

MINOVA RUNAYA OVERVIEW.

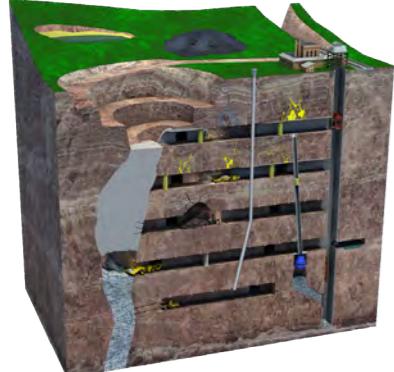
BOLTS | RESIN CAPSULES | INJECTION CHEMICALS | WIRE MESH | HIGH-QUALITY VENTILATION SYSTEMS

SECURING PERFORMANCE. TOGETHER.

Minova Runaya will manufacture and supply a range of ground support products including **bolts, resin capsules, injection chemicals, wire mesh & high-quality ventilation systems**

We actively support our customers with more than products, providing them with value added services and tailored product solutions. We are when and where they need us, securing their safety, performance and efficiency.

WHO DO WE SERVE?



HARD ROCK MINING

We support underground hard rock mines across the primary commodities. Our products are designed to competently provide safety and improve efficiency.



COAL MINING

We provide safe environments in extremely fractured and fluid ground conditions. We understand that safety and efficiency are the key requirements of coal production.



CONSTRUCTION

Stemming from our mining expertise, we have produced a wide range of products that are used in the construction industry. Our solutions are utilised in both above and below ground assets to secure, repair, restore and rehabilitate.



Cutting-edge technology solutions for the *mining and infrastructure industries* across India.

Minova Runaya combines the technical competences and global reach of the already established Minova with Runaya Metsource's project and manufacturing capabilities.

WORLD-CLASS LOCAL GROUND SUPPORT PRODUCTS.

Minova Runaya is currently constructing a facility at Bhilwara, Rajasthan to cater to Indian and global markets.

First products are expected to be delivered in January 2021 and will provide considerable direct and indirect employment.

The Bhilwara facility will provide products and services which were previously unavailable in India and had to be imported. Establishing this production facility will also support the Government of India's 'Make in India' and 'Atmanirbhar Bharat' initiatives.

PRODUCT TYPES

- ▶ Friction Bolts
- ▶ Solid Bolts
- ▶ Mesh products
- ▶ Plates
- ▶ Resin Capsules
- ▶ Injection Chemicals
- ▶ High Volume Output Grouts
- ▶ Anchoring Grouts
- ▶ Ventilation Control Devices

STEEL BOLTS.

Rock reinforcement includes methods that modify internal rock mass behaviours by installing structural elements that prevent further rock mass loosening, reduces deformation caused by excavating and stabilises the rock, extending the natural rock arch.

This type of reinforcement is an active method of support that includes point anchored bolts, friction bolts and grouted bolts.

We offer a full range of solutions that address the requirements for increased life cycle, ranging from stainless steel bolts to specialist coatings and new technologies.

We offer multiple coating solutions for a wide range of bolts that increase bolt lifespan while maintaining bolt performance. Due to varying geological conditions and project applications, a single bolt is unlikely to meet all requirements.

KEY FEATURES

- ▶ Proven historical performance
- ▶ Extensive quality controlled manufacture
- ▶ Flexible configurations to meet a variety of requirements

In addition to a complete range of steel and chemical components, we can provide an extensive and complimentary range of accessories for steel strata support requirements.



2m
30s

Average Installation time (per bolt)

SAFER. FASTER. MORE EFFICIENT.

NEW TECHNOLOGIES

Technology that reduces manual material handling and improves overall installation efficiency.

- Increase bolting speeds
- Increase worker safety
- Minimise operational delays
- Simplified supplier interface
- Reduced project costs

NEXT GENERATION BOLTING.

Our innovative bolting technology combines leading edge and high quality, high strength products to make rock bolting safer, faster and more efficient.

The combined advantages of our self-drilling anchor (SDA) bolts and our high performance, injectable, two component bulk resin grouts create a unique offering for mining environments.

