

*Shrinkage-compensated, high-strength, flowing recasting repair concrete*

## webercem five star repair concrete



### About this product

**webercem five star repair concrete** is a preblended cementitious repair concrete which complies with the Highways England Specification for Highway Works white book Series 1700 *Structural Concrete*.

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

### Technical data

| The following test results were obtained in lab conditions at 20°C |                             | HE spec                   |
|--|-----------------------------|---------------------------|
| Working time   | 45 – 60 minutes             |                           |
| Set time   | 300 minutes                 |                           |
| Plastic density  | 2200 kg/m <sup>3</sup>      |                           |
| Water/cement ratio (3.3 litres per 25kg)                           | 0.37                        | max 0.4                   |
| Flow trough  |                             |                           |
| at 5°C immediately after mixing                                    | 750 mm in 5 sec             | 750 mm in 30 sec          |
| at 5°C 30 minutes after mixing                                     | 750 mm in 6 sec             |                           |
| at 20°C immediately after mixing                                   | 750 mm in 5 sec             | 750 mm in 30 sec          |
| at 20°C 30 minutes after mixing                                    | 750 mm in 6 sec             |                           |
| Flow in simulated soffit and top repair                            | At 5°C and 20°C             | Complies                  |
| Compressive strength   | <b>5°C</b> <b>20°C</b>      |                           |
| 3 days   |                             | 35 N/mm <sup>2</sup>      |
| 7 days   |                             | 45 N/mm <sup>2</sup>      |
| 10 days  | 35 N/mm <sup>2</sup>        | min 29 N/mm <sup>2</sup>  |
| 28 days - EN1504 - 3   | —      65 N/mm <sup>2</sup> | min 50 N/mm <sup>2</sup>  |
| Cement content   | > 500 kg/m <sup>3</sup>     | min 400 kg/m <sup>3</sup> |
| Air content  | 2.8%                        | max 7%                    |

### Uses

- Replacement of concrete to beams and crossheads
- Repair of car parks and buildings
- Coastal structural repairs and seawall reconstruction
- Repairing concrete columns, beams, walls and soffits
- For use under baseplates where thick sections are required to be grouted: 75 to 500 mm

### Features and benefits

- ▲ Permanent structural repair concrete
- ▲ Contains non-reactive aggregates and a low soluble alkali cement content.
- ▲ The repair concrete can be applied to a range of thicknesses, minimum 25 mm.
- ▲ Contains OPC & PFA to clause 1702, 5 mm non-reactive carboniferous limestone to clause 1704, microsilica and shrinkage compensating agents.
- ▲ Rapid strength development 35mpa in 3 days thus reducing repair possession times
- ▲ Dimensionally stable, forms an integral bond to existing concrete and restores structural integrity with proven durability
- ▲ Economical repair
- ▲ Variable application thickness providing flexibility of use
- ▲ Free-flowing recasting repair concrete allowing formation of intricate falsework
- ▲ Ideally suited in structural elements where reinforcement is congested
- ▲ Shrinkage-compensated to avoid shrinkage cracks and enhance durability
- ▲ Class 4 repair product meeting the requirements of BS EN 1504-3

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## Preparation

The concrete substrate shall be adequately prepared by suitable methods to remove all defective concrete or suspect concrete by high pressure water cutting or by mechanical means, i.e. breakers, scabbling, grit blasting, etc.

The perimeter of the prepared area shall be well defined by a saw cut, avoid feather edging of the repair concrete.

All concrete shall be removed to give a minimum clear dimension of 20 mm to all exposed rebar reinforcement. The extent of the concrete removal shall be agreed with the contract supervisor or engineer.

Rust scale corrosion products and other deposits shall be removed from the exposed steel reinforcement by grit blasting or high pressure water cutting. Finish shall be to achieve second quality to BS 7079:1989. Degrease with suitable solvent where appropriate immediately prior to pouring.

