

Method Statement

Ref. #: DCP00/03-0015-B-2022



Keyfix E

(High strength epoxy resin for anchoring and fixing)



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Section A : General Comments

General Notes:

The information below is a detailed overview for the application of DCP's **Keyfix E** anchoring 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.

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 10°C, the following guidelines are adopted as good working practice:

- i. Unmixed materials should be stored in a warm (preferably temperature controlled) environment, avoiding exposure to frost or temperatures below 5°C.
- ii. Cold temperatures will affect the properties of the resin.
- iii. Avoid applying the grout if the temperature is around 5°C and falling.

Note: If crystallization has occurred due to low-temperature storage conditions (typically below 5°C), condition the product at temperatures around 30°C for several days before application.



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	 Hammer drill (Fig.1) Drill bit (Fig.2) Double cartridge gun (Fig.3) Cleaning brush (Fig.4) Hand air pump (Fig.5)

Fig.1: Hammer drill

Fig.2: Drill bit

Fig.3: Double cartridge gun



Fig.4: Cleaning brush

Fig.5: Hand air pump



Section B : Application

1.0 Substrate Preparation

- 1.1 Substrate preparation
 - 1.1.1 The area to be drilled should be marked on the structure using spray paint.
 - 1.1.2 **Hole:** for optimum anchoring, use a rotary hammer drill for better practice and clean the hole with compressed air and the holes steel brush, the hole should be rough-sided and dust-free.

1.2 Steel preparation

1.2.1 **Bars and anchors:** should be clean and rust-free to achieve the design bond strength. Deformed bars will have a better bond strength.

Note: Holes should be dry and dust-free.

2.0 Drilling

2.1 Use a suitable drill bit diameter and drill hole in the concrete to the required embedment depth. (See below table for reference).



Bar diameter (mm)	Hole diameter (mm)	Embedded length (mm)	Bar area (mm²)	Maximum pull out force (kN)*	Needed quantity of Keyfix AE15 per hole (ml)
10	12	110	79	36	8.3
12	14	130	113	51	13.3
14	16	150	154	69	20.1
16	20	180	201	94	37.7
18	24	200	254	117	60.3
20	26	230	314	150	81.4
25	31	280	491	228	140.9
32	40	360	804	376	301.6

* Maximum pull-out force that yield a concrete splitting failure pattern.

- 2.2 Insert the steel brush to the back of the hole and pull out in a back and forth twisting motion.
- 2.3 Insert the nozzle extension of the hand air pump into the back of the hole and blow out the dust 2 times.







- 2.4 Brush over the whole length of the hole again in a twisting motion.
- 2.5 Blow out again using the hand air pump until the hole is clean and dust-free.

3.0 Placing

- 3.1 Unscrew and remove the cartridge protective cap.
- 3.2 Remove the insert plug and attach the static mixing nozzle tightly.
- 3.3 Insert cartridges into the double cartridge gun and dispense sufficient material (typically 10 ml) until an even homogeneous color is achieved.
- 3.4 Insert the nozzle into the back of the hole and start applying pressure to the gun, slowly withdraw the nozzle as the hole fills.

Note: As the mixer nozzle is withdrawn, ensure that no air voids are created.

- 3.5 Normally it's sufficient to fill the hole approximately half to two-thirds full.
- 3.6 Immediately, press the stud/steel rebar in a circular motion into the hole to the required embedment depth with slight agitation.
- 3.7 The bar should be left undisturbed until materials reach the final setting.
- 3.8 Clean any excess resin around the hole.
- 3.9 Allow the resin to cure completely. (see table below).

Resin Cartridge Temperature	Base Material Temperature	Working Time	Curing Time
35 to 40°C	35 to 40°C	8 min	4 hr
25 to 30°C	25 to 30°C	13 min	10 hr
20 to 25°C	20 to 25°C	25 min	12 hr
10 to 15°C	10 to 15°C	100 min	24 hr
10 to 15°C	5 to 10°C	120 min	45 hr

3.10 The anchor can be loaded after the required curing time.



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Notes:

- When filling holes overhead or in porous block work, the use of plastic sleeves is recommended in order to hold the reinforcing bar in place and ensure proper embedded length.
- Partly used cartridge are reusable, remove the static mixer and surplus base and catalyst components from the cartridge nozzle, insert the plug and screw on the protective cap.

4.0 Cleaning

4.1 Use thinner solvent like DCP Solvent to clean the tools within the pot life of the grout.

Section C : Cautions

Health and safety

Keyfix E is irritant to skin, eyes and respiratory system. Wear suitable gloves and eye protection.

Fire:

Keyfix E 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 **Keyfix E**. 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.

