Method Statement

Ref. #: DCP00/04-0042-A-2022

Cempatch SD300

(Spray applied, high build, one component, cementitious repair mortar for dry mix shotcrete application)

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Section A : General Comments

General Notes:

The information below is a detailed overview of the application of DCP's **Cempatch SD300** concrete repair system and should be read in conjunction with the relevant technical data sheet prior to application. All DCP Products should be applied by experienced specialist contractors.

Cempatch SD300 is available in the accelerated setting time grade "**Cempatch SD300A**".

All the points below assume the correct preparation of the relevant surface.

High-Temperature Working:

Cempatch SD300 can be applied at temperatures between 5°C and 35°C. However, It is suggested that, for temperatures above 35°C, the following guidelines are adopted as good working practice:

i. Unmixed materials and equipment should be stored in a cool shaded area and away from direct sunlight.
ii. Avoid application during peak temperature of the day.
iii. Plan for enough materials, tools, and labor to ensure a continuous applicant process.
iv. It is recommended to use cool chilled water for mixing at high temperatures.

Low-Temperature Working:

It is suggested that, for temperatures below 10°C, the following guidelines are adopted as good working practice:

i. Unmixed materials should be stored at 10°C minimum to ensure optimum flow properties.
ii. Use warm mixing water to provide the desired temperature for the mix.
iii. Avoid applying the product if the temperature is around 5°C and falling.
iv. Accelerated heating methods are not to be used under any circumstances.
v. Do not apply under rain or snow, and avoid dew points conditions during application.

System Products:

Cementitious repair mortar: **Cempatch SD300.**

Zinc-rich steel epoxy coating: **Repcoat ZR.**

Cementitious bonding agent: **Cempatch Primer M.** [if required]

Tools and Equipment:

It is suggested that the following list of equipment are adopted as a minimum requirement

Personal protection	:	*Protective overalls*
	:	*Goggles or a face mask*
	:	*Good quality gloves*
	:	*Safety shoes*
	:	*Safety helmet*
Equipment	:	*Dry mix shotcrete machine (Fig.1)*
	:	*Soft brush (Fig.2)*
	:	*Stiff wire brush (Fig.3)*
	:	*Steel grit-blasting machine (Fig.4)*
	:	*Chisel and hammer (Fig.5)*
	:	*Hammer drill (Fig.6)*
	:	*Concrete saw (Fig.7)*

Fig.1: Dry mix shotcrete machine

Fig.2: Soft brush

Fig.3: Stiff wire brush

Fig.4: Steel grit-blasting machine

Fig.5: Chisel and hammer

Fig.6: Hammer drill

Fig.7: Concrete saw

Section B : Application

1.0 Substrate Preparation

1.1 The surface to be repaired should be cleaned from dust, oil, plaster, grease, curing compound, corrosion deposits or any other contaminants that could impair the adhesion of the repair mortar.

1.2 All damaged and weak concrete should be cut back to to remove all segregated, damaged, or deteriorated concrete.

1.3 Continue breaking out until a sound homogeneous substrate has been reached and/or to a minimum depth of at least 10 mm.

1.4 The perimeters of the repair area should be saw cut to a minimum depth of 10 mm.

1.5 The edge of the repair should be roughened to provide a good mechanical key at the substrate interface.

1.6 Steel Preparation

1.6.1 Break along corroded steel bars in the repair area and continue until non-corroded bright steel is observed. It may be necessary to break out the concrete beyond the original repair area in order to achieve this.

1.6.2 Inspect steel reinforcement and replace if section loss is greater than 25%.

1.6.3 Clean all bars to bright steel finish of minimum SA2, preferably by grit blasting to remove all rust traces and ensure backside of bars are cleaned.

1.7 Concrete Preparation

1.7.1 Remove all dust, oil, grease, paint, and any other contaminants that could impair adhesion from the concrete surface.

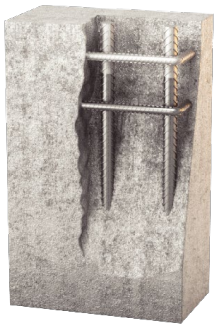
1.7.2 The prepared area should be cleaned thoroughly by brush and/or compressed air.

2.0 Priming

2.1 Exposed reinforcement steel shall be grit blasted to a minimum grade SA 2 according to ISO 8501-1.

2.2 All grit blasted steel reinforcements should be primed within 2 - 4 hours with one or two coats of zinc rich epoxy coating **Repcoat ZR**.

2.3 An unbroken coating of primer must be achieved.



2.4 Alternatively, **Cempatch Primer M** which is a cementitious bonding agent and active protective primer can be used prior to the application of the repair mortar.

2.5 Areas to be repaired with **Cempatch SD300** should be soaked and thoroughly saturate with clean water to provide a saturated, surface dry condition before applying the repair mortar; all excess water should be removed.

