Fasloc® resin bolting



SANDVIK

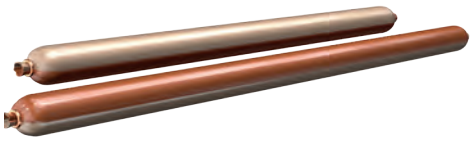
Fasloc® resin bolting



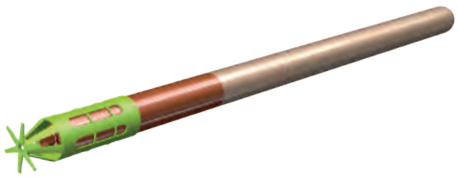
Resin bolting introduction

Resin anchor bolting provides effective long-term strata support in underground soft- and hardrock mining and tunnelling.

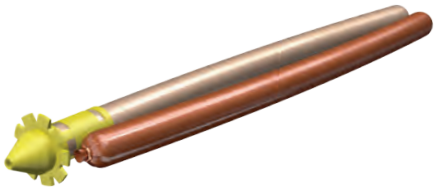
The resin anchored bolts can be fully encapsulated for corrosion resistance and point anchored and tensioned to plate and mesh for confinement of the coal or rock face.
Fasloc® resin capsules are manufactured from a sophisticated blend of reinforced polyester resins and inert fillers. In addition to the typical two-part mastic/catalyst arrangement, we manufacture two speed capsules containing two distinct resin gel times in the same package where separate point anchor and tension times are required for bolting. We also provide a two capsule arrangement where 2 resin capsules are joined and folded in half for packaging, and are available in either single-speed or two-speed configurations.



Fasloc® resin capsules (Single Speed)



Fasloc® Duo Speed resin capsules



Fasloc® SK Duo Speed resin capsules

Fasloc® resin capsules comprise an outer clear plastic heat sealed sheath clipped at both ends. Within this are two separate internal compartments consisting of:

1. Colour coded reinforced thixotropic polyester resin mastic of a specific setting speed and
2. Catalyst/hardener to activate the resin.

In addition to the typical two-part mastic/catalyst arrangement, Duo Speed capsules contain two distinct resin gel times – fast and slow – in the same convenient package.
On rotation of the bolt through the capsule in the bolt hole, the two capsule compartments are ruptured and the components are mixed together initiating a rapid polymerisation process and cure to form a rock solid anchor.

Assisting this process are the unique size graded fillers to aid shredding of the film, mixing the resin, and by interlocking with each other and the interface of the hole further reduce strata movement.

The results are fast installation and rapid achievement of full strength.
With Fasloc® resin capsules load transfer results from short encapsulation pull tests have been found to be superior to other similar products.

Fasloc® resin capsules are available in both water based (Fasloc® S Single Speed and Fasloc® S Duo Speed) and oil based (Fasloc® HS Single Speed and Fasloc® HS Duo Speed) formulations of the catalyst component. Oil based Fasloc® HS (high strength) are stronger, UCS and other mechanical parameters reach higher values and comply to standards such as BS 7861-1:2007.

