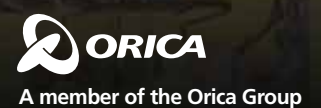


Secura Bolt Product Data



Solutions from Materials Technology





Secura Bolt™



Secura bolts were first introduced into the Australasian mining and tunnelling industry in 1997. The Secura bolt is a specifically designed solid reinforcing bar for use in strata reinforcement of underground mining and tunnelling excavations.

Secura bolts include a unique paddle system to improve resin mixing and consequently provide higher bond strength in larger diameter boreholes. Secura paddles are formed using a unique shearing process which results in a more consistent specification along the bolt length compared with traditional stamp paddle processes. Extensive installation testing has confirmed that the Secura 3½ paddle configuration assists in resin film shredding and provides consistent and efficient mixing of resin capsule components. The Secura bolt paddle configuration also does not become caught on mesh during installation as with other resin mixing systems.

The unique Nova thread (R thread) profile on the Secura bolts incorporates a modified rope thread with large root and small crest areas. The R Thread is a more robust performing thread in the underground mining and tunnelling environment where bolts are often exposed to dirt and other contaminants. R thread profile Secura bolts are available in R20, R24 and R27 sizes. A UNC thread is available with the ¾" size Secura bolt. And a continuous T threadbar is also available with the T20 Secura bolts.

Standard Secura bolts are supplied complete with either a slot pin integral domed washer torque nut, or with a separate dome washer and slot pin torque nut. Numerous paddle configurations and paddle diameters are available to maximise performance in various diameter boreholes. Secura bolts are also available in various diameters and lengths to suit individual strata support, excavation dimensions and equipment requirements. All bolts can be supplied black or hot dip galvanised and are manufactured and supplied from either of Minova's Sydney or Perth facilities.

Secura bolts have been successfully used as permanent support in mines and tunnels throughout Australia and New Zealand for over 10 years. Full technical and service support is available from experienced and trained personnel to all Secura bolt customers.

Advantages:

- proven historical performance
- extensive quality controlled manufacture
- permanent single pass bolting
- multiple lengths, diameters, paddle configurations
- consistent pin nut torque drive system
- high strength thread
- proven resin mixing performance

Resin Capsule Mixing Consistency

An extensive evaluation of Secura Bolts was completed in 2008 at Minova's full-scale bolt simulation facility in Nowra NSW. The primary evaluation objective was to determine the best possible bolt, paddle and borehole diameter combinations to ensure consistent resin mixing during in-situ installations.

The following table indicates the most consistent performing bolt and paddle diameter combinations, plus the maximum suggested borehole diameter for each bolt/paddle combination:

Bolt	Steel Grade	Typical Bolt Diameter	Nominal Paddle Diameter	Nominal Borehole Diameter
3/4" Secura Bolt – 3 ½ paddles	300+	3/4"	24.5 mm	28.0 mm
T20 Secura Bolt – 3 ½ paddles	K1017	19.5 mm	30.0 mm	33.0 mm
R24 Secura Bolt – 3 ½ paddles	K1045	21.7 mm	30.0 mm	33.0 mm
R24 Secura Bolt – 3 ½ paddles	K1045	21.7 mm	32.0 mm	35.0 mm
R24 XHT Secura Bolt – 3 ½ paddles	HSAC840	21.7 mm	30.0 mm	33.0 mm
R27 Secura Bolt – 3 ½ paddles	500N	23.0 mm	30.0 mm	33.0 mm
R27 Secura Bolt – 3 ½ paddles	500N	23.0 mm	32.0 mm	35.0 mm

