Fasloc® SF Styrene-Free

New generation of resin capsules

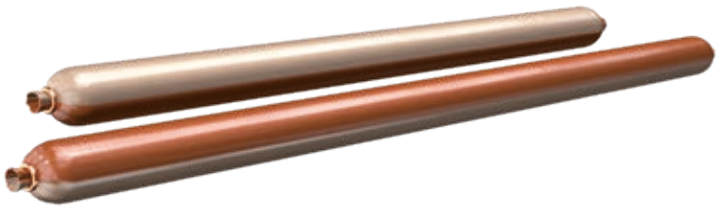


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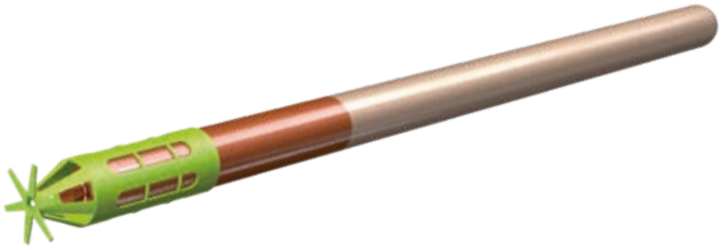
Fasloc® SF Styrene-Free

Introducing a new generation of resin capsules with a completely new styrene-free formula

Fasloc® SF Styrene-Free resin capsules are an innovative anchoring solution designed to deliver high performance, improved safety, and easier handling. At the core of Fasloc® SF is a styrene-free formulation that creates immediate value for both professionals on site and organizations responsible for safety, logistics, and sustainability. Fasloc® SF is not classified as hazardous material, which significantly reduces effort and complexity when it comes to transport, storage, and daily handling.
In addition, the product offers an extended shelf life compared to styrene-based formulations, giving users more flexibility in project planning and inventory management. Beyond handling advantages, Fasloc® SF delivers enhanced performance where it matters most. The formulation provides stronger anchorage strength, ensuring reliable and durable fastening even under demanding conditions. With higher pull-out resistance, users can trust the system to perform consistently and safely over time. The product also shows improved bolting behavior, supporting precise installation and dependable load transfer. Safety is another defining pillar of Fasloc® SF Styrene-Free. The product is odorless and contains no VOC (volatile organic compounds), making it far more comfortable to use. By eliminating styrene, Fasloc® SF significantly reduces exposure to potential health risks, supporting safer working conditions.



Fasloc® SF Single Speed resin capsules



Fasloc® SF Duo Speed resin capsules

Fasloc® SF resin capsules consist of a clear plastic, heat-sealed sheath clipped at both ends. Inside are two separate compartments containing:

— A colour-coded, reinforced styrene-free resin mastic of defined setting speed
— A catalyst/hardener that activates the resin

In the standard two-part design, the resin and catalyst are mixed during bolt installation. In the Duo Speed version, two distinct resin gel times – fast and slow – are combined within a single capsule, allowing sequential anchoring and tensioning in one convenient package.
When the bolt rotates through the capsule in the borehole, both compartments rupture, mixing the components and initiating rapid polymerisation. Size-graded fillers assist in shredding the film, improving mixing, and interlocking with the rock interface to minimise strata movement. This results in quick installation and rapid achievement of full load-bearing strength.
Short encapsulation pull tests have shown Fasloc® SF resin capsules to provide superior load transfer compared to similar products.

