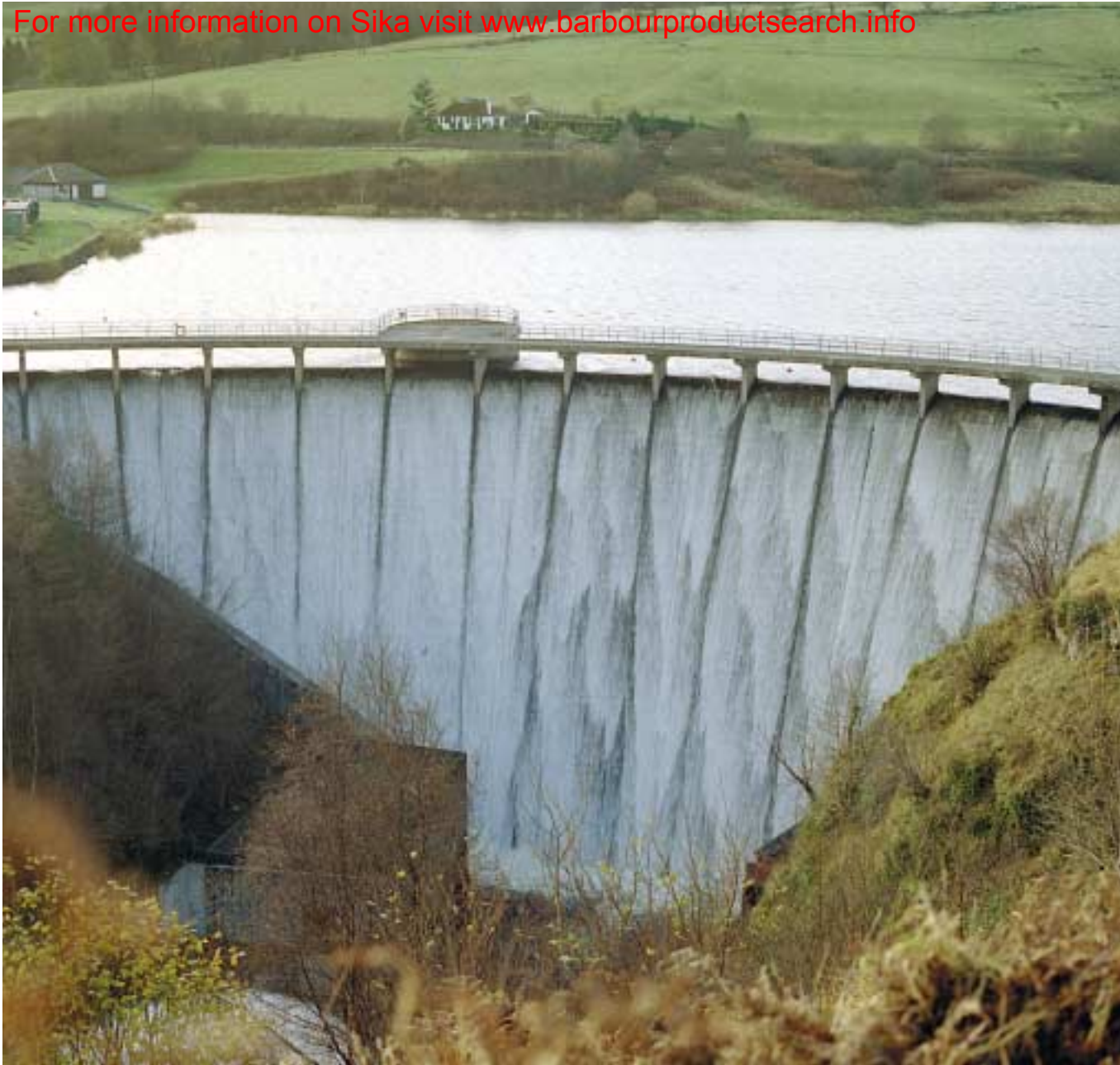


Construction



## High Strength Concrete Incorporating Sikacrete<sup>®</sup> Technology



# Sika® Fume Microsilica Concrete

## Sika Fume Microsilica Concrete

**Sika® Fume Microsilica Concrete** incorporates silica fume (microsilica) technology for the production of very high performance concrete's. **Sika® Fume** is available in both slurrified form and densified powder, **Sikacrete® Powerpack**.

Microsilica is an extremely pure form of silicon dioxide which, when mixed in concrete, reacts with the free lime from the cement and closes the pore network in the concrete with a dense calcium silicate crystal growth. This results in an exceptionally strong matrix with minimal pores. Microsilica is more than 100 times finer than the cement and each cement grain is surrounded by more than 100,000 grains of microsilica, reacting and densifying the matrix.

