

Polymer-modified, dry-spray, structural repair concrete, with fibre-reinforcement

webercem spray DSF



Uses

- Repairs to large areas of structural concrete
- Repairs of highway structures: bridge columns, piers, deck soffits, beams, abutments, parapets, retaining walls, tunnels and viaducts
- Repairs of marine structures: jetties, piers, quays, seawalls, concrete offshore platforms, docks and drydocks
- Repairs of fire damaged concrete structures
- Sealing of mine roadways and tunnels
- Structural enhancement of mineshafts
- Structural encasement of steel sections, pylons, chimneys, cooling towers
- Rock and embankment stabilisation
- Thin concrete overlays 25 – 50 mm on columns, beams and soffits
- Increasing cover to steel in RC structures

webercem spray DSF has been designed for use in both thin and thick sections up to 300 mm.

About this product

webercem spray DSF is a ready-to-use, polymer-modified, cement-based concrete mix. It contains inert limestone aggregates and dust suppressants. The formulation has been designed specially for dry process spray application to give high early strength, reduced rebound and maximise application thickness.

webercem spray DSF contains alkali resistant glass fibres. It has been designed to give higher tensile strength, reduced rebound and to minimise application thickness. The fibres help to reduce shrinkage cracking. Conformity testing to BS EN 1504-3 has confirmed that **webercem spray DSF** meets the requirement of a Class R4 repair product.

Features and benefits

- ▲ Economical – low rebound
- ▲ Safe to use and handle. Relatively low dust emission, no siliceous aggregates, no caustic accelerators
- ▲ High-build – up to 150 mm thickness can be applied in one pass on vertical and overhead faces without any additional mesh reinforcement
- ▲ Low permeability to water and chlorides
- ▲ Low chloride ion diffusion: better protection of reinforced concrete marine structures
- ▲ Complies with Highways Agency specifications for repairs to highway structures
- ▲ Fibres provide better strain relief and stress distribution
- ▲ Thin overlays 25 – 50 mm on columns, piers and walls without need for mesh, providing extra cover to steel
- ▲ Class 4 repair product meeting the requirements of BS EN 1504-3

Technical data

The values given below are indicative of typical properties that are achievable on sprayed material in good conditions by an experienced contractor.

Dry density	2280 kg/m ³
Initial set	1 – 2 hours

Performance to BS EN 1504-3

Test results – all intended uses

Performance characteristic	Method	BS EN 1504-3 requirement	Pass/Fail
Compressive strength	EN 12190	≥ 45 MPa	Pass
Chloride ion content	EN 1015-17	≤ 0.05%	Pass
Adhesive bond	EN 1542	≥ 2.0 MPa	Pass
Carbonation resistance	EN 13295	$d_k \leq$ control concrete (1.3)	Pass

Test results – certain intended uses

Performance characteristic	Method	BS EN 1504-3 requirement	Pass/Fail
Elastic modulus	EN 13412	≥ 20 GPa	Pass
Thermal compatibility Part 1 Freeze/thaw	EN 13687-1	Bond strength after 50 cycles ≥ 2.0 MPa	Pass
Coefficient of thermal expansion	EN 1770	Result = $9.0 \times 10^{-6}/^{\circ}\text{C}$	N/A
Capillary absorption	EN 13057	$\leq 0.5 \text{ kgm}^{-2}\text{h}^{-0.5}$	Pass

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Preparation

As with all repairs and applications it is essential to apply to a clean, sound surface free from all grease, oil, dust and loose material.

Concrete

Concrete substrates must be adequately prepared by a suitable mechanical method such as scabbling, grit blasting, water jetting or needle gunning, or by such other means as appropriate. Concrete must be carefully prepared to give a clean, freshly-exposed surface. The outer limits of concrete patches should be cut square to avoid feather edges.

Old concrete surfaces contaminated with oil or grease must be cleaned with a suitable detergent. Care must be taken to ensure that the oil or grease is removed from the surface and not simply spread over a larger area.

When using this fibre-reinforced concrete in thin sections, from 25 mm to 50 mm, provided that the substrate has been adequately prepared to give a good bond and considering other factors, there is no need to use mesh unless it is specifically requested by the Engineer.

Soak the concrete surface thoroughly, allowing surplus water to drain off.

Steel substrates

Steel substrates, including exposed reinforcement, should be free of loose rust and grease. Ideally they should be grit blasted to a uniform grey metal finish to achieve first quality to BS 7079-A1 followed by degreasing with a suitable solvent immediately prior to bonding.

Any formwork or extra reinforcement such as steel mesh should be designed/prepared and fixed in accordance with the guidelines of the Code of Practice detailed in the Application section of this data sheet.

Application

Guidelines on the method of working are detailed in the Code of Practice for Sprayed Concrete published by the Concrete Society and should be strictly observed.

webercem spray DSF should be emptied from the bags directly into the hopper of the dry process spraying machine. The equipment should be balanced so as to produce a steady stream of material with minimal pulsing.

The amount of water added at the spraying nozzle will be controlled by the nozzleman – too low an addition will increase rebound and dust emission; too wet a mix will slump. The correct amount of water can be judged by the appearance of the sprayed concrete; any glossiness of the surface should be avoided.

In case of a long delay between applied coats of the sprayed concrete, the surface of the newly applied hardened concrete should be water jetted using maximum air pressure and water flow through the nozzle to ensure that any laitance and all weak or loose material has been removed.

The surface should be allowed to drain before proceeding with the next coat.

webercem spray DSF can be applied down to 15 mm thickness but, because of the higher cement content, (due to aggregate loss through rebound) there is the likelihood of greater shrinkage. The recommended minimum thickness is 25 mm. The recommended minimum thickness for protection over steel is 40 mm.

Finishing

Any necessary trowelling or profiling should be done immediately after spraying has finished.

An 'as-sprayed' appearance is recommended, but if overcoating is to follow, finish with a wooden float or damp sponge. Avoid the use of steel floated finishes as these normally result in crazing and cracking. The effect is, however, much less with this product.

Curing

This product must be properly cured if it is to achieve its optimum properties. Cure immediately with a suitable curing compound unless the surface is to be overcoated or subject to chemical impregnation, in which case cure with polythene sheeting and/or wet hessian for a minimum of 3 days.

Protect from frost.

Packaging

webercem spray DSF is supplied in 25 kg polylined paper sacks.

Yield

Approximately 11.5 litres per 25 kg bag, but allowance must be made for rebound and profiling.

Storage and shelf life

When stored unopened in a dry place at temperatures above 5°C, shelf life is 12 months from date of manufacture.

Health and safety

Contains cement (Contains chromium (VI). May produce an allergic reaction). Harmful by inhalation. Irritating to eyes and skin. Keep out of the reach of children. In case of contact with eyes, rinse immediately with plenty of water and seek medical help. After contact with skin, wash immediately with plenty of soap and water. Wear suitable protective clothing, gloves and eye/face protection.

For further information, please request the Material Safety Data Sheet for this product.

Technical services

Weber's Customer Services Department has a team of experienced advisors available to provide on-site advice both at the specification stage and during application. Detailed specifications can be provided for specific projects or more general works. Site visits and on-site demonstrations can be arranged on request.

Technical helpline

Tel: 08703 330 070
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Sales enquiries

Weber products are distributed throughout the UK through selected stockists and distributors. Please contact the relevant Customer Services Team below for all product orders and enquiries.

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