note:**

1. All the products are integral joint other than those identified as JG (coupling connection).
2. The above parameters are general information of our products and are design parameters based on special materials and technical status and cannot be used as inspection basis. In addition, our products are not limited to the above sizes and can be designed and manufactured as per customer demand.

# LOW PRESSURE GRP LINE PIPE

Pipelines fabricated by fixed-length winding technology using glass fibre and its products as reinforcing materials, and a thermosetting resin, such as unsaturated polyester resin or epoxy resin, as the base material.

## Production Range

- Diameter: DN25-DN2000
- Pressure rating: 0.1MPa-6.9MPa

## Product standard

- API Spec 15LR-2002 Specification for low pressure fibreglass line pipe and fittings, 7th Edition
- SY/T 6266-2004 Low pressure fibreglass line pipe and fittings
- JC 552-2011 Filament-wound thermosetting resin pressured pipe

## Range of Application

- Oilfield: oily water transmission pipelines; crude oil transmission pipeline
- Chemical: Corrosion-proof pipeline for chemical plants; pipelines for power plants
- Municipal works: used for municipal water supply and urban sewage and drainage
- Others: GRP cooling towers, smoke flue, etc.

## Product Characteristics

- Excellent physical properties, light weight and high-strength
- Good corrosion resistance and long service life
- Stable chemical structure and no secondary contamination
- Good insulation performance and good design ability
- Low heat conductivity coefficient and low heat loss
- Very smooth inner wall and excellent hydraulic properties
- No buildup of scale and wax, saving maintenance costs
- Easy installation and low comprehensive costs

# PRODUCT PARAMETERS

## 1. Wall thickness of UPR (unsaturated polyester resin) low-pressure GRP pipeline (mm)

Pipe Spec.	0.6MPa	1.0MPa	1.6MPa	2.5MPa
DN50	4.5	4.5	4.5	4.5
DN 65	4.5	4.5	4.5	5.5
DN 80	4.5	4.5	4.5	5.5
DN 100	4.5	4.5	5.5	5.5
DN 150	5.0	5.5	6.0	7.5
DN 200	6.0	6.5	7.5	9.5
DN 250	6.0	7.0	9.0	12.0
DN 300	6.5	7.5	10.0	14.0
DN 350	7.0	8.0	11.0	16.0
DN 400	7.5	8.5	13.0	18.0
DN 450	8.0	9.5	14.0	20.5
DN 500	8.5	10.5	14.5	22.5
DN 600	9.0	12.5	17.5	26.5
DN 700	10.0	13.5	20.0	-
DN 800	10.5	15.5	-	-
DN 900	11.5	16.5	-	-
DN 1000	12.5	-	-	-

## 2. Parameters of low-pressure epoxy resin pipeline

Nominal Diameter	Rated Pressure		ID	OD	Nominal Wall Thickness	Minimum Bending Radius	Nominal Length
(mm) (in)	MPa (psi)		(mm)	(mm)	(mm)	(m)	(m)
DN250 10	2.5	350	250	258	4	170	8.6
	3.5	500	250	259.2	4.6	172	
	4.5	650	250	262	6	174	
	5.5	800	250	264.6	7.3	176	
	6.9	1000	250	267.2	8.6	178	
DN300 12	2.5	350	300	312	6.0	205	11.2
	3.5	500	300	316	8.0	210	
	5.5	800	300	326	13.0	215	
DN400 16	2.5	350	400	416	8.0	230	
	3.5	500	400	422.6	11.3	235	
DN500 20	2.5	350	500	521	10.5	250	
	3.5	500	500	530	15.0	255	
DN600 24	2.5	350	600	627	13.5	270	
	3.5	500	600	638	19.0	275	
DN700 28	2.0	300	700	731	15.5	300	
	2.5	350	700	738	19.0	305	

Note: The above parameters are general information of our products and are design parameters based on special materials and technical status and cannot be used as inspection basis. In addition, our products are not limited to the above sizes and can be designed and manufactured as per customer demand.

