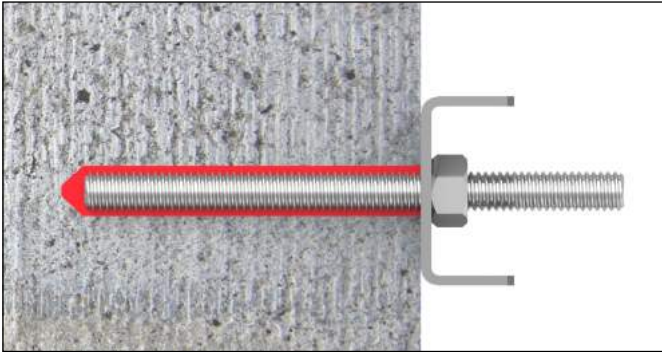


Fosroc® Lokfix E55

Styrene free vinyl-ester resin based cartridge system, for anchoring reinforcement, fixings into a variety of substrates.



Uses

For concrete (solid, porous and light), masonry and hollow bricks.

- Accredited for use in dry, damp and flooded concrete substrates
- Can be used with cracked concrete
- Fixing of post installed reinforcement*
- Anchoring of threaded rod fixings
- Anchoring of internal threaded rod sleeves
- Internal, external and submerged conditions
- Can be applied to almost any size of fixing
- For horizontal, vertical and overhead application
- Bonding and surface crack sealing applications

Advantages

- High bond strength
- Rapid return to service
- Can use with a good quality skeleton gun (300ml size)
- No additional mixing equipment required
- Does not apply expansive force to the substrate
- Enables fixings closer to edges than mechanical anchors
- Resistant to a variety of chemicals
- Re-usable by replacing the static mixer
- Low VOC
- Waterproof, protecting the fixing from corrosion
- Performs over a wide variety of temperatures

- C1 seismic resistance, Lokfix E55S only
- Fire rated up to 2 hours, Lokfix E55S only

Description

Lokfix E55 is a two component vinyl-ester anchoring material, supplied in single component cartridges with a static mixer nozzle. When applied it sets and cures rapidly to firmly secure a variety of steel fixings into concrete and masonry substrates.

Two grades of Lokfix E55 are available, selection is based upon substrate installation temperature and compliance :

Lokfix E55S: Standard temperature grade, optimised for substrate installation temperatures between -10 to +40°C.

Lokfix E55L: Low temperature grade, optimised for substrate installation temperatures: -20 to +15°C. Lokfix E55L does not have C1 seismic approval or fire testing.

Other grades of Lokfix are also available

Lokfix E35 Resin anchor cartridge system based on styrene free polyester for lightweight fixings into concrete and masonry

Lokfix E75 Resin anchor cartridge system based on pure epoxy for heavy duty anchoring.

Specification Clause

The anchor grout shall be Fosroc Lokfix E55 cartridge system. The Anchoring grout shall comply with ETA-18/0587, ETA-18/0586 and ETA-18/0585 and have a fire resistance of 120 minutes.

Standards Compliance

Lokfix E55S complies with European approval to EAD-33087-00-0601 for use in post-installed rebar, which supersedes ETAG 001 TR 023 (rebar).

Lokfix E55S and **Lokfix E55L** comply with the following standards:

- European approval to EAD-330499-00-0601 option 1 for use in cracked and un-cracked concrete, which supersedes ETAG 001 option 5 for use in concrete.
- European approval to EAD-330076-00-0604 for use in anchoring masonry, which supersedes ETAG TR 029 , anchoring in masonry.
- Émissions dans l'air Intérieur : A+

Fosroc® Lokfix E55

- LEED compliant VOC Level
- Fire resistance <120mins
- Seismic C1 testing as part of EAD 330499-00-0601 for specific fastening sizes.



Table 1—Material Properties

Compressive Strength (EN196)	100 MPa
Flexural Strength (EN196)	15 MPa
E Modulus (EN196)	14,000 MPa
Shore D Hardness	90
Density	1.77kg/L
Permanent Service Temperature	-40 to +72°C
Temporary Service Temperature	-40 to +120°C
Electrical resistance (IEC93)	3.6 x10 ⁹ Ωm
Thermal Conductivity (IEC 600093)	0.65W/m.K

Chemical resistance

Lokfix E55 has resistance to a wide variety of chemicals. Consult Fosroc technical department for specific data.