Fasloc® SF capsules are available in two catalyst formulations:

— **Water-based:** Fasloc® SF S Single Speed and Fasloc® SF S Duo Speed
— **Oil-based:** Fasloc® SF HS Single Speed and Fasloc® SF HS Duo Speed

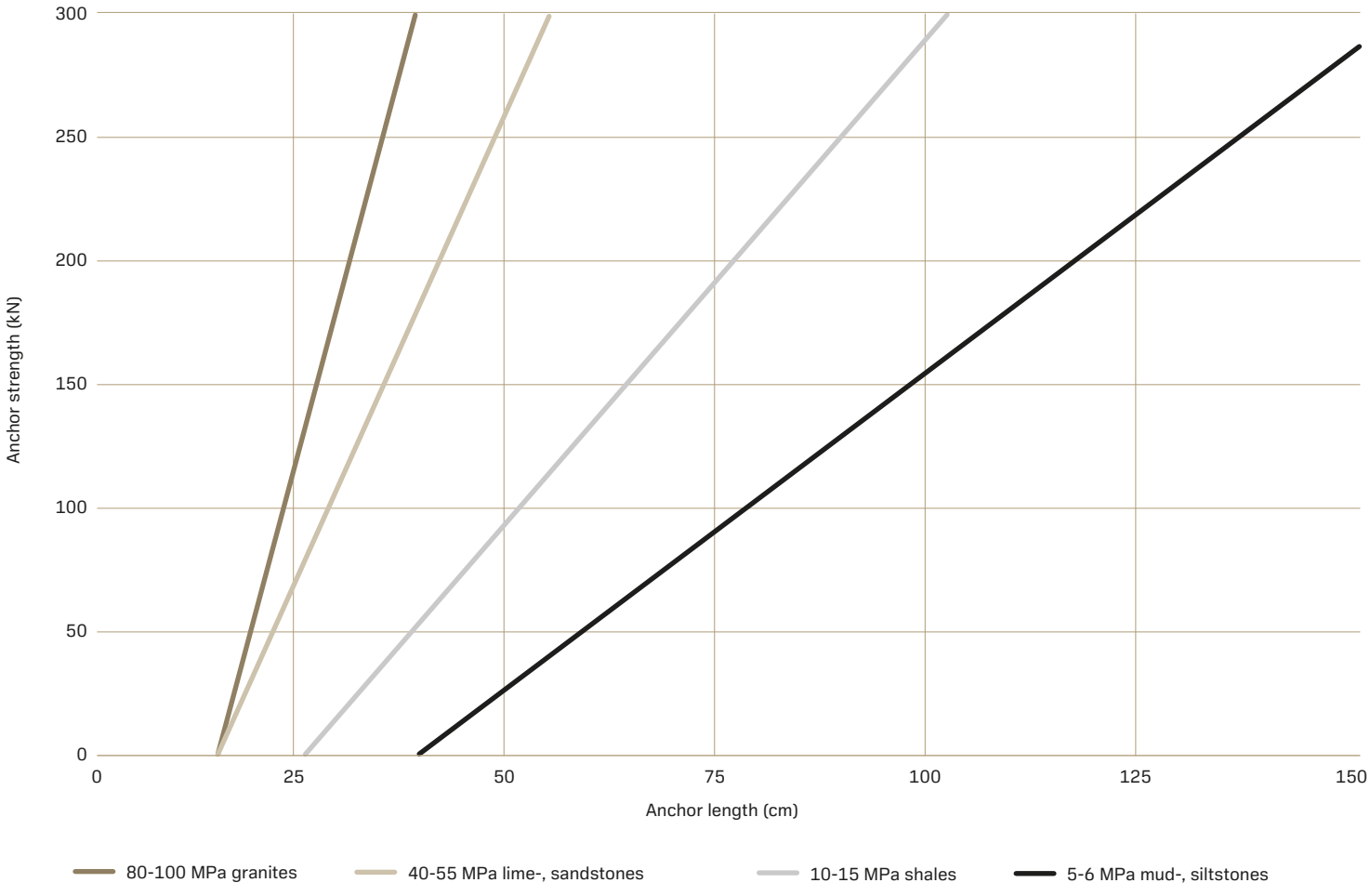
The oil-based **Fasloc® SF HS (High Strength)** variants deliver higher unconfined compressive strength (UCS) and mechanical performance, meeting standards such as BS 7861-1:2007 and SANS 1534:2018 Edition 2.