# GLASS FIBRE REINFORCED PLASTIC MORTAR PIPE

Pipelines fabricated by fixed-length winding technology using glass fibre and its products as reinforcing materials, UPR as base material and silica sand as filling.

## Production Range

- Diameter: DN100-DN4000
- Pressure rating: 0.1MPa-2.5MPa
- Stiffness class: 1250-10000N/m<sup>2</sup>

## Product standard

- GB/T 21238-2007 glass fibre reinforced plastic mortar pipe

## Range of Application

- This GRP mortar pipe is widely used in oilfields, chemical industry, urban water supply and drainage, water conservancy construction, power plants, ports and piers, wastewater treatment plants, papermaking, leather making, pharmaceutical engineering and other water-consuming projects

## Product Characteristics

- Excellent physical properties, light weight and high-strength
- Good corrosion resistance and long service life
- Stable chemical structure and no secondary contamination
- Low heat conductivity coefficient and low heat loss
- Very smooth inner wall and excellent hydraulic properties
- No buildup of scale and wax, saving maintenance costs
- Fewer connections, good sealing performance
- High design ability
- Easy installation and low comprehensive costs

## Product parameters (mm)

Stiffness (N/m <sup>2</sup> )	SN3750			SN5000			SN10000			
	0.25	0.6	1.0	0.25	0.6	1.0	0.25	0.6	1.0	2.5
Pressure MPa	0.25	0.6	1.0	0.25	0.6	1.0	0.25	0.6	1.0	2.5
DN400	6.1	6.1	5.9	6.7	6.7	6.4	8.1	8.1	8.1	7.7
DN500	7.2	7.2	7.1	8.0	8.0	7.7	11.4	11.4	9.6	9.4
DN600	8.7	8.3	8.3	9.6	9.6	9.2	12.1	12.1	11.7	11.0
DN700	9.7	9.7	9.4	11.2	11.2	10.4	13.8	13.6	13.2	12.5
DN800	11.8	11.3	10.0	12.8	12.5	11.7	15.5	15.5	15.0	14.2
DN900	13.4	12.5	11.7	14.8	13.8	12.9	19.3	17.7	16.4	15.5
DN1000	14.6	13.7	13.0	16.2	15.1	14.4	20.7	19.4	18.0	17.3
DN1100	16.1	14.9	14.2	17.9	16.5	15.6	23.0	21.2	19.8	18.9
DN1200	17.2	16.1	15.4	19.6	17.9	16.9	24.7	22.9	21.5	20.6
DN1400	20.4	18.4	17.7	22.7	20.5	19.5	29.2	26.4	24.8	23.8
DN1500	22.0	19.9	18.7	24.4	22.1	20.7	31.4	28.5	26.3	25.3
DN1600	23.6	21.2	20.0	26.2	23.4	22.0	33.7	30.3	28.2	26.9
DN1800	26.3	23.5	22.4	29.2	26.1	24.7	36.4	33.8	31.6	30.3
DN2000	27.4	25.4	23.4	35.0	32.4	29.6	44.7	38.2	37.3	36.1
DN2200	29.7	27.6	25.3	37.8	35.3	32.6	48.7	42.5	41.5	40.4
DN2400	32.6	30.3	28.4	41.8	38.8	34.0	53.4	46.6	44.0	42.8
DN2600	36.3	33.5	31.5	45.2	40.5	35.4	55.8	48.9	47.2	45.8
DN2800	39.6	36.0	34.0	49.4	45.1	42.0	62.0	56.5	53.0	51.0
DN3000	41.0	38.1	36.2	52.0	47.0	45.3	67.0	61.7	58.2	54.0

Note: The above parameters are general information of our products and are design parameters based on special materials and technical status and cannot be used as inspection basis. In addition, our products are not limited to the above sizes and can be designed and manufactured as per customer demand.

