

Polyester resin anchoring grout meeting requirements of BS EN 1504-6: Anchoring of reinforced steel bars.



## Uses

Lokfix mix and place anchoring grouts are used for anchoring of steel bars into concrete, brickwork, masonry and rock. Recommended applications include:

- Installation of starter bars
- Base plate bolts
- MOT Bolts
- Installation of balustrades
- Installation of barriers and safety fences
- Installation of tie bars

## Advantages

- Easy to mix and apply
- Rapid strength gain
- Vibration resistant
- Corrosion resistant
- Non-expansive
- Can be placed underwater
- Increased flowability
- Two grades specifically for vertical and horizontal / overhead use

## Description

Lokfix is a two component polyester anchoring grout supplied in pre-measured quantities. The material cures quickly to give consistent, high performance anchorages. The two versions of Lokfix are available :

### Lokfix S25 - Blue lid

Pourable grade, 25 minute gel time at 20°C for use in vertical down holes where the hole is 8 to 40 mm greater in diameter than the bar.

### Lokfix P25 - Yellow lid

Thixotropic grade, 25 minute gel at 20°C for use in overhead or horizontal holes where the hole is up to 25 mm greater in diameter than the bar. The thixotropic nature of Lokfix P25 reduces flow of grout out of the hole.

### Specification Clause

The anchor grout should be Lokfix S25 pourable grout in vertical downwards holes or Lokfix P25 in horizontal and overhead holes. The anchor grout should comply with the requirements of BS EN1504-6 and have a compressive strength of 100 MPa at 28 days.

### Standards compliance

Lokfix S and Lokfix P complies with the requirements of BS EN 1504-6 : Anchoring of reinforced steel bar.

Lokfix S and Lokfix P conforms to the requirements of Highways Agency Interim Advice Note 104/07: The anchorage of reinforcement and fixings in hardened concrete

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|                             |  |
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| EN 1504-6<br>Concrete repair products for Anchoring of reinforced steel bar                                      |  |
| Chloride ion content   | ≤ 0.05%                                  |
| Testing of anchoring products by pull out method   | @ 75 KN load <0.6 mm                     |
| Determination of creep under sustained load  | Displacement <0.6 mm after 3 months load |
| Glass Transition temperature   | >45 °C                                   |
| Reaction to fire   | Class B s1 d0                            |
| Dangerous substances   | Complies with 5.3                        |

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## Properties

The following results were obtained at a temperature of 20°C unless otherwise stated.

| Test method  | Standard        | EN 1504 - 6 Requirement                                       | Result  |                            |                        |
|--|-----------------|---|---|----------------------------|------------------------|
|  |                 |   | Lokfix S25  | Lokfix P25                 |                        |
| <b>Testing of anchoring products by pull out method</b>    | EN 1881:2006    | Displacement < 0.6 mm @ 75 KN load                            | Dry 0.40 mm<br>Wet 0.44 mm  | Dry 0.34 mm<br>Wet 0.43 mm |                        |
| <b>Determination of creep under sustained tensile load</b> | EN 1544:2006    | Displacement < 0.6 mm after 3 months of continuous 50 KN load | 0.47 mm   | 0.41 mm                    |                        |
| <b>Chloride ion content:</b>                               | EN 1015-17:2000 | ≤ 0.05 %  | 0.00%   | .000%                      |                        |
| <b>Determination of glass transition Temperature</b>       | EN 12614:2006   | >45°C or >20°C above ambient                                  | 67.2° C   | 73.5° C                    |                        |
| <b>Compressive Strength</b>                                | EN 12190        | -   | 100 MPa 28 days   | 100MPa                     |                        |
| <b>Tensile Strength</b>                                    | BS 6319 Pt.7    | -   | 11MPa 28 days   | 11 MPa                     |                        |
| <b>Flexural Strength</b>                                   | BS 6319 Pt. 3   | -   | 20 MPa 28 days  | 19 MPa                     |                        |
| <b>Gel time / minimum loading time</b>                     | -               | -   | Temp °C   | Gel Time                   | Min loading time (hrs) |
|  |                 |   | 5   | 130                        | 12                     |
|  |                 |   | 10  | 65                         | 5                      |
|  |                 |   | 20  | 25                         | 2                      |
|  |                 |   | 30  | 10                         | 1                      |
| <b>Chemical resistance</b>                                 |                 |   | The cured resin is resistant to fresh and salt water, petrol, oils, grease and most acids, alkalis and solvents. Consult Fosroc Technical Services for specific chemical resistance |                            |                        |
| <b>Minimum anular gap</b>                                  | -               | -   | 4 mm  |                            |                        |
| <b>Maximum anular gap</b>                                  | -               | -   | 20 mm   |                            |                        |