Table 2 - Lokfix E55S Gel & *Dry Curing Times

For optimal use the cartridge temperature should be between +15 to +30°C

Substrate Temp.	Gel Time (mins)	*Dry Curing Time (mins)
-10°C**	90	1440
-5°C	90	840
0 °C	45	420
+5°C	25	120
+10 °C	15	80
+20 °C	6	45
+30 °C	4	25
+35 to 40°C	2	20

Table 3—Lokfix E55L Gel & *Dry Curing Times

For optimal use the cartridge temperature should be between +10 to +20°C.

Substrate Temp.	Gel Time (mins)	*Dry Curing Time (mins)
-20°C**	75	1140
-15°C**	55	960
-10 °C**	35	600
-5°C	20	300
0 °C	10	150
+5 °C	6	80
+10 °C	6	45
+15 °C	4	25

* The tables are for dry conditions. In wet/damp conditions, the gelling and setting times will double.

**For installations below -10°C the cartridge must be conditioned between +10°C and +20°C.

Note, the substrate temperature can vary significantly from the ambient temperature.

Fosroc® Lokfix E55

Design Criteria

Table 4 - Setting Parameters – details below

Un-cracked Concrete Rebar				Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø28	Ø32
Anchor Size												
Edge Distance		$C_{cr,N}$	mm	92	126	152	173	188	253	303	323	341
Min. Edge Distance	5 x d	C_{min}		40	50	60	70	80	100	125	140	160
Axial Distance		$S_{cr,N}$		184	252	304	346	376	506	606	646	682
Min. Axial Distance	5 x d	S_{min}		40	50	60	70	80	100	125	140	160
Embedment Depth		h_{ef}		80	90	110	115	125	170	210	250	270
Anchor Diameter		d		8	10	12	14	16	20	25	28	32
Drill Diameter		d_0		12	14	16	18	20	24	32	35	40
Brush Diameter				14	16	18	20	22	26	34	37	41.5
Installation Torque		$T_{inst.}$	Nm	10	20	40	50	60	120	150	200	250
Material Consumption			ml	6	7	10	12	15	24	66	88	124

Table 5 - Setting Parameters – details below

Un-cracked Concrete Threaded Rod				M8	M10	M12	M16	M20	M24	M27	M30
Anchor Size											
Edge Distance		$C_{cr,N}$	mm	92	126	152	188	253	291	312	329
Min. Edge Distance	5 x d	C_{min}		40	50	60	80	100	120	135	150
Axial Distance		$S_{cr,N}$		184	252	304	376	506	582	624	658
Min. Axial Distance	5 x d	S_{min}		40	50	60	80	100	120	135	150
Embedment Depth		H_{ef}		80	90	110	125	170	210	250	270
Anchor Diameter		d		8	10	12	16	20	24	27	30
Drill Diameter		d_0		10	12	14	18	24	28	32	35
Brush Diameter				12	14	16	20	26	30	34	37
Installation Torque		$T_{inst.}$	Nm	10	20	40	60	120	150	200	250
Material Consumption			ml	3	4	5	7	24	35	58	69

Note tables 4 and 5 are for dry un-cracked concrete only. For all other conditions including fixings into solid and hollow masonry types, fixings into cracked concrete, fixings subject to seismic conditions and post installation of reinforcement

refer to the relevant method statement, EAD document or use the design software www.lokfix.com, also available through your local technical office.

Fosroc® Lokfix E55

Assistance and qualification

Design of fixings and reinforcement must be undertaken by suitably qualified personnel with understanding of the construction and use of the structure, the use of the fixing, as well as being in compliance with local legislation.

In applications where fixings or rebar must be designed and applied in compliance with the requirements of the ETA, designers should consult the relevant Fosroc accreditation documents.

Fosroc provides software which may be used to aid design, available at www.lokfix.com or through your local technical office.

Product Installation

Full details are available in the application method statement, a copy of which may be obtained from your local Fosroc technical department.

The following methodology is for installation into solid substrates such as reinforced concrete. For hollow substrates please request a separate method statement.

