



ADFIL
Construction Fibres



Adfil Fibres
Ports & Dock
Applications

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Synthetic Fibre Reinforced Concrete In Ports & Dock Applications



Adfil Macro & Micro Synthetic Fibre Reinforced Concrete provide significant benefits in the construction and repair of Port and Docks Facilities.

Challenges

Ports and Docks are key Logistical Hubs supporting the distribution of Cargo Worldwide. The Cargo is stored in large Steel Containers which are loaded & unloaded via Crane, Reach Stackers and specialist Handling Equipment from the docked Cargo Ships. With some containers weighing in excess of 20T and being stacked in multiple layers, it is critical that the Concrete Slab contains appropriate reinforcement to accommodate such loads otherwise this could lead to serviceability problems and temporary closure of the affected area. With most Ports and Docks located by the Coast, the Concrete Pavement will be exposed to the Sea Water and Spray, putting conventional steel reinforcement at high risk of corrosion. This will result in surface spalling; dramatically reducing the service life of the Concrete Pavement. In Marine and Coastal Environments, constant exposure to water, especially sea water, can cause devastating damage to concrete structures as a result of steel corrosion.



Port of Blyth

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Solution

The replacement of conventional welded steel mesh with DURUS Synthetic Fibre will eliminate the risk of corrosion and any associated problems. Synthetic Macro fibre reinforcement will allow more efficient installation as there is no requirement for handling, placement and fixing of steel mesh. This will significantly reduce construction time. The risk of steel mesh being placed incorrectly, with inadequate cover, will not be a factor if it is replaced with DURUS Macro Synthetic Fibres, which will be dispersed consistently throughout 100% of the volume of the concrete on delivery to site. This will also eliminate significant Health & Safety hazards associated with steel fixing. The use of Fibrin Micro Synthetic Fibre will enhance the abrasion resistance of the concrete by around 60%, and more than double the Impact resistance. This will extend the service life of the concrete structure in these aggressive environments. Fibrin will also reduce permeability and the occurrence of plastic shrinkage cracking. This is a significant consideration with regards to the ingress of water into the concrete structure which can lead to accelerated damage and shortened service life.



Port of Tyne

The reinforced concrete pavements used in large container freight handling facilities, such as The Port of Tyne, are subject to excessive dynamic loads from heavy duty freight handling equipment, high impacts from container placement and abrasion from HGV traffic tyre scrub. Pavement durability is enhanced with the use of a combination of DURUS macro and Fibrin Micro synthetic fibres

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Port of Boston

The busy cargo handling areas at the Port of Boston utilized DURUS Macro synthetic fibres to replace conventional steel mesh reinforcement. Large reels of steel cable were stockpiled ready for distribution, exerting heavy loads on the reinforced concrete pavement, along with high dynamic loads posed by mechanical handling equipment. The macro fibre reinforced concrete allowed minimal disruption to Port operations due to the fact steel mesh storage, handling and fixing was not required during installation.



Boston Loading Crane

Avonmouth Dock Extension

The accepted design specification needed to give confidence to the Client that it would be suitable to accommodate heavy plant operations, materials stockpiling and high volume HGV traffic. Multiple layers of traditional welded steel mesh reinforcement has been used in this type of application for many years, but is time consuming and labour intensive to install correctly.

There are also significant Health & Safety hazards associated with mesh handling, cutting & fixing. ADFIL Design Engineers were required to provide a solution using DURUS high performance macro synthetic fibres to replace upper layers of steel mesh fabric and provide a highly durable reinforced concrete pavement.



Storage and Handling Area



UK Technical Sales

Assistance

For any assistance please contact one of the following to get appropriate technical support:

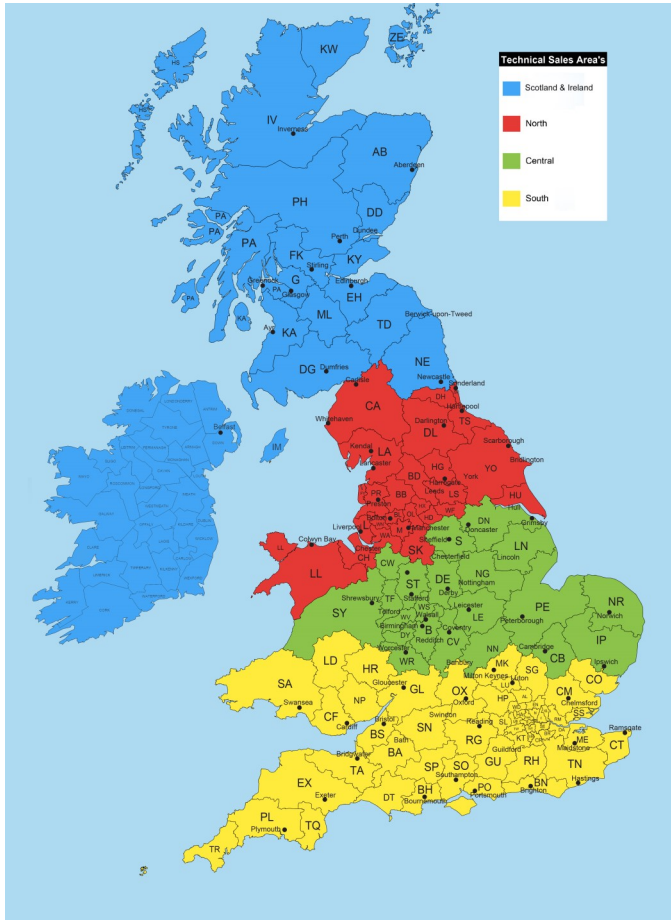
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