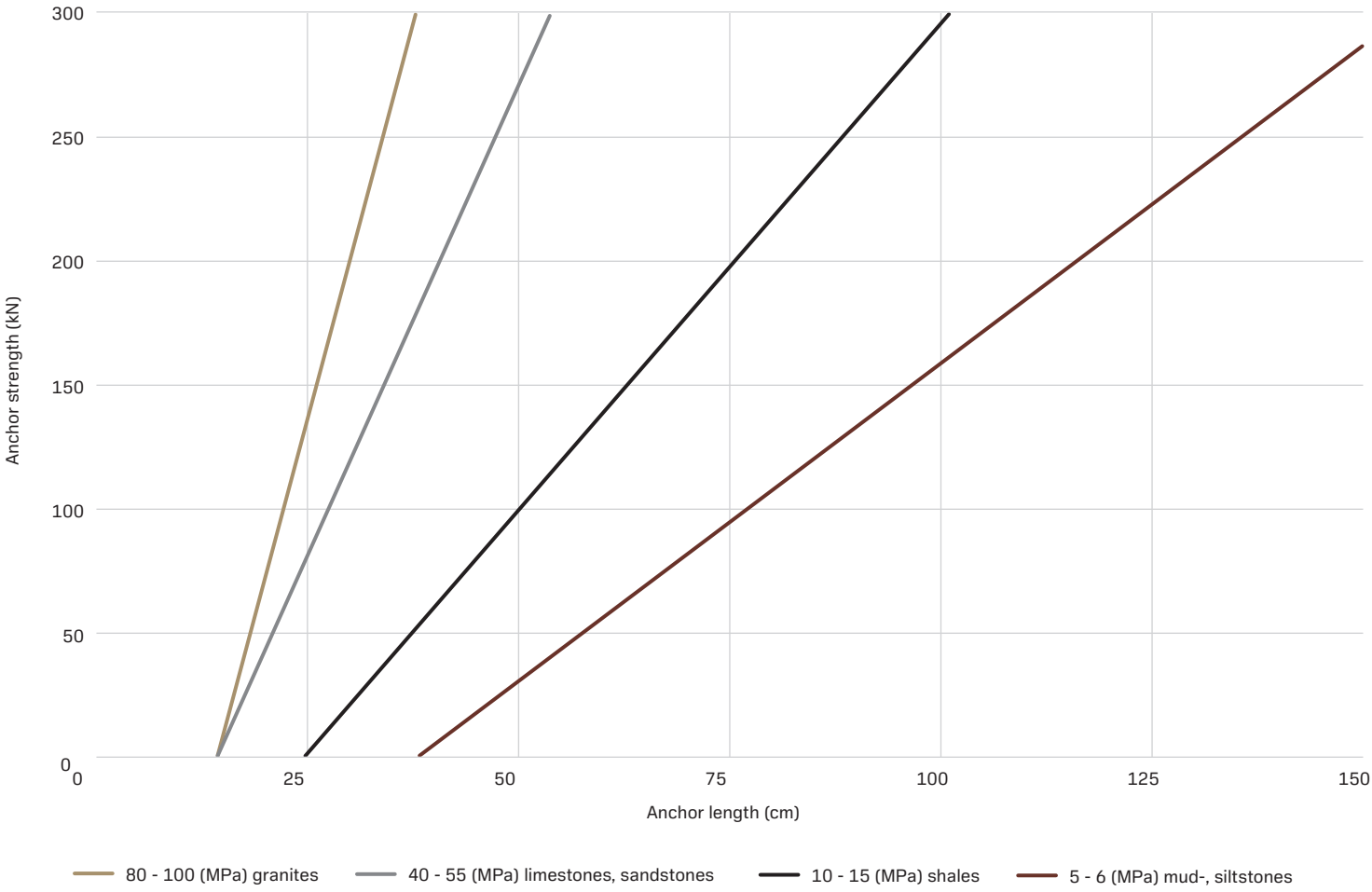
Fasloc® capsules enable convenient applications for short or long rock bolts where a fast cycle time is needed.

Fasloc® Duo Speed capsules enable a convenient one capsule application where rebar pre-tension and a fast cycle time are needed. Any anchorage system performance varies with the surrounding strata strength.

Fasloc® provides approximately 25 to 40 t per grouted 0.5 m pull out resistance in hard rock, and 4 to 10 t per grouted 0.5 m in soft rock. Estimated performance can be viewed in the graph below.

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

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



Fasloc® formulation type	Gel time at 20°C	UCS at 24 h	Punched shear strength at 24 h
Fasloc® S 30s (fast)	25 - 35 s	≥ 30 MPa	≥ 20 MPa
Fasloc® S 180s (slow)	170 - 220 s	≥ 60 MPa	≥ 20 MPa
Fasloc® HS 30s (fast)	25 - 35 s	≥ 80 MPa	≥ 25 MPa
Fasloc® HS 180s (slow)	170 - 220 s	≥ 80 MPa	≥ 25 MPa