Hole Formation and Preparation

Drill hole with percussive drill ensuring sides of the concrete are rough.

If rebar is struck immediately stop drilling and seek the advice of the designing engineer.

Clean holes immediately prior to installation of fixings to avoid them becoming re-contaminated.

Standing water in the hole shall be removed prior to preparation.

Using a hand pump or compressed air insert the nozzle to the back of the hole and blow out 4 times.

Insert a wire cleaning brush to the bottom of the hole and brush out 4 times

Using a hand pump or compressed air insert the nozzle to the back of the hole and blow out an additional 4 times.

If dust is still present, repeat the process until no further dust is visible.

Ensure the drill bit and the cleaning brush are of suitable diameter for the fixing used.

Threaded rod:

Drill bit \varnothing = rod diameter +2mm

Wire brush \varnothing = rod diameter +4mm

Reinforcement:

Drill bit \varnothing = rod diameter +4mm

Wire brush \varnothing = rod diameter +6mm

Fixings Preparation

Fixings shall be free from rust, paint, grease and contaminants which will interfere with the bond.

Mark the required depth on your fixing.

Installation

Unscrew the fixing cap. Pull the plastic within the tube slightly upwards so that the steel collar is exposed, cut the plastic tube competently removing the metal clip and discard.

Screw the static mixer nozzle onto the cartridge. Place the cartridge into the application gun.

Pull the trigger to extrude the Lokfix E55.

Important: extrude the initial material until the colour becomes grey and consistent. This typically takes two or three full squeezes. Discard material that is streaky in colour.

Insert the nozzle to the back of the hole and pump the Lokfix material gently pulling back until the hole is $\frac{3}{4}$ full. Ensure there are no voids in the resin. If the hole is too deep for the nozzle to reach the back, use a nozzle extender.

In wide/overhead holes a piston plug will help reduce slump and ensure a void free application.

Observing the product gel time, insert the fixing into the hole using a gentle twisting motion. Ensure the fixing is inserted to the required depth and is held straight until the resin sets. There should be some extrusion of the Lokfix material from the hole which indicates that there is full embedment.

Do not load or apply tension to the fixing until the product fixing time has been observed, see tables 2 & 3.

Do not over-tighten fixings. Observe maximum installation torque as stated in tables 4 & 5 for un-cracked concrete.

Fosroc® Lokfix E55

If the cartridge is to be re-used, remove the mixing nozzle and re-apply the cap. When using again a new mixing nozzle will be required.

Cleaning

Wet resin should be removed from tools and equipment using Fosroc Solvent 105 immediately after use.

Estimating

Supply

Lokfix E55S and Lokfix E55L are supplied in boxes of 12 no. 300ml cartridges, each supplied with a single mixer nozzle.

Fosroc may also supply:

- Steel cleaning brushes, in various diameter to clean the hole.
- Dust blower pump, one size, hand held to clean the hole.
- Hollow block sleeves, in a variety of diameters and embedded lengths for hollow bricks and blocks, can be used for solid brick.
- Extension nozzle, essential where the embedment depth is greater than 190mm. In various lengths.
- Piston plugs, required where the hole diameter is >20mm or where embedment depth is >240mm. Must be used with an extension nozzle.
- Application guns, hand held for cartridge application.
- Spare mixer nozzles, required if a cartridge is to be re-used.

Yield

Standard yield estimation is provided in tables 4 and 5 based on the hole diameter, fixing size and embedded length.

For non-standard consumption the following calculation of theoretical consumption may be used. factors such as over-drilling, extrusion from bolt hole, initial gun extrusion and some wastage should also be considered.

$(\pi \text{ radius cm hole}^2 - \pi \text{ radius cm bolt}^2) \times \text{hole length cm} = \text{consumption ml.}$

Limitations

Load calculations should always be undertaken by a qualified engineer.

When embedding into hollow masonry it is normally necessary to use hollow block sleeves. Consult separate method statement.

For applications into natural or decorative stone staining may occur. Check suitability before use.

Storage

300ml cartridges have a maximum shelf life of 12 months when kept in a dry warehouse at between +5 to +25°C.

Precautions

Health & Safety

Observe the information provided on the relevant SDS.

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