# FRP FITTINGS

FRP Fittings covers spare parts that connect, control, burn, divert, seal, support, etc. in a fibreglass pipeline system.

## Production Range

- Diameter: DN40-DN4000
- Pressure rating: 0.1MPa-25MPa

## Product standard

- SY/T 6267-2006 Specification for high pressure fibreglass line pipe
- SY/T 6266-2004 Low pressure fibreglass line pipe and fittings

## Range of Application

- Oilfield: oily water transmission; crude oil transmission
- Chemical: Corrosion-proof pipeline for chemical plants; pipelines for power plants
- Municipal works: used for municipal water supply and urban drainage
- Others: internal components of GRP vessels etc

## Product Characteristics

- Excellent physical properties, light weight and high-strength
- Good corrosion resistance and long service life
- Stable chemical structure and no secondary contamination
- Good insulation performance and good design ability
- Low heat conductivity coefficient and low heat loss
- Very smooth inner wall and excellent hydraulic properties
- No buildup of scale and wax, saving maintenance costs
- Easy installation and low comprehensive costs



# GRE TUBING

GRE Tubing refers to downhole tubing manufactured by micro-controlled filament winding epoxy resin combined with high-strength glass fibre roving.

## Production Range

- Diameter: DN50-DN80
- Pressure rating: 10MPa-25Mpa
- Can be designed and manufactured according to customer needs

## Product standard

- Q/SXD 002-2011 High pressure glass fibre reinforced epoxy resin downhole tubing
- SY/T 6267-2006 Specification for high pressure fibreglass line pipe

## Range of Application

- Downhole oily water injection line
- Production tubing

## Product Characteristics

- Light weight, easy installation and transportation
- High specific strength and reasonable mechanical properties
- Good anti-corrosion performance
- Low thermal conductivity and low thermal stress
- Good electric insulation performance
- Good hydraulics performance
- Rust-resistant, posing no secondary contamination to the transported media
- Anti-contamination and resistance to insects
- Good wear resistance and high design ability

## Product parameters

Spec	Pressure Rating	Thread Spec	Nominal ID	Nominal OD	Nominal Wall Thickness	Coupling OD	Nominal Weight	Nominal Length
(in)	(MPa)	(in)	(mm)	(mm)	(mm)	(mm)	(kg/m)	(m)
2	16	2 3/8	48	60	6	84	2.5	9.0
	20	2 3/8	48	64	7.5	92	2.9	9.0
2 1/2	12	2 7/8	56	66	5	104	2.6	9.0
	14	2 7/8	56	69	6.5	104	3	9.0
	16	2 7/8	56	72	8	104	3.5	9.0
	20	2 7/8	56	75	9.5	104	4.2	9.0
3	17	3 1/2	62	77	7.5	107	4.2	8.7
	20	3 1/2	62	80	9	107	4.4	8.7
	20	3 1/2	62	81	9.5	120	6	8.7

Note: The above parameters are general information of our products and are design parameters based on special materials and technical status and cannot be used as inspection basis. In addition, our products are not limited to the above sizes and can be designed and manufactured as per customer demand.

# GRE CASING

GRE casing used downhole which manufactured by micro-controlled filament winding of epoxy resin and high-strength glass fibre roving.

## Production Range

- Diameter: DN100-DN200
- Pressure rating: 10MPa-25Mpa
- Can be designed and manufactured according to customer needs

## Product standard

- Q/SXD 002-2011 High pressure glass fibre reinforced epoxy resin downhole tubing
- SY/T 6267-2006 Specification for high pressure fibreglass line pipe

## Range of Application

- Used for repairing casing in wells where casing is damaged
- Used as casing in monitoring wells

- Used as casing in water source wells
- Used as casing in coalbed methane wells

## Product Characteristics

- Light weight, easy installation and transportation
- High specific strength and reasonable mechanical properties
- Good anti-corrosion performance
- Low thermal conductivity and low thermal stress
- Good electric insulation performance
- Good hydraulics performance
- Rust-resistant, posing no secondary contamination to the transported media
- Anti-contamination and resistance to insects
- Good wear resistance and high design ability

