Method Statement

Ref. #: DCP00/03-0048-A-2021

Flo-Grout EP340

(High strength pourable epoxy resin grout)

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Section A : General Comments

General Notes:

The information below is a detailed overview for the application of DCP's **Flo-Grout EP340** 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.

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

High Temperature Working:

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 continuous applicant process.

Low temperature working:

It is suggested that, for temperatures below 15°C, the following guidelines are adopted as good working practice:

i. Unmixed materials should be stored in a warm (temperature controlled at 25°C) environment, to ensure optimum flow properties.
ii. Cold temperatures will affect the properties of the grout.
iii. Avoid applying the grout if the temperature is around 5°C and falling.

Thicknesses and Size Limitations:

Flo-Grout EP340 is suitable for grouting large gaps from 10 to 400 mm. For greater thicknesses, multiple layers can be applied after initial curing of the previous layer.

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	:	*Mixing drill (Fig.1)*
	:	*Mixing paddle (Fig.2)*
	:	*Empty bucket (25 ltr) (Fig.3)*
	:	*Electrical hammer (Fig.4)*
	:	*Chisel and hammer (Fig.5)*
	:	*Feeding hopper (Fig.6)*

Fig.1: Mixing drill

Fig.2: Mixing paddle

Fig.3: Empty bucket

Fig.4: Electrical Hammer

Fig.5: Chisel & Hammer

Fig.6: Feeding Hopper

Section B : Application

1.0 Substrate Preparation

1.1 The substrate should be sound, clean and free from contamination. Surface laitance should be removed by scabbling or grit blasting.

1.2 All honey combed or defected concrete surfaces must be removed to reach sound and solid surfaces.

1.3 Base plate's underside should be clean and free from oil, rust and scale.

1.4 For isolated areas and large base plate areas, it is recommended to open air release vent holes to relief air pressure

1.5 The concrete surfaces should be dry. All sections of the substrate that will come into touch with the grout, including holes, must be carefully cleaned before installing structural elements or machinery.

1.6 All anchor pockets, sleeves or holes drilled for anchor bolts must be free of water and cleaned from dust and lose debris using suitable brush or compressed air.

1.7 Steel surfaces should be grit blasted to remove all rust and scale.

1.8 Remove all vibration sources that may cause settlement until the grout has hardened.

2.0 Formwork

2.1 Ensure that all areas to be grouted are clean from dust, dirt and any other foreign materials before fixing any formwork.

2.2 The formwork itself must be constructed to be water tight (leak proof), to prevent any possible grout loss from any formwork joints. This can be achieved by sealing underneath the formwork and at the joints by using appropriate sealant.

2.3 The formwork must be strong enough to withstand the hydraulic pressure developed during grout pouring.

2.4 Forms should extend vertically above the bottom of the base plate surface to prevent overflow and ensure that the space to be grouted is completely filled (typically 100 mm rise should be sufficient check Fig. 7), the side formwork should provide a clearance of 25 - 50 mm horizontally to prevent displaced air from getting trapped below the plate.

2.5 **Pouring side:** To obtain maximum flow distance (free flowing grout application), a side shutter feed (feeding hopper) should be erected on one side of the baseplate with 100 - 250 mm side height and slope away from the plate at approximately 45 degrees to provide minimum turbulence and build the required hydrostatic head. (see Fig.7).

Note: Pour the mixed grout into the forms from one side only to prevent air entrapment.

2.6 The grout should be poured from the shortest distance across the baste plate.

2.7 The formwork should be fixed in such a way as to allow easy stripping, without causing damage or stress on the grout. Suitable formwork release agent could be used.

2.8 All dust, dirt and any other foreign materials have to be removed from the grout area before the last piece of formwork is fixed and sealed.

2.9 **Opposite the grout filling side**: Erect the formwork at least 100 mm above and beyond the base plate edge. (see Fig.7).

