



R S S
Rock Support Systems

TECHNICAL DATA SHEETS

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TECHNICAL DATA SHEET

Rock Support Systems Medium Set Pumpable Grout +35 4/4



Description

Medium Set Pumpable Grout +35

Is an encapsulated, high alumina, thixotropic grout that is non-shrink and attains rapid early strength. The encapsulated product ensures correct water/cement ratio for consistent pumpability and strength.

Data

Working temperature:..... +35°C
Diameter:..... 65 mm
Length:..... 450 mm
Average weight per capsule:..... 2.2 kg
Yield per capsule:..... 1.35 L
Initial set:..... 15-20 minutes
Final set:..... 20-25 minutes
Setting time: 4 hours
Required load: 4 tons/40 kN

Typical Applications

- Can be used with SS1 air operated or SS6 Grout Pumps.
- Vertical and horizontal holes, with various diameters and lengths can be pumped.
- Can be used for prefilling of holes in primary support.

Typical Results

The bond pull-out (kN) using a 16 mm diameter rebar grouted in a 250mm x 50mm internal diameter pipe is actually a measure of the shear strength of the Grout.

The following are typical laboratory results at a room temperature of 35°C:

AGE	BOND STRENGTH (kN)	COMPRESSIVE STRENGTH (MPa)
2 hours	20 kN	-
4 hours	40 kN	15 MPa
8 hours	60 kN	-

Packaging

Supplied in woven polypropylene bags with a waterproof inner liner.

Palletised and wrapped with 150 bags (minimum) per pallet.

Quality Assurance

Rock Support Systems Mining Supplies Pty. Ltd. production and testing programs comply with all local (SANS 1745: 2003) and international testing standards.



TECHNICAL DATA SHEET

Rock Support Systems Medium Set Pumpable Grout 4/4



Description

Medium Set Pumpable Grout is an encapsulated, high alumina, thixotropic grout that is non-shrink and attains rapid early strength. The capsulated product ensures correct water/cement ratio for consistent pumpability and strength.

Data

Working temperature:25°C
Diameter:65 mm
Length:450 mm
Average weight per capsule:2.2 kg
Yield per capsule:1.35 L
Initial set:15-20 minutes
Final set:20-25 minutes
Setting time:4 hours
Required load:4 tons/40kN

Typical Applications

- Can be used with SS1 air operated and SS6 Grout Pumps.
- Vertical and horizontal holes, with various diameters and lengths can be pumped.
- Can be used for prefilling of holes in primary support.

Typical Results

The bond pull-out (kN) using a 16 mm diameter rebar, grouted in a 250mm x 50mm internal diameter pipe is actually a measure of the shear strength of the Grout.

The following are typical laboratory results at a room temperature of 25°C:

AGE	BOND STRENGTH (kN)	COMPRESSIVE STRENGTH (MPa)
2 hours	25 kN	-
4 hours	50 kN	18 Mpa
8 hours	70 kN	25 Mpa

Packaging

Supplied in woven polypropylene bags with a waterproof inner liner.
Palletised and wrapped with 150 bags per pallet.

Quality Assurance

Rock Support Systems Mining Supplies Pty. Ltd. production and testing programs comply with all local (SANS 1745: 2003) and international testing standards.



TECHNICAL DATA SHEET

Rock Support Systems Pumpable Lacing Grout 8/24



Description

Lacing Grout 8/24 is a high alumina, thixotropic grout that is non-shrink and designed for cables and long anchors. A selection of chemicals ensures that this product is highly pumpable in all conditions.

Data

Working temperature:	+20°C
Bag contains:	10 kg
Yield per bag:.....	6.5 L
Water per bag:	2.5 L
Initial set:	60 minutes
Final set:	90 minutes
Setting time:.....	8 hours
Required load:.....	4 tons/40 kN

Typical Applications

- Can be used with SS1 air operated Grout Pumps or SS6 Grout Pumps.
- Vertical and horizontal holes, with various diameters and lengths can be pumped.
- Can be used for prefilling of holes in primary support.
- Mainly used in conjunction with end anchor roof bolts.

Typical Results

The bond pull-out (kN) using a 16 mm diameter rebar grouted in a 250mm x 50mm internal diameter pipe is actually a measure of the shear strength of the Grout.