Spec	Pressure Rating	Thread Spec	Nominal ID	Nominal OD	Nominal Wall Thickness	Coupling OD	Nominal Weight	Nominal Length
(in)	(MPa)	(in)	(mm)	(mm)	(mm)	(mm)	(kg/m)	(m)
4	12	4	82.5	96.9	7.2	112	4.7	8.4
	14	4	82.5	99.1	8.3	112	5.4	8.4
	17	4	82.5	102.9	10.2	112	6.3	8.4
	20	5	94	128	17	165	13.1	8.7
5	17	5 1/8	108.6	130	11	142	9.8	8.4
6	17	7	148	178	15	212	15	8.0
	10	7	157	178	10	200	12.1	8.0
DN164	10	8 7/16	164	185	10.5	234	16.9	8.7
	12		164	187.8	11.5	234	18.2	8.7
	14		164	191	13.5	234	19.5	8.7
DN209	7	9 5/8	209	225	8	270	16	8.7

Note: The above parameters are general information of our products and are design parameters based on special materials and technical status and cannot be used as inspection basis. In addition, our products are not limited to the above sizes and can be designed and manufactured as per customer demand.

# CONNECTION OPTIONS



## Threaded connection

Range: DN40-250mm

Pressure: 3.5-25MPa pipe connection



## Bell and Spigot Joint

Range: DN300-4000mm

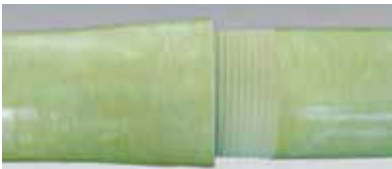
Pressure: 1.0-5.0MPa pipe connection



## Socket Bonding

Range: DN300-900mm

Pressure: 1.0-5.0MPa pipe connection



## T-thread Connection

Range: DN250-300mm

Pressure: 3.5-8.5MPa pipe connection



## Flange Connection

Range: DN40-900mm

Pressure: 1.0-25MPa pipe connection



## Hand lay-up method

Range: Any size

Pressure:  $\leq 2.5$ MPa

# STORAGE TANKS

## HIGH-STRENGTH COMPOSITE MATERIAL LINER

The inner walls of these metal tanks are lined with fibre glass using vacuum priming technology.

### Production Range

- Same as metal tank capacity
- Normal thickness  $\geq 4\text{mm}$
- Pressure rating: atmospheric pressure

### Product standard

- Q/0500SXD 010-2010 High-strength composite material liner for vertical steel storage tanks
- Patent No. for invention patent  
ZL 2009 1 0016651.9

### Range of Application

From corrosion prevention for new metal storage tanks, to reinforcement and corrosion prevention for used metal tanks.

### Product Characteristics

- Compared with hand lay-up (GRP internal corrosion prevention), the strength of this high-strength composite material liner is increased by over 30%
- Stable product quality
- Little pollution in construction surroundings
- Excellent adhesive property with inner wall of metal tanks
- Technical indicators for high-strength composite material liner
- Dynamic properties of high-strength composite material liner

Properties	Indicators
Tensile strength	$\geq 350\text{ MPa}$
Tensile modulus of elasticity	$\geq 15\text{ GPa}$
Bending strength	$\geq 320\text{ MPa}$
Bending elastic modulus	$\geq 16\text{ GPa}$

Mechanical properties for composite part where high strength composite material liner is adhered to the inner tank wall should conform to the requirements of the table below.

Properties	Indicators
Shear strength	$\geq 6.1\text{ MPa}$

# LARGE GRP STORAGE TANKS

Vessels used to treat and store corrosive materials fabricated by filament winding, jetting moulding, contact moulding, etc. using glass fibre and its products as the reinforcing materials and resin as the base material.

