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We are on:

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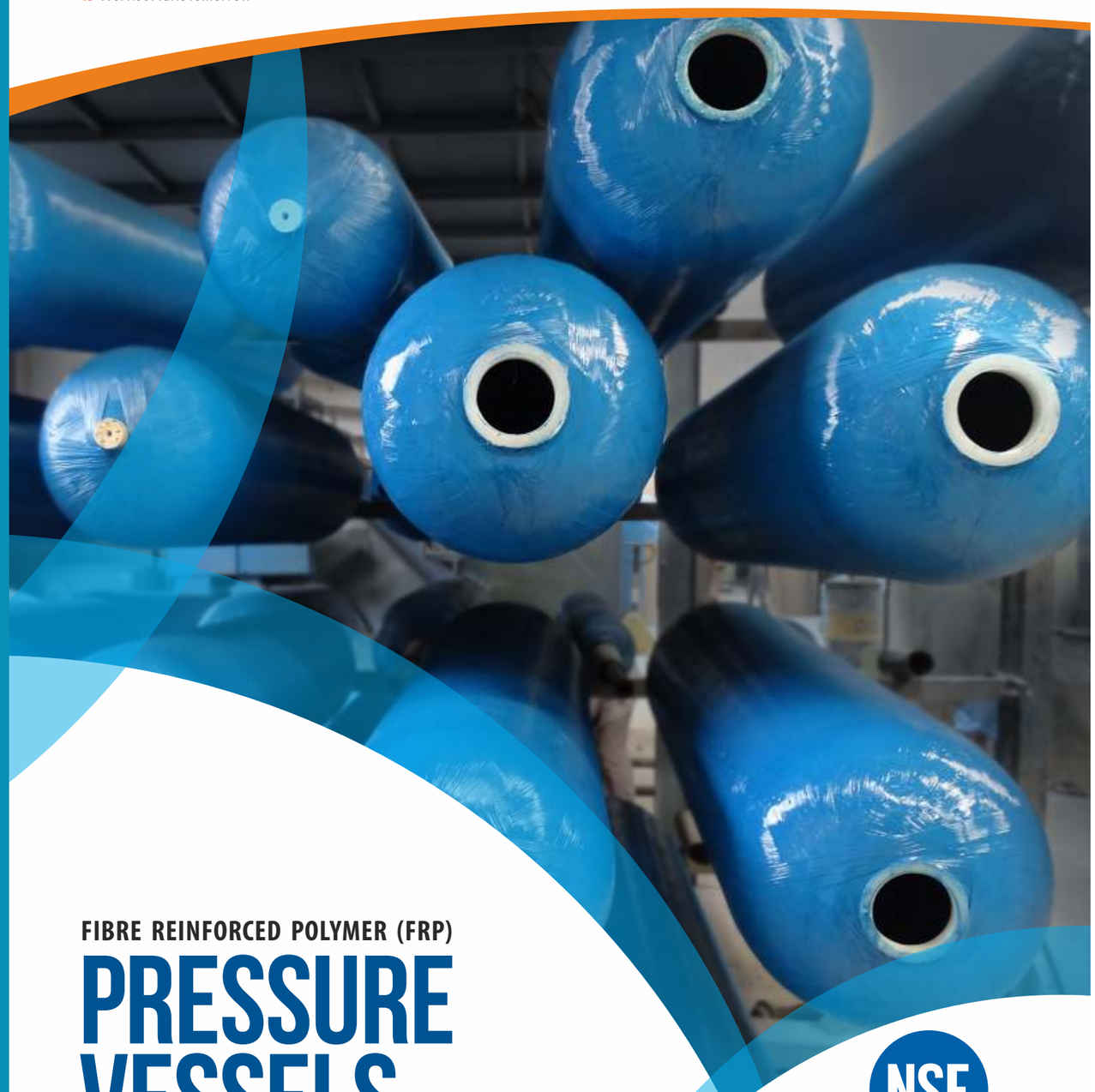
TATA STEEL

#WeAlsoMakeTomorrow

TATA



FIBRE REINFORCED POLYMER (FRP)

PRESSURE VESSELS

Reliability in water treatment and chemical industry customised for your needs.

NSF

Certified to NSF/ANSI/CAN 61

NEW MATERIALS BUSINESS

An Initiative of **Tata Steel**

WATER TREATMENT PROCESS

Clean & safe water is vital for everyday life. Water is essential for health, hygiene and the productivity of our community.

The water treatment process may vary at different geographic locations. Surface water contains suspended particles, bacteria, algae etc. which are difficult and costlier to remove, whereas underground water contains dissolved minerals. Depending on the quality of raw water available, the process and the technology used in the filtration process changes but the basic principles are largely the same. The standard water treatment processes are as follows:

Coagulation / Flocculation

During coagulation, liquid aluminum sulfate (alum) is added to untreated (raw) water. When mixed with the water, this causes the tiny particles of dirt in the water to stick together or coagulate. Next, groups of dirt particles stick together to form larger, heavier particles called flocs which are easier to remove by settling or filtration.

Disinfection

Water is disinfected before it enters the distribution system to ensure that any disease-causing bacteria, viruses, and parasites are destroyed. Chlorine is used because it is a very effective disinfectant, and residual concentrations can be maintained to guard against possible biological contamination in the water distribution system

Reducing dissolved fluoride

Fluoride is a naturally occurring contaminant in groundwater. Long-term exposure to high-fluoride drinking water may have several adverse health effects, primarily dental fluorosis. The main method used to lower the fluoride content is reverse osmosis technology.