2.10 Make air release holes (if necessary) at the highest points within any enclosed areas of the machinery/equipment.

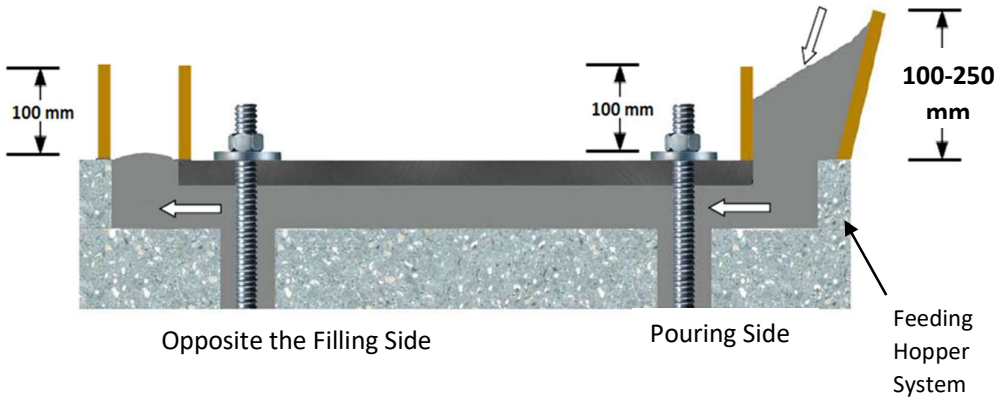


Fig.7: Formwork placement

2.11 **Side Perimeter of grouting Area**: Erect the formwork at least 100 mm above and beyond the base plate edge, with the first 1.5 m of the outer side having a 200 mm height. (see Fig.8)

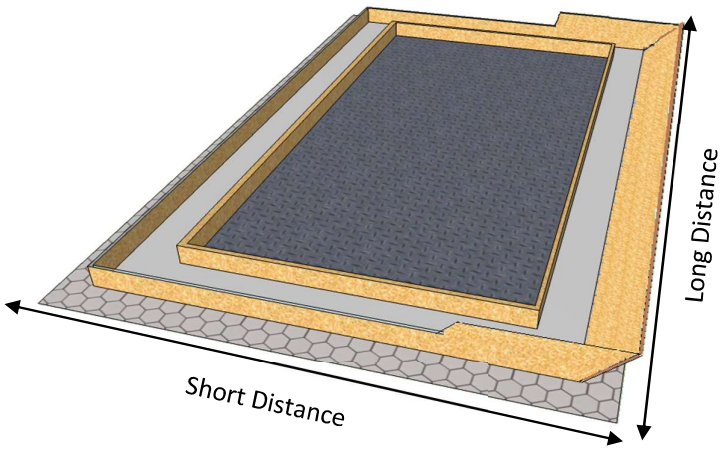


Fig.8: Side Perimeter of grouting area

3.0 Mixing

3.1 A mechanically powered mixer or drill fitted with helix type paddle should be used to ensure proper mixing.

3.2 Locate the mixer or the mixing container as close as possible to the element being grouted in order to minimize the transporting time.

3.3 Pour all the contents of the hardener pack into the base container. Make sure the hardener container is fully emptied into the resin component. Mix the two components for 2 minutes until homogenous is obtained.

3.4 The filler should be gradually added while mixing. Mixing should continue for 3 minutes or until a uniform consistency obtained.

Notes:

- *Slow speed mixer (i.e. 300 rpm) should be only used.*
- *If drill mixer with helix paddle is used, then the rotation of the paddle should be upward mixing to minimize the entrapment of air (i.e. the rotation of the mixer makes the blades move material from the bottom of the bucket to the top).*
- *The mixing paddle should be always below the epoxy grout level, it should not be moved up and down to prevent air entraining.*

4.0 Placing

4.1 It is essential that the machine mixing capacity, material supply and labour availability is adequate to enable the grouting operation to be carried out continuously.

4.2 Apply the grout as immediately as possible after preparation and cleaning. Prior to placement, ensure that all surfaces are dry and free from any standing water.

4.3 Ensure enough available labour to cover the full area of grouting within the working life of the material, using multiple pouring points (depending on the area) to ensure working life is not exceeded. (see Fig.09).

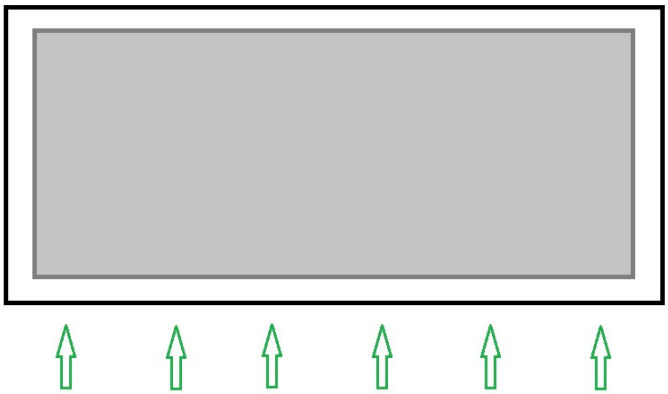


Fig.9: Multiple pouring points

4.4 At 100 mm of head, a flow distance of 2100 mm can be achieved at gap thicknesses of 100 mm @ 25°C ambient temperatures.