## Production Range

- DN 4200mm~DN25000mm  $\geq 100\text{m}^3$
- Pressure rating: atmospheric pressure

## Product standard

- HG/T 3983-2007 HG/T 3983-2007 Filament wound glass fibre reinforced thermosetting resin chemical resistant large tanks made on site
- HG/T 20696-1999 HG/T 20696-1999 Specification of GRP equipment design for chemical industry
- Q/SH 1020 1798-2012 Filament wound glass fibre reinforced thermosetting resin large vertical tanks made on site

## Range of Application

- Applicable to industries including petroleum, chemical, metallurgical, dyeing, pharmaceutical, food, brewery, etc.

## Product Characteristics

- Corrosion resistance, light weight and high-strength, long service life, just as ordinary GRP tanks
- No need for transportation
- Easy installation
- Large capacity: its maximum winding diameter can be up to 25m and its capacity can be up to 5000m<sup>3</sup>

## Product parameters

Major physical performance indicators of large filament wound GRP tanks.

No.	Items	Large GRP Tanks
1	Density	1.65-2.0g/cm <sup>3</sup>
2	Hoop tensile strength	$\geq 250\text{MPa}$
3	Hoop tensile elastic modulus	$\geq 2.2 \times 10^4\text{MPa}$
4	Axial tensile strength	$\geq 65\text{MPa}$
5	Axial tensile elastic modulus	$\geq 5.5 \times 10^3\text{MPa}$
6	Compressive strength	118-245 MPa
7	Coefficient of thermal expansion	$1.07 \times 10^{-5}\text{m/m.c}$
8	Thermal conductivity	0.28-3.2 m/m.k
9	Barcol hardness	$\geq 36$
10	Coefficient of internal surface roughness	0.016
11	Food-grade residual styrene content in tanks	<0.2 %

# SMALL GRP STORAGE TANKS

Vessels used to treat and store corrosive materials fabricated by means of filament winding, jetting moulding, contact moulding, etc. using glass fibre and its products as the reinforcing materials and resin as the base material.

## Production Range

- Vertical tank:  $\geq 160\text{m}^3$
- Horizontal tank:  $\geq 150\text{m}^3$
- Pressure rating: atmospheric pressure

## Product standard

- JC/T 587—2012 Filament wound glass fibre reinforced thermosetting resin corrosion resistant vertical tanks

## Range of Application

- Applicable to industries such as petroleum, chemical, metallurgical, printing and dyeing, pharmaceutical, food, brewery, etc

## Product Characteristics

- High corrosion resistance, also resistant to contamination and insects
- Resistant to heat and frost, can be used between  $-30^{\circ}\text{C}$  and  $110^{\circ}\text{C}$
- Light-weight, high-strength, and easy transportation and installation
- Insulated to reduce the loss of thermal energy
- Can be easily molded and repaired
- High design ability, can meet various needs of our customers
- Long service life, safe and reliable
- Favourable comprehensive benefits

## Product parameters

Major physical performance indicators of small filament wound GRP tanks.

No.	Items	Small GRP Tanks
1	Density	1.65-2.0g/cm <sup>3</sup>
2	Hoop tensile strength	120-180MPa
3	Hoop tensile elastic modulus	1.41-2.45 x 10 <sup>4</sup> MPa
4	Axial tensile strength	45-60MPa
5	Axial tensile elastic modulus	1.09-1.27 x 10 <sup>4</sup> MPa
6	Compressive strength	118~245 MPa
7	Coefficient of thermal expansion	1.07 x 10 <sup>-5</sup> m/m.c
8	Thermal conductivity	0.28-3.2 m/m.k
9	Barcol hardness	$\geq 40$
10	Coefficient of internal surface roughness	0.016
11	Food-grade residual styrene content in tanks	<0.2 %

# GRP PRESSURE VESSEL

Manufactured by 3-dimensional envelope winding technology using glass fibre and its products as the reinforcing materials and resin as the base material.

