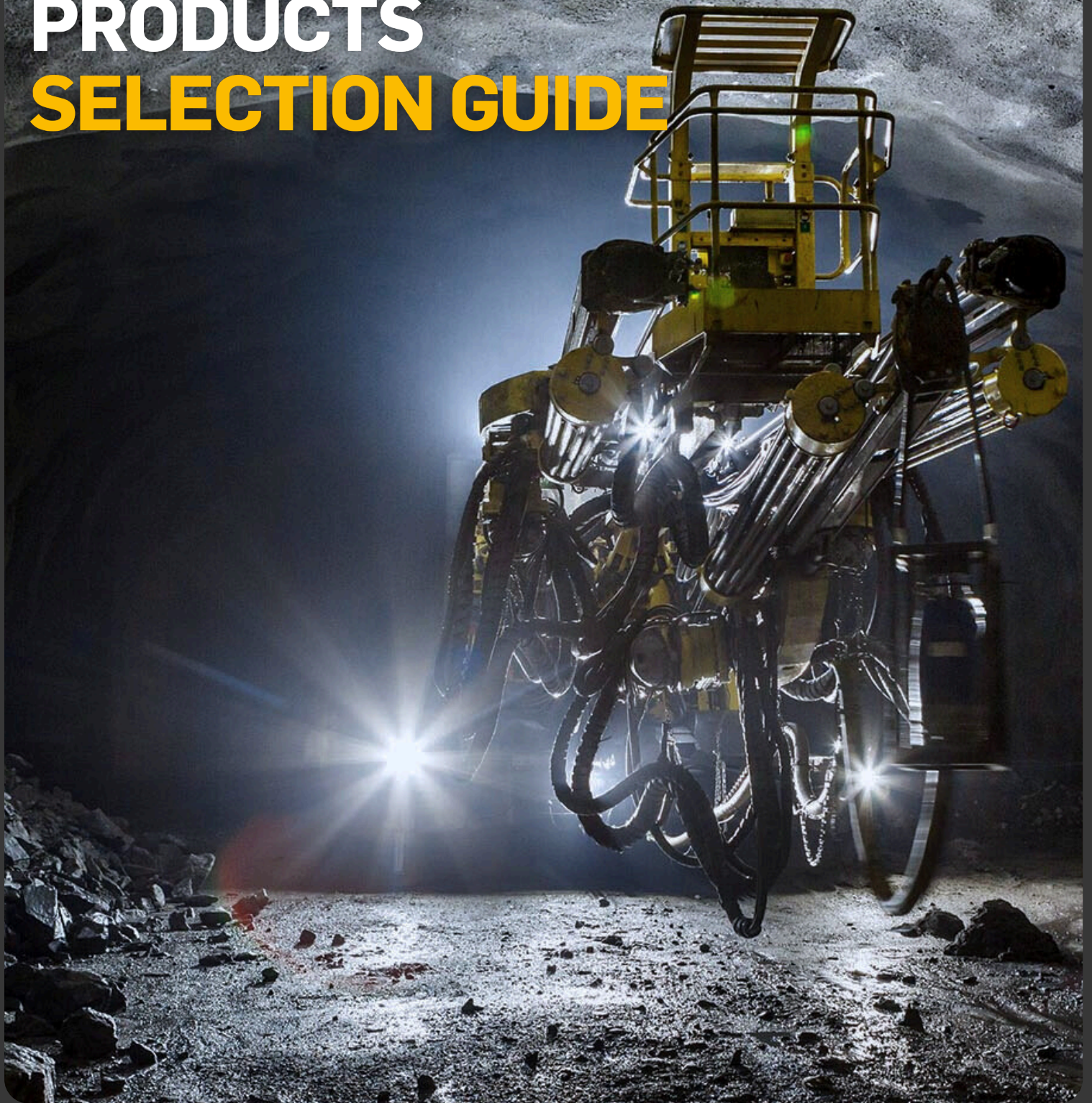




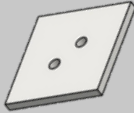

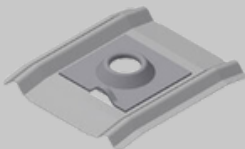
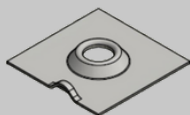