(pH) Correction

Lime is added to the filtered water to adjust the pH and stabilize the naturally hard water to minimize corrosion in the distribution system, and within customers' plumbing.

Sedimentation

As the water and the floc particles progress through the treatment process, they move into sedimentation basins where the water moves slowly, causing the heavy floc particles to settle to the bottom. Floc which collects on the bottom of the basin is called sludge, and is piped to drying ponds. In Direct Filtration, the sedimentation step is not included, and the floc is removed by filtration only.

Filtration

Water flows through a filter designed to remove particles in the water. The filters are made of layers of sand and gravel, and in some cases, crushed anthracite. Filtration collects the suspended impurities in water and enhances the effectiveness of disinfection. The filters are routinely cleaned by backwashing.

Different types of filtration processes are in practice today including reverse osmosis process to remove minerals and particles in water

Tata Steel's New Materials Business

NEW HORIZONS OF GROWTH

Tata Steel Limited (TSL) has ventured into exploration and development of new materials business with focus on composite materials such as Fibre Reinforced Polymer (FRP). FRP products are customised to meet the emerging needs of various sectors including the country's industrial sector.

Within the industrial sector, water filtration is a key area of growth. This growth is largely driven by scarcity of potable drinking water. Uncontrolled lifting of underground water for agriculture and real estate/ commercial buildings has given rise to the presence of dangerous minerals such as arsenic, fluoride, iron etc. which make this water unsafe for human consumption.

Therefore, water filtration for drinking purposes has become the need of the hour.

WORLD-CLASS FILAMENT WINDING PROCESS

Tata Steel's New Material Business Division has invested in the latest equipment & technology systems to manufacture pressure vessels that meet the most demanding needs of industry. The manufacturing process for these pressure vessels is the filament winding process.

Filament winding is an automated PLC controlled open molding process that uses a rotating mold made of FRP. The mold configuration produces a finished inner surface and a laminate surface on the outside diameter of the product. Filament winding results in a high degree of fibre loading, which provides high tensile strength in the manufacture of hollow, generally cylindrical products such as pressure vessels and chemical storage tanks.

The automated process makes high strength-to-weight ratio laminates and provides a high degree of control over uniformity and fibre orientation.

Tata Steel composite pressure vessels are best suited for the water treatment solutions for both residential and commercial needs. The superior filament winding process makes it withstand a pressure of 10.5 kg/cm^2 without any damage or failure. These pressure vessels are hydraulically efficient and fully corrosion resistant

ADVANCED TECHNOLOGY UNBEATABLE ADVANTAGES

- Designing and producing engineered solutions by using high performance composites is our core competence.
- The inner liners of large diameter vessels are made of GFRP and small diameter vessels are made of thermoplastics through blow molding process.
- The outer layer is made of glass fibre and resin through filament winding process.
- There are seamless, corrosion free, non-metallic vessels suitable for virtually all applications.
- Guaranteed to provide comparatively higher service life in various segments- from water treatment and filtration to chemical and process industries.
- Large diameter pressure vessels can also be used in power plant demineralizing plants. These are of high strength, lightweight,easier to install and virtually maintenance free.

Operating Parameters

- Maximum operating pressure - 150 psi
- Operating temperature 35 to 120 degree celsius
- Vacuum - maximum 127 mmHg

Design Features

- Inside FRP liner and filament winding at external layers provides superior strength
- All vessels till 13"X54" size come with 2.5″T or T/B opening
- Pressure vessels from 14"X65" and above come with 4″T/B opening
- Available in 4″ or 6″ Handholes for ease of cleaning the vessels
- Any non-standard size pressure vessels can also be supplied as per customers specifications
- Protection against UV and algae growth
- 1 year warranty for all vessels used for softener and filtration applications
- Offerings ranging from 6"x24" to 79"x79" in height, up to a capacity of 7000 litres

Size (Inches)	Dia. (Inches)	Height (Inches)	Capacity (Ltrs)	Opening		Base
				Top	Bottom	
6X24	6"	24"	10	2.5" Socket		Standard
6X35		35"	14.4	2.5" Socket		Standard
7X35	7"		19.7	2.5" Socket		Standard
8X44	8"	44"	32.9	2.5" Socket		Standard
10X54	10"	54"	62.1	2.5" Socket		Standard
12X48	12"	48"	78	2.5" Socket	2.5" Socket	Standard
13X54	13"	54"	102	2.5" Socket	2.5" Socket	Standard
14X65	14"	65"	144	4" Socket	4" Socket	Standard
16X65	16"		186	4" Socket	4" Socket	Standard
18X65	18"		242	4" Socket	4" Socket	Standard
20X69	20"	69"	325	4" Socket	4" Socket	Tripod
21X62	21"	62"	318	4" Socket	4" Socket	Tripod
24X72	24"	72"	450	4" Socket	4" Socket	Tripod
30X72	30"		708	4" Socket	4" Socket	Tripod
36X72	36"		999	4" Socket	4" Socket	Tripod
42X72	42"		1306	6" Flange	6" Flange	Tripod
48X72	48"		1753	6" Flange	6" Flange	Tripod
64X72	64"		5500	6" Flange	6" Flange	Tripod
79X79	79"	79"	7000	6" Flange	6" Flange	Tripod