## Production Range

- DN≤4000mm
- Capacity: ≤240m<sup>3</sup>
- Pressure rating: ≤0.6MPa

## Product standard

- Q/0502 SXD 007-2011 glass fibre reinforced thermosetting resin pressure vessel

## Range of Application

- Applicable to oil, water and gas separators, filters, absorption towers, reaction kettle, etc.

## Product Characteristics

- The size accuracy of GRP pressure vessels (OD, wall thickness, roundness, etc.) plus the compressive & burst performances of the shell can meet that of metallic pressure vessels of the same type
- Advanced technology, high quality, light weight, anti-corrosion and long service life
- GRP pressure vessels have low density and perform well. Its machinability is better than that of metal tanks

## Product parameters

Major physical performance indicators of filament wound GRP pressure vessels.

No.	Items	GRP Pressure Vessel
1	Density	1.65-2.0g/cm <sup>3</sup>
2	Hoop tensile strength of tubular construction layer	210MPa
3	Hoop tensile elastic modulus of tubular construction layer	1.7x10 <sup>4</sup> MPa
4	Axial tensile strength of tubular construction layer	130MPa
5	Axial tensile elastic modulus of tubular construction layer	1.0x10 <sup>4</sup> MPa
6	Barcol hardness	≥40
7	Coefficient of inner wall roughness	0.016
8	Food-grade residual styrene content in the tanks	<0.2 %

# PULTRUSION PRODUCTS

## GLASS FIBRE AND CARBON FIBRE SUCKER RODS

Special sucker rods are made by a one-time pultrusion process using high-strength glass fibre or carbon fibre as the reinforcing material with resin as the base material.

### Production Range

- Round solid continuous sucker rods with sectional diameter of  $\phi 16\text{mm}$
- All the fittings for the sucker rods conform to API standards

### Product standard

- API SPEC 11C Reinforced plastic sucker rods
- SY/T 5029-2006 Sucker rods

### Range of Application

- Oil wells with high dynamic level
- Oil wells whose surface equipment is overloaded

- Oil wells where metal rods often fail
- Oil wells which need increased production with the existing equipment
- Deep wells and ultra deep wells

### Product Characteristics

- Small density
- Good elasticity
- Corrosion resistant
- Abrasion resistant
- Reducing failure frequency and piston effect of sucker rods
- High operating efficiency, alleviating labour intensity of the operators

### Product parameters

Items	Unit	Indicators
Tensile strength	MPa	2510
Tensile modulus of elasticity	GPa	135
Bending strength	MPa	1470
Bending modulus of elasticity	GPa	120
Elongation at break	%	1.8
Density	kg/m <sup>3</sup>	1500
Maximum rated working temperature	°C	80-150
Maximum short-time load	KN	300



# PULTRUDED GLASS FIBRE SECTIONS

Uniform section structural shape made by continuous pultrusion process.

## Production Range

- Round rod
- Round pipes
- Angle steel
- Square tubes
- Channel steel
- Joist steel
- T-rod
- Various profiles can be manufactured as per customer specifications

## Range of Application

- Applicable to chemical plants
- Ocean shipment and construction
- Food and beverage processing
- Petroleum and metallurgical

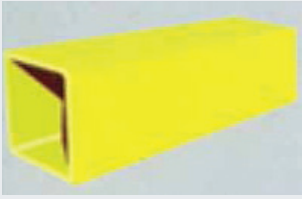
- Papermaking
- Wastewater treatment industries as well as transportation, coal, electricity generation etc.