Our innovative bolting range has been designed for dynamic, converging and variable rock conditions with options to replace cable bolts. We offer solutions to suit individual mine requirements and to work in with your surface support. Whether it be static or dynamic capacity, we have a range of options for you.

ADVANTAGES

RESIN GROUT

- ▶ Immediate load bearing capacity
- ▶ Adjustable volumes allow full encapsulation
- ▶ Guaranteed mixing quality
- ▶ Improved operator handling and safety

SELF DRILLING ANCHORS

- ▶ Rapid installation in varying ground conditions
- ▶ Optimised bolt and drill bit diameters
- ▶ Static and dynamic options
- ▶ Independent dynamic testing at impacts up to 50 kJ

FRICITION BOLTS.

Used in mining for decades and considered the simplest form of ground reinforcement.

- ▶ Unique shape that enables increased contact surface of the steel with the hole providing higher pull out loads
- ▶ Immediate frictional support at the face
- ▶ Quick and easy installation
- ▶ Post-grout with Minova cement grouts for extra load bearing capacity
- ▶ Various diameters and lengths



CABLE BOLTS.

Continuous roll or cut to length cable bolts for use in coal and hard rock mines.



- ▶ Proven historical performance
- ▶ Flexible formats with continuous roll or cut to length options
- ▶ 5.2mm cable bolt supplied with fish hook to anchor cable into borehole prior to grouting
- ▶ Bulb diameter changeable to suit requirements
- ▶ Available accessories and hole plugging products
- ▶ Resin point anchoring
- ▶ Bulbs to assist resin capsule mixing
- ▶ Wide range of plates and accessories

SECURA BOLTS.

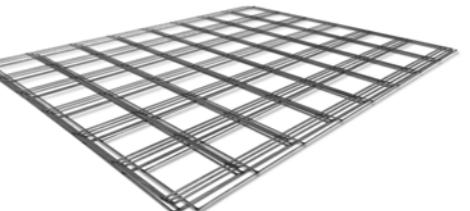
Specifically designed as a solid reinforcing bar for use in strata reinforcement of underground mining and tunnelling excavations.ground reinforcement.

- ▶ Proven historical performance
- ▶ Permanent primary support
- ▶ High strength thread profile
- ▶ Proven resin mixing performance
- ▶ High load transfer
- ▶ Extensive quality controlled manufacture



MESH.

Mesh provides surface support coverage to loose rock between installed rock bolts, in underground mining excavations.



- ▶ Multiple configurations: numerous sheet sizes, apertures, wire diameters and black or galvanised wire
- ▶ Rapid installation
- ▶ Reduced shotcrete requirement
- ▶ Field proven

PLATES.

Developed and proven for use in point anchored or fully encapsulated roof and rib bolting applications.

- ▶ Ribbed surface profile for enhanced resin mixing and load transfer
- ▶ Extensive quality controlled manufacture
- ▶ High load transfer
- ▶ Multiple lengths, diameters, pin and paddle configurations



COAL BOLTS.

Plates provide optimal surface support manufactured from high-strength steel and designed to help prevent loose material from falling between the roof bolt pattern and provide strength to your immediate roof.



Options of each plate type are available in numerous dimensions to suit any bolt type and diameter in the Minova Runaya range. Plates are available with or without a hanger loop in black steel or hot dip galvanised.

- ▶ Optimal surface support
- ▶ Flexibility
- ▶ Variety of coatings
- ▶ Variety of configurations
- ▶ Reduces the number of plates and handling required on site

ANCHORING GROUTS.

Minova has been committed to global research and development since the mid-1980's.

Minova Runaya range a comprehensive selection of anchoring grouts for all your general and specific bolting applications. These include cable bolt grouting, general strata injection and consolidation applications.

Minova's tried and tested anchoring grouts have been specially designed for hard and soft rock mining projects and tunnelling applications where rapid strength gain is essential.

