



Technical Data Sheet

HARDFIX EP

Epoxy resin anchoring and fixing grout.

Description

HARDFIX EP is fast set, medium viscosity, solvent free, two-components epoxy adhesive.

HARDFIX EP is a two-component product. Components are Red and white in color, when mixed at 1:1 ratio turn into a uniform Pinky color paste that bond to steel and concrete surfaces.

Applications

HARDFIX EP is a fast set, high strength adhesive primarily designed as a general-purpose fast set epoxy paste for filling gaps, holes, and surface irregularities, and for bonding of steel elements, natural stone, and polyethylene elements.

Advantages

- High compressive and Early strength.
- High bond strength to concrete and steel surfaces.
- Good chemical resistance.

Technical properties

Appearance (Mixture)	Smooth reddish Colour free from lumps	
Mixed density	1.18 ±0.1 @ 25°C	
Compressive yield strength ASTM D695-02a	≥ 65 MPa @ 7days	
Bond strength to concrete	Greater than the tensile strength of concrete	
Temperature of the Base Material	Working Time	Curing Time
40°C	7 min	4 hours
25°C	13 min	10 hours
20°C	25 min	12 hours
10°C	100 min	24 hours

Setting time and pot life will vary depending on temperature and size of mix; extending at lower temperatures and smaller thickness of application. Pot life and set time given in table above were determined using a 200g mix. At temperatures above 25°C the material workability increases as does the rate of strength development. At temperatures lower than 25°C the material workability decreases, and strength development slows.

For



Method of use

Substrate Preparation

- The substrate should be sound, clean, and free from grease or any contamination.
- Bars should be free from any loose rust deposits.
- Holes can be drilled using a hammer drill to produce a rough surface or by coring to produce a smooth surface.
- Deformed or ribbed bars will give a higher performance than smooth or other bar types. After drilling, holes should be brushed and blown out twice, to remove all drilling debris.

Mixing

One part of component A should be mixed to one part of component B. To avoid waste, only mix sufficient quantities that can be used within the pot life.

Components should be scooped from the tins and mixed together thoroughly using a spatula or palette knife in a suitable tin or board, until a uniform grey paste is obtained.

Application

The mixed material should be poured into the prepared holes. The bar/bolt should then be pressed and twisted into the grout.

Disclaimer:

We hope that the information herein will be helpful. The data is based upon knowledge considered to be accurate and true and is offered for the user consideration, investigation and verification in the application intended. We do not warrant the results or performance attained due to the nature of the influence of other constituent components in the application.



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Design Consideration

A) Minimum Hole Depth H_D

As per BS8110, minimum Hole Depth H_D (or length of embedment) is shown below, allowing for 40% factor of safety.

$$H_D = \frac{0.6 F_Y}{F_C \pi \phi_H} \cdot \frac{\pi}{4} \phi_B^2$$

$$H_D = \frac{0.6}{4} \cdot \frac{F_Y}{F_C} \cdot \frac{\phi_B^2}{\phi_H}$$

Noting that:

F_Y : Yield strength of the steel (N/mm²)

F_C : Concrete bond stress (N/mm²)

ϕ_B : Bar Diameter (mm)

ϕ_H : Hole Diameter (mm)

H_D : Minimum Hole Depth (length of Embedment) (mm)

π : 3.14

B) Calculation of the Pullout Force (F) in tension using the minimum hole depth (H_D) shown in A is as follows:

$$H_D = \frac{0.6}{4} \cdot \frac{F_Y}{F_C} \cdot \frac{\phi_B^2}{\phi_H}$$

$$F_C \pi \phi_H H_D = 0.6 F_Y \cdot \frac{\pi}{4} \phi_B^2$$

The Pullout Force (F) is equal to F_Y * Steel Bar Area. The Steel Bar Area is equal to

$$\frac{\pi}{4} \phi_B^2$$

then:

$$F_C \pi \phi_H H_D = 0.6 F$$

$$F (N) = \frac{\pi}{0.6} \cdot F_C \cdot \phi_H \cdot H_D$$

$$F (KN) = (5.23 \cdot F_C \cdot \phi_H \cdot H_D) \div 1000$$

Thicknesses and size limitations

HARDFIX EP is suitable for grouting hole diameter sizes that exceed the bar diameter by 4mm to 32mm.

Storage

12 months when stored properly in unopened container in dry conditions at temperature between 10 - 25°C.

Cleaning

All tools shall be cleaned immediately after application using **Envirocon -Solvent**. Hardened materials must be cleaned mechanically.

Packaging

HARDFIX EP is available in 8L liter kit

Theoretical Yield

To calculate volume of HARDFIX EP required in ML:

$$\text{Volume (ML)} = \frac{\pi}{4000} \cdot (\phi_H^2 - \phi_B^2) \cdot H_D$$

Health and Safety

Avoid skin and eye contact by wearing overalls, gloves, goggles, and air-mask etc. Spillage on skin should immediately be removed by thorough washing with water and soap or suitable cleaner. Eye should be flushed with fresh water.

Avoid inhalation of vapors and paint mist by wearing suitable air-mask. In the event of ingestion and eye contact, seek medical attention immediately. Smoking in the area should not be permitted. Local safety regulations should be followed.

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E n v i r o c o n C o n s t r u c t i o n P r o d u c t s L L C

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