Applications

— **Fasloc® SF Single Speed:** suitable for short or long rock bolts where fast cycle times are required. Designed for pneumatic applications, like the Automatic Resin Capsules Injection System (ARI) for bolters.
— **Fasloc® SF Duo Speed:** ideal for applications requiring both rebar pre-tensioning and rapid cycle times. With inserting just one combined resin capsule instead of multiple shorter capsules, this option is perfect for manual applications, providing simpler handling and installation.

Rock bolt anchor strength related to UCS of rock and anchor length

Anchor performance depends on surrounding strata strength. In testing, Fasloc® SF provides approximately 25-40 t pull-out resistance per 0.5 m encapsulation in hard rock and 4-10 t per 0.5 m in soft rock, as illustrated in the graph below.



Specifications

Specification Fasloc® SF (S, SK)* Single Speed

Options	Nominally	From	To
Diameter	–	18 mm	42 mm
Length	–	200 mm	3,000 mm
Gel time at 20°C	–	10 s	600 s
Uniaxial compressive strength	≥ 60 MPa	–	–
Shear strength	≥ 20 MPa	–	–

* SK symbol means a two capsule arrangement where two capsules are joined and folded in half for packing.

Specification Fasloc® SF (S, SK, Torq)* Duo Speed

Options	Nominally	From	To
Diameter	–	23 mm	33 mm
Length	–	700 mm	3,000 mm
Gel time at 20°C	–	10 s	600 s
Uniaxial compressive strength	≥ 60 MPa	–	–
Shear strength	≥ 20 MPa	–	–

* SK symbol means a two capsule arrangement where two capsules are joined and folded in half for packing.

Specification Fasloc® SF (HS)* Single & Duo Speed

Options	Nominally	From	To
Diameter	–	18 mm (Single Speed) 23 mm (Duo Speed)	42 mm (Single Speed) 33 mm (Duo Speed)
Length	–	200 mm (Single Speed) 700 mm (Duo Speed)	3,000 mm (Single & Duo Speed)
Gel time at 20°C	–	30 s	600 s
Uniaxial compressive strength	≥ 80 MPa	–	–
Shear strength	≥ 25 MPa	–	–
Elastic modulus	> 11 GPa	–	–
Creep	≤ 0.12 %	–	–

* HS symbol means High Strength.