**Clarification of property values:** The typical properties given above are derived from laboratory testing. Results derived from field applied samples may vary.

## Design Criteria

### Selection of grout version

The version of Lokfix grout chosen will depend on anchor conditions (see 'Description').

### Parameters of anchor design

The high strength of the cured resin permits strong anchors to be created. Ultimate strength is varied by:

- Strength of host material
- Length of resin bond to bar
- Hole preparation and formation
- Type and dimension of bar

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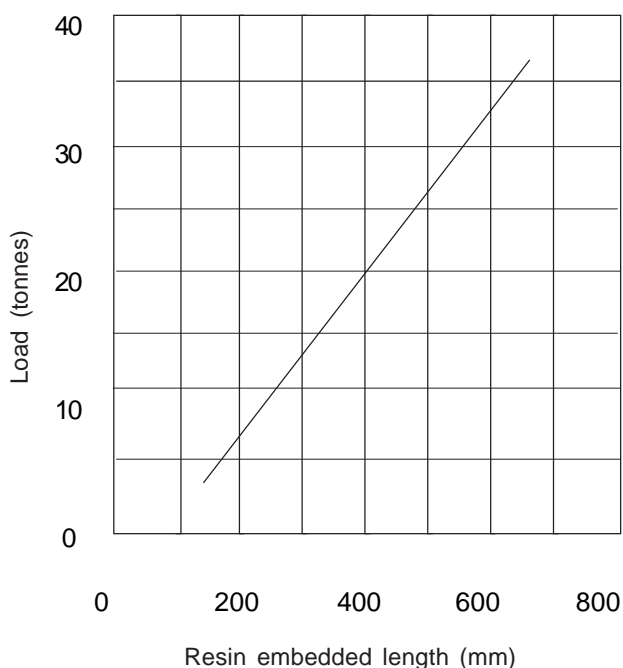
## Design Criteria cont.

### Typical loads attained

Concrete: 20 N/mm<sup>2</sup> unreinforced.

Bar: Deformed rebar to BS 4449.

Hole: Air-flushed rotary percussive drilled.



*Note: The graph illustrates typical failure loads. Minimum safety factors of 1.5 in non-critical and 2 in critical cases should be considered for design purposes. Where relevant, the local codes of practice or standards must also be considered in relation to anchorage length.*

## Application Instructions

### Hole preparation and formation

Optimum performance of Lokfix grouts requires rough sided, dust-free holes. Use of rotary percussive drills with air or water flushing is recommended.

Diamond drilled holes should be under-reamed or the surface roughened with a drill steel.

Cast holes should preferably be of inverse dovetail configuration. If parallel sided holes are cast they should be rough to provide adequate keying.

### Bar preparation

All bars should be deformed. They should preferably be degreased and all flaky rust removed.

### Mixing

A complete pack of resin and catalysed filler should be mixed in one operation. Mixing may be carried out manually or

mechanically. When a smooth, even consistency is achieved the grout is ready for use and should be placed well within the gel time of the grout.

Packs have been designed to produce practical and economic volumes of grout.

DO NOT attempt to mix partial pack components.

## Installation

### Lokfix S25

Using the calculated volume of grout based on the estimating guide table, the grout should be poured steadily into the prepared holes. The anchor bar is then pressed into the hole to the required depth; slight agitation will assist in achieving a complete bond. The bar should be left undisturbed in the required position until the resin is set.

