



AL NAJMA AL WATANYA COMPANY

GLASS REINFORCED PLASTIC (GRP) PIPES

2025 Edition



0770 508 5291



العراق - السليمانية-كلار



KEY BENEFITS OF GLASS REINFORCED PLASTIC (GRP)

Corrosion/Abrasion Resistance GRP resists rust and wear, making it ideal for harsh and corrosive environments.			Lightweight Its low weight simplifies transport and reduces structural load.
Long Service Life Durable material ensures decades of reliable performance, even under constant wear and tear.			Fast and Easy Installation Lightweight and easy to cut and maneuver using standard tools, allowing for quick installation and reduction labor costs.
High Load Capacity GRP features an excellent strength-to-weight ratio, enabling it to support heavy loads while remaining lightweight.			High UV Resistance maintains its structural integrity and appearance even with prolonged exposure to sunlight.
High Chemical Resistance GRP is resistant to many chemicals, including acids, alkalis, and solvents, making it ideal for industrial and chemical applications.			Numerous Fittings Compatible with a wide variety of fittings and connectors, allowing for flexible system design.
	Superior Hydraulic Properties Smooth internal resulting in low friction, high flow rates, and excellent hydraulic efficiency. Resulting in reduction of energy costs and prevention of sediment buildup.		

RAW MATERIALS

GRP pipes are manufactured from high-quality composite materials. All raw materials are tested prior to manufacturing to ensure compliance with specified standards. The primary raw materials include:

Fiberglass Reinforcements: Provide strength and structural integrity.

Polyester Resin: Binds the fibres together and offers excellent corrosion resistance.

Silica Sand: Used as a core material to enhance stiffness and reduce overall weight.

Catalyst: A precise amount of catalyst is added to the pre-mixed resin to initiate polymerization, which hardens the GRP pipe as it is formed on the rotating mandrel.

Additives: Special additives can be incorporated to enhance the weather resistance of GRP pipes. For example, UV-protection additives safeguard pipes stored outdoors for extended periods before installation, preventing degradation from sunlight. This feature provides superior durability compared to many traditional pipe materials.

This combination results in durable, lightweight, and highly resistant pipes suitable for a wide range of applications.

PRODUCTION PROCESS



CONTINUOUS FILAMENT WINDING

The Continuous Filament Winding (CFW) process is an advanced, automated manufacturing technique used to produce high-quality GRP (Glass Reinforced Polyester) pipes. In this process, continuous glass fibres and resin are precisely applied onto a rotating mandrel in a controlled pattern, often with a core of silica sand for added strength and stiffness. As the mandrel rotates and moves forward, the materials are layered and cured, resulting in a seamless, durable, and corrosion-resistant pipe. The CFW process ensures consistent quality, high production efficiency, and the ability to manufacture pipes in a wide range of diameters and lengths, making it ideal for large-scale infrastructure projects.

NOMINAL DIAMETERS

DN 300 mm – DN 3000 mm

PRESSURE CLASSES

PN 1 bar to PN 32 bar

Stiffness (SN)

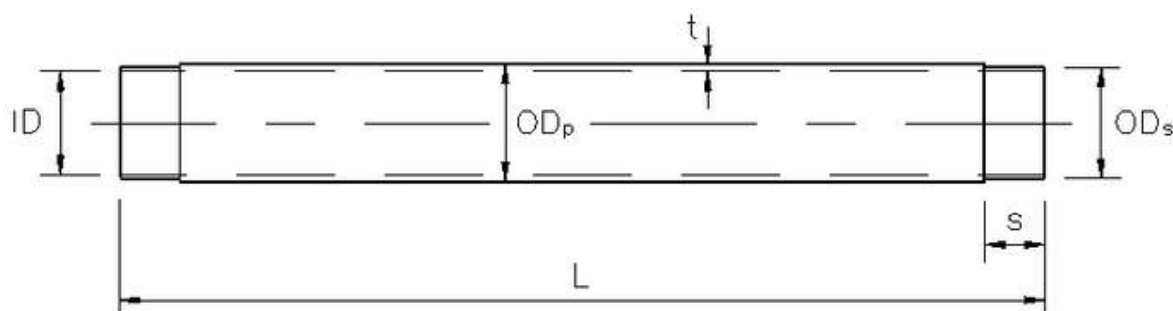
1250 N/m² - 10000 N/m²

GRP pipes are typically manufactured in standard lengths of **6** or **12 meters**. Custom lengths can be provided upon request to accommodate specific project requirements.