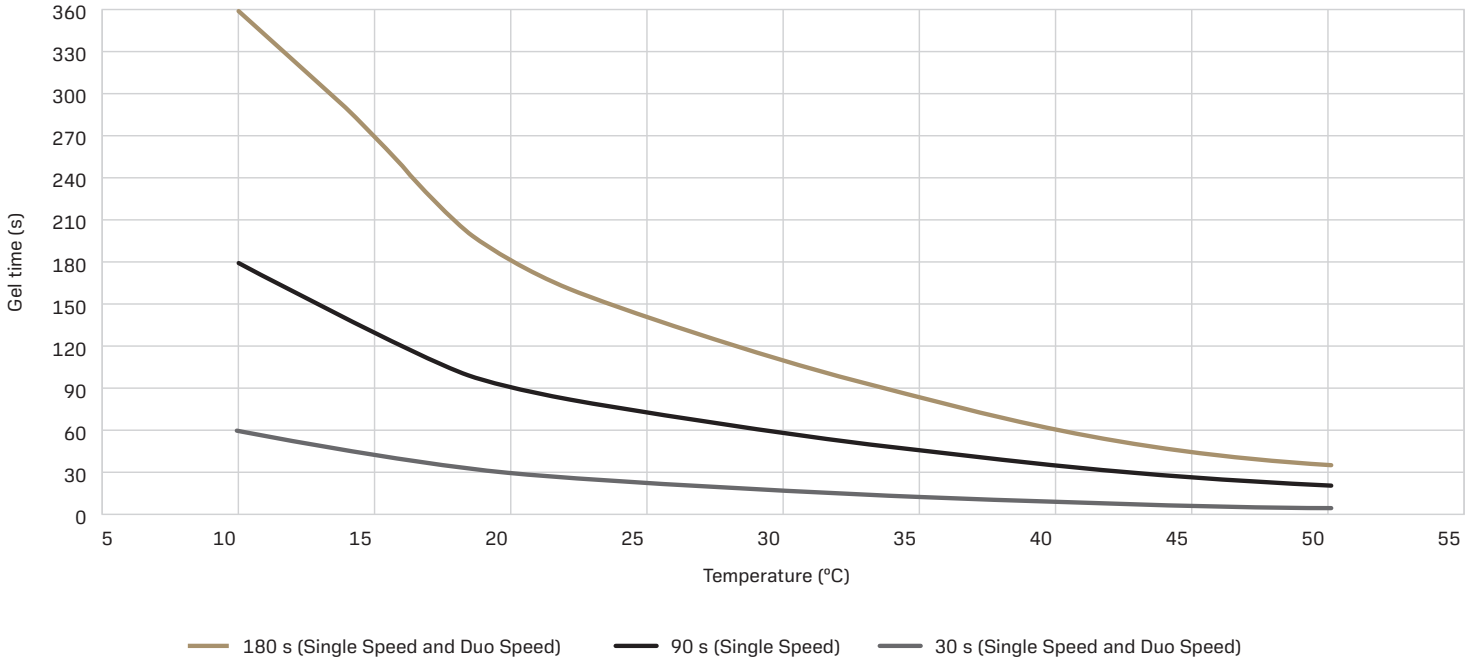
Fasloc® formulation type	Diameter	Length	Gel time
Fasloc® (S, HS, SK)*	18 ÷ 42 mm	200 ÷ 3000 mm	10 ÷ 600 s
Fasloc® (S, HS, SK)* Duo Speed	23 ÷ 33 mm	700 ÷ 3000 mm	10 ÷ 600 s

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

Effect of temperature on gel time

Fasloc® 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® resin capsules are packed into cardboard or beaverboard 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.

The shelf life of our products is influenced by a variety of factors, including but not limited to the composition of raw materials, transportation methods, storage temperature, and the influence of sunlight.

We are committed to tailoring each product to best suit the specific conditions at the location of application. Please contact your local representative for final confirmation of any key specifications.

It is essential stocks are rotated correctly to ensure that oldest stock is used first.

Fasloc® 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, the so-called “baskets” and the “parachutes” (photos below).



Parachute



Basket

Application instructions

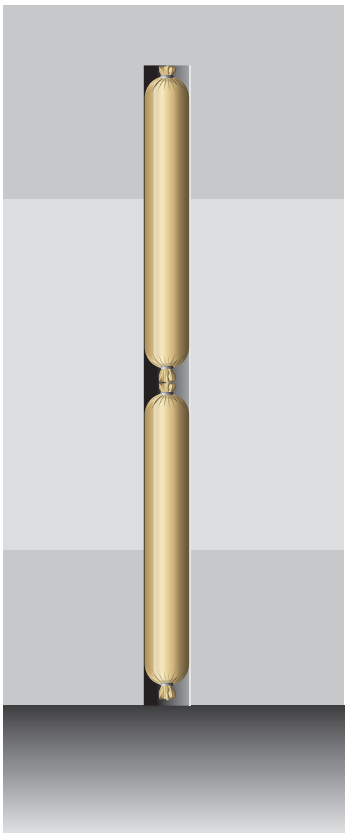
When using Fasloc® (Single Speed) capsules one or more are inserted into the borehole depending on the application specifications determined by the client.

