

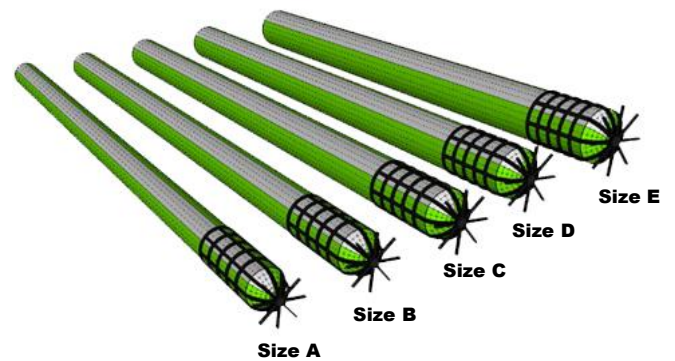
MINING / CONSTRUCTION

Lokset

RESIN CAPSULES - TYPES SM, HM, SL, HL

DESCRIPTION

Lokset resin capsules are two-component resin mortars – firstly a mastic based on polyester resin, and secondly a hardener containing organic peroxide. The two components are separated from each other within a plastic sheath. Application parameters of the resin capsules can be adjusted to customer specific requirements.



APPLICATION AND USE

Lokset capsules are used in the mining and construction sectors for:

- Anchoring of rock bolts, anchors and soil nails for ground support;
- Anchoring of bolts for machinery;
- Pipe and cable support fixings;
- Fixtures to building structures.

ADVANTAGES

- Reliability - Lokset resin capsules have been successfully applied worldwide for decades
- The bond strength is higher than the anchor strength
- Ease of use - our stiff resin capsule is easily inserted into the hole
- Variety - capsules are available in various dimensions, setting times and viscosity parameters
- Rapid installation process

TECHNICAL DATA

Laboratory data may vary in the field due to different ambient temperature, pressure and other factors.

CAPSULE DIAMETER VS BOREHOLE DIAMETER

Parameter	Unit	Lokset size A	Lokset size B	Lokset size C	Lokset size D	Lokset size E
Capsule diameter	mm	20	24	28	32	38
Suitable borehole diameter	mm	22 - 26	26 - 30	30 - 34	34 - 39	40 - 44

CAPSULE OPTIONS

Parameter	Unit	
Capsule length	mm	250 ; 300 ; 450 ; 550 ; 600
Gel time at 20 °C	sec	15 ; 30 ; 60 ; 180

MECHANICAL DATA

	Type			
	SM	SL	HM	HL
	standard	standard	high	high
Compressive strength [MPa]	> 30 (for gel time 15 and 30s)		> 30 (for gel time 15 and 30s)	
	> 60 (for gel time 60 and 180s)		> 80 (for gel time 60 and 180s)	
Punch shear strength [MPa]	> 20 (for gel time 60 and 180s)		> 25 (for gel time 60 and 180s)	
Modulus of elasticity [GPa]	-		> 11 (for gel time 60 and 180s)	
Creep [%]	-		max 0.12% (for gel time 60 and 180s)	
Viscosity	Medium (standard)	Low (thixotropic)	Medium (standard)	Low (thixotropic)

APPLICATION METHOD

Lokset resin capsules can be applied using different types of bolting machines including hand-held bolters, leg-mounted bolters and mechanized mobile bolters. If capsules are placed in the borehole by compressed air it may be necessary to use a special type designed for pneumatic shooting. For the optimal choice of capsule type, it is recommended to consult your Minova representative, and if possible, perform anchoring tests under real conditions.

During most standard applications the following steps should be taken:

- Drill a hole to the correct depth and diameter; drilled holes must be clear of dust and debris. Flushing with water is

recommended. An optimal diametric difference between the bolt and borehole is between 4 and 10 mm.

- Insert required number of capsules, push them to the back of the hole and place bolt into the hole.
- Attach bolt to rotary machine and start rotating progressively through the capsule(s) at a speed of 200 – 600 rpm, until the bottom of the drilled hole is reached.
- When the bolt head reaches the hole bottom, stop movement and spin the bolt for five seconds; do not overspin.
- Stop rotation and leave bolt undisturbed until resin has cured. Put plate, washer and nut over bolt and tighten up if required.

For further details, please see the Application Instruction.

SAFETY INSTRUCTIONS AND LIMITATIONS

Observe the usual precautionary measures for handling chemicals and refer to the Lokset MSDS.

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 will differ from the theoretical strength or the anchor's bonding will be incorrect.

The capsules should not be used in weak, loose, incoherent or highly porous soil, such as sands, clays.

When working with resin capsules, use the same standard personal protection equipment as when working with similar types of chemicals: safety gloves, goggles and protective clothing. If clothes become overly wetted any of the capsule's components it is recommended to change into set of clean clothing. For detailed safety information, please refer to the corresponding Material Safety Data Sheet.

PACKAGING AND TRANSPORTATION

Lokset resin capsules are packed into appropriate boxes according to their length, in quantities depending on their size. Boxes are stacked on pallets in quantities agreed with the customer.

Lokset resin capsules are marked with a symbol that specifies the capsule's dimensions, recipe type and gelation time.

The naming of the resin capsules are as follows:

a-bbb cde-fff

a – diameter type (A,B,C,D,E – see table with capsule parameters),

bbb – length of capsule [mm],

c – letter S for standard mechanical parameters or letter H for high mechanical parameters,

d – letter M for medium viscosity (standard) or letter L for low viscosity (thixotropic),

e – letter X for antistatic version of capsule or Y for standard version,

f – gel time [sec].

i.e. symbols A 450 SMX 30 describe a capsule with a diameter of 20 mm, length 450 mm, type of recipe SM, X antistatic and gelation time: 30 seconds at 20 °C.

STORAGE AND SHELF LIFE

The warranty period for properly stored capsules is 6 months.

The capsules shall be stored in closed containers, in dry and well-ventilated areas at 0 - 25 °C.

DISPOSAL

Follow local regulations.

APPROVALS AND CERTIFICATES

In progress

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ADDITIONAL DOCUMENTATION

- Lokset MSDS

LIST OF REPRESENTATIVES

- AUSTRIA: Minova MAI GmbH
- BELGIUM / FRANCE: Minova France C/O Orica Belgium SA
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