4.5 Always mix only the quantity of the grout that can be used within its pot life. Never reduce the mixing time.

4.6 Continuous grout flow during the grouting operation is essential. Sufficient grout must be available prior to starting, and time taken to pour a mixed batch must be regulated to the time taken to prepare the next one.

4.7 Enough mixed grout shall be ready to start with and to build the required hydrostatic head. The grout head must be maintained at all times so that a continuous grout front is achieved.

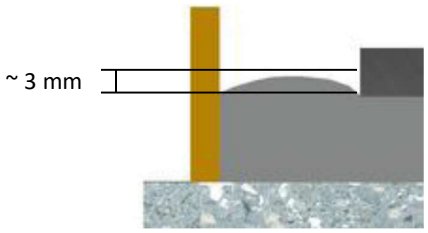
4.8 When the grout reaches the open side of the formwork, and rises above the underside of the base plate, pouring should continue slowly down the length of the base plate until completed.

Notes:

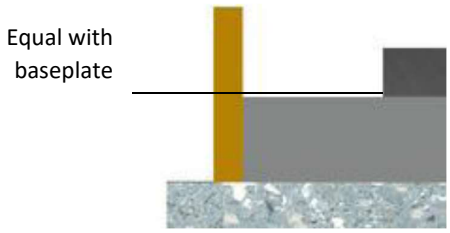
- *If temperatures are less than 20°C, the cure rate will be slow, but eventually will go to completion if the temperatures remain above 5°C.*
- *Pre calculation of the exact needed volume of grout is essential to ensure full coverage under the base plate.*
- *Place the grout down/along any slope, not against/up.*
- *Apply the grout across the shortest width of the equipment/base.*
- ***Height of the epoxy grout**: Place sufficient epoxy grout in the forms for it to rise slightly above the underside (approximately 3 mm) of the base plate.*

It is recommended that during placement of the epoxy grout, the level of the grout has to be slightly above the level of the bottom of the base plate to ensure complete fill of the base. The final height of the epoxy grout should be finished level with the bottom of the base or only slightly higher.

This will eliminate any subsequent breaking off or edge 'spalling' of the grout should the equipment be subjected to a rapid increase in temperature later on.



Fresh Epoxy Grout After Placing



Cured Epoxy Grout

5.0 Cleaning

5.1 All tools should be cleaned **immediately** after finishing using a suitable epoxy thinner. Hardened materials should be cleaned mechanically.

5.2 Brush away and remove any excess grout into appropriate containers for disposal before it has hardened.

5.3 Always dispose of excess or waste materials in accordance with local regulations.

6.0 Remarks

6.1 Confirm availability of mixing equipment.

6.2 On completion of the grouting operation, all areas of grout should be protected from solar heat gain by providing shade over the whole areas.

6.3 Calculate the time required for preparing and mixing the epoxy grout and include this in the program. In many cases, two working teams are necessary to supply the feed hopper and to maintain the work flow. Do not reduce the mixing time, even when in a hurry.

6.4 Check the substrate in advance. Ensure that the substrate is in good condition and clean.

6.5 Do not change the product mixing ratio.

6.6 Do not subject epoxy grouts to sudden temperature changes especially during early curing stages.

6.7 Do not vibrate the epoxy grout during placing.

6.8 Wherever possible unrestrained 'shoulders' are to be avoided. These have a tendency to crack and/or deboned.

6.9 Contact DCP Technical Services Department for advice on control spacing for large base plate grouting projects.

6.10 This method statement does not include 'Confined Spaces' situation. For working in Confined Spaces, ventilation system must be used and a *Confined Space entry permit system* should be followed under supervision from the project health, safety and environment (HSE) department.

Section C : Cautions

Health and safety

Flo-Grout EP340 is irritant to the eyes, skin and respiratory system. Wear suitable gloves and eye protection.

Fire:

Flo-Grout EP340 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 **Flo-Grout EP340**. 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.