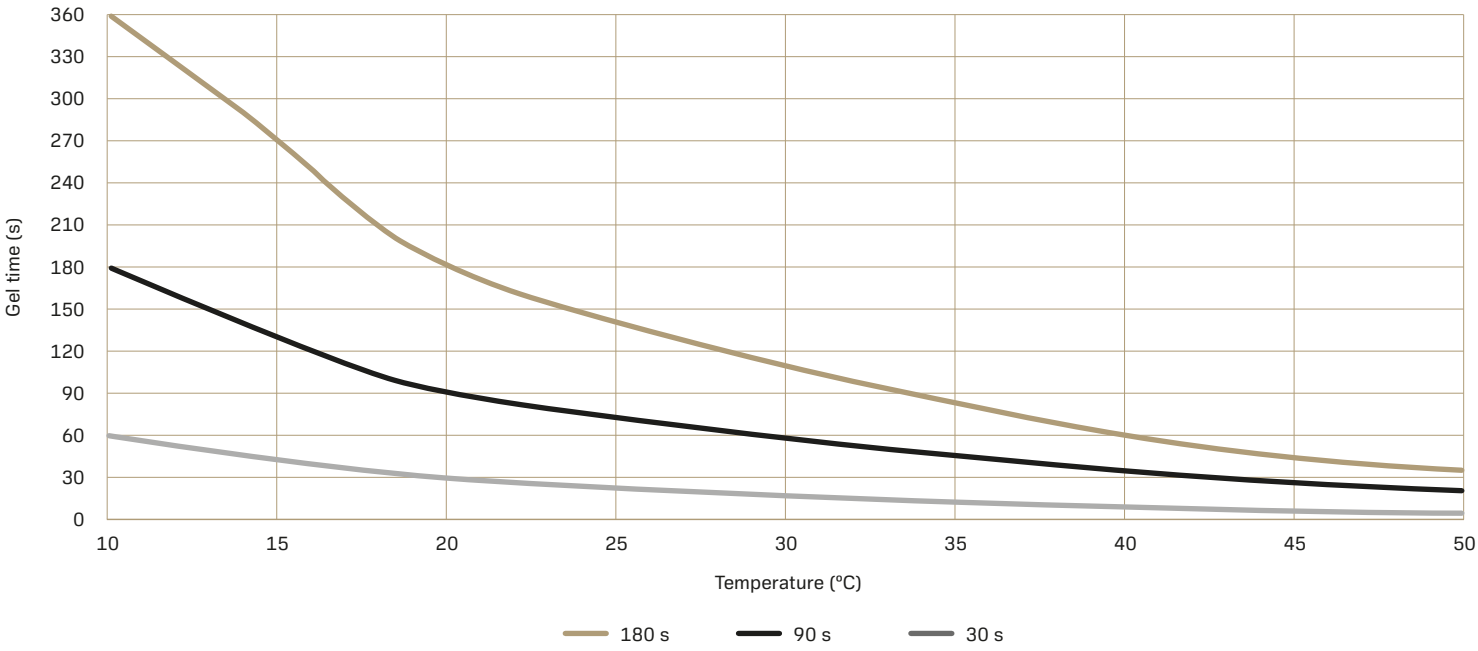
Mix and hold times (in seconds)

Revolutions	100 RPM		300 RPM		600 RPM		800 RPM	
Gel time type	Mix	Hold	Mix	Hold	Mix	Hold	Mix	Hold
15 s	NR*	NR*	9-12	5-15	7-10	5-10	7-10	5-10
30 s	NR*	NR*	20-25	10-20	10-20	10-20	10-15	10-20
60 s	30-40	10-40	20-30	10-30	20-30	10-30	20-30	10-30
90 s	30-40	20-90	20-30	10-60	20-30	10-60	20-30	10-60
180 s	40-90	120-180	30-90	120-180	30-60	90-120	20-60	90-120
Ultra-Slow	40-240	180-600	40-240	180-600	40-240	180-600	40-240	180-600

* Not recommended.

Effect of temperature on gel time

Fasloc® SF resin gel times are determined at 20°C.
Resin is temperature sensitive, so at lower temperatures, gel time will be slower than normal and at higher temperatures the gel time will be faster than normal (see the figure below).



Packaging, storage and shelf life
Fasloc® SF resin capsules are packed into cardboard or beaver-board boxes depending on customer requirements. The number of resin capsules per box and the number of boxes per pallet as well as the type of pallet depend on the dimensions of the resin capsules and the customer's requirements.
To maximise shelf life Fasloc® SF resin should be stored in a reasonably cool, and dry area. Ideally storage in a cool room such as a large fridge storage room or an air conditioned insulated container is preferred.
Cold storage may extend the shelf life of the capsules. However to ensure correct set times the capsules should be allowed to attain ambient underground temperature before use.
The guarantee period of shelf life for properly stored cartridges – storage temperature ≤ 20 °C – is 24 months. Under adverse storage conditions shelf life will be reduced. The capsules should not be subject to temperatures ≥ 30 °C for prolonged periods.
It is essential stocks are rotated correctly to ensure that oldest stock is used first.

Fasloc® SF resin capsules can optionally be supplied with plastic retainers, which are used to support the resin capsules in a vertical hole in the roof of the excavation during application. Depending on the arrangement, the retainers can either be attached to the supplied resins or inserted into the box separately, in a pouch. There are 2 types of retainers available, the so-called "baskets" and the "parachutes" (photos below).