HARDROCK GROUND SUPPORT PRODUCTS SELECTION GUIDE




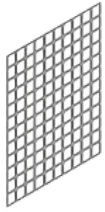



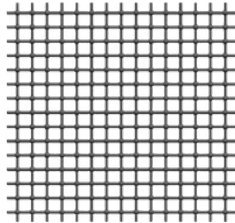
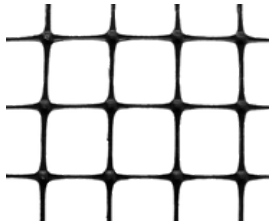
PRODUCT FAMILY	PRODUCT NAME	PRODUCT CHARACTERISTICS	PRODUCT APPLICATION
CHEMICAL BOLTS 	Secura Bolt R24/R28	<ul style="list-style-type: none"> • Solid 22mm/25mm reinforcing bar that is threaded at one end with an R (Nova) thread profile and an integrated 36AF dome torque nut. • Standard lengths 1.8-3m, additional sizes are available upon request. • Design includes a unique paddle system to improve resin mixing providing higher bond strength in large diameter boreholes. 	<ul style="list-style-type: none"> • Permanent primary support. • Galvanized finish available for corrosive applications. • Primary use is strata reinforcement in underground hardrock mines.
	Secura DB (Debonded)	<ul style="list-style-type: none"> • Smooth solid bar with paddle on one end. The bolt end is equipped with Nova R thread and an integrated 36AF dome torque nut. • Standard lengths 1.8-3m, additional sizes are available upon request. • Custom alloy steel enables the smooth section of the bar between the anchor point and face plate capable of deforming thereby absorbing large amounts of energy in dynamic grounds. 	<ul style="list-style-type: none"> • Highly effective ground support element in underground installations and tunnels, subjected to large deformations in rock mass such as rock burst and squeezing rock.
CHEMICAL BOLT PLATES 	Crown Plates	<ul style="list-style-type: none"> • Crown plates are high load bearing capacity plates that provide optimal support in a range of strata conditions. • These plates are typically used with solid (Secura®) bolts. • Available sizes: 150/200mm 	<ul style="list-style-type: none"> • Primary use is strata reinforcement in underground mines. • Designed to transfer the load onto the rockface and secure the mesh.
	Combi Crown Plates	<ul style="list-style-type: none"> • Combi Crown plate is where a Crown plate is welded onto a strata plate. Combi plates are typically used for meshing application with Secura bolts. 	<ul style="list-style-type: none"> • Combi Crown plates are available with or without a utility slot for supporting miscellaneous services. Plates can be supplied in black steel or hot dip galvanised.
CABLE BOLTS 	Twin Strand Cable Bolts	<ul style="list-style-type: none"> • Cable bolt range includes continuous roll or cut to length cable bolts. Available in various lengths and bulb configurations. • Available in 15.2 mm plain and bulbed cable bolts and Superstrand 21.8mm diameter cables. 	<ul style="list-style-type: none"> • Primary use is hard rock mining. • Bulbs at the top to aid resin capsule mixing. Reinforced bulbs every 1000/500mm down the groutable length of the cable. Tensionable to 25 tonnes.

PRODUCT FAMILY	PRODUCT NAME	PRODUCT CHARACTERISTICS	PRODUCT APPLICATION
CABLE BOLT PLATES	Dome Plates 	<ul style="list-style-type: none"> • High load bearing capacity plates that provide optimal support in a range of strata conditions. • Available in various sizes to suit flat/domed Barrel & Wedge type and diameter. 	<ul style="list-style-type: none"> • Dome plate applicable for single strand use, flat plate applicable for single and twin strand cables. • Designed to transfer the load onto the rockface and secure the mesh.
	Flat Plates 		
FRICITION BOLTS 	Strata Bolt	<ul style="list-style-type: none"> • Bolts provide immediate frictional support at the face and can be installed with handheld or mechanised equipment. • Pull test collars available for QA. • For additional load bearing capacity, the bolts can be post grouted with cement grouts. • Diameter available: 34mm, 40mm 47mm 	<ul style="list-style-type: none"> • Primary use is strata reinforcement in underground mines. • Used in the development and production headings for immediate support.
	HCF Bolt (High Capacity Friction Bolt)	<ul style="list-style-type: none"> • HCF Bolt increased load performance in heavy ground conditions. • Diameter available: 47mm 	
FRICITION BOLT PLATES	Combi Plates 	<ul style="list-style-type: none"> • Combi plates are high load bearing capacity plates that provide optimal support in a range of strata conditions. • Combi plates are designed where a dome plate is welded onto a strata plate. • Assists in improving mine efficiency by reducing handling multiple plates. • Available in: 280x300x1.8mm 	<ul style="list-style-type: none"> • Primary use is strata reinforcement in underground mines. • Designed to help prevent loose material from falling between the roof bolt patterns and provide strength to the immediate roof. • Available in black and galvanised versions to suit installation conditions.
	Dome Plates 	<ul style="list-style-type: none"> • High load bearing capacity plates that provide optimal support in a range of strata conditions. • Available in various sizes to suit application. 	