The following are typical laboratory results at a room temperature of 35°C:

AGE	BOND STRENGTH (kN)	COMPRESSIVE STRENGTH (MPa)
4 hours	20 kN	10 MPa
8 hours	40 kN	-
24 hours	60 kN	25 MPa

Packaging

Supplied in woven polypropylene bags with a waterproof inner liner.
Palletised and wrapped with 100 bags per pallet.

Quality Assurance

Rock Support Systems Mining Supplies Pty. Ltd. production and testing programs comply with all local (SANS 1745: 2003) and international testing standards.



Description

Rock Support Systems SS1 Multipurpose Grout Pump 5.0 L is air operated with no moving parts and low maintenance.

Data

Material: Steel
Capacity: 5.0 L
Height: 1250 mm
Weight: 21.5 kg
Safety: Not a pressure vessel

Typical Applications

- In all development ends for primary and secondary support.
- By simply changing lances, grout with different viscosities can be pumped.

Quality Assurance

Rock Support Systems Mining Supplies Pty. Ltd. production and testing programs comply with all local (SANS 1745: 2003) and international testing standards.



TECHNICAL DATA SHEET

Rock Support Systems LD Void Crete (SS15) Cement



Description

Void Crete Cement is an OPC based product mixed with chemicals to produce aerated cement (spongy texture). It is mainly used to fill voids or cavities between sets, or support structural and the hanging wall, with an SG lower than water 0.6-0.8.

Data

Working temperature:	+20°C
Bag contains:	25 kg
Yield:	8-10 bags per met/cub
Initial set:	3 hours stalling
Final set:	28 days
Setting time:.....	8-12 hours
Required load:.....	0.8-1.3 MPa
Colour:.....	Light Grey

Typical Applications

- Can be pumped with a rotor/stator pump.
- A minimum hose of 60m is required.

Typical Results

Cube to be filled and crushed within 28 days to determine the strength.

AGE	BOND STRENGTH (kN)	COMPRESSIVE STRENGTH (MPa)
28 days		1.2 MPa

Packaging

Supplied in woven polypropylene bags with a waterproof inner liner.
50 bags packed per bulk bag.

Quality Assurance

Rock Support Systems Mining Supplies Pty. Ltd. production and testing programs comply with all local (SANS 1745: 2003) and international testing standards.



TECHNICAL DATA SHEET

Rock Support Systems Capsule Gun



Description

Rock Support Systems Multipurpose Capsule Gun.

Data

Material: Aluminium

Size:..... 25 mm/28 mm with barrel lengths of 3 m/2.0m /1.8 m/1 m

Air operated

Typical Applications

- In all development ends for Primary and Secondary Support.

Quality Assurance

Rock Support Systems Mining Supplies Pty. Ltd. production and testing programs comply with all local (SANS 1745: 2003) and international testing standards.



TECHNICAL DATA SHEET

Rock Support Systems Slow set Grout

Encapsulated, Ready-to-use, Portland Cement Mechanical Rock Support Grout for Mining and Tunnelling Industries



Description

Rock Support Systems Slow Set is an encapsulated Portland cement rock support grout material which, when submerged in water for approximately 3 minutes and then inserted into the anchor hole, achieves desired rock bolt support.

Typical Applications

- Where quick strength fixing of anchor bolts into rock, concrete, masonry or other material of sufficient strength will take the loading required.
- Rock Support Systems Slow Set can be applied into vertical and horizontal holes.

Advantages

- Rock Support Systems Slow Set Capsules are easy to apply.
- High impermeability, preventing water and moisture penetration, thereby eliminating corrosion.
- No added Chlorides, Nitrates, Sulphates or Gypsum.
- Rock Support Systems Slow Set is non-toxic.

Typical Results

Bond Pull-out (kN)

The bond pull-out (kN) using a 16 mm diameter rebar grouted in a 250mm x 50mm internal diameter pipe is actually a measure of the shear strength of the Rock Support Systems Slow Set Grout.

