Lokfix S(FS)

Fast setting Polyester Resin grouts

Uses

Lokfix S(FS) used for high strength corrosion resistant anchoring of bolts and bars from 12 - 51mm diameter into concrete, rock, masonry or brickwork where high speed of installation and early application of load is required.

Permanent installation of reinforcement starter bars, foundation bolts, base plates, balustrading, barriers and safety fences, railway tracks, tie-back anchors, reinforcement dowelling abutments, ground anchors for towers, cranes, dock sills.

Advantages

- Rapid setting & strength gain
- Vibration resistant
- Corrosion resistant
- Non expansive
- Can be placed under water

Description

Lokfix S(FS) is a fast setting, premeasured, two part filled polyester resin grouts for application at temperatures between 8 deg C to 27 deg C.

Lokfix S (Small aggregate)

Lokfix S(FS) is used where the difference between the hole diameter and bar diameter is < 25mm.

Lokfix S(FS) is used for vertical or horizontal holes where hole and bar relationship conforms to Lokfix Polyester resin Grout S.

Properties

Specific gravity

Lokfix S(FS) : 1.95 $\pm$ 0.05

Technical support

Fosroc offers a comprehensive range of high performance, high quality concrete repair and construction products. In addition, Fosroc offers technical support service to specifiers, end-users and contractors, as well as on-site technical assistance in locations all over the country.

Design criteria

The version of Lokfix grout to be used will depend upon ambient temperature and anchor conditions.

The high strength of the cured resin permits strong anchors to be created. The ultimate bond strength developed depends upon:

Strength of host material

Length of resin bond to bar

Hole preparation and formation

Type and dimension of bar

The following formula may be used to determine the minimum depth of installation for Type 1 rebar bolts, to ensure the shear stress within the concrete is kept within the limits set out in BS 8110.

$$\text{Minimum hole depth} = \frac{0.6Y}{SPd_2} \cdot \frac{Pd^2_1}{4} = \frac{0.15Yd^2_1}{Sd_2}$$

where Y is characteristic yield strength of steel (460 N/mm^2)

S is permitted shear stress in concrete (N/mm^2)

d_1 is bar diameter (mm)

d_2 is hole diameter (mm)

This formula is used typically as shown in Table 1.

Table 1

Minimum hole depth

Characteristic concrete strength (N/mm^2):			20	25	30	> 40
Permitted concrete shear stress using Type One Bar (N/mm^2):			1.8	2.0	2.2	2.5
Bar diameter (mm)	Yield (tonnes)	Hole diameter	Minimum hole depth (mm)			
12	5.2	20	280	250	225	200
16	9.3	20	490	445	400	355
20	14.5	25	615	555	500	440
25	22.6	32	750	675	615	540
32	37.0	38	1035	930	845	745
40	57.8	45	1365	1225	1115	980

Properties

Gel time Temp(^{0}C)	Gel time (min)	Minimum time required before loading (hours)
8	40	6
18	24	4
27	10	2

Lokfix S(FS)

Compressive strength : After the minimum time required before loading the grout typically attains a compressive strength in excess of 20N/mm^2 and an ultimate compressive strength of 70N/mm^2 in 7 days (50mm x 50mm x 50mm) when tested as per BS 6319 Part 2 : 1983.

Chemical resistance : The cured resin is resistant to fresh and salt water, petrol, oils, grease and most acids, alkalis and solvents.

