

# SHOTPATCH™ 10

Micro-silica enhanced, dry process shotcrete for repair to large surface areas

## Description

SHOTPATCH 10 is a ready to use cement based single component shotcrete mortar modified with microsilica. The formulation is designed to achieve a durable, structural grade, dry process shotcrete applied mortar. It gives high early strength, reduced rebound and allows for maximum application thickness, coupled with resistivity values commensurate with accepted criteria for cathodic protection (CP) overlays. The ingredients are carefully selected to give minimum dust during the spraying.

## Uses

- Large areas of concrete repairs.
- Refurbishment of columns, bridges, tunnels, retaining walls.
- Single high build application.
- Repair of fire damaged structures, marine structures, piers, quays, off shore platforms, etc
- Rock and embankment stabilisation.
- Sealing of mine roadways, tunnels, etc.
- Rock and embankment stabilisation, swimming pool construction.
- Cathodic protection overlays.

## Advantages

- Single component - ready to use.
- Non-reactive aggregates
- High build - up to 150mm can be applied at one pass.
- Low rebound - grading and formulation allow for excellent penetration and compaction with minimum loss of aggregate through rebound.
- Low dust - formulation ensures dust is kept to a minimum.
- Safe to handle - no added caustic accelerators.
- Excellent adhesion to concrete and steel.
- Rapid strength gain.
- Low water absorption & chloride ion diffusion.
- High resistance to carbon dioxide penetration.
- Excellent resistivity values ( for CP overlays)

## Typical properties

Appearance	: Grey granular powder
Maximum aggregate size	: 5mm
Density	: Dry bulk : 1700kg/m <sup>3</sup> : Applied : 2400kg/m <sup>3</sup>
Water/powder ratio, by weight	: 0.085
Compressive Strengths	: 24 Hours 15N/mm <sup>2</sup> (ASTM C109) : 28 Days 40N/mm <sup>2</sup>
Alkali contents	: < 3.0 kg/m <sup>3</sup> (as Na <sub>2</sub> O)

## Specification Clause

The one-component, dry-spray, micro-concrete shall be SHOTPATCH 10, high strength, cementitious formulation modified with microsilica. The repair micro-concrete shall have compressive strength minimum of

15 MPa at 1 day and 40 MPa at 28 days. The repair mortar shall not require polymer bonding agent as primer.

## Directions for use

### Surface preparation

All surfaces to be treated should be sound and clean. Saw cut the edges of the repair locations to a depth of at least 15mm to avoid featheredging and to provide a square edge. Break out the complete repair area by mechanical means or by high pressure water jetting to a minimum depth of 15 mm up to the sawn edge.

Clean the surfaces by removing any dust, unsound or contaminated material, oil, paint, grease, or corrosion deposits. Where breaking out is not required, roughen the surface and remove any laitance by mechanical means or high-pressure water jetting to provide a minimum of 5mm profile.

All surface-preparation procedures used should ensure that adequate mechanical key is achieved. Remove oil and grease deposits by steam cleaning, detergent scrubbing, or degreasing. To ensure optimum repair results, assess the effectiveness of decontamination with a pull-off test.

Traces of rust and corrosion products should be removed by wet or dry sand blasting of exposed reinforcing steel.

### Priming

The prepared substrate should be thoroughly soaked with clean water and all standing water removed before the application of SHOTPATCH 10.

The concrete substrate should be in a saturated-surface-dry (SSD) condition immediately before the application of SHOTPATCH 10.

In chloride laden environment apply CONCRESLIVE ZRi on prepared steel reinforcement

### Application

Empty the bags of SHOTPATCH 10 directly into the hopper of the dry process shotcrete pump. SHOTPATCH 10 may be introduced dry directly to the gun or predampened first. Use a maximum of 1 Litre of water per bag of 25 Kg for predampening.

Once the surface is properly cleaned and placement has started, the nozzle operator is responsible for adding the correct amount of water at the nozzle to achieve proper hydration of the sprayed material. This water/powder ratio is critical and will affect the physical properties and performance of sprayed material.

Consider total water addition (predampening & added at the nozzle) in the range of 2 ~ 2.25 Litre/ Bag of 25 kg as a guideline.

The proper placement of SHOTPATCH 10 depends primarily on the ability of the nozzleman. The nozzleman

must perform the spray application using recognized procedures for nozzle angle, material build-up, coverage of reinforcement, consideration of rebound, and surface finishing.

#### Finishing

Any necessary trowelling or profiling should be done immediately after spraying has finished. If overcoating is to follow, finish with a wooden float or damp sponge. Over finishing should be avoided to prevent excessive laitance and surface hairline cracking.

#### Curing

Good curing practice is essential. Particular care is required in hot and windy condition.

Curing can be by the application of MASTERKURE 181 curing compound which compatible with most subsequent protective coatings, or by covering the work with properly secured plastic sheeting.

Apply the curing compound when the surface can not be marred by the application process.

For intra-layer curing, consider the use of MEYCO TCC 735. A multi-role admixture that enhances hydration of the cement, increases bond to steel, reduces shrinkage and eliminates the requirement for curing between layers. In high ambient temperatures or hot drying winds, MEYCO TCC 735 treated SHOTPATCH 10 will still require shading and sheltering.

#### Coverage

A 25kg bag of SHOTPATCH 10 after mixing with 2.0 to 2.25 Ltrs will yield approximately 11.3 litres and shall cover 0.25 m<sup>2</sup> at 40mm thickness depending upon the water/powder ratio used.

Site trials are advisable to obtain accurate wastage factors due to variations in surface preparation, equipment and nozzle men.

#### Packaging

SHOTPATCH 10 is supplied in 25kg bags

#### Watch points

- Protect newly applied SHOTPATCH 10 from heavy rain or frost.
- Over application should be avoided to prevent slumping away from prepared concrete surfaces or steel.
- Movement joints should be continued through the applied SHOTPATCH 10 and sealed with a suitable sealant from the MASTERFLEX range.

#### Equipment

An extensive range of dry and wet process shotcreting and ancillary equipment is available from Degussa affiliate MEYCO. Your representative will provide details and assistance with equipment selection on request.

#### Equipment care

All tools shall be cleaned with water immediately after use. All spraying equipment should be blown clear of SHOTPATCH 10 at stopping of work and for extended breaks, trowels etc. should be washed with clean water immediately after use.

Hardened SHOTPATCH 10 can only be removed by mechanical means.

#### Storage and Shelf life

Store under cover, out of direct sunlight and protect from extremes of temperature. In tropical climates the product must be stored in an air-conditioned environment.

Shelf life is 12 months when stored as above.

Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging. For specific storage advice please consult BASF's Technical Services Department.

#### Safety precautions

As with all chemical products, care should be taken during use and storage to avoid contact with eyes, mouth, skin and foodstuffs (which can also be tainted with vapour until product fully cured or dried). Treat splashes to eyes and skin immediately. If accidentally ingested, seek immediate medical attention. Keep away from children and animals. Reseal containers after use. Do not reuse containers for storage of consumable item. For further information refer to the material safety data sheet. MSDS available on demand or on BASF construction chemicals web site.

#### Note

All BASF Technical Data Sheets are updated on regular basis; it is the user's responsibility, to obtain the most recent issue.

Field services where provided, does not constitute supervisory responsibility, for additional information contact your local BASF representative.

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