KEY FEATURES

- ▶ Rapid strength gain
- ▶ Durability of high strength and low porosity for long term life
- ▶ All grout formulations include a non-shrink expansion compensation system
- ▶ Suitable for all forms of manual and mechanised cable bolt grouting
- ▶ Excellent pumpability
- ▶ Resistance to high saline and acidic ground water
- ▶ Supplied pre-blended and pre-packaged, requiring only the addition of set amounts of water in a high shear mixer to produce high quality grouts

Other applications include thixotropic grouting, long distance pumping, water stop grouting and rapid advance drill and blast development.



Stratabinder HS



CMT Grout



FB400

FB400C



Tekseal



Conbex HES

Conbex HT



FB200R

FB200



TekThix



Rockfast Hydroblend

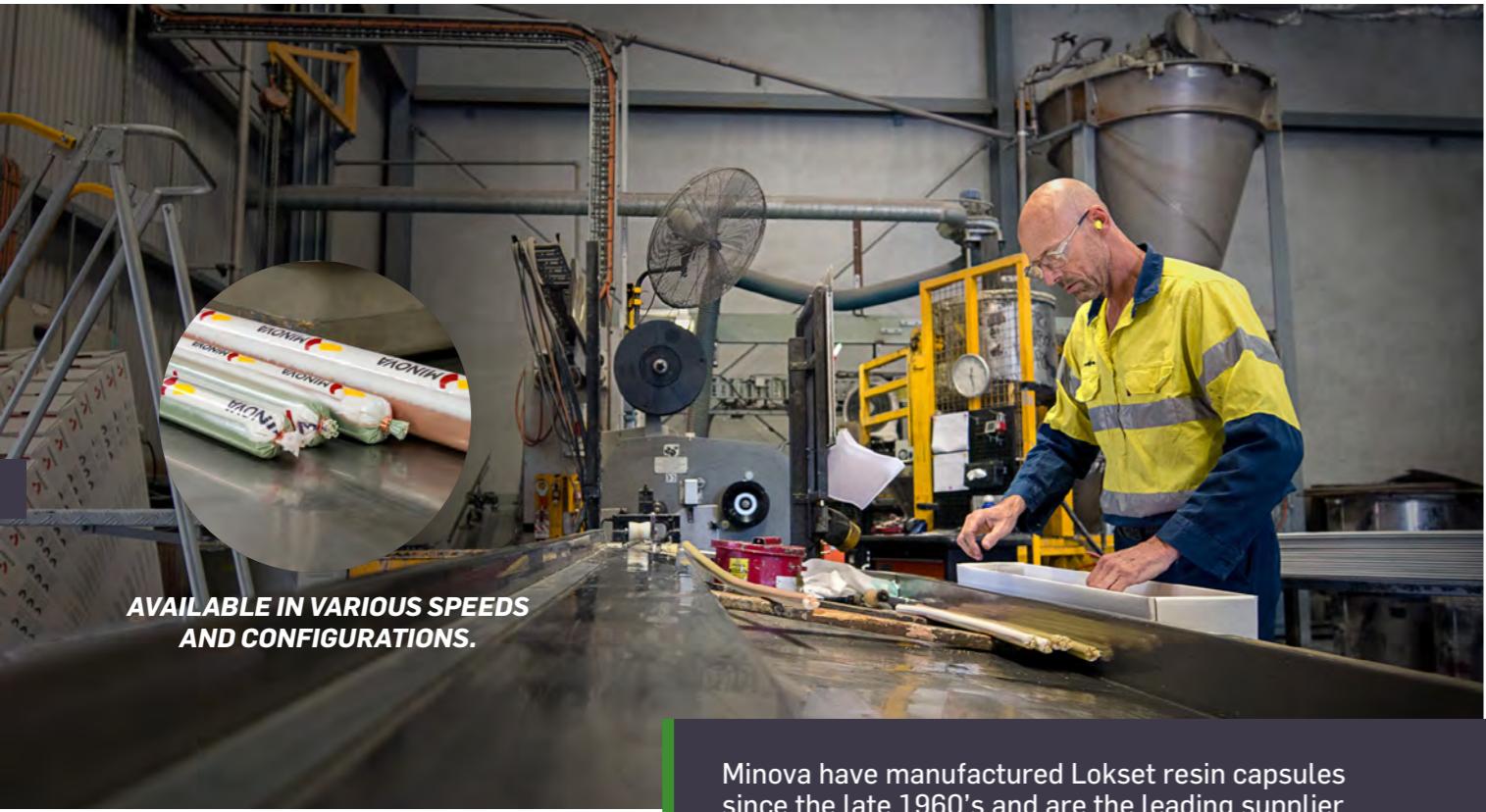
HIGH VOLUME OUTPUT GROUTS.

