

Case Studies



Case Study 1 Internal Concrete Floor

Final Specification
Concrete Mix: Design RC40
Size of Project: 16,000 m³
Fibre Dosage: Durus @ 4 kg /m³

The original design was for a 200 mm thick slab, with C32/40 concrete reinforced with a top layer of A142 steel reinforcing mesh. The Adfil team worked with the client and contractor and a revised design was proposed which eliminated the need for the layer of A142 mesh and all the other associated costs were removed.

Durus enhanced concrete gave the contractor the benefit of placing the concrete both directly from the truck mixer and in restricted areas through a pump.

Health and safety hazards connected with using steel mesh reinforcement were removed and the project was completed 4 weeks ahead of schedule. This enabled the client to open up the processing unit early and increased the Company profit.



Case Study 2 External Concrete Pavement

Final Specification
Concrete Mix Design: C32/40
Size of project: 2,000 m³
Fibre Dosage: Durus @ 4 kg /m³
and 0,9 kg/m³ Crackstop M Ultra

Due to the high profile of the project and heavy use, the initial specification for the external concrete pavement included a 200 mm thick slab of air entrained concrete reinforced with heavy grade conventional steel mesh reinforcement. One of Low & Bonar's consulting engineers suggested a professionally indemnified design using Durus macro fibres.

In lieu of the air entraining agent (AEA) the proposal also included Crackstop micro fibres to improve the durability of the concrete and give freeze/thaw protection. The external concrete works were completed in line with a challenging construction schedule, to the satisfaction of the main contractor. The use of Durus has maintained structural performance, while reducing construction time, overall cost and embedded carbon.



Case Study 3 Precast Concrete Walls

Final Specification
Concrete Mix: Design C30
Size of Project: 10,000 m³
Fibre Dosage: Durus @ 4 kg/m³
and 0,9 kg/m³ Crackstop M Ultra

The Adfil team reviewed several precast products in which traditional steel reinforcing mesh was predominantly used. Steel mesh is very labour intensive and can lead to an increased risk of health and safety issues in the precast factory. Due to its nature, steel can corrode/rust and can cause unsightly staining on the surface of concrete.

Previously steel mesh was only added to reduce damage of the precast elements when they were removed from the mould, transported and placed on site.

Nowadays Durus macro synthetic fibre offers a 3-dimensional reinforcement matrix which means that the concrete resists impact damage, whilst reducing costs and removing health and safety hazards.



Case Study 4 Water Treatment Works

Final Specification
Concrete Mix: Design RC40
Size of Project: 160 m³
Fibre Dosage: Durus @ 5 kg/m³
and 0,9 kg/m³ Crackstop M Ultra

A UK Water Authority needed a rapid and effective solution that removed the logistical problems associated with using traditional steel mesh. The contractor needed to minimise labour cost and improve site safety whilst also meeting WRAS (Water Regulations Advisory Scheme).

After the engineer approved our design Durus enhanced concrete was placed inside a covered water tank. The concrete containing Durus removed the need for steel mesh on the site which meant that manual handling issues were also removed providing a faster building technique.



DURUS® Fibre Range

EFFECTIVE STEEL MESH REPLACEMENT

Enhanced Performance • Increased Safety • Reduced Costs • Lower Workload

Belgium T +32 52 457 413
India T +91 8527625678
United Kingdom T +44 1482 863777

www.adfil.com / info@adfil.com

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Durus® Fibre Range

Making steel mesh a thing of the past... and reducing your costs and workload

The Durus fibre range is revolutionising concrete construction. By adding Durus to the concrete mix, the synthetic fibres eliminate the need for steel mesh with the benefits of increased performance, reduced cost and health and safety advantages. Durus concrete is more flexible, has a greater resistance to plastic shrinkage cracking and is far easier and safer to use than traditional steel reinforcement. Using Durus fibres will enhance the toughness of the concrete with no risk of the reinforcement corroding or staining the concrete surface.

What is Durus?

The Durus product range consists of monofilament fibres that are specifically extruded and precision-cut to form a high performance, synthetic macro fibre. By adding to the mix, Durus increases the toughness of the finished concrete. The finished product has all the strength of traditional steel reinforced concrete, with a 3-dimensional matrix of fibres achieving a more flexible, performance orientated solution.

Proven technology – guaranteed

For total peace of mind, our engineers can deliver a complete bespoke design service to specify dosage calculations. To demonstrate absolute confidence in this proven technology, we can offer professional indemnity insurance on designs done by our qualified consultant engineers.