2.6 Provided that the substrate is well prepared, roughened and has been thoroughly soaked with clean water, and is damp before the application of the repair mortar, a primer is not normally required.

2.7 In case of fully submerged condition, or when the concrete elements will be exposed to chemicals, it is recommended to use **Quickmast 108** (epoxy bonding agent) as a primer before applying the repair mortar to prevent the migration of salts, as well as providing bond for **Cempatch SD300** to host concrete.

2.8 In both cases, subsequent application of the repair mortar shall be done wet on wet.

3.0 Mixing and Application

3.1 Hand mixing with trowel or similar of **Cempatch SD300** is not allowed. A Dry mix shotcrete machine should only be used.

3.2 **Cempatch SD300** can be applied in a single application for sections up to 150 mm thick in vertical and 100 mm in overhead applications; thickness should not be less than 10 mm deep in all applications.

3.3 Turn on the dry mix shotcrete machine and empty the bags of **Cempatch SD300** directly into the hopper of it.

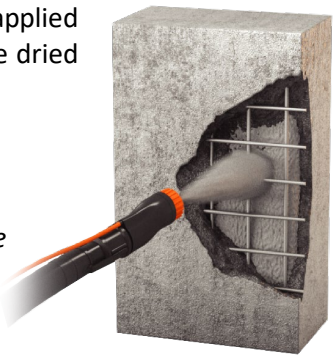
3.4 The water mixed with the dry **Cempatch SD300** is controlled by the operator at the nozzle.

3.5 A minimum water powder ratio of 0.13 and a maximum of 0.15 should be used.

3.6 Apply up to 150 mm in a single layer without the formation of voids and loose rebound material.

3.7 Adding reinforcement wire mesh every 30 mm is an added value for extra strengthening.

3.8 For total thicknesses above 150 mm, apply in several coats, each previous coat applied should be dried and kept rough. Prior to applying the subsequent layer wet the dried coat lightly with water.

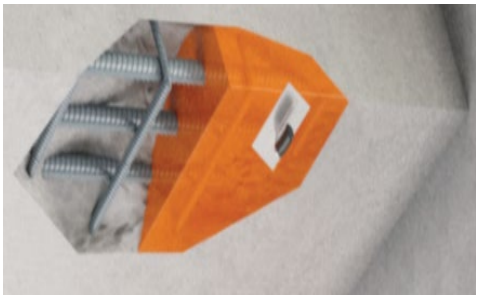


Notes:

- *Do not add any additives, cement or aggregate.*
- ***Cempatch SD300** is only applied using a dry mix shotcrete machine, where the water is mixed with the material at the nozzle.*

3.9 Where **Cempatch SD300** is to be built up to prevent sagging or slumping, each layer should be allowed to stiffen before applying subsequent layers [wet on wet]. When layers cannot be applied [wet on wet], pre-wet the surface of the applied layer and allow to surface dry.

3.10 The surface of the placed mortar shall be finished using a flat edge and closing the surface with a wooden/plastic float or damp sponge to achieve the desired surface texture; Taking into consideration the setting time of the product.



4.0 Curing

4.1 As **Cempatch SD300** is a cementitious based material, it should be cured in a similar method to concrete.

4.2 Curing can be conducted by using Setseal range of curing compounds or by wet hessian sheets covered with polyethylene sheets starting after final setting time.

5.0 Cleaning

5.1 All tools should be cleaned immediately after finishing using clean water.

5.2 Hardened materials must be cleaned mechanically.

6.0 Remarks

6.1 In all cases the steel should be clean and bright after cleaning.

6.2 **Cempatch SD300** should not be applied onto frozen substrates or if the ambient temperature is around 5°C and falling.

6.3 Do not apply on smooth surfaces.

6.4 Do not expose freshly repaired surfaces to heavy loads for the first 24 hours.

6.5 Avoid application in direct sun and/or strong wind.

6.6 Protect freshly applied material from freezing.

6.7 No standing or excess water should remain after dampening the surface.

6.8 Rebound will be increased with an unsuitable size spraying machine, compressor, nozzle type, dry mixture, and thin layers.

Section C : Cautions

Health and safety

Cempatch SD300 should not come in contact with eyes. However, any accidental splashes to the eyes must be rinsed with clean water and seek medical advice.

Fire:

Cempatch SD300 is nonflammable.

For further information on refer to the Material Safety Data Sheet.

Section D : Approval and Variations

This method statement is offered by DCP as a 'standard proposal' for the application of **Cempatch SD300**. It remains the responsibility of the Engineer to determine the correct method for any given application. Where alternative methods are to be used, these must be submitted to DCP for approval, in writing, prior to commencement of any work. DCP will not accept responsibility or liability for variations to the above method statement under any other condition.