PRODUCT FAMILY	PRODUCT NAME	PRODUCT CHARACTERISTICS	PRODUCT APPLICATION
LOKSET® RESIN CAPSULES	<p>Classic</p> 	<ul style="list-style-type: none"> The Lokset® 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. 	<ul style="list-style-type: none"> The Lokset® resin capsule is used primarily as an anchoring medium for Secura Bolts/ Secura DB and Cable Bolts. They provide roof and sidewall support in mines and tunnels. Suitable for Jumbo installation and/or pneumatic hand bolters. Suitable for Trajectaflex or alternative resin capsule shooter systems. 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.
	<p>Advance®</p> 	<ul style="list-style-type: none"> Lokset® Advance® Resin has all the advantages of the Lokset Classic, with extended shelf life of 12 months at 25°C reducing waste and disposal. 	<ul style="list-style-type: none"> The Lokset® Advance® resin capsule is used as an anchoring support in strata especially where long tendon support is required.
	<p>TooSpeedie®</p> 	<ul style="list-style-type: none"> The Lokset® Toospeedie® is a two-speed resin capsule that is available in variations and combinations from extra-extra slow, to extra fast. Specific percentages of TooSpeedie® components are available on request. 	<ul style="list-style-type: none"> The Lokset® Toospeedie® resin capsule is used primarily as an anchoring medium for rockbolts and long tendons. They provide roof and sidewall support in mines and tunnels. Suitable for Jumbo installation and/or pneumatic hand bolters.
	<p>X2</p> 	<ul style="list-style-type: none"> Lokset® X2 resin capsules have been developed to enable full encapsulated mechanised resin bolting, utilising the Quick-Chem™ resin capsule insertion system. Profit Quick-Chem™ versions are available to increase installation efficiency and assist waste reduction. The Lokset® X2 system incorporates two resin capsules that are joined and folded in half for packaging. Available in 1.5m X2 and 1.2m X2 lengths. 	<ul style="list-style-type: none"> The Lokset® X2 resin capsules are typically installed using development Jumbos in underground headings with an excavation height of 4–6 m, where hand insertion is not safe or practical. The Lokset® resin capsule is used primarily as an anchoring medium for rockbolts.

PRODUCT FAMILY	PRODUCT NAME	PRODUCT CHARACTERISTICS	PRODUCT APPLICATION
<p>QUICK CHEM™ SYSTEM</p> 	<p>30mm</p> <hr/> <p>36mm</p>	<ul style="list-style-type: none"> • Quick-Chem™ is a patented system developed to assist resin capsule installation into boreholes for hardrock bolting. • The Quick-Chem™ system consists of a specially designed cap (Parachute) pre-fit/ suitable for attaching to 30 mm diameter and 36 mm diameter Lokset® resin capsules. • The insertion tube consisting of a threaded R32 adaptor sleeve (that locates in the drill coupling of the Jumbo drifter in seconds) and is secured to a 3-meter length of clear, high strength, flexible plastic tubing. 	<ul style="list-style-type: none"> • Safe; enables resin capsule to be inserted in bolt hole from remote location under supported ground. • Quick; no requirement for lifting baskets or manual resin insertion, capsule can often be placed in insertion tube from operator's cab. • Efficient; up to 200-hole insertions can be achieved from each tube. • Easy to use; clear tubing indicates position of resin capsule. • Robust; strong and flexible insertion tube. • Versatile; can be used with most drill rigs such as Robolters, Jumbo's, Boltec etc and in most rock bolting situations. • Adaptable; can be inserted through mesh and broken ground. • Reliable; assists the resin capsule in reaching the back of the hole undamaged.
<p>HYBRID BOLTS</p> 	<p>MY BOLT* (Minova Yielding Bolt)</p>	<ul style="list-style-type: none"> • MY Bolt is an easy to install mechanical combination bolt. Enables immediate support. • Yield design engineered to effectively absorb exceptionally high dynamic loads. • Available in 2.4M & 3M versions. Additional lengths available to suit mine specifications. • Available in HDG version to extend service life. 	<ul style="list-style-type: none"> • Easy installation with standard Jumbo attachments. • Immediate load bearing capacity on installation. • High load bearing capacity without use of grouts or resin. • A versatile bolt designed to accommodate various rock conditions, including fractured, highly fragile, robust, and seismic environments. • No resin or grout application is necessary, streamlining the installation process considerably. It can be seamlessly hammered into wet and fragmented ground without encountering any complexities or impediments.