The following are typical laboratory results at a room temperature of 25°C:

AGE	BOND STRENGTH (kN)	AGE	BOND STRENGTH (kN)
24 hours	50 kN	7 days	70 kN
3 days	60 kN	28 days	100 kN

Setting Times (Tested in accordance with SANS 1745: 2003)

Initial Set: 240 Minutes

Final Set: 300 Minutes

Directions for use

Submerge the required number of Rock Support Systems Slow Set Capsules in water for approximately 3 minutes (until the air bubbles stop), allowing complete absorption. The entire hole must be filled with Rock Support Systems Slow Set Capsules. Push the specified bar, rope dowel or shepherd's crook through the capsules to the length of the hole and leave to set.

Packaging

Supplied in woven polypropylene bags with a waterproof inner liner. Palletised and wrapped with 150 bags per pallet.

Quality Assurance

Rock Support Systems Mining Supplies Pty. Ltd. production and testing programs comply with all local (SANS 1745: 2003) and international testing standards.



TECHNICAL DATA SHEET

Rock Support Systems Medium set grout

Encapsulated, Ready-to-use, Non-Shrink, High Alumina Mechanical Rock Support Grout for Mining and Tunnelling Industries



Description

Rock Support Systems (4/5) is a High Alumina Cement rock support grout material which, when submerged in water for approximately 3 minutes and then inserted into the anchor hole, achieves desired rock bolt support.

Typical Applications

- Where quick strength fixing of anchor bolts into rock, concrete, masonry or other material of sufficient strength will take the loading required.
- Rock Support Systems (4/5) can be applied into vertical and horizontal holes.

Advantages

- Non-shrink chemically controlled expansion, removing the risk of failure in underground applications.
- Rock Support Systems (4/5) Capsules are easy to apply.
- High impermeability preventing water and moisture penetration, thereby eliminating corrosion.
- No added Chlorides, Nitrates, Sulphates or Gypsum.
- Rock Support Systems (4/5) is non-burning and non-toxic.

Typical Results

Bond Pull-out (kN)

The bond pull-out (kN) using a 16 mm diameter rebar grouted in a 250mm x 50mm internal diameter pipe is actually a measure of the shear strength of the Rock Support Systems Medium (4/5) Grout. The following are typical laboratory results at a room temperature of 25°C:

AGE	BOND STRENGTH (kN)	AGE	BOND STRENGTH (kN)
4 hours	50 kN	12 hours	75 kN
6 hours	60 kN	7 days	85 kN
8 hours	70 kN	28 days	100 kN

Setting Times (Tested in accordance with SANS 1745: 2003)

Initial Set: 20 Minutes
Final Set: 26 Minutes

Directions for use

Submerge the required number of Rock Support Systems Medium (4/5) Capsules in water for approximately 3 minutes (until the air bubbles stop), allowing complete absorption. The entire hole must be filled with Rock Support Systems Medium (4/5) Capsules. Push the specified bar, rope dowel or shepherd's crook through the capsules to the length of the hole and leave to set.

Packaging

Supplied in woven polypropylene bags with a waterproof inner liner.
Palletised and wrapped with 150 bags per pallet.

Quality Assurance

Rock Support Systems Mining Supplies Pty. Ltd. production and testing programs comply with all local (SANS 1745: 2003) and international testing standard.



TECHNICAL DATA SHEET

Rock Support Systems Fast set 1-2

Encapsulated, Ready-to-use, Non-Shrink, High Alumina Mechanical Rock Support Grout for Mining and Tunnelling Industries



Description

Rock Support Systems is an encapsulated High Alumina Cement rock support grout material which, when submerged in water for approximately 3 minutes and then inserted into the anchor hole, achieves desired rock bolt support.

Typical Applications

- Where quick strength fixing of anchor bolts into rock, concrete, masonry or other material of sufficient strength will take the loading required.
- Rock Support Systems can be applied into vertical and horizontal holes.

Advantages

- Non-shrink chemically controlled expansion removing the risk of failure in underground applications.
- Rock Support Systems Capsules are easy to apply.
- High impermeability preventing water and moisture penetration, thereby eliminating corrosion.
- No added Chlorides, Nitrates, Sulphates or Gypsum.
- Rock Support Systems is non-burning and non-toxic.

