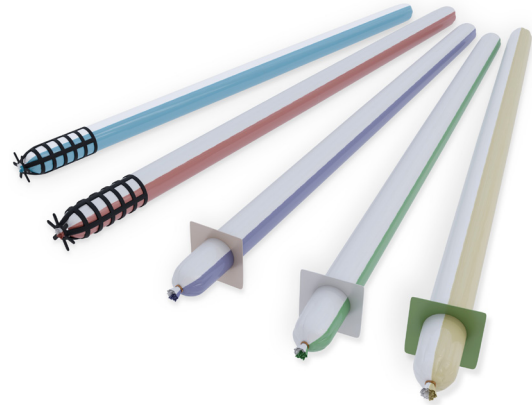


MINOVA

LOKSET® SPIN TO STALL

ANCHORING MEDIUM FOR ROCKBOLTS



Lokset capsule colours and retainers may differ based on specification.

DESCRIPTION

The Lokset® Spin to Stall resin capsule consists of a reinforced, thixotropic polyester resin mastic in one compartment and an organic peroxide catalyst separated by a physical barrier in the other. The rotation of the bolt during installation ruptures the capsule, shreds the skin and mixes the two components, causing a chemical reaction and transforming the resin mastic into a solid anchor.

The capsule is available in a 50:50 or 60:40 ratio of fast: slow speeds.

APPLICATION AND USES

- > The Lokset spin-to-stall resin capsule is used primarily as an anchoring medium for rockbolts and long tendons. Providing roof and sidewall support in mines and tunnels. It can be used with both Hydraulic and Pneumatic roof bolters. Other uses include:
 - > Marine fixings above or below water
 - > Ground anchors in rock
 - > Fixtures to building structures
 - > Pipe and cable support fixings
 - > Crane and rail track fixing
 - > Anchoring bolts for machinery

ADVANTAGES

- > Combined fast and slow speeds guarantee installation of both capsules, with a unique configuration ensuring effective resin and catalyst mixing.
- > Rapid and simple insertion with reduced handling, wastage and storage requirements.
- > Shorter installation times with no hold time required, allowing quick bolt pretensioning.
- > High compressive strength and modulus deliver strong, rapid and consistent anchorage.
- > Corrosion protection for use in wet conditions, with no expansion stresses for reliable performance in weak strata.

TECHNICAL PROPERTIES

Typical insertion properties at 25°C are as follows:

FAST: SLOW	APPROXIMATE SPIN TIME (SECS)
50:50	12-15
60:40	

The data is based on laboratory testing. Hold times and installation parameters may vary in the field depending on ambient temperature, mining conditions, equipment, hole-to-bolt annulus, and resin age or storage conditions. Each mine site should be evaluated to determine optimal performance.

MECHANICAL DATA

PARAMETER	UNIT	LOKSET SPIN TO STALL
Compressive Strength	(MPa)	≥60 (age 1 hour)
Punch shear strength	(kN)	Fast Set ≥16 (age 1 hour)
	(kN)	Slow Set ≥20 (age 1 hour)
Push out Force	(kN)	≥130 (age 24 hours)

PULL TEST

Measured on a 21.7 mm bolt, 250 mm encapsulation length in a 28.5 mm hole with Lokset spin to stall resin capsule STS100025 using the split bolt method in 60MPa substrate.

PUSH OUT TEST

Measured on 22 mm bolt, 50 mm encapsulation in 28 mm I.D. threaded cylinder, with slow set resin.

PUNCHED SHEAR STRENGTH

This test provides excellent correlation with mine pull out tests (without the variances) and is directly related to the strength of the resin. With fast setting resins the test can be performed in a very short time after the resin mixture has gelled (15 seconds).

Measured according to BS 2782 (part 3).