PRODUCT FAMILY	PRODUCT NAME	PRODUCT CHARACTERISTICS	PRODUCT APPLICATION
<p>SELF DRILLING ANCHORS</p> 	<p>Carbothix</p> 	<ul style="list-style-type: none"> • Carbothix consists of two resin/hardener components, A and B. • After the two components have been effectively mixed, the resulting viscous emulsion will not absorb any water. 	<ul style="list-style-type: none"> • When intensively mixed together via a specialised static mixer from the metered pumping system the mixture thickens very quickly to form a tough interpenetrating network of non-porous elastic silicate or organomineral resin. • This minimises leakage from the bolt hole, displaces drilling water helping to ensure full encapsulation.
	<p>28, 32 and 38</p> 	<ul style="list-style-type: none"> • The self-drilling anchor system is a bolting solution that enables drilling and grouting in one operation. • The anchor bar features a hollow bore for flushing or simultaneous drilling and grouting. Fitted with a left-hand or right-hand R-thread for easy extension and connection to conventional rock drilling equipment. 	<ul style="list-style-type: none"> • Primary use is strata reinforcement as alternatives to conventional rock bolting systems. • When coupled together, SDA's provide an efficient alternative to long tendon support. • Ideal for use in poor ground conditions and spiling applications.
<p>MESH</p>		<ul style="list-style-type: none"> • Multiple configurations of mesh are available including numerous sheet sizes, apertures, wire diameters and black or galvanised wire. 	<ul style="list-style-type: none"> • Primary use in metal mining and tunneling development used in conjunction with ribbed and friction bolts. • Mesh provides surface support coverage for loose rock.
	<p>Steel</p> 	<ul style="list-style-type: none"> • Ausro straps are yielding straps which allow the straps to yield under load conditions allowing better load distribution between bolts. 	<ul style="list-style-type: none"> • Ausro straps allow for larger deformation and load distribution as the longitudinal members are able to slip through the looped cross-members, ensuring containment even with large strata movements. • Applicable in unstable ground conditions where seismic activity is present, to improve surface support and to ensure better connection between the surface support and bolts.

PRODUCT FAMILY	PRODUCT NAME	PRODUCT CHARACTERISTICS	PRODUCT APPLICATION
<p>MESH</p>	<p>GFRP</p> 	<ul style="list-style-type: none"> • GFRP mesh provides surface support coverage for loose rocks between installed bolts. • This mesh complies with standard grid applications while providing the added benefits of durability and cuttability. • The high load capacity at each joint, comparable to welded steel mesh, is unique and makes the design of GFRP grid reinforced RC structures a viable option. • GFRP Mesh is available FRAS rating upon request. 	<ul style="list-style-type: none"> • Primary use is roof support and shotcrete reinforcement in underground mines and tunnels.
	<p>Tensar®</p> 	<ul style="list-style-type: none"> • Tensar Biaxial Geogrid® mesh is a stiff, lightweight and monolithic geogrid mesh made from flame retardant polypropylene. • The mesh has integral junctions that give strength in two directions and a rectangular rib cross-section with square edges. • Available in black or white UV inhibitor. 	<ul style="list-style-type: none"> • Primary use is roof and rib control and soft bottom reinforcement. • Flexible and can be cut according to the mine site requirements.



NEW SOUTH WALES

Nowra

QUEENSLAND

Mackay

SOUTH AUSTRALIA

Adelaide

WESTERN AUSTRALIA

Perth

Customer Service:
1800 Minova / 1800 646 682 (free call within Australia)



minovaglobal.com/apac

The Minova Logo is a Registered Trademark.
© 2020 Minova Australia Pty Ltd.
® Registered trademarks Minova International Ltd