Application instructions

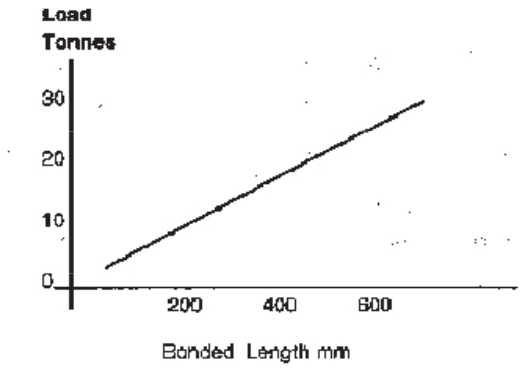
Selection of grout version

Parameters of anchor design

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

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

Fig.1 Typical loads attained



Concrete : 20N/mm^2 unreinforced

Bar : 25mm dia Deformed rebar to IS:1786

32mm dia hole: Air-flushed rotary percussive drilled

Note : The graph illustrates typical failure loads.

Minimum safety factors of 1.5 in non critical and of 2 in critical cases should be considered for design purposes. Wherever relevant, the local code of practice or standard must also be considered in relation to anchorage length.

Hole preparation and formation

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

Diamond drilled holes should be under-reamed unless necessary safety factors are incorporated.

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

Bar preparation

All bars 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 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 (See properties).

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

Do not attempt to mix partial pack components.

Installation

Lokfix S(FS) polyester resin grout

Using the calculated volume of grout based on Table 1, 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 of the bar will assist in achieving a complete bond. The bar should then be left undisturbed in the required position until the resin is set.

Cleaning

Any mixing drums, pumps, etc. should be cleaned within the pot life of of the grout. Nitoflor Sol is available for this purpose.

Lokfix S(FS)

Table 1

Quantity estimating guide

Table indicates volume of Lokfix polyester resin grout in cm^3 /100mm bond

Hole diameter mm	Bolt diameter mm 12	16	20	25	32	40
20	25					
25	50	40	25			
32	80	70	60	40		
38		100	100	75	45	
45			150	130	100	45
50				180	150	90
62					280	225

These figures allow for a 25% wastage factor.

If the anchor is in very old concrete, masonry or brickwork the wastage factor should be increased.

No of bolts/200 mm deep hole which can be fixed using a 2.5 litre pack of Lokfix

Hole diameter mm	Bolt size mm 12	16	20	25	32	40
20	50					
25	25	31	50			
32	15	17	21	31		
38		12	12	16	27	
45			8	9	12	27
50			6	8	9	13
62			4	4	5	5

Estimating

Packaging

Lokfix S(FS) : 0.5 L Packs
Nitoflor Sol : 5 litres and 20 litres.

Storage

The product should be stored away from high temperature.6 months shelf life when stored below 25^0C in original unopened containers.

Precautions

Fire resistance and creep

At operating temperatures above 40^0C, the creep of Lokfix polyester resin grout resin under load may become significant. Resin anchors should not be used where structural load bearing performance has to be maintained in anchors subjected to fire conditions.

Health and safety instructions

Confined areas must be well ventilated and no naked flames allowed. Contact with the skin should be avoided as certain sensitive skins may be affected by contact with the polyester resin. In such cases if contact with the resin occurs, the skin should be washed immediately with soap and water - not solvent. Gloves and barrier creams should be used when handling these products. Eye contamination must be immediately washed with plenty of water and medical treatment sought.

Fire

Lokfix S(FS) polyester resin grout resin is flammable. Confined areas must be well ventilated and no naked flames allowed. Do not smoke during use.

Flash point

Lokfix S(FS) 29^0C

Nitoflor Sol 33^0C

Additional information

The Fosroc range of associated products includes high strength cementitious grouts, epoxy grouts. Also available a range of products for use in construction; viz., admixtures, curing compounds, release agents, flooring systems and repair mortars.

Separate datasheets are available on these products.

Important note :
Fosroc products are guaranteed against defective materials and manufacture and are sold subject to its standard terms and conditions of sale, copies of which may be obtained on request. Whilst Fosroc endeavours to ensure that any advice, recommendation specification or information it may give is accurate and correct, it cannot, because it has no direct or continuous control over where or how its products are applied, accept any liability either directly or indirectly arising from the use of its products whether or not in accordance with any advice, specification, recommendation or information given by it.

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