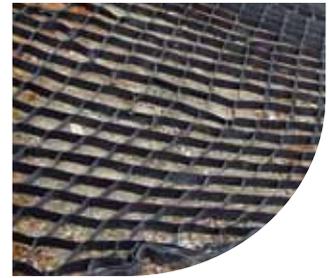


# The next answer in geosynthetics





# Strong, sustainable structures

**You can't start any major civil engineering project without impacting the planet. The challenge is to find more flexible techniques and sustainable materials. We work with the industry to lay the foundations for a new kind of civil engineering.**

## The lighter, longer-lasting alternative

In many applications, geosynthetics are hi-tech replacements for building staples like stone and sand. They can improve the performance and durability of a structure. And because they're lighter and easier to install than their mineral counterparts there are fewer trucks travelling up and down our roads. They reduce the environmental impact of construction.

In the 30 years since our market-leading TERRAM™ and TYPAR™ products were launched, Fiberweb™ has developed unrivalled expertise and experience in geosynthetics.

We've worked closely with construction engineers, architects and landscape architects to create new products and applications. Now, Fiberweb geosynthetics are widely used in highways, railways, flood defences, landfills, buildings, forestry and military defences.

**Fiberweb has always possessed a practical understanding of on-site challenges**

## From lab to site

The continuing development of geosynthetics relies on fresh research and education. That's why we've invested heavily in a new research and development facility, devoted to realising the next generation of TERRAM and TYPAR products.

**We pride ourselves on our dual role as construction engineers and as research scientists**

We'll continue to work closely with our construction sector partners, pioneering new materials and disseminating the latest techniques throughout the industry. This forward-looking work, coupled with our existing track record means Fiberweb is a leader in the field.



# Proven performance

**Geosynthetics perform many different functions: acting as barriers and providing drainage, filtration, protection, reinforcement and separation. Fiberweb is a leading innovator in exploiting these capabilities to the full.**

## Geosynthetics in action

Highway builders have relied on geosynthetics for over thirty years. Stone is widely used as a road base or as a drainage medium. This usually involves placing the stone against indigenous soil. But loading and water movement mean that the stone is liable to become contaminated by the soil.

A geotextile layer beneath the road base allows water to drain away but prevents intermixing of the stone and soil. Fiberweb's TERRAM and TYPAR geosynthetics have been used to this effect beneath roads and railways all over the world.

And geosynthetics are also used beneath coastal defences. A robust TERRAM or TYPAR filter below rock armour or pre-cast concrete revetment units ensures that the underlying soils are not leached out by tidal action, undermining the whole structure.

Geotextiles have also proved their worth in the construction of landfills, lagoons, reservoirs and canals. These structures only contain liquids because of an impermeable geomembrane performing the 'barrier' function. The problem is that any angular debris can easily puncture this membrane.

Landfills typically hold waste up to 30m deep - the downward pressure is immense. But a layer of robust, chemically resistant geotextile protects the membrane completely.

Geosynthetics are nothing if not versatile. TERRAM flexible plastic mesh is used to wrap around pipelines, cushioning their protective coating against abrasion. This mesh replaces old-fashioned 'sand collars', which were bulky, heavy and difficult to place evenly around the pipe.

Tree saplings are a tender treat for foraging animals, and they're vulnerable to frost, high winds and heavy rain. TUBEX™ cylindrical tree guards and shelters are extensively used in forestry. They are proven to minimise damage and optimise ventilation, internal temperature, and sunlight transmission.

**TERRAM and TYPAR geotextiles are much easier to install than traditional layers of stone**



# Hi-tech materials in action

**No matter how Fiberweb geosynthetics are ultimately used, they all share one thing in common. They were all developed on the back of painstaking research in close collaboration with industry specialists.**

## The Smithland flood bund

Smithland, Kentucky (USA) lies at the confluence of the Ohio and Cumberland Rivers. The town is no stranger to fighting floods. In the spring of 2011, with little notice, the community of just over 400 people faced a record surge in the water levels.

The Louisville office of the US Army Corps of Engineers (USACE) contacted Fiberweb to request their help with the emergency - a DEFENCELL™ flood bund to protect the land from flooding.

The system relies on panels of interconnected cells, made from a tough geotextile. Once on site, they can be quickly unpacked, positioned and secured to each other.

The result is a honeycomb of cells, which are then filled with a suitable material like sand. The panels come in different sizes and can be stacked on top of each other to form high walls with angles and curves.

