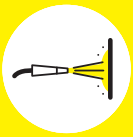
webercem spray DS

Dry-spray concrete

- Polymer-modified
- High build structural repair concrete
- Good adhesion to concrete


SPRAY APPLICATION

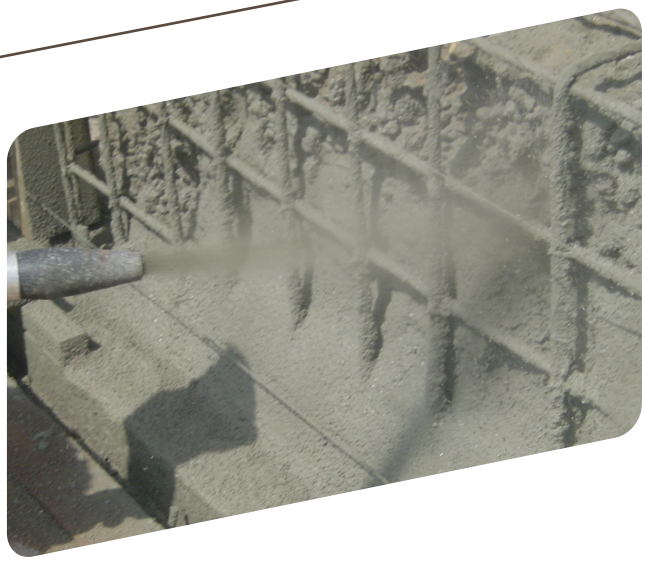

LOW REBOUND


MEETS BS EN 1504-3 AS AN R4 MORTAR

COMPRESSIVE STRENGTH

APPLICATION THICKNESS

YIELD



About this product

webercem spray DS is a pre-bagged, ready-to-use, polymer-modified, cement based structural concrete. It contains graded inert limestone aggregates designed to suppress dust. The formulation has been designed specially for dry process spray application to give high strength, low rebound and wastage, and to maximise the application thickness.

Conformity testing to BS EN 1504-3 has confirmed that **webercem spray DS** meets the requirements for a Class R4 repair product.

Features and benefits

- Economical – low rebound
- Relatively low dust emission, no siliceous aggregates, no caustic accelerators
- High-build – up to 150mm thickness can be applied in one pass on vertical and overhead faces encapsulating existing steel reinforcement
- Low permeability to water and chlorides
- R4 repair product meeting the requirements of BS EN 1504-3
- Complies with National Highways specifications for repairs to highway structures

webercem spray DS

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

Constraints

- Do not apply if frost is forecast within 24 hours of use
- Do not apply in temperatures below 5°C or above 30°C

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.

Steel Substrates

Reinforcing bars should be exposed leaving a clear gap at least 25mm behind the bars to allow for full encapsulation. Steel bars should be free of loose rust and grease. Steel should be prepared in accordance with BS EN 1504-10.

Reducing suction

Before using **webercem spray DS**, the concrete substrate must be thoroughly prewetted for at least 30 minutes and then all surplus water removed. Water from the spray nozzle followed by high pressure air is the method commonly adopted.

Additional mesh reinforcement

Where there are no exposed bars and where the thickness of the sprayed concrete is 50mm or greater, then mesh reinforcement must be provided. Mesh helps to evenly distribute stresses due to thermal movement or shrinkage and reduces the risk of cracking especially on corners. The mesh should be designed and fixed in accordance with the guidelines of the Code of Practice for Sprayed Concrete published by the Concrete Society.

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 DS 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 high an addition will cause 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.

The recommended minimum thickness is 25mm. The recommended minimum thickness for protection over steel should be as specified for the project.

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.

Curing

This product must be properly cured if it is to achieve its optimum properties. Cure immediately with a high efficiency curing membrane 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 DS is supplied in 25kg polylined paper sacks.

Yield

Approximately 12 litres per 25kg 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

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

Technical data

These results were obtained under laboratory conditions. Batch to batch results may fluctuate due to common cause variation

BS EN 1504-3 (R4 Class)

All tests carried out at 20°C unless otherwise stated

Performance characteristic	Method	Requirement	Result	Pass/Fail
Compressive strength	EN 12190	≥45MPa	63.5 MPa	Pass
Chloride ion content	EN 1015-17	≤0.05 %	0.01%	Pass
Adhesive bond	EN 1542	≥2.0 MPa	2.6 MPa	Pass
Carbonation resistance	EN 13295	dk ≤ control concrete	dk ≤ control concrete	Pass
Elastic modulus	EN 13412	≥20 GPa	25.4 GPa	Pass
Thermal compatibility Part 1 Freeze-thaw	EN 13687-1	Bond strength after 50 cycles ≥2.0 MPa	2.3 MPa	Pass
Capillary absorption	EN 13057	≤0.5 $kgm^{-2}h^{-0.5}$	0.43 $kgm^{-2}h^{-0.5}$	Pass
Reaction to fire	EN 13501-1	Declared class	Class A1	
Coefficient of thermal expansion	EN 1770	Declared value	$3.0*10^{-6}$	

Additional test data

All tests carried out at 20°C unless otherwise stated

Performance characteristic	Method	Result
Dry Density	BS EN 12190	2160 kg/m^3
Compressive Strength of Concrete Cores	EN 12504-1	49.8 MPa
Apparent chloride diffusion coefficient at 20°C	Taywood Test	2.36 x $10^{-13}m^2/s$
Apparent chloride diffusion coefficient at 40°C	Taywood Test	9.46 x $10^{-13}m^2/s$
Tensile Strength of Hardened Mortar	BS 6319-7	2.7 MPa
14 day drying shrinkage	BS 1920-8	0.015%
21 day drying shrinkage		0.025%
28 day drying shrinkage		0.030%
Wear resistance "BCA"	EN 13892-4	2020 µm
Wet density	Internal test	2180 kg/m^3
Initial set	Internal test	2-3 hours

Indicative strength gain

Internal tests carried out in laboratory conditions to EN 12504-1

Temperature	24 hours	3 Days	7 Days	28 Days	60 Days
Compressive strength @ 5°C	2.7 MPa	17.3 MPa	36.3 MPa	42.1 MPa	
Compressive strength @ 10°C	4.1 MPa	24.4 MPa	34.6 MPa	42.8 MPa	
Compressive strength @ 20°C	14.6 MPa	35.3 MPa	48.5 MPa	65.6 MPa	78.0 MPa

Saint-Gobain Weber
Dickens House, Enterprise Way,
Maulden Road, Flitwick,
Bedford, MK45 5BY

+44 (0) 1525 718877
technical@netweber.co.uk
www.uk.weber
@SGWeberUK

REV. 20/02/24