Concretes made from microsilica are used anywhere that high performance is required. Microsilica concrete is often used where conventional concrete has not performed under arduous conditions. Savings can be made in down time, replacement costs, etc. This **Sika® Fume** concrete has strengths and wear resistance many times that of conventional high strength concrete.

Additionally, the low permeability of microsilica concrete gives excellent resistance to all types of chemical attack. Chemicals such as acids, sugars etc. all attack concrete. The service life of a slab can be greatly extended by the inclusion of microsilica. Areas such as Waste Transfer Stations which suffer from both high abrasion and chemical attack are ideal application for **Sika® Fume** microsilica based concretes.

**Sika® Fume Microsilica** concretes are particularly suitable for marine environments where scour and corrosion of reinforcing steel are a problem. The dense nature of this concrete and high wear resistance greatly extend the service life in such situations.

The advantageous rheology of **Sika® Fume Microsilica** concrete mixes mean that they are easy to pump and pour.

**Sika® Fume Microsilica** concretes exhibit little or no bleeding due to their low water content and care should be taken to cure the concrete with a suitable curing agent such as **Sika® Curehard 181**.

## Performance of Sika® Fume Concretes

**Sika® Fume Microsilica** concrete's are capable of :-

- ▲ High early strength (20 N/mm<sup>2</sup> + at 24 hours)
- ▲ High ultimate strengths (Upward of 75N/mm<sup>2</sup>)
- ▲ Abrasion resistance many times that of conventional concrete
- ▲ Greatly enhanced acid/chemical resistance
- ▲ Early drying – days as opposed to weeks
- ▲ Resistant to extremes of temperature for freezers and furnaces
- ▲ High bond strength to steel or existing concrete on overlays
- ▲ High flexural and tensile strengths enabling engineers to design thinner sections
- ▲ Longer service life in any arduous application



Thin section slab application

## Applications for Sika® Fume Concrete's

Typical **Sika® Fume** applications include :-

- ▲ Waste transfer stations
- ▲ Water and sewage works
- ▲ Transport plant yards
- ▲ Thin section slabs
- ▲ Scour protection for sea walls, flood defences etc.
- ▲ Chemical and processing works
- ▲ Dairies, cattle shed and agricultural uses
- ▲ Tanneries, hide processing
- ▲ Military Facilities
- ▲ Early drying to allow floor toppings to be applied
- ▲ Freezer floors to enable earlier freezing
- ▲ All areas subjected to constant turning or skewing of traffic

## Typical Mix Design

Minimum cement content 400Kgs

10% (Dry weight) **Sika® Fume Microsilica**. (20% slurry)

Max water/cement ratio 0.45

Superplasticiser. Typically **Sikament®**, and **Viscocrete®** 1.5/2%

**Sika® Fibrepack** steel and polypropylene fibres



# Case Study 1 Floor

**PROJECT** Carnaby Waste Transfer Station, Bridlington

**Concrete Contractor**

Twintec Ltd

**Problem** To provide a new hard wearing concrete floor for a waste recycling plant with improved abrasion and chemical resistance properties.

**Solution** A **Sika® Fume Microsilica** concrete incorporating steel fibres and **Sikament®** technology was provided by Hanson Premix.



Laser Levelling Concrete

# Case Study 2 Slipway

**PROJECT** Castlebridge Reservoir

**Concrete Contractor**

RJ M<sup>c</sup>Leod

**Problem** Scoured slipway required replacing

**Solution** A **Sika® Fume Microsilica** concrete containing **Sikament®** technology and **Sika®** steel fibres provided contractor RJ M<sup>c</sup>Leod with a highly durable and abrasion resistant concrete. The concrete was supplied by Hanson Premix.



Formwork preparation



Stripping formwork and cleaning

# Case Study 3 Flood Defence

**PROJECT** River Gryffe Crosslee Flood Prevention Works

**Concrete Contractor**

A Blackwell Ltd

**Problem** Flood defence retaining wall to prevent flash flooding of a new residential development by the River Gryffe.

**Solution** **Sika**® provided a high quality erosion resisting concrete with minimal washout preventing damage to marine life and the environment for the retaining wall. This concrete incorporated **Sika Fume**® technology alongside **Sika's** well proven anti washout agent **Sika**® **UCS01**. Placing assisted by **Sikament**® Technology. The concrete was supplied by Hanson Premix.



Backfilling **SikaFume**® Concrete

Also available from **Sika**®



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