Defined by the fact that considerably larger outputs are possible when mixing Minova's high volume output grouts, they clearly outperform traditional cement grouts in a wide range of soft and hard rock mining applications.

Minova Runaya offer an extensive range of high volume output grouts includes foaming and non-foaming products for a large range of routine and unique applications. These include general underground cavity filling, collapsed roadway recovery, ventilation seals, backfilling behind steel sets and sidewall (rib) stabilisation for soft rock mining, plus rockfill consolidation and pillar replacement for hard rock mining.

KEY FEATURES

- ▶ Rapid placement with quick strength gain
- ▶ Remote pumping over distances from 200m - 5km are possible
- ▶ Reduced formwork requirement
- ▶ Rapid gelling quickly seals leakage paths
- ▶ Quality controlled application
- ▶ Yields to ground pressure thereby reducing stress concentration
- ▶ Pre-blended/packaged, requiring only the addition of set amounts of water in a continuous placer pump to produce high quality grouts
- ▶ Can be supplied in 20kg or 1.2 ton bags



AVAILABLE IN VARIOUS SPEEDS AND CONFIGURATIONS.

RESIN CAPSULES.

The Lokset system consists of an easily handled cartridge, containing a highly reinforced polyester resin component, together with its catalyst, in accurately measured quantities.

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

- ▶ Protects the bolt from corrosion and can be used in wet conditions
- ▶ Shorter installation times with Spin to Stall resin capsules
- ▶ Higher compressive strength, strong, rapid and consistent anchorage
- ▶ Guaranteed installation of both fast and slow set capsules when Lokset Toospeedie
- ▶ With slow set, single speed capsules gain full encapsulation, without pre-tensioning

Minova have manufactured Lokset resin capsules since the late 1960's and are the leading supplier and innovator in this field. Local manufacture and supply ensures security of supply, service and support to the India market.

LOKSET TOOSPEEDIE

Two speeds in a single capsule
Pre-tensioning of rock bolts

LOKSET X2

Two speeds in two joined capsules
Used in Hard Rock Mining

LOKSET SUPAMIX

Water based resin capsule
6 month shelf life

LOKSET SPIN TO STALL

Faster installation speeds
Improved installation experience

LOKSET ADVANCE

Latest generation of capsule
12 month shelf life
Improved installation performance

LOKSET J AND LONG TENDON SERIES

Installing Cable bolts
Special formulations to reduce insertion force



Bevedan/Bevedol



Carbomine



Geoflex



Carbofill



Geofoam

INJECTION CHEMICALS.

With over 40 years of global experience in the development, manufacture and licensed application of these products, Minova Runaya are now uniquely positioned to offer you the highest performing solution to meet the demands of your project.

For many decades Minova injection chemicals have been successfully used in underground mining to consolidate fractured strata and prevent water ingress. Our range includes polyurethane (PUR), urea silicate and phenolic based systems. Our polyurethane products can be injected under high pressure and our cavity filling resin systems rapidly fill underground voids when timing is critical.

KEY FEATURES

- ▶ Variety of grades to suit numerous application situations
- ▶ Low viscosity allowing good penetration into small fissures
- ▶ Excellent adhesive strength forming strong bond with strata
- ▶ Quick reaction time to reduce migration and loss of material
- ▶ Yields to ground pressure, accommodating subsequent movement
- ▶ High mechanical resistance gives improved support of strata
- ▶ Consolidates both brittle and wet fractures and water bearing strata
- ▶ Seals against water with hydrostatic pressures





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RIICO Industrial Area Growth Centre
A-393(A), Hamirgarh, Dist. Bhilwara Rajasthan 311001 INDIA

T: +(61) 1300 646 682
E: mrpl@minovaglobal.com

www.minovaglobal.com/apac/minova-runaya

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