When using Fasloc® Duo Speed capsule it is the only one resin capsules 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.

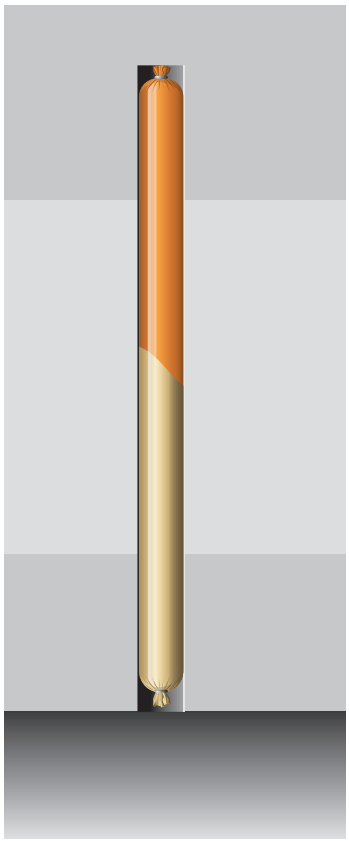
The required number, diameter and length of Fasloc® resin capsules for civil, tunneling and mining applications is calculated by estimating the volume of the annulus between the bolt and the borehole. To ensure full encapsulation of the bolt it is recommended to add 10 -15% excess for borehole irregularities.

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.

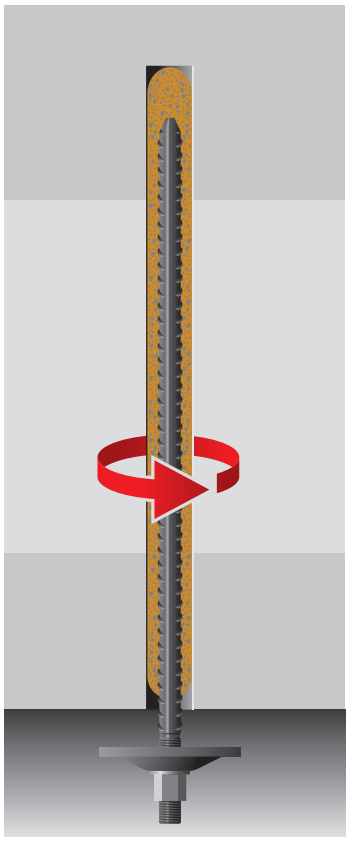
Then insert the bolt attached to the bolting machine and mix the resin and catalyst components, rotating and moving the bolt up to the bottom of the borehole. After the mixing, hold the bolt until the resin is set, then turn the nut. See pictures 1a/1b – 3. These instructions are general guidelines. 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.



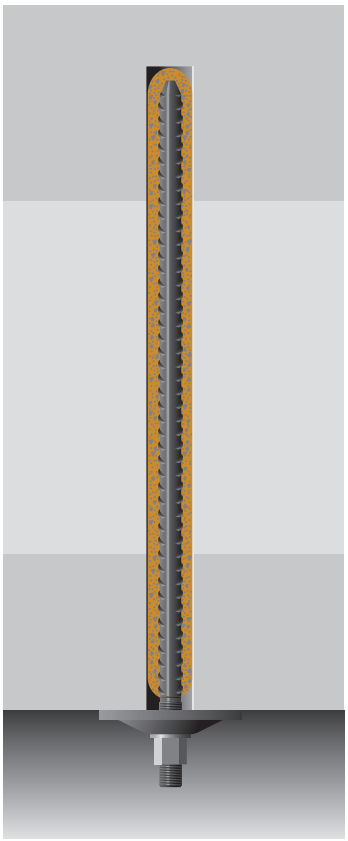
1a. Insert the Fasloc® (Single Speed) resin capsule/ resin capsules to the top of the borehole.