- > The appropriate quantities of resin mastic and catalyst are mixed for six (6) seconds.
- > The resultant mixture is squashed between two uniform flat steel plates and allowed to gel.
- > The plates are taken apart and the cured slice of resin is placed between two steel templates.
- > The device is placed in a tensiometer, and a plunger is forced into a hole in the plates at a predetermined rate, thus pushing a flat circular disc out of the resin slice (i.e. shearing the resin).
- > The force applied to shear the resin is recorded electronically by the tensiometer and converted to shear stress in MPa using the thickness of the disc in mm.

SAFETY INSTRUCTIONS AND LIMITATIONS

Observe the usual precautionary measures for handling chemicals and refer to the Lokset SDS. In case of incorrect anchor selection, wrong hole dimensions or the incorrect anchoring method, i.e., lack of anchor rotation or low rotation speed, the capsule components might be insufficiently mixed. In such cases, the bond strength may be less than the theoretical strength. The capsules should not be used in weak, loose, incoherent or highly porous soil, such as sands and clays. Capsules should not be used in holes with flowing water, with a strong presence of water and near groundwater sources. When working with resin capsules wear, safety gloves, goggles and protective clothing. Do not open or puncture capsules prior to use. If clothes become saturated with any of the capsule's components it is recommended to change into a set of clean clothing. For skin contact, wash thoroughly with soap and water. For detailed safety information, please refer to the corresponding Safety Data Sheet.

APPLICATION METHOD

It is essential that good bolting procedures are followed and the instructions on the box are observed. As a guide, the following steps must be taken:

1. Drill hole to correct diameter, ensuring water/air flush is used. The hole should be clean and free from dust and other loose particles. In Coal mining, 27-28 mm hole diameters are normally preferred with 22 mm core diameter roof bolts or cables. Do not exceed the manufacturer's recommended diameter.
2. Drill a hole to correct the length of the bolt. The ideal hole length should be at least 100 mm shorter than the bolt, dependent on the bolt/cable being used. Do not deviate from the manufacturer's recommended length of hole with the bolt.
3. Select the correct resin capsule(s) that have been specified for the job
4. Check that the use-by date on the box label has not expired.
5. Insert the Lokset spin to stall the resin capsule yellow (FAST) end first. Push the capsule until the capsule touches the top of the hole using the bolt (or other insertion device if available). Ensure the capsule reaches the top of the hole.
Do not install the Lokset spin to stall resin capsules upside down.
Should insertion problems occur, then the problem must be investigated.
6. Connect the bolt to the spinning dolly/spanner.
7. The bolt is pushed and spun at maximum rpm at a constant feed rate through the entire length of the capsule(s). When the top of the hole is reached continue spinning until the nut breaks out and tensioned to ensure complete mixing.

8. The following items must also be checked where hand-held (air operated) equipment is utilised:

Compressed air supply should be clean and dry

Air supply from roof bolter to miner should not be more than 100 metres of 2" hose

Air pressure must be between 85 - 100 psi (586 - 690 KPa) when bolter(s) are operating

Water pressure should be between 80-90 psi (550 - 620 KPa), and hoses should be flushed out prior to connection

PACKAGING AND TRANSPORTATION

Lokset Spin to Stall resin capsules are available in lengths from 880 mm to 1500 mm with 25mm "nominal" diameter. They are packaged in water resistance cardboard cartons labelled with colour codes and supplied on wooden pallets.

STORAGE CONDITIONS AND SHELF LIFE

Suggested shelf life for Lokset Spin to Stall resin capsule is 4 months when stored between 20- 25°C. Extended shelf life can be expected when stored at lower temperatures of 0-5°C in cool rooms and is highly recommended. Stock rotation is strongly recommended. Storage at higher temperatures will severely reduce shelf life.

Store in a cool, dry place away from direct sunlight. Do not double stack pallets. When using cool room storage, the resin capsules should be allowed time to attain ambient temperature before use otherwise SPIN and HOLD TIMES will be extended.

TECHNICAL SUPPORT

We provide technical advisory service by a team of specialists in the field. The service includes on-site assistance and advice on evaluation trials and laboratory work.

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