



BEYOND CARBON: SUSTAINABLE CONSTRUCTION WITH BARCHIP FIBRE

When it comes to sustainability, decarbonisation and low carbon activities often get most of the attention. Yet BarChip enables sustainable concrete solutions across the entire life cycle, contributing far more to the sustainability outcomes of modern construction projects.

From supply chain benefits to reduced material consumption, community outcomes and the service life of concrete, BarChip macro synthetic fibre positively impacts almost every stage of the construction life cycle.

Read on and discover the seven ways BarChip transforms construction projects for the better.



BarChip Inc.

The Synthetic Fibre Experts

www.barchip.com

Beyond Carbon

Positive Sustainability Outcomes with BarChip Fibre



1

Resource Efficient Supply Chain

The process of transforming plastic pellets into BarChip fibre is significantly less resource intensive compared to producing steel reinforcement from iron ore. BarChip manufacturing uses more than 90% less freshwater and over 80% less non-renewable energy than traditional steel production. These efficiencies align with global sustainability goals, minimizing resource consumption and promoting a more efficient, environmentally responsible supply chain.



2

Low Carbon Construction

BarChip macro synthetic fibre is a low carbon reinforcement solution, with a typical carbon footprint of just 6 kg to 12 kg per cubic metre of concrete. In comparison, steel fibres typically range from 19 kg to 37 kg, while steel mesh reinforcement often exceeds 100 kg of carbon per cubic metre of concrete. By switching to BarChip fibre, contractors can significantly reduce the carbon footprint of their reinforcement. Additionally, BarChip can enable designs that use less concrete, massively amplifying potential carbon savings.



3

Efficient Material Use

BarChip can eliminate the need for extra concrete cover or sacrificial layers that protect against corrosion, enabling thinner concrete cross sections in flooring and precast applications. In tunnelling works, fibre reinforced shotcrete follows the ground profile without overspray, reducing waste and improving efficiency. BarChip primary linings can be used as permanent linings in load sharing designs that reduce final lining thickness. Where waterproof membranes are used, BarChip reinforced primary linings eliminate the need for smoothing layers typically required with steel fibre reinforcement. By reducing concrete consumption, BarChip helps deliver measurable environmental benefits while also driving noticeable cost savings for projects.



4

Community Minded Construction

BarChip fibre reinforced concrete enables faster construction timelines, minimizing disruption to local communities. Unlike steel, BarChip is pre-mixed with concrete and delivered ready for use, significantly reducing the number of site deliveries. Fewer deliveries mean less traffic congestion, lower noise levels and reduced emissions, creating a healthier environment around project areas. By reducing costs, BarChip supports more efficient public infrastructure spending, maximizing value for communities and contributing to sustainable infrastructure solutions that benefit both people and the environment.



5

Worker Safety and Wellbeing

BarChip eliminates the need for handling and placing steel mesh, reducing worker fatigue, lowering physical strain and removing trip hazards on-site. In mechanised tunnelling works, BarChip fibre reinforced shotcrete removes the need for workers to operate under unsupported ground, a critical improvement in worker safety. BarChip prioritizes worker safety by making concrete processes simpler, safer and less physically demanding.



6

Life Cycle Performance

BarChip's combination of corrosion prevention and ductile performance enhances the durability of concrete structures. By controlling cracks and eliminating corrosion, BarChip reduces maintenance requirements and repair costs over time. This extended service life translates into lower life cycle costs and enhanced sustainability throughout the structure's life. It also demonstrates the importance of sustainability in concrete reinforcement, where material choice directly impacts durability, maintenance and long-term environmental outcomes.