Typical Results

Bond Pull-out (kN)

The bond pull-out (kN) using a 16 mm diameter rebar grouted in a 250mm x 50mm internal diameter pipe is actually a measure of the shear strength of the Rock Support Systems Grout.

The following are typical laboratory results at a room temperature of 25°C:

AGE	BOND STRENGTH (kN)	AGE	BOND STRENGTH (kN)
1 hour	20 kN	8 hours	70 kN
2 hours	40 kN	7 days	85 kN
4 hours	60 kN	28 days	100 kN

Setting Times (Tested in accordance with SANS 1745: 2003)

Initial Set: 20 Minutes

Final Set: 26 Minutes

Directions for use

Submerge the required number of Rock Support Systems Capsules in water for approximately 3 minutes (until the air bubbles stop), allowing complete absorption. The entire hole must be filled with Rock Support Systems Capsules. Push the specified bar, rope dowel or shepherd's crook through the capsules to the length of the hole and leave to set.

Packaging

Supplied in woven polypropylene bags with a waterproof inner liner.
Palletised and wrapped with 150 bags per pallet.

Quality Assurance

Rock Support Systems Mining Supplies Pty. Ltd. production and testing programs comply with all local (SANS 1745: 2003) and international testing standards.



TECHNICAL DATA SHEET

Rock Support Systems Winch Bolt Down Grout

A Cementitious High Early Strength Grout for Winches and Rapid Concrete Repairs



Description

Rock Support Systems Bolt Down comprises of a dry powdered grout and activator. The grout has been specially formulated to include high quality and graded siliceous aggregates, shrinkage compensating chemicals and High Alumina Cements.

Typical Applications

- Anchoring of ribbed and smooth steel bars.
- Anchoring of holding down bolts for winch beds.

Advantages

- Highly workable.
- Early strength development.
- Excellent bonding characteristics.

Typical Results (VICANT TEST)

Initial Set: 20–25 minutes
Final Set: 35–45 minutes

Compressive Strengths

1 Hour: 10–14 MPa
4 Hours: 14–18 MPa

Bond pull-out (kN) using a 250 mm x 16 mm rebar in a 50 mm internal diameter pipe

1 Hour: 40 kN
4 Hours: 65 kN

Directions for use

For ease of application, Bolt Down is packed in a two-part system. The powder and activator are mixed in a supplied bag. By rotating and moving the contents for about 2-3 minutes, a homogeneous mix is achieved and can then be poured from the mixing bag into the holes.

Working time is limited to 20 minutes.

All the usual precautions related to cementitious products should be adhered to when applying Bolt Down. All equipment must be cleaned with water after use.

Environmental and Safety precautions

Bolt Down contains cementitious products and is alkaline when it comes in contact with water. Avoid splashing into eyes or contact with skin. In case of eye contact; flood eyes repeatedly with water. Wash hands thoroughly with water after handling.

Yield

One 10 kg bucket of Bolt Down yields 5L of pourable grout

Packaging

Supplied as a two-part system, consisting of 9 kg powdered grout and 2L activator.

Quality Assurance

Rock Support Systems Mining Supplies Pty. Ltd. production and testing programs comply with all local (SANS 1745: 2003) and international testing standards.



Production Application

- Rock Support Systems TSL is a polymer-based product that can be used in various application and surfaces. TSL when used underground on rock face.
- Serves as a form of support and sealer to protect the rock against the elements (weathering).
- Restraint minor key blocks between support units.
- Penetrate fractures to promote block interlock.
- Non-toxic non-flammable.
- Reduce cycle to on face quick to apply.
- Safe on all forms of transport cost.

Description

Rock Support Systems TSL is packed in a 20kg polypropylene woven bag and a 5L polymer. The mix requires no additional liquids when mixing.

Mixing Instructions

One bag of Rock Support Systems TSL grout and 5L of polymer is placed into the mixing bowl of the pump, once the product is properly mixed it can be sprayed on to the rock face. The pump and equipment can be washed with water.

Performance Test 7 Days

Tensile Bond Strength:.....	2.4 MPa
Shear Strength:	9.8 MPa
Shear Bond:	3.7 MPa
Tensile Strength:.....	5.0MPa

Bag size: Bag 20kg bag and 5L polymer
Yield: 14L

Packaging and Shelf Life

Supplied in woven polypropylene bags with a waterproof inner liner. Bags of 20kg and 5L of polymer x 40 per bulk bag. Rock Support Systems TSL has a shelf life of 3 months when stored unopened in dry conditions and out of direct sunlight.