### Lokfix P25

The grout should be injected to the rear of the hole to avoid air entrapment. The thixotropic nature of Lokfix P25 will prevent significant flow of resin out of the hole.

## Cleaning

Any mixing drums, pumps, etc., should be cleaned with Fosroc Solvent 105 within the pot life of the grout. Cured material can only be removed mechanically.

## Supply

Lokfix S25 - Blue Lid

Lokfix P25 - Yellow Lid

The pack consists of a can of resin and a plastic bag of hardener contained in a plastic mixing pail with a snap-on lid. Volume of mixed components: 2.5 litres.

## Storage

Store in accordance with the Highly Flammable Liquids and Liquefied Petroleum Gases Regulations 1972. Shelf life of 12 months at 20°C will be reduced at higher temperatures.

## Limitations

### Fire resistance

Resin anchors should not be used where structural load bearing performance has to be maintained in anchors subjected to fire conditions. Conbextra GP or Conbextra HF would be suitable in this case. Contact Fosroc Technical Service for advice.

## Precautions

### Health and safety

For further information see appropriate Product Safety Data Sheet available from [www.fosroc.com](http://www.fosroc.com)

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## Fire

Lokfix products and Fosroc Solvent 105 are flammable. Do not expose to naked flames or other sources of ignition. No Smoking. Containers should be tightly sealed when not in use. In the event of fire, extinguish with CO<sub>2</sub> or foam.

## Flash points

|                            |      |
|----------------------------|------|
| <b>Lokfix S25:</b>         | 29°C |
| <b>Lokfix P25:</b>         | 29°C |
| <b>Fosroc Solvent 105:</b> | 43°C |

## Estimating guide

To find the quantity of material required

The table below indicates the quantity of material in litres required for each 100 mm of hole depth.

Example

- 100 fixings, each using a 20 mm diameter bolt into a 38 mm diameter hole which is 300 mm deep.
- From the table: 20 mm diameter bolt and 38 mm diameter hole gives **0.082 litre** per 100 mm depth of hole therefore **0.082 litre** x 3 (300 mm deep hole) equals **0.246 litre** per hole/fixing.
- As 100 fixings are required: 100 x 0.246 litre = **24.6 litres total**.
- Lokfix S25 and Lokfix P25 are supplied in 2.5 litre packs therefore 24.6/2.5 = 9.84 10 packs required

NB: This example and the table below quotes net quantities and makes no allowance for overdrilling the hole or for any wastage. A typical allowance to cover these factors is approximately 10%.

## To determine the quantity of material per 100 mm of hole depth

| Hole diameter | Bolt diameter |             |             |             |             |             |             |             |
|---------------|---------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|               | 12 mm         | 16 mm       | 20 mm       | 25 mm       | 32 mm       | 38 mm       | 44.5 mm     | 51 mm       |
| 20 mm         | 0.020 litre   | —           | —           | —           | —           | —           | —           | —           |
| 25 mm         | 0.038 litre   | 0.029 litre | —           | —           | —           | —           | —           | —           |
| 32 mm         | 0.069 litre   | 0.060 litre | 0.049 litre | 0.031 litre | —           | —           | —           | —           |
| 38 mm         | —             | 0.093 litre | 0.082 litre | 0.064 litre | —           | —           | —           | —           |
| 45 mm         | —             | —           | 0.128 litre | 0.110 litre | 0.079 litre | 0.046 litre | —           | —           |
| 51 mm         | —             | —           | —           | 0.155 litre | 0.124 litre | 0.091 litre | —           | —           |
| 57 mm         | —             | —           | —           | 0.206 litre | 0.175 litre | 0.142 litre | 0.100 litre | —           |
| 64 mm         | —             | —           | —           | 0.273 litre | 0.241 litre | 0.208 litre | 0.166 litre | 0.117 litre |
| 76 mm         | —             | —           | —           | —           | —           | 0.340 litre | 0.298 litre | 0.249 litre |



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Certificate number FM 610