## Product Characteristics

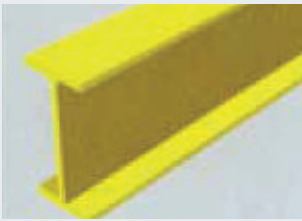
- Corrosion resistance, light weight and high-strength
- Good dimensional stability
- Fadeless
- Low maintenance costs
- Good quality but low cost
- Can be designed into special products with features of insulation, low heat conductivity, flame retardant, etc. as per customer specifications

## Specifications as shown below

	Name	Sizes of section bars (mm)	Weight per meter Kg/m
	Angle Steel	L30x30x5.1	0.49
		L35x35x5.1	0.60
		L45x45x5.1	0.76
		L40x40x4	0.54
		L50.8x50.8x6.35	1.17
		L76x76x6.35	1.75
		L76x76x9.53	2.63
		L101x101x9.5	3.45
		L152x152x12.7	6.65
		L75x20x3	0.55
		L50x20x3	0.42



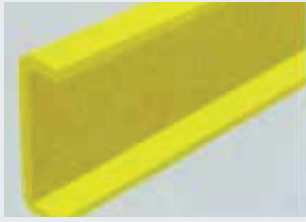
Name	Sizes of section bars (mm)	Weight per meter Kg/m
Square Tube	20x4.5	0.55
	40x4	0.96
	50x3.2	1.07
	50x4.8	1.72
	50x6.35	2.16
	60x4	1.65
	76x6.35	3.36
	80x6.5	3.62
	101.6x6.4	4.50



Name	Sizes of section bars (mm)	Weight per meter Kg/m
Joist Steel	25x15x4	0.38
	30x15x4	0.44
	30x15x5	0.57
	38x15x4	0.61
	1100x50x6.35	2.40
	1150x100x8	5.40
	1150x125x9.5	7.50
	1190x125x10	8.80
	1250x125x12	11.0



Name	Sizes of section bars (mm)	Weight per meter Kg/m
Round Rod	Φ7	0.075
	Φ8	0.10
	Φ10	0.16
	Φ12	0.22
	Φ15	0.37
	Φ20	0.64



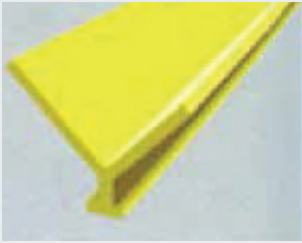
Name	Sizes of section bars (mm)	Weight per meter Kg/m
Channel Steel	30x18x4	0.43
	25.4x11.13x3.18	0.24
	46.1x19.5x6	0.94
	40x40x5	1.18
	74.5x25x5	1.10
	88x15x5	1.02
	88x35x5	1.40
	140x80x10	5.13
	150x40x10	3.56
	150x45x8	3.34
	178x60x6.35	3.23
	203x55x9.5	5.26
	28.5x26.5x3	0.40



Name	Sizes of section bars (mm)	Weight per meter Kg/m
T-Bar	T 45x54x6	1
	T 46x62x10	1.43
	T 140x80x10	3.85



Name	Sizes of section bars (mm)	Weight per meter Kg/m
Round Pipe	Φ18x3	0.25
	Φ30x3	0.46
	Φ40x4	0.84
	Φ50x4	1.12
	Φ50x6.35	1.67
	Φ60x5	1.77
	Φ65x6.35	2.22



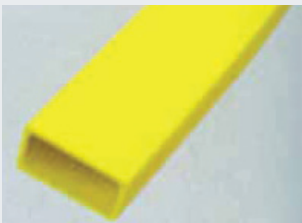
Name	Sizes of section bars (mm)	Weight per meter Kg/m
Y-Steel	Y51x39x6.35	1.4
	Y39x39x6.35	1.3
	Y26x39x6.35	1.1



Name	Sizes of section bars (mm)	Weight per meter Kg/m
Toe-Board	101x14x3.4	0.78
	148x13x3	0.99



Name	Sizes of section bars (mm)	Weight per meter Kg/m
Lay-up Board	L 55x55x4	0.76
	L 55x350x3	2.25
	L 55x350x4	2.90
	L 55x100x3	0.82