Precautions

Health and Safety:

Rock Support Systems TSL is non-toxic, but like all polymer/cement, is alkaline in nature. The use of gloves and goggles is recommended.

Rock Support Systems TSL is non-flammable and non-combustible.

Technical Support

Rock Support Systems Mining Supplies Pty. Ltd. provides a technical and specialist support team to back its products in assisting customer requirements.



TECHNICAL DATA SHEET

Rock Support Systems Cable Grout



Production Application

Rock Support Systems C.G. is a pumpable full column grout for use in the installation of mechanical long anchors up to 16 m of length.

Description

Rock Support Systems C.G. is packed in a 20kg polypropylene woven bag. It is a mix which only requires the addition of water. The mixed grout is then placed by means of a suitable grout pump. It is a Portland based mixture.

Mixing Instructions

One bag of Rock Support Systems C.G. is added to ± 8 L of water and mixed in a suitable vessel for 3 minutes. Preferable temperature range is between 20°C and 30°C

The grout is pumped into the hole before, or after the installation of the anchor.

To ensure full column grouting, fill from the back to the front of the hole.

Performance Test

Initial Set (25°C): 4 to 5 hours
Final Set (25°C): 5 to 6 hours

Typical Compressive Strength

24 hours: 8 MPa
48 hours: 10 MPa
7 days: 16 MPa
28 days: 34 MPa

Pull Strength

Pipe: 300mm x 16 mm Rebar

24 hours: 25 kN
48 hours: 40 kN
7 days: 70 kN

Packaging and Shelf Life

Supplied in woven polypropylene bags with a waterproof inner liner. Bags of 20kg x 40 per pallet and shrink-wrapped for protection. Rock Support Systems C.G. has a shelf life of 12 months when stored unopened in dry conditions and out of direct sunlight.

Precautions

Health and Safety:

Rock Support Systems C.G. is non-toxic, but like all cement, is alkaline in nature. The use of gloves and goggles is recommended.

Rock Support Systems C.G. is non-flammable and non-combustible.

Technical Support

Rock Support Systems Mining Supplies Pty. Ltd. provides a technical and specialist support team to back its products in assisting customer requirements.



Description

Encapsulated Cable Grout is packed in a 15.4kg polypropylene woven bag with 7 sleeves. It is a mix which only requires the addition of water. The mixed grout is then placed by means of a suitable grout pump. It is a Portland based mixture.

Production Application

Encapsulated Cable Grout. is a pumpable full column grout for use in the installation of mechanical long anchors up to 16 m of length.

Mixing Instructions

One bag of Encapsulated Cable Grout consists of 7 sleeves, to be remove from bag and soaked into water and allow for water absorption until bubbles stop (bubble time).

Preferable temperature range is between 20°C and 30°C.

The grout is pumped into the hole after the installation of the anchor. To ensure full column grouting, ensure pipes are not blocked.

Performance Test

Initial Set (25°C):	4 to 5 hours
Final Set (25°C):	5 to 6 hours

Typical Compressive Strength

24 hours:	8 MPa
48 hours:	10 MPa
7 days:.....	16 MPa
28 days:.....	34 MPa

Pull Strength

Pipe: 300mm x 16 mm Rebar

24 hours:	25 kN
48 hours:	40 kN
7 days:.....	70 kN

Packaging and Shelf Life

Supplied in woven polypropylene bags with a waterproof inner liner. Bags of 15.4kg x 50 per pallet and shrink-wrapped for protection Encapsulated Cable Grout has a shelf life of 12 months when stored unopened in dry conditions and out of direct sunlight.

Precautions

Health and Safety:

Encapsulated Cable Grout is non-toxic, but like all cement, is alkaline in nature. The use of gloves and goggles is recommended.

Encapsulated Cable Grout is non-flammable and non-combustible.

Technical Support

Rock Support Systems Mining Supplies Pty. Ltd. provides a technical and specialist support team to back its products in assisting customer requirements.