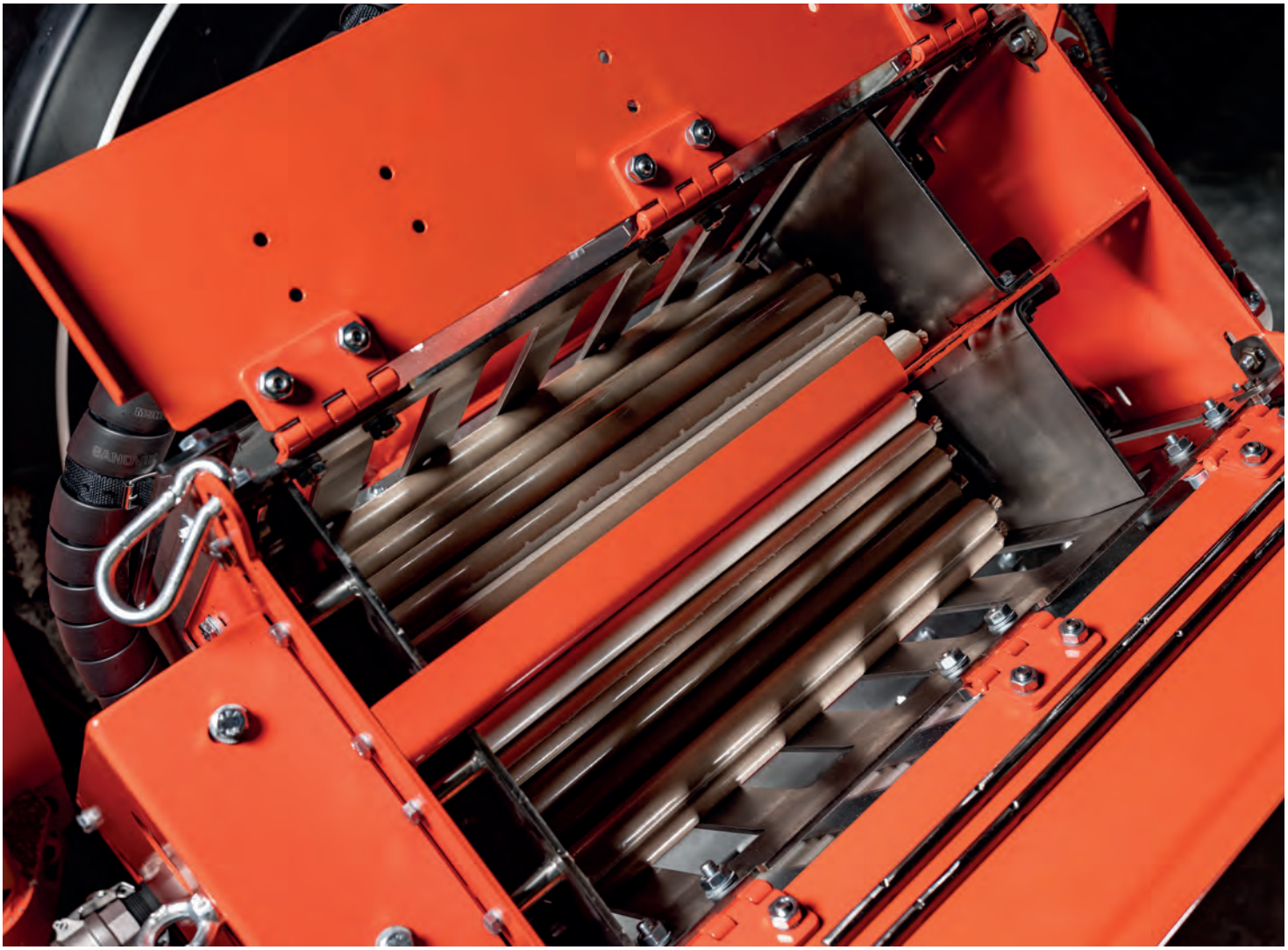
1b. Insert the Fasloc® Duo Speed resin capsule to the top of the borehole. The fast (red) end must be inserted up the hole first followed by the slow (natural beige) end.



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® has a 3 part quality control program:

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

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, polyester resin and catalyst. Fasloc® 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.

© Sandvik 28-07-2026

mining.sandvik/groundsupport

10082-1/07.26-web St