Parachute

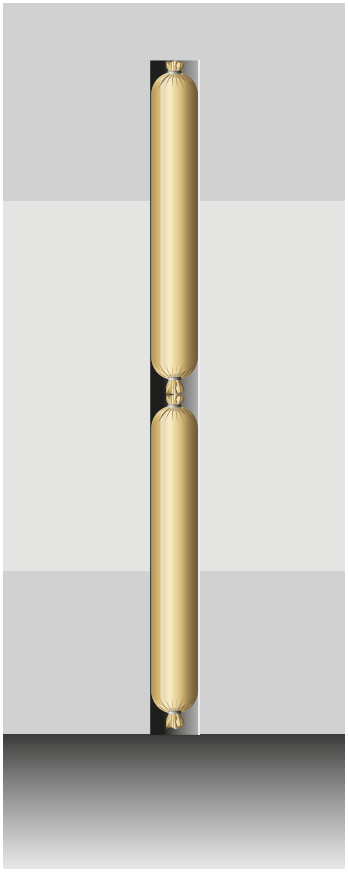


Basket

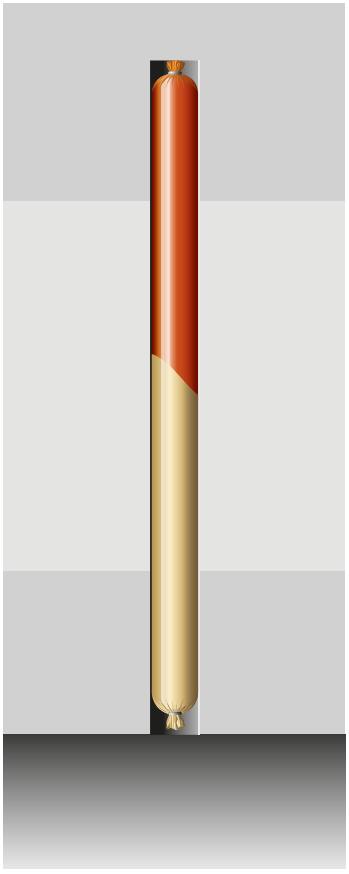
Application instructions

When using Fasloc® SF (Single Speed) capsules one or more are inserted into the borehole depending on the application specifications determined by the client.
When using Fasloc® SF Duo Speed capsules it is only one resin capsule placed in a borehole and the fast (red colour) end must be inserted up the hole first followed by the slow (natural beige colour) end.
The required number, diameter and length of Fasloc® SF resin capsules for civil, tunneling and mining applications is calculated by estimating the volume of the annulus between the bolt and the borehole. To ensure full encapsulation of the bolt it is recommended to add 10-15 % excess for borehole irregularities.

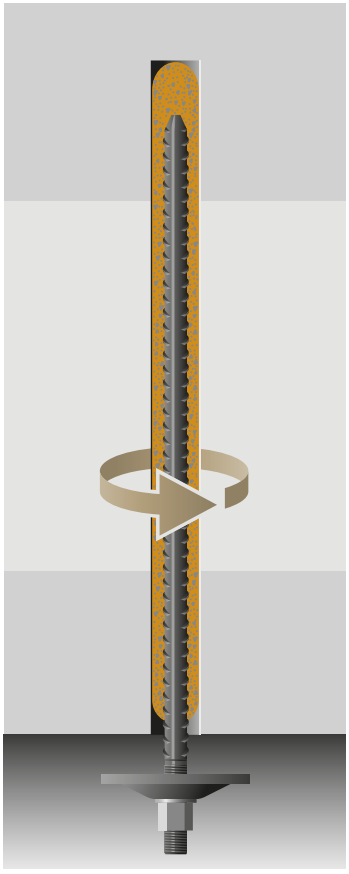
The annular gap between the bolt diameter and the actual hole diameter should not be more than 10 mm.
Insert the resin capsule/resin capsules to the top of the previously drilled and cleaned borehole.
Then insert the bolt attached to the bolting machine and mix the resin and catalyst components, rotating and moving the bolt up to the bottom of the borehole. After the mixing, hold the bolt until the resin is set, then turn the nut. See pictures 1a/1b-3.
These instructions are general guidelines. Various factors affect installation, so on-site tests should be conducted to determine actual mix and hold times. Generally, for adequate mixing, it is recommended to follow the rule of a minimum of 30 turns of the anchor.