Flexible application solutions

This technology can be used in shotcrete, precast and ready mixed concrete applications. Durus can be used in concrete that comes into contact with water intended for human consumption, has satisfied the criteria set out in BS 6920: Part 1: 2000 and complies with the requirements of the Water Regulations Advisory Scheme Tests of Effect on Water Quality. Our unique packaging system allows the fibres to be easily and rapidly dispersed within the concrete, either on site or at the concrete batching plant.

Packaged for ease of use

The Durus dosage rates are dependent on the specific application and we offer flexible packing configurations to suit the dosage and type of concrete plant.

Combination fibre solutions

Our engineered designs will sometimes combine both macro synthetic fibres and micro synthetic fibres. This will give concrete the optimum performance when it is to be used in critical, harsh environments where life span and structural integrity are key.

Easy mixing options

Durus fibres can be added by hand to the truck mixer or pan mixer, or can be added using a fibre integration machine. Our solutions and guidelines include all mixing, laying and finishing instructions. We can also suggest specialist flooring contractors who could complete the project for you, giving you total peace of mind.



Durus® technical advantages

- Cost effective & efficient
- Increased flexural strength
- Increased impact resistance
- Increased durability
- Increased tensile strength
- Increased ductility
- Potential for increased joint spacing

Durus® benefits over steel reinforcement

Easier to handle than steel reinforcement

Durus is lighter than steel, making it far easier to handle. Freight costs and storage space are also substantially reduced.

Saves time and money

Use Durus and there's no time-consuming placing of steel mesh before pouring the concrete. In today's construction world, saving time means saving money. Durus eliminates potential budget and cost issues due to fluctuating steel prices.

Safer than steel reinforcement

Steel fibres can protrude from the plastic and hardened concrete,

creating a hazardous environment. Durus eliminates these problems.

Guaranteed accuracy of installation

Steel mesh can be misplaced, with a dramatic impact on quality and production schedules, particularly where it has to be repositioned prior to the concrete pour. Durus cannot be misplaced, eliminating such problems.

No corrosion

The presence of water, salt and acids are all fundamental causes and accelerators of corrosion/ rusting of steel reinforcement. Durus macro fibres are not affected by these substances. This will offer clients the reassurance

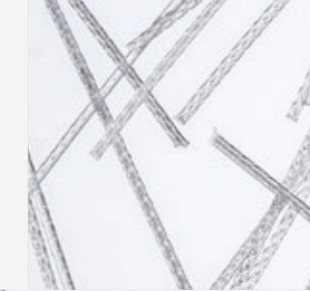
that projects using Durus will have long-term integrity.

Easier to add to concrete than steel reinforcement

Durus is pre-packed in accordance with manual handling regulations. The fibres can be easily and safely added to the concrete.

3D reinforcement

Durus macro fibres are positioned evenly throughout the concrete, providing 3-dimensional reinforcement.



Adfil Total Solutions

A unique free service for designers, architects, engineers and specifiers

Why not take advantage of our free design service - tailored to your specific project. The Adfil team will work closely with you to supply all calculations and technical specifications. That's in addition to producing a detailed commercial proposal that sets out the financial benefits of using Durus instead of steel. We'll also provide on-site support for any aspect of Durus mixing, placing and finishing. This way, you can be sure you've got the right solution for all aspects of your project.

Responsible design considerations

We take Health and Safety issues very seriously. The UK Health and Safety Commission states that 'The challenge is to ensure that health and safety considerations are not outweighed by aesthetic and commercial priorities and, conversely, that health and safety does not inhibit aesthetics. However ... designers have considerable potential to eliminate hazards and reduce risks associated with construction work, as well as those associated with building use.

maintenance, cleaning, and eventual demolition.'

Our Durus fibres are specifically designed to be extremely user friendly and considerably safer than conventional steel reinforcement.

Call us now and take advantage of our FREE design service to find out how much time and money you can save on your construction project using Durus fibres.



Hardstandings



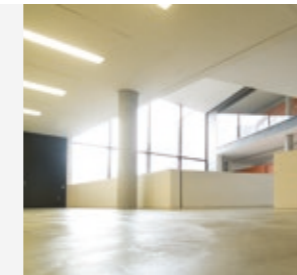
Roadways & pavements



Composite floors



Tunnels



Internal floors



Precast concrete



Agricultural concrete



Sprayed concrete