

CREATING TOMORROW'S INFRASTRUCTURE

With advanced material solutions



**NEW MATERIALS
BUSINESS**

An Initiative of **Tata Steel**





Tata Steel's New Materials Division

A SPRINGBOARD INTO THE EXCITING WORLD OF ADVANCED MATERIALS

Tata Steel has recently initiated a new business vertical, '**New Materials Business**' in the domain of composites to harness the increasing potential of new and emerging materials in many areas. These include lightweighting, energy storage, water and infrastructure, health and wellness, railways, automotive, and smart cities.

A Fibre Reinforced Composite (FRP) comprises a polymer matrix reinforced with carbon, glass, aramid or natural fibres that add and improve properties such as stiffness, strength, creep and fatigue resistance. The choice of polymer and fibres depends on desired physical and chemical properties. A wide range of matrix and reinforcement combinations are possible, offering a specific mix of properties to suit many applications areas.

Composites offer a range of benefits including high strength and corrosion resistance, lightweight, smooth finish, low maintenance, design freedom, and cost efficiency.

Through **New Materials Business**, Tata Steel helps customers in a range of market segments gain operational efficiency and competitive advantage through the use of composites.

A number of technology and manufacturing partnerships, an extensive industry background, understanding of customers' requirements and deep technical specialisation are helping Tata Steel develop engineered composites tailored for specific applications.

Street Furniture and Art Installations

Strong, lightweight and maintenance-free FRP is perfect for iconic buildings and art installations in urban spaces.

Leveraging these properties, along with the design freedom and long life offered, a range of FRP-based street furniture has been developed with spectacular aesthetics

and superior functionalities.

These include modular toilets, fencing, benches, gazebos and bus shelters. We offer a range of solutions for cities and Industrial townships.



FRP Bridges

Lightweight and corrosion-resistant FRP foot overbridges (FOBs) offer many benefits. These include:

- Low life-cycle cost
- Fast installation
- Long maintenance-free service life
- Excellent aesthetics
- Infinite design possibilities

FRP-based FOBs find applications in industries with a corrosive atmosphere and smart cities where bridge designs can be tailored to city-specific themes.

Pioneering FRP FOB design and manufacturing capabilities in India, Tata Steel has already installed the first few FRP bridges in the country.



Spectrum of Street Poles

GRP / FRP Street Poles are lightweight, easy to transport and require a very simple foundation. Fully corrosion resistant and weatherproof, the poles offer long maintenance-free life of over 25 years.

As FRP does not conduct electricity, there is no chance of

accidental electrocution.

With embedded sensor-based functionality, these can also be used as smart poles to monitor weather, pollution and traffic for smart cities.

These can withstand wind loads up to 180 km/hour.

GRP Poles



GRP Translucent Poles

These have an option to change pole illumination colour according to occasion through a mobile app



Glass Reinforced Polymer (GRP) Pipes

FRP being orthotropic in nature, mechanical properties such as hoop and axial tensile strengths can be controlled to meet design pressure and stiffness ratings.

Being lightweight, laying and transportation are easy and cost-effective. Moreover, GRP pipes can be manufactured in longer lengths up to 12 metres, which minimises the number of joints in a pipeline, thus reducing chances of angular deflection and leakage.

Having a high BCC value or Hazen William co-efficient, GRP pipes offer smooth slime-free inner surfaces that increase pumping efficiency and reduce operational costs. These are also anti-corrosive and therefore suitable for potable water, sewage and aggressive soil conditions.



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