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Technical Data

Mechanical Properties	R27 Minimum	R27 Typical	R24 Minimum	R24 Typical	R24 XHT Minimum	R24 XHT Typical	T20 Minimum	T20 Typical	3/4" Minimum	3/4" Typical
Core Diameter (mm)	23	23.5	21.45	21.7	21.45	21.7	19.3	19.5	17.0	17.3
Bar Diameter Including Ribs (mm)	26	27	22.6	23.2	22.6	23.2	22.2	22.5	19.0	19.7
Nominal Cross sectional area – Bar (mm ²)	415	450	361	370	361	370	293	299	227	242
Yield Strength (MPa)	500	550	400	445	600	675	500	550	300	340
* Yield Force Minimum Diameter (MT)	20.4	22.4	12.6	14.0	18.9	21.3	14.5	16.6	5.6	6.3
** Yield Force Typical Diameter (MT)	23.1	25.4	14.9	16.8	22.3	25.5	14.5	16.6	6.9	8.6
Tensile Strength (MPa)	600	650	600	730	840	890	600	640	440	490
* Tensile Force Minimum Diameter (MT)	24.4	26.5	18.9	23.0	26.5	28.1	17.9	19.3	8.6	9.1
** Tensile Force Typical Diameter (MT)	27.7	30.0	22.3	27.5	31.2	33.6	17.9	19.3	10.2	12.0
Elongation (% 5D)	12	22	14	22	15	19	12	21	22	27
Mass per metre – Bar (kg/m)	3.4	–	3.0	–	3.0	–	2.4	–	–	1.90

Note: Metric Tonne (MT)

* Yield Force Minimum and Tensile Force Minimum values are calculated on the smallest diameter area of the bolt (thread root diameter) as per AS1275-1985 and ASTM F432-04.

** Yield Force Typical and Tensile Force Typical values are calculated on the nominal cross sectional area of the bar, as provided by the steel supplier.

Plates

Minova manufactures a comprehensive range of specifically designed plates for use with rock bolts and cable bolts. Extensive product data is available on Minova's full range of plates from Minova's product catalogue and web site, www.minova.com.au
Plates most typically used with Secura Bolts are:

Dome Plate 36	• 150 mm x 150 mm x 7 mm
Combi Plate 36	• 240 x 300 mm • 125 x 125 x 4 mm
Crown Plate	• 150 x 150 x 5 mm

All codes listed below include left hand thread. Right hand threaded bolts are available on request. Other sizes and combinations are available on request.

Codes, Dimensions and Weights

Item Code	Description	Unit Weight	Pack Size
SB202329	Secura Bolt R27x1800 3½ x 30 mm Paddle Black	6.7 kg	100
SB2023	Secura Bolt R27x1800 3½ x 30 mm Paddle Gal	6.7 kg	100
SB202316	Secura Bolt R27x1800 3½ x 32 mm Paddle Black	6.7 kg	100
SB202321	Secura Bolt R27x1800 3½ x 32 mm Paddle Gal	6.7 kg	100
SB202327	Secura Bolt R27x2400 3½ x 30 mm Paddle Black	8.8 kg	100
SB202323	Secura Bolt R27x2400 3½ x 30 mm Paddle Gal	8.8 kg	100
SB202327	Secura Bolt R27x2400 3½ x 32 mm Paddle Black	8.8 kg	100
SB202323	Secura Bolt R27x2400 3½ x 32 mm Paddle Gal	8.8 kg	100
SB202319	Secura Bolt R27x3000 3½ x 30 mm Paddle Black	11.2 kg	100
SB202324	Secura Bolt R27x3000 3½ x 30 mm Paddle Gal	11.2 kg	100
SB202319	Secura Bolt R27x3000 3½ x 32 mm Paddle Black	11.2 kg	100
SB202324	Secura Bolt R27x3000 3½ x 32 mm Paddle Gal	11.2 kg	100
SB202015	Secura Bolt R24x2400 3½ x 30 mm Paddle Black	7.2 kg	100
SB202	Secura Bolt R24x2400 3½ x 30 mm Paddle Gal	7.2 kg	100
SB202140	Secura Bolt T20x2400 3½ x 29 mm Paddle Black	6.0 kg	100
SB202173	Secura Bolt T20x2400 3½ x 29 mm Paddle Gal	6.0 kg	100
	Secura Bolt 3/4x2100 3½ x 22 mm Paddle Black	4.0 kg	100

Secura Bolt is a registered trademark of Minova Australia Pty Ltd





Product Service Support

Minova provides a full service support package to customers, including underground pull testing, operator awareness training, underground audits and stock control assistance. Each service package is developed to suit the individual customers requirements.

All aspects of Minova's product service support service is provided by experienced trained and qualified personnel.

Additional Information

For additional information relating to any aspect of this product specification data, including product performance, quality, testing, specification, range, availability etc. please contact your nearest Minova office, or email: technicalsupport@minovaint.com

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