**“If it wasn’t for DEFENCELL flood barriers, two-thirds of Smithland, would be under water right now”**

**Brent Stringer,  
Emergency Management Officer  
for Livingston County**

## Scientific parking at a Bristol science park

The first phase of the Bristol and Bath (UK) Science Park - SPark One - was completed in 2011. The client, Quantum Property Partnership, wanted the project to embody the highest environmental build standards.

Large expanses of concrete and asphalt exaggerate the effects of prolonged rainfall. They collect and channel water until downstream areas can't cope with the volumes. The solution for SPark One was a porous-surfaced Sustained Urban Drainage Systems (SuDS) car park for 200 vehicles, with drainage to the local sewer.

SuDS prevent downstream flooding and minimise pollution. The porous, load-bearing surfaces collect water, pollutants are filtered and the water is released in a controlled manner.

Forming the surface of the SuDS system were TERRAM pavers. Injection moulded from recycled polyethylene, the pavers have an interlocking design to resist lateral movement.

The SPark One car park bays would be used each day. Grass doesn't flourish in the constant shade beneath cars, so gravel was the most-appropriate option. A TERRAM 1000 geotextile beneath the pavers performed the tasks of filtration and separation. An impermeable membrane prevented water draining into the surrounding soil.

The result was a state-of-the-art SuDS parking facility which meets the requirements of the BRE Group's Environment Assessment Method (BREEAM).

# Our geosynthetics range



### TERRAM & TYPAR

TERRAM (manufactured in the UK) and TYPAR (manufactured in the USA) are leaders in their markets. These products, including geotextiles, geocomposites and geocells, are used in the construction of paved and unpaved roads, rail track bed, industrial yards, drainage systems, erosion control works, landfills and recreational facilities.



### DEFENCELL

The DEFENCELL barrier systems protect people and property in military, security and environmental applications. DEFENCELL is widely used as a geocellular containment system for the construction of flood barriers and other embankments.



### TUBEX

TUBEX is the market leader in the manufacture and supply of tree protection products. Tubular tree guards manufactured from twin-wall polypropylene or recycled polyethylene, shielding saplings from sprayed herbicides and foraging animals, and promote healthy growth within a sheltered microclimate.

# The next answer

**What could high-tech materials do next? That's the question we focus on at Fiberweb. It's what our customers are asking too. So we make it our mission to realise the potential of materials technology. This way, Fiberweb and its customers are always innovating together.**

## **Intelligent application**

We're an industrial company. But that doesn't mean we think only in terms of production and polymers. At Fiberweb, we like to think of potential. Because the real value in our materials lies in the infinite variety of ways we can apply them. And the process for making nonwovens is so flexible that there is always room for more ideas. We call this "intelligent application". And it's led to some truly remarkable materials.

## **Materials that make the world better**

We've made flood defences that can be easily transported and rapidly installed where they're needed. Stretchable crop fleeces up to 1.5km long. Waterproof, breathable material that cocoons and protects buildings.

Our nonwovens have changed the world and become part of everyday life. Since it was founded, over 30 years ago, Fiberweb has been at the forefront of innovations like these, and we have grown to become a global force in materials. Our materials are used in a huge range of applications across seven industry sectors: filtration, technical nonwovens, medical, building, agriculture, geosynthetics and industrial consumable products.

## **Finding the next answer**

We're investing heavily to find new applications for our materials. We have new, multi-million dollar innovation centres in the US and UK. They feature pilot lines and analytical labs that provide solutions as and when our customers demand them. At the same time, the facility gives our scientists the tools they need to carry out their own exploration and pioneer new technologies.

**Eight global manufacturing bases in six countries**

**Over 30 years experience in the materials industry**

**1200 employees**

**R&D centres in Europe and the US**

## **A leader in material technology application**

By intelligently applying our high-performance fibre technology, we are helping industry solve its most complex material challenges, and providing our customers with the answers they will need tomorrow.

**fiberweb**

THE NEXT ANSWER

### **Contact details:**

#### **Americas**

Tel: +1 615 847 7062

Email: [Geosynthetics.americas@Fiberweb.com](mailto:Geosynthetics.americas@Fiberweb.com)

#### **Europe**

Tel: +44 20 8150 1841

Email: [Geosynthetics.europeasia@fiberweb.com](mailto:Geosynthetics.europeasia@fiberweb.com)

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TYPAR is a brand name for a specific family of fabrics sold primarily in North America.