7

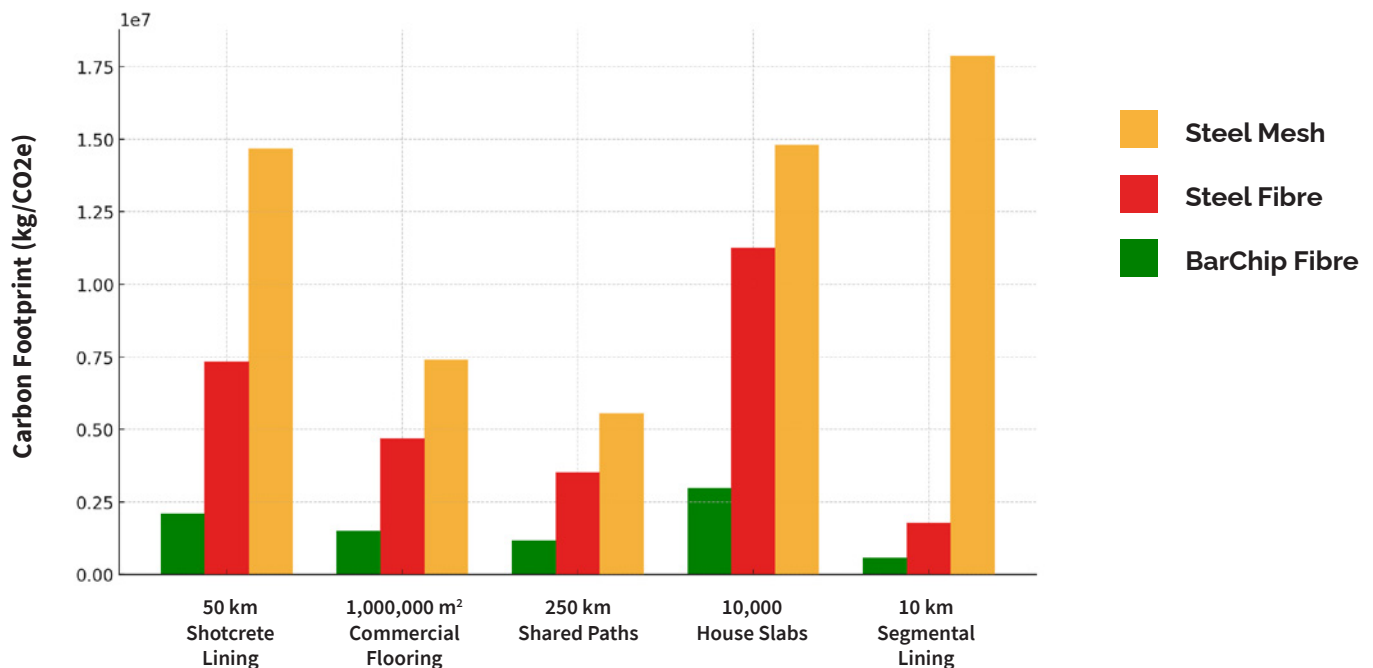
End-of-Life Solutions

BarChip fibre reinforced concrete can be processed and reused in secondary applications such as road subbase or general fill, reducing the volume of material sent to landfill. Its ability to be reused aligns with circular economy principles, promoting resource efficiency and reducing environmental impact at the end of a structure's service life.



Carbon Impact of Concrete Reinforcement Solutions

BarChip is a low carbon reinforcement solution. Regardless of the industry or application, BarChip macro synthetic fibre consistently delivers a lower carbon footprint compared to steel fibre and steel mesh reinforcement.



Supported by Environmental Product Declarations

BarChip is EPD certified through the International EPD® System, a global program compliant with ISO 14025 and EN 15804 standards for Type III environmental declarations. BarChip EPDs showcase the product's impact across numerous environment categories. They provide transparency and assurance for designers and contractors, helping them make informed decisions about the environmental cost of materials used on their projects.



Recycled Packaging

BarChip is packaged in mulchable paper bags and supplied on durable, recycled HDPE pallets with a fitted rain hood for weather-resistant outdoor storage. The packaging is designed for ease of use and to minimize waste. Individual BarChip bags can be added directly into the concrete mix, while pallets can be returned to the nearest recycling centre for secondary use.

More Than Small Talk

Achieved Results in Real World Applications

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Caldecott 4th Bore: Load Sharing Design allowed final lining thickness to be reduced by 30%



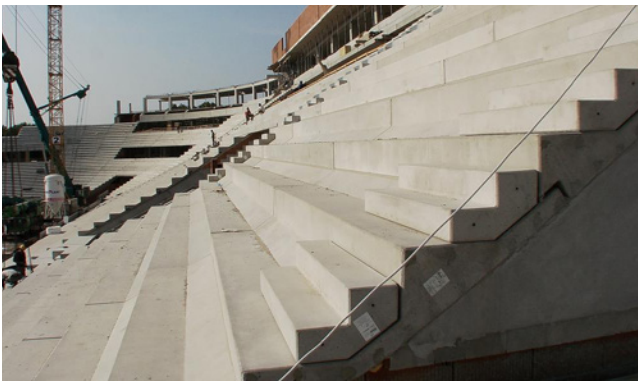
Santona Laredo Tunnel: BarChip reduced carbon footprint by 77% from original steel design.



Melbourne Metro: Eliminated the need for 50 mm smoothing layer, reducing overall shotcrete consumption by 15%.



Parramatta Light Rail: Reduced carbon footprint by 4,815 tonnes of CO2e and labour costs by 15%.



Debrecen Stadium Seating: Reduced the thickness of precast elements from 22cm to 12cm.



Erosion Control Dome Barriers: Enabled removal of concrete cover, reducing thickness from 150 mm to 50 mm.

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