

Complete Composite Systems (CCS)

The innovative and eco-friendly foundation material TECHNO-CRETE® is proving to be a successful and increasingly popular alternative to concrete post mix for rail construction projects...

TECHNO-CRETE® is a hydrophobic polyurethane foam foundation system, offering a green and cost-effective post mix option for railway contractors. Its ease of use and minimal bulk-dispensing qualities also ensure faster installation while reducing health and safety concerns.

Available in two packs, part A of TECHNO-CRETE® consists of a blend of recycled organic mineral oils from the catering trade and sustainably grown rapeseed oil, while part B contains isocyanate.

When the two packs of liquid are mixed together and poured into a hole around the post, the liquid blend expands to 20 times its initial volume to create a lightweight, high-density foam. That foam mixture rises to fill the hole and encapsulates the post, becoming a solid mass able to hold the post within ten minutes. Curing time is 24 hours but the post is hard enough to fix to within one hour.

A huge advantage that TECHNO-CRETE® has over cement-based products is its ability to be used in inclement weather. If the ground or air temperature dips below 0 degrees centigrade, the water required to mix the concrete will freeze, whereas even if temperatures drop below zero the exothermic reaction of TECHNO-CRETE® still takes place, resulting in no delays regardless of weather conditions.



Concrete Comparison

Concrete works by virtue of mass of material. In order to fill a typical 300mm diameter x 600mm deep fence post hole, 3 x 20kg bags of concrete post mix plus 20 litres of water are required. TECHNO-CRETE[®], however, uses skin friction to its advantage and that same post would need just one 1.8kg bag of TECHNO-CRETE[®] — and no water — to support it.

A major project involving 40km of fencing with posts at four-metre centres would require 10,000 holes. Filling those 10,000 holes would use 600,000kg of concrete post mix and 200,000 litres of water: a total of 800 tonnes of material. At 18 tonnes of payload per truck, that's 45 truckloads of material.

But filling those same 10,000 holes over 40km the green way — using TECHNO-CRETE[®] — would only require 10,000 x 1.8kg bags of TECHNO-CRETE[®]. That's 18 tonnes of material, requiring just one truckload, resulting in a vast saving on transportation costs throughout the job.

Environmental Benefits

Cement, which makes up approximately a quarter of concrete post mix, is the world's third-largest source



of human-generated CO2 emissions. Producing one tonne of cement generates an estimated 1.25 tonnes of CO2. So the 800 tonnes of concrete mix required for the 10,000 holes job referenced above would generate approximately 150 tonnes of CO2.

In contrast, the 18 tonnes of TECHNO-CRETE® required for the same 10,000 holes project would produce 18 tonnes of CO2. That's over 130 tonnes less CO2 emissions generated than when using concrete (equivalent to over 130 return flights from London to New York), not accounting for the additional CO2 emitted whilst transporting the materials to the site.

Operator Safety

With fewer tonnes of material to deal with on site, TECHNO-CRETE® reduces manual handling and results in less back damage and muscle fatigue amongst operatives. With fewer health and safety issues on site, injury claims are therefore decreased. In a recent COSHH assessment by a Tier 1 contractor run through market-leading risk management system Sypol, TECHNO-CRETE® was deemed to be harmless when used with standard PPE.

Another key advantage of using TECHNO-CRETE® is, if trackside access is poor, an operative can carry ten bags of TECHNO-CRETE® in a backpack, effectively allowing them to serve ten posts on their own. Carrying 30 bags of concrete post mix and 200 litres of water would require more time and labour, heightening the chances of operatives suffering cement burns, one of the highest health and safety issues contractors have.

Who's Using It?

More than 25 companies, including the likes of Network Rail, Siemens, and Cleshar, have used TECHNO-CRETE® and are delighted with the results and savings.

TECHNO-CRETE® has been used to support a GRP handrail system for the upgrade of the Transpennine Route between York and Manchester, while the foundation system was also chosen to **support the installation of a demarcation barrier** on the London Docklands Light Railway network. TECHNO-CRETE® was also the ideal option during a challenging installation on the **Northern City Line's re-signalling project** at Drayton Park in London.

TECHNO-CRETE® is a green alternative to traditional concrete post mix that:

- Dramatically reduces the amount of CO2 emitted into the atmosphere compared to concrete
- Saves on the cost of transportation and distances travelled compared to concrete
- Reduces operator injuries and therefore injury claims, boosting health & safety records
- Ensures faster installation times with less possession
- Can be used in all weathers, unlike cement-based products that require water — which would freeze in low temperatures — for mixing

For enquiries about TECHNO-CRETE® please **contact the technical experts at CCS**, the product's exclusive UK distributor:



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TECHNO-CRETE® is developed by Strucsol