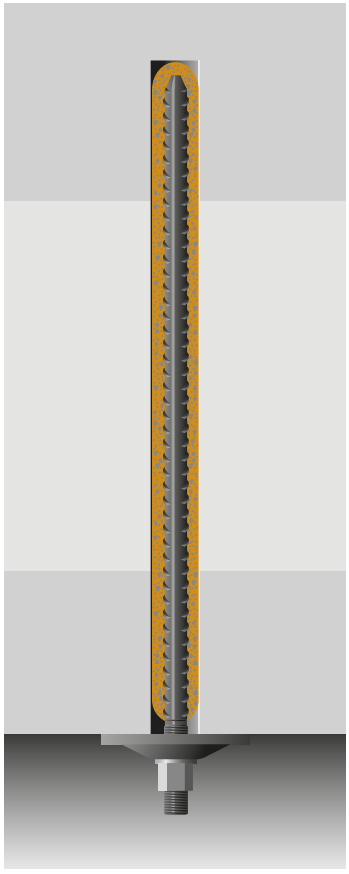
1a. Insert the Fasloc® SF (Single Speed) resin capsule/resin capsules to the top of the borehole.



1b. Insert the Fasloc® SF Duo Speed resin capsule to the top of the borehole. The fast (red) end must be inserted up the hole first followed by the slow (natural beige) end.



2. Insert the bolt attached to the bolting machine and mix the resin and catalyst components, rotating and moving the bolt up to the top of the borehole.



3. After the mixing, hold the bolt until the resin is set, then turn the nut.



Quality control
Fasloc® SF has a 3 part quality control program:

1. Raw material certification, approval and testing
2. In-process control tests
3. Finished product acceptance tests

Capsule retention samples from each manufactured batch are kept to support traceability.

Handling precautions
Do not open or puncture capsule, physical contact with the liquid within the capsule may cause mild skin irritation.
Safety glasses/goggles/gloves should always be used. In case of contact with eyes or skin immediately flush with copious quantities of water for at least 15 minutes. Seek medical attention.
For further information see Safety Data Sheet.
Capsules are filled with inert fillers, styrene-free resin and catalyst. Fasloc® SF resin capsules are for industrial use only and are intended for use in conjunction with mine/tunnel bolts.

Notice of disclaimer of liability
Products supplied by Sandvik comply with DSI's specifications. Sandvik does not claim that its products will be fit for the user's intended use. The conditions under which Sandvik products are used have not been assessed by Sandvik and must be assessed and monitored by each user.

The effectiveness of Sandvik products will be affected by various factors, including mine conditions, mine temperature, product temperature, product storage and transportation conditions, strata control design, and the skill and experience of the user. In the case of Sandvik bolt installations, bolt hole size, length and quality, bolt profile, bolt pre-load, bolt encapsulation, resin spin time, and resin hold time, are just some of the critical factors for proper installation and good performance.
This installation guide only contains general information relevant to installing Sandvik products.
The user assumes all responsibility and liability arising from the use of Sandvik products or reliance on this installation guide. Sandvik is committed to maintaining current and accurate information and this installation guide is subject to change without further notice. Please contact us for any further information regarding our products, their performance, quality, specification, testing and installation.

All dimensions, weights, quantities, and specifications are those applicable at the time of this publication and may be amended from time to time. Please contact your local representative for final confirmation of any key specifications.

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