No priming of the reinforcement is required, **webercem five star repair concrete** forms a good cementitious bond to the clean exposed reinforcement. Do not use primers with this product.

Old concrete surfaces contaminated with oil or grease will require cleaning, care must be taken to ensure all contamination and any coating is removed prior to application of concrete.

Grout-tight formwork is essential. Use a light uniform application of release agent and good quality sealed ply formwork. The formwork shall be adequately supported and fixed to resist fluid concrete pressures.

The parent concrete shall be thoroughly saturated with potable water prior to the application of the repair concrete. This may be achieved by filling the formwork with water, usually for 2 hours, then draining off the water and removal of all surplus water.

## Mixing

Use only freshly opened bags of **webercem five star repair concrete** and a clean forced-action mixer of suitable volume, i.e. Daines Mixal mixer, Cretangle pan mixer or a Putzmeister P13 mixer and pump.

Charge the mixer with 3.1 – 3.3 litres of water per 25 kg bag, followed by a gradual addition of repair concrete. For optimum flow use 3.3 litres of water. Mix for 3 minutes. Mix only full bags, do not mix part bags.

**NB:** do not exceed maximum water addition of 3.3 litres water per 25 kg bag.

## Performance to BS EN 1504-3

### Test results – all intended uses

| Performance characteristic     | Method     | BS EN 1504-3 requirement          |
|--------------------------------|------------|-----------------------------------|
| Compressive strength           | EN 12190   | ≥ 45 MPa                          |
| Chloride ion content           | EN 1015-17 | ≤ 0.05%                           |
| Adhesive bond                  | EN 1542    | ≥ 2 MPa                           |
| Restrained shrinkage/expansion | EN 12617-4 | Bond strength after test ≥ 2 MPa  |
| Carbonation resistance         | EN 13295   | $d_k \leq$ control concrete (1.3) |

### Test results – certain intended uses

| Performance characteristic               | Method     | BS EN 1504-3 requirement                  |
|--|------------|---|
| Elastic modulus                          | EN 13412   | ≥ 20 GPa                                  |
| Thermal compatibility Part 1 Freeze/Thaw | EN 13687-1 | Bond strength after 50 cycles ≥ 2 MPa     |
| Capillary absorption                     | EN 13057   | ≤ 0.5 kgm <sup>-2</sup> h <sup>-0.5</sup> |

## Application

The mixed concrete shall be used within 30 minutes of mixing and kept agitated prior to use.

The mixed concrete can be placed either by gravity pouring or by pumping through hoses at least 50 mm diameter. Care shall be exercised to avoid air entrapment during placing. No vibration is needed to compact the repair concrete but the formwork should be tapped with a mallet to release minor air bubbles on the surface of the formwork.

### Setting time

Setting time at 20°C is approximately 300 minutes.

### Winter working

**webercem five star repair concrete** can be used down to 5°C provided cold weather working precautions are carried out. At low temperatures the strength development gain of repair concrete is greatly reduced.

For further information please contact **Weber** Technical Services.

## Curing

Immediately after finishing, the exposed surfaces of the concrete shall be cured with wet hessian, polythene or frost blankets for at least 48 hours to prevent rapid loss of water.

The concrete shall then be cured with a high efficiency sprayed-on curing membrane for at least 14 days.

This membrane must be removed if it is to be overcoated, alternatively use wet hessian and tightly fitting polythene sheeting to cure the concrete.

**Protect from wind, rain and frost.**

## Packaging

**webercem five star repair concrete** is supplied in 25 kg bags.

## Coverage

Yield per 25 kg bag is 12.75 litres  
Coverage per m<sup>3</sup> volume is 78 bags of **webercem five star repair concrete**.

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## 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: 01525 718877  
e-mail [technical@netweber.co.uk](mailto:technical@netweber.co.uk)

### 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.

**UK and Ireland**  
Tel: 01525 718877  
e-mail [sales@netweber.co.uk](mailto:sales@netweber.co.uk)



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