3B the fibreglass company

# discover your fibreglass world

www.3B-fibreglass.com

# 3B-the fibreglass company, the reference for quality and innovation

3B-the fibreglass company is a leading developer and supplier of glass fibre products and technologies for the reinforcement of thermoplastic and thermoset polymers. 3B operates three manufacturing facilities located in Battice (Belgium), Birkeland (Norway) and Goa (India) as well as a fully dedicated Customer Service Centre based in Brussels.

With a total commitment to supporting its customers, 3B's world class Science & Technology Centre located in Battice provides a unique hub of expertise for research, innovation and the development of versatile thermoset and thermoplastic composite solutions and products.

3B's business strategy is focused on three key segments which are thermoplastics, wind energy and performance composite applications for which 3B's high performing glass fibre products offer unique attributes for numerable applications such as pressure vessels, pipe rehabilitation, leaf springs and electrical insulators. By focusing on specific segments 3B has developed strong expertise in these selected end-use markets which allows us to deliver real added value to our customers.

## our customers at the heart of our agenda

3B's ambition is to offer its thermoplastic and thermoset customers a global reliable sourcing strategy partnering with them to develop today's innovative composite solutions for tomorrow's products.

3B is totally committed to supporting its customers, both locally and globally. Doing business is also about the strength of shared values and people relationships, and at 3B we believe in forming close partnerships with our customers. This proximity allows us to react quickly to their evolving needs and challenges and offer them the same service levels around the world. You will find 3B's people to be fast, reliable, flexible, knowledgeable and resourceful – the qualities of an industry innovator and true partner.

## innovative and entrepreneurial

To move forward in a world which is constantly changing, there is a need to anticipate and permanently question. This is 3B's approach. Employees at 3B are passionate about innovation - and when passion drives innovation, everything is possible!

Innovation for the global reinforced plastics and composites industries finds most of its inspiration in Europe and with its Science and Technology Centre based in Belgium, 3B is the glass fibre industry emulation actor. As an entrepreneurial partner, 3B is committed to developing, together with its customers, sustainable innovative solutions for a wide range of markets and applications.

Building on an expertise to develop new glass and new sizing technologies, 3B is designing better value, longer-term, higher performance solutions in partnership with its customers.

## glass fibre composites - the answer for sustainable development

Throughout various industries, the main drive is to develop products that are stronger, lighter and more durable. They also need to deliver lower unit and life cycle costs as well as a minimal environmental impact.

Fibre glass reinforced plastic and thermoset materials meet these needs. They combine durability with eco-responsibility and versatile features making them the materials of choice across industries ranging from automotive, aerospace and defence to construction, infrastructure and renewable energies.

3B is continually working with its partners to develop innovative fibre glass solutions that deliver superior performances compared to traditional materials such as steel and aluminium. To pursue its sustainability vision, the company builds upon its competence in fibre glass development and operates eco-responsible E-CR glass technologies at all its facilities; manufacturing the unique eco-friendly HiPer-tex® high performance glass at its Norwegian plant.

**durability** | We develop products for various industries and end-uses that allow parts to be reliable, stronger, lighter and longer-lasting.

**eco-responsibility** | In close relationship with our customers we contribute to making parts requiring lower energy consumption and continuously strive to minimize our environmental footprint.

**versatility** | We design reliable solutions for a wide range of polymers and applications with an exceptional adaptability.

# a focused strategy

## the thermoplastic reinforcement global leader

3B's ambition is to be the thermoplastic reinforcement global leader in the sense of leading the industry through innovative solutions based on strong market awareness.

The replacement of conventional materials, in particular metal by thermoplastics, appears to be a fundamental trend for many applications. The major drivers are weight reduction, design flexibility and operational cost savings. The main challenge in developing sustainable thermoplastic composite solutions is to achieve long term performance combined with superior mechanical and heat performance.

3B is an expert in designing optimum sizing chemistry at the glass/ resin interphase – effectively limiting material degradation over time. By combining 3B glass fibre products with a specific resin matrix system, superior mechanical and physical performances can be engineered to address the needs of various markets and their applications.

## wind energy - a benchmark series of products for turbine blade manufacturing

3B-the fibreglass company blows fresh prospects into the wind energy sector by introducing a new benchmark series of products for turbine blade manufacturing. Each product of this renewed range of reinforcements is designed for specific resin systems and engineered to provide optimum performances for the manufacture of wind turbine blades achieving best in class composite properties.

SE 2020 and HiPer-tex™ W2020 specifically engineered for epoxy polymer systems as well as HiPer-tex™ W3030 specially developed for polyester and vinylester resin systems are solutions designers need to greatly improve existing blades and, more importantly, to create the next generation of epoxy wind turbine blades.


## innovative composites solutions

Performances in composites materials are driven primarily by fibres' inherent properties. From needs for high load bearings or corrosion resistance performances to transparency to UV light, unique characteristics of 3B's glass fibres are a path to the highest performing composites applications addressing needs of 3B's partners in various end-use markets.

