

# SHOTPATCH<sup>®</sup> 20

Premixed, high build, shotcrete mortar

## DESCRIPTION

**SHOTPATCH 20** is a ready to use, cementitious powder, which on mixing with the specified quantity of water yields a sprayable high build mortar.

The shotcrete mortar can be modified with **BARRA EMULSION AC** for increased impermeability and bond strength.

## FIELDS OF APPLICATION

**SHOTPATCH 20** is recommended for situations requiring spray application of mortar to a thickness of 10 - 100 mm in a single layer, for repairs and protection. Applications include;

- repairs to the underside of bridge decks, piers, and beams, tunnels and culverts.
- repairs to sewer pipes, drains, water towers, etc.
- slope stabilisation.
- fireproofing and protection to steelworks.

## FEATURES AND BENEFITS

<b>Higher build per pass</b>	Considerable savings in time and labour when building up thick sections.
<b>Prepacked, pre-formulated</b>	No batching errors. Consistency in performance.
<b>Reduced rebound</b>	Minimised wastage. Faster build up.
<b>High strength</b>	Stronger repair.

## TYPICAL PERFORMANCE DATA

	Strength (N/mm <sup>2</sup> )	
	1 day	28 days
Compressive (ASTM C109)	16.0	50.0
Flexural (ASTM C348)	2.0	6.0

	Plain Mortar	Polymer Modified*
Permeability, m/sec (Taywood method)	4.1 x 10 <sup>-13</sup>	2.5 x 10 <sup>-13</sup>
Volume of permeable core space (voids), % (ASTM C642)	11.3	6.6
Water absorption, % (ASTM C642 procedure A)	5.2	1.7

\* **SHOTPATCH 20** modified by **BARRA EMULSION AC** diluted with equal volume of water.

## PROPERTIES

Supply form	:	Powder
Colour	:	Cement grey
Density (fresh wet)	:	2.29 kg/L, @ 2.5 L water per 25 kg powder

## APPLICATION

### Substrate condition

The substrate must be clean and free from surface contaminants such as moss and fungus growth, curing membrane, rust, sludge, dirt and loose particles. Use scabbling, wire brushing and water blasting with compressed air through the shotcrete nozzle, to clean the surface.

If the application is for replacing damaged concrete, first saw cut the boundary of the damaged area, perpendicular to the surface, to at least 10 mm depth and hack out the area to at least 40 mm depth, before cleaning the surface.

Where required, cut back concrete to at least 25 mm behind the rebars. Remove all corrosion products from the rebars by grit blasting or other suitable technique. Replace the affected part of rebar if the diameter after grit blasting is found to be reduced by more than 20% of the original diameter.

**Note:** It is recommended that the decision on replacement of rebars is taken based on the advice of the structural engineer responsible for the works.

In a chloride laden environment, the rebars are recommended to be coated with **BARRAFER S** or **BARRAZINC SP** zinc rich primer.

Saturate the surface thoroughly with clean water before applying the mortar.

### Mixing

**Dry process:** Introduce both the powder and water at the nozzle for mixing.

**Wet process:** Premix the powder and water, then pump the mixture to the nozzle.

If polymer modification is required, pre-mix the water with **BARRA EMULSION AC** in the ratio 1:1 by volume.

Water requirement (per 25 kg)

Consistency	Min.	Max.
Sprayable	8% (2L)	12% (3L)

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## Priming

Normally priming is not required. However, if damaged concrete is being replaced and the concrete is known to be contaminated with chlorides, prime the prepared surface with MASTERTOP 2525 (see separate data sheet).

## Placing

On primed surfaces start placing after the primer reaches a tacky state.

**SHOTPATCH 20** has been formulated for placing by spray to thickness ranging from 10 mm to 100 mm in one pass of the nozzle, both by wet and dry processes. Spray the mortar using a DEGUNA 20 mixer cum sprayer for wet spraying or a PICCOLINA spray unit for dry spraying, or similar machines available from BASF Construction Chemicals. For satisfactory results, an experienced operator in sprayed concrete is essential. The maximum thickness per pass is also dependent on the surface conditions of the substrate, skill of the nozzle man and the orientation of the treated surface - vertical, inclined or overhead.

Smooth the final surface by a wooden, plastic, or synthetic sponge faced trowel. Start trowelling only after the mortar has set sufficiently hard to resist penetration by fingers.

## CURING

Immediately after final finishing, start (preferably) 3 - 5 days of wet-curing, then cure with a uniform coat of a membrane curing compound such as MASTERKURE 181 (see separate data sheet).

## Protective coating

In a high chloride or a high carbon dioxide laden atmosphere, a flexible protective coating with low permeability to chlorides and carbon dioxide such as, BARRACRYL D or BARRACRYL ELASTIC is recommended. Refer to BASF Construction Chemicals for detailed product selection advice.

## EQUIPMENT

**Wet process:** DEGUNA 20 combined mixing & spraying unit or a similar equipment (see separate data sheet).

**Dry process:** PICCOLINA (see separate data sheet) spraying machine or a similar equipment.

## CLEANING

Clean tools and equipment with water, before the mortar hardens.

## ESTIMATING DATA

A 25 kg bag of **SHOTPATCH 20** mixed with 2.5 L of water (or with 2.5 L of a 1:1 solution of BARRA EMULSION AC in water) yields 12 litres (0.012 m<sup>2</sup>). Therefore, material requirement on a smooth and flat surface is 20.83 kg/m<sup>2</sup> at 10 mm thickness excluding rebound losses and allowance for 'cut off'.

Actual consumption depends up on the surface profile and rebound loss. The loss from rebound depends on the experience of the nozzle man, the orientation of the surface and the surface texture. Excluding any allowance for 'cut off', it is recommended that a minimum of 10% allowance for rebound be made for vertical and inclined surfaces and 50% for overhead surfaces.

## PACKAGING

25 kg, multi-ply paper sacks with polythene liner.

## SHELF LIFE

**SHOTPATCH 20** can be stored in unopened original bags for 12 months, if kept dry and at even temperature.

## PRECAUTIONS

**Health:** **SHOTPATCH 20** is alkaline like normal cement and can cause skin irritations to persons with sensitive skin. Wear gloves and masks while handling the product. Take all precautions normally taken while handling cement.

**Safety:** Take adequate safety measures during spraying. Consult the supplier of the spraying machine.

**Fire:** **SHOTPATCH 20** is not flammable.

AN/SP20/v2/140409

## STATEMENT OF RESPONSIBILITY

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