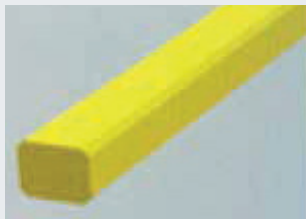
Name	Sizes of section bars (mm)	Weight per meter Kg/m
Rectangular Tube	40x20x4.5	0.85
	60x30x2.65x3	0.89
	175x55x3	4.20



Name	Sizes of section bars (mm)	Weight per meter Kg/m
Open Web	305x41x6.3	6.8



Name	Sizes of section bars (mm)	Weight per meter Kg/m
Plum-Blossom Pipe	Φ32x30x1.75	0.53
	Φ32x29x2.5	0.52
	Φ33.8x31x2.75	0.64



Name	Sizes of section bars (mm)	Weight per meter Kg/m
Flat Bar	38x15	1.09
	50x15	1.44
	30x6	0.36
	228x12.5	5.55
	140x12.5	3.41
	15x3	0.084
	10x3	0.556
	1220x4	9.2



Name	Sizes of section bars (mm)	Weight per meter Kg/m
Handrail	71x60	1.37



Name	Sizes of section bars (mm)	Weight per meter Kg/m
Oval Tube	192x48x6	4.7

# MOULD PRESSING PRODUCTS

Mould pressing technology involves inserting a measured amount of moulded materials (powder granular or fibre plastics) into matched metal moulds which, under specified temperature and pressure, solidify into a specific moulded product. The moulded products made by our company are mainly manufactured by mould pressing of fibre reinforced composite materials (SMC sheet molding compound, BMC bulk moulding compound, GMT continuous filament reinforced thermoplastic plastics, etc.), which are widely used in many fields.

## Production Range

- We can fabricate various mould pressing products according to customer requirements.

## Range of Application

- The products mainly include automobile spare parts and protective covers
- Structural members of construction material and decorating parts
- Integral bathroom
- Electrical insulation parts and order-made products, etc.
- Widely used in such fields like industry, agriculture, transportation, electrical, chemical, construction materials, mechanical, etc.

## Product Characteristics

- Mould processing technology provides a range of design capabilities, dependent on design and performance requirements
- Large high-strength products requiring complex moulds can be moulded with a single pressing, with ability to embed parts as part of the design
- Characteristics of products made by mould pressing include:
  - High dimensional accuracy
  - Good quality stability
  - Excellent electric insulation performance
  - High mechanical strength
  - Resistant to corrosion and ageing
- Variety of design is virtually unlimited using a range of processing technologies. Examples of multiple patterns produced include:
  - Faux wood
  - LCMT
  - Fake metal patterns, etc.

## Models and main parameters of our hydraulic presses

Models of hydraulic presses		Y71K-2500	Y71K-2000	Y71K-1500	Y71K-1000	Y71K-630	Y71K-500
Nominal pressure (KN)		25000	20000	15000	10000	6300	5000
Workbench size (mm)	Left-right size	4200	3500	3200	2400	2000	1800
	Front-back size	2500	2500	2200	2000	1800	1400
Maximum slide stroke (mm)		3450	2500	2000	1700	1500	1400
Size of hydraulic press (mm)	Height above ground	12600	10600	8900	7800	7200	6600
	Left-right size	9200	8900	7800	6300	6000	5500
	Front-back size	8100	7700	6600	4800	4500	4200
Size of foundation (mm)	Left-right size	7600	6800	6200	5300	4600	4600
	Front-back size	7350	7500	6500	4200	4000	3300
Motor power (KW)		250	200	140	100	65	50
Remarks	The size of mould pressing products is usually 60% less than that of workbench. The mould pressing products whose mould specification is within the size of workbench and whose projected area is less than 6m <sup>2</sup> can all be manufactured by our company.						





## **SHENGLI LTD**

5 Ossian St, Ahuriri, Napier 4110, New Zealand  
PO Box 12099, Ahuriri, Napier 4144, New Zealand

**P: +64 6 835 1401 F: +64 6 835 0108**

**[www.shengli.asia](http://www.shengli.asia)**