In particular, HiPer-tex™ glass and 3B ECR glass - including Advantex® glass - have allowed the development of highly demanding applications such as CNG tanks, pipe rehabilitation, electrical insulators, leaf springs and ballistic protective armour thanks to key attributes such as corrosion resistance, superior tensile strength and impact performance, high modulus and fatigue performance as well as low seed level.

# versatile applications for multiple industries

Reinforced fibreglass solutions incorporating HiPer-tex® high performance fibres and 3B E-CR glass - including Advantex® glass - are spearheading product substitution across a wide range of industries

## automotive

**Benefits:** Strength-to-weight ratio, high corrosion resistance, high fatigue resistance, long term performance

**Ideal choice for:**
Panels // Under-the-hood components // Semi structural parts and assemblies // Brake shoes // Leaf springs

## energy

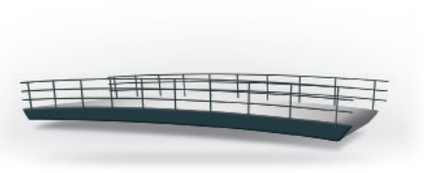
**Benefits:** High fatigue properties, high resistance to corrosion

**Ideal choice for:**
Windmill blades (onshore & offshore) // Wave and tidal blades // Electrical insulators

## infrastructure & construction

**Benefits:** High corrosion resistance, strength-to-weight ratio

**Ideal choice for:**
Sewer pipes, chemical line pipes // Tanks for chemicals // Pipe rehabilitation // Architecture



## pressure vessels

**Benefits:** Strength-to-weight ratio, high corrosion resistance, high fatigue resistance

**Ideal choice for:**
LPG & CNG cylinders

## heat & thermal insulation

**Benefits:** Resistance to high temperature, high corrosion resistance

**Ideal choice for:**
Exhaust muffler systems

## sport & leisure

**Benefits:** Strength-to-weight ratio, high corrosion resistance

**Ideal choice for:**
Skis // Ski poles // Boat hulls

# brands you can rely on

3B is continually striving to minimize its impact on the environment. The company is the only fibreglass producer operating fully 100% boron-free glass fibre manufacturing platforms. In addition, 3B is running high energy efficient melting technologies. The two combined offer a perfect example of integrated pollution prevention in an optimized process making 3B is the green benchmark of the industry.

## HiPer-tex®

HiPer-tex® high performance fibre is distinguished by its high strength, high modulus and high elongation at break. Due to breakthrough developments in glass formulation and manufacturing technology, these high performance fibre glass reinforcements can be produced at a commercially attractive cost.

HiPer-tex® high performance fibre is not only based on a completely new glass formulation, melting, fiberizing and sizing technologies, it also utilizes a high capacity production platform for scale economy. Compared to traditional E-glass, HiPer-tex® high performance fibre is typically 30% stronger with a 45% increase in strain energy and a ten-fold increase in fatigue resistance.

## Advantex® glass

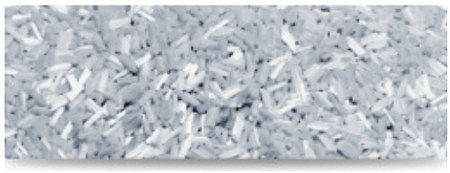
Next to HiPer-tex® glass technology, 3B is operating all its melters with an E-CR glass formulation delivering significantly improved corrosion resistance for a wide range of end-use aggressive environments. Other important customer benefits over traditional E-glass include improved stiffness, higher temperature resistance and longer service life. 3B E-CR glass - including Advantex® glass - is classified as both an E-CR glass and an E-glass in accordance with ASTM D578

# product portfolio

3B offers a versatile product portfolio continuously addressing evolving market needs for a wide range of applications

## chopped strand

Bundles of glass filaments chopped into specified lengths. Coated with a sizing that maximises processability and end-use performance. Ideal for compounding and injection moulding technologies.



## direct roving

Glass filament bundles gathered into a continuous single strand. Coated with a sizing that maximizes processability and end-use performance. Material of choice for pultrusion, filament winding, D-LFT, weaving and knitting.

## chopped strand mat (CSM)

Made of randomly, yet evenly distributed strands, chopped from continuous fibres bonded with either emulsion or powder binder. Ideal for hand lay-up and open-mould based applications.

## continuous filament mat (CFM)

A non-woven mat made of continuous fibres randomly oriented in multiple layers. Glass fibres are coated and layers are held together with an appropriate binder. Used in infusion, press moulding and pultrusion.

## assembled roving

A collection of specified numbers of continuous strands gathered without mechanical twist into a single bundle. Unwind easily at any speed with excellent chopping and dispersion features.

## wet chopped strands

Wet glass filament bundles chopped into specified lengths. Engineered to disperse easily in water-based bonding systems for production of non-wovens and gypsum board reinforcement.

## milled fibre

Glass filaments coated with a specific sizing to enhance polymer compatibility and then ground into a controlled fibre length distribution. Ideal for flame retardant applications, paints and glues.

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