Stiffness classes can be tailored to meet specific project requirements.

PIPE, COUPLING, SEALING RING, LIMIT BLOCK AND MATERIALS

PIPE DIMENSIONS



ND (mm)	Odp min (mm)	Odp max (mm)	ODs min (mm)	ODs max (mm)	s (mm)	L (mm)
300	310	311	309.5	310.5	150	12000
350	361	362	360.5	361.5	150	12000
400	412	413	411.5	412.5	150	12000
450	463	464	462.5	463.5	150	12000
500	514	515	513.5	514.5	150	12000
600	616	617	615.5	616.5	180	12000
700	718	719	717.5	718.5	180	12000
800	820	821	819.5	820.5	180	12000
900	924	925.5	923.5	924.5	180	12000
1000	1026	1027.5	1025.5	1026.5	180	12000
1100	1128	1129.5	1127.5	1128.5	180	12000
1200	1229	1230.5	1228.5	1229.5	180	12000
1300	1332	1333.5	1331.5	1332.5	180	12000
1400	1434	1435.5	1433.5	1434.5	180	12000
1500	1536	1537.5	1535.5	1536.5	180	12000
1600	1638	1639.5	1637.5	1638.5	180	12000
1700	1740	1741.5	1739.5	1740.5	180	12000
1800	1842	1843.5	1841.5	1842.5	180	12000
1900	1944	1945.5	1943.5	1944.5	180	12000
2000	2046	2047.5	2045.5	2046.5	180	12000
2100	2148	2149.5	2147.5	2148.5	180	12000
2200	2250	2251.5	2249.5	2250.5	180	12000
2300	2352	2353.5	2351.5	2352.5	180	12000
2400	2453	2454.5	2452.5	2453.5	180	12000
2500	2556	2557.5	2555.5	2556.5	180	12000
2600	2658	2659.5	2657.5	2658.5	180	12000
2700	2760	2761.5	2759.5	2760.5	180	12000
2800	2861	2862.5	2860.5	2861.5	180	12000
2900	2964	2965.5	2963.5	2964.5	180	12000
3000	3066	3067.5	3065.5	3066.5	180	12000

TESTS & STANDARDS



RAW MATERIALS

Following tests are conducted on all raw materials to ensure compliance with specified standards.

TESTS

Resin

Viscosity (ASTM D2196)
Acid value check
Styrene content check
Gel time, cure time, and peak temperature (ASTM D2471)



Glass Fiber

Moisture content, size/binder content, and TEX properties (ISO 3344)



Sand

Sieve analysis and moisture content check



Laminate

Loss on Ignition (LOI) test

TESTS & STANDARDS



PIPE TESTS

To ensure the highest standards of product integrity and performance, a comprehensive quality control program is implemented in our GRP pipe production. The following table outlines the types of tests performed, their frequency, and applicable reference standards.

TEST TYPE	TEST FREQUENCY	STANDARD
Visual Inspection	Each Pipe	ASTM D2563
Wall Thickness	Each Pipe	ASTM D3567
Length	Each Pipe	ASTM D3567
Diameter (Spigot OD)	Each Pipe	ASTM D3567
Barcol Hardness	Each Pipe	ASTM D2583
Hydrostatic Pressure	Sample per batch	ASTM D2992
Pipe Stiffness	Sample per batch	ISO 7685, ASTM D2412
Deflection Test	Sample per batch	ASTM D2412
Axial Tensile Strength	Sample per batch	ASTM D638, ISO 3268
Hoop Tensile Strength	Sample per batch	ASTM D2290, ISO 8521
Loss on Ignition (LOI)	Sample per batch	ASTM D2584

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YEAR 2025