

ScotAsh Stabilisation Products

Sustainable solutions for construction specialists

January 2009



Road surfaces at Rainham Landfill and Finsbury Park were remediated using ScotAsh materials while our binders treated sludges at Spiers Wharf

Environmental stabilisers and binders help to optimise resource efficiency in land remediation and recycled roads projects, providing strong environmental benefits and economic solutions.



ScotAsh products were used to stabilise sludges at Bowling Harbour

Stabilisation Solutions

ScotAsh manufactures bespoke stabilisation solutions that can be used to stabilise contaminated land or to treat trench arisings, enabling excavation spoil to be re-used in recycled roads projects.

Contaminated land, soils, sludges and industrial wastes can be treated using cementitious binders in a process called stabilisation/solidification (S/S).

The chemical properties of the cementitious products immobilise contaminants (stabilisation) and the physical binding properties create a solid matrix (solidification).

Materials that are not contaminated but are unsuitable as a construction material, such as wet sludges, dredgings or tunnel drilling muds, can be treated using the same processes and products to make them suitable for use as construction materials.

EnvirOceM

As a Lafarge Cement UK joint venture, ScotAsh also has access to the Blue Circle branded Land Remediation System, **EnvirOceM**.

The **EnvirOceM** family of products and ScotAsh stabilisation products are custom designed to meet the requirements of each specific project. Stabilisation and/or solidification techniques using cementitious binders is well established in both the United States and United Kingdom. The technology is capable of immobilising a range of inorganic and organic pollutants.

Contaminated Land & Sludges

The Environment Agency (EA) published a Science Report: 'Guidance on the Use of Stabilisation/Solidification for the Treatment of Contaminated Soil' in September 2004 for the Codes and Standards for the Stabilisation and Solidification Technology (CASST) collaborative project. The report provides a framework



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for the design and implementation of S/S treatment, based around a number of key steps.

These include screening to establish whether S/S is likely to be feasible by considering the contaminants present, the type of material to be treated and evaluating re-use versus disposal.

The guidance recommends that site-specific design objectives are developed.

ScotAsh works closely with clients and often collaborates with expert third parties, including geotechnical specialists, universities and the Contaminated Land Assessment and Remediation Research Centre (CLARRC), to develop innovative solutions.

The company teamed up with Professor George Fleming and a team at Strathclyde University on a project to stabilise tributyl tin in harbour sludges on Tyneside.

In Scotland, ScotAsh has contributed to work by CLARRC on the treatment of mercury and other Persistent Bioaccumulative Toxic pollution.

We have also developed solutions and supplied products to treat muds from the tunnelling, oil and construction industries and to stabilise sewage sludge, paraffin waste and heavily-contaminated canal dredgings.

There are various treatment options – including in-situ, ex-situ and the new Accelerated Carbonation Technology (ACT).

This employs carbonation of cement, instead of hydration, providing a superior ability to immobilise contaminants and improve soil condition. It has a greater acid buffering capacity than hydrated cementitious binders, improving durability.

In addition, it locks in CO₂, providing environmental benefits.

Environmental binders from ScotAsh were used to treat contaminated sludges on the Forth & Clyde Canal at Spiers Wharf in Glasgow, as part of a major redevelopment.

The company also supplied products to stabilise contaminated sludges from the Forth & Clyde Canal at Bowling Harbour. Treated sludges were used to create a new path instead of being disposed of at landfill.



The road sub-base at Whale Brae is one of several Edinburgh sites to benefit from ScotAsh products

Recycled Road Arisings

ScotAsh manufactures hydraulic and pozzolanic binders for use in recycled roads projects.

Every year in the UK, around 80 million tonnes of primary aggregates are used in road maintenance, resulting in 65 million tonnes of waste – most going to landfill.

The conventional approach to road repair involves digging out the damaged roadway, transporting the waste to landfill sites and bringing in new materials. This can mean up to 400 lorry movements for each thousand tonnes of road waste – and, in most cases, the dumping of high-grade stone, paid for by the taxpayer, at landfill sites.

ADVANTAGES OF REMEDIATION

- Provides a cost-effective in-situ treatment for contaminants
- Eliminates the need for imported fill
- Strong environmental benefits of material re-use, reduced vehicle movements, emissions, fuel use and traffic congestion
- Reduces landfill and aggregate tax liabilities
- Improves the handling and engineering properties of soil
- Work can usually be completed more quickly than with the conventional approach of excavating, exporting spoil and importing new materials.

A more sustainable method is to stabilise the dug-out material on site by milling it with our ash-based stabilisers and relaying it, enabling repairs to be carried out using around 90% recycled materials.

This in-situ stabilisation technique has been used successfully at sites in Edinburgh and London. It minimises landfill, vehicle use and transport emissions as well as reducing traffic congestion and enhancing road safety.

It is a cold process – so saves energy – and reduces local authority spending on materials, aggregate and Landfill Tax.

Working in partnership with geotechnical specialists, ScotAsh products were used to reinstate part of the historic carriage drive in Finsbury Park, London.

The granular surfaced, asphalt road was excavated, the arisings were milled in-situ then stabilised by adding ScotAsh blended pozzolanic and hydraulic material.

The rolled stabilised aggregate was then compacted back down, giving a good result with 100% recycled materials – and no heavy lorry movements through the park.

At Rainham Landfill site in Essex, a custom-blended ScotAsh product was combined with crushed waste aggregates from the landfill site and used to reinstate the approach road.

In Edinburgh, PFA-based products have been successfully trialled at several locations to stabilise tar contaminated road arisings, enabling the spoil to be re-used as in-fill.

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