



# Secura Bolt™ – De-bonded

Product Data





## Secura Bolt™ – De-bonded

Secura bolts were first introduced into the Australasian mining and tunneling industry in 1997. The Secura bolt is a specifically designed solid reinforcing bar for use in the strata support of underground mining and tunnelling excavations. Using all the normal standard configurations (listed below) of the R27 Secura Bolt, Minova has now in addition developed the **R27 Debonded Secura Bolt** for use in “squeezing” ground conditions.

1. 3.5 x 32 mm paddle system
2. New and improved R27 domed washer nut
3. Unique Nova (R) thread
4. Varied thread length to customers requirements
5. Either black or hot dipped galvanised steel

Minova have now developed the R27 De-bonded Secura Bolt by incorporating a specific sized polyethylene de-bonding sleeve that fits over the R27 secura bolt to allow the Y500 steel D bar to elongate as the load enters into the minimum/typical yield.

This simple system’s yielding capabilities are determined by the length of de-bonded polyethylene used to create the free bolt length which in turn is calculated in conjunction with the minimum 12% to typical 22 % bar elongation.

The de-bonding of the R27 Secura bolt can be set to different lengths/parameters depending on customer requirements. Common setting is for the polyethylene to start at the end of the thread or alternately 300 mm from the thread.

The application for the Minova R27 De-bonded Secura Bolt is in squeezing ground conditions where mine geotechnical engineers have calculated certain ground deformation through monitoring systems against their support system models. The R27 De-bonded Secura Bolt has been designed for these specific rock / ground squeezing conditions and not as a genuine dynamic support product.

The R27 Debonded Secura Bolt is complimented in use with a specifically designed 10 mm dome

plate, the plate’s load capacity is well beyond the Y500 D bar typical tensile strength. This plate is a very important component that accepts the transferred load of the ground deformation to effectively stretch the de-bonded (“free” bar) section of the R27 D bar without the plate deforming/failing.

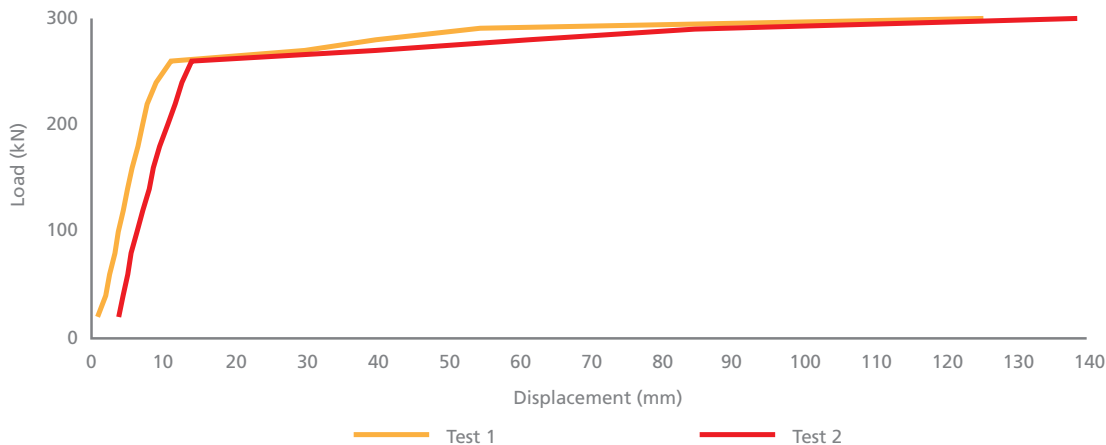
Considerable lab testing has been performed followed by insitu trials. Further testing has also been carried out at the Minova test facility at Nowra, NSW. The Minova – Nowra test facility allows for the complete test bolt installation to be dissected so as a thorough examination can be made on all the aspects of the R27 de-bonded Secura Bolt i.e. bar stretch length, encapsulation length, resin mixing quality etc.

As detailed in the load displacement graph below the R27 Y500 D bar is loaded and brought into the minimum / typical yield strength before the elongation properties of the “free” bar length begins to re-act & stretch.

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The graph example below shows the displacement / stretch capability using 1.5m of polyethylene as the de-bonding agent.

Load Displacement Test Chart



## Advantages

- Maintains its support capacity whilst squeezing ground movement is taking place.
- Can be adjusted to accommodate varied lengths of displacement.
- Allows for full encapsulation to be maintained
- Available in black or hot dipped galvanised steel.
- Can be used in the most common actual 37 – 38 mm resin bolt hole size.
- Installed using the same installation procedures as regular resin bolting.
- Cost effective in terms of the basic use of existing Minova manufactured products with the simple addition of the polyethylene de-bonding agent.

## Technical Data

Bolt	Steel Grade	Typical Bolt Diameter	Nominal Paddle Diameter	Nominal Borehole Diameter
R27 Secura Bolt – 3 ½ paddles	HT Y500 N-Bar	23.5 mm	32.0 mm	35.0 mm

Mechanical Properties	R27 Minimum	R27 Typical
Core Diameter (mm)	23	23.5
Rib Height (mm)	26	27
Cross Sectional Area – Bar (mm <sup>2</sup> )	415	450
Yield Strength (Mpa)	500	550
* Yield Force Minimum Diameter (MT)	20.4	22.4
** Yield Force Typical Diameter (MT)	23.1	25.4
Tensile Strength (Mpa)	600	650
* Tensile Force Minimum Diameter (MT)	24.4	26.5
** Tensile Force Typical Diameter (MT)	27.7	30.0
Elongation (%) 5D	12	22
Mass per metre – Bar (kg/m)	3.4	–
***1000 mm de-bonded ( mm ) Elongation	72	109
***1500 mm de-bonded ( mm ) Elongation	88	129

### New Domed R27 Nut included on the R27 de-bonded Secura Bolt

Note: \* Yield Force Minimum and Tensile Force Minimum values are calculated on the smallest diameter area of the bolt as per AS1275-1985 and ASTM F432-04.  
 \*\* Yield Force Typical and Tensile Force Typical values are calculated on the nominal diameter area of the bolt, as provided by the steel supplier.  
 \*\*\* Typical values are calculations based on lab test results.

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## R27 De-bonded Secura Bolt

Lab Testing (Minova – Nowra Test Lab)



R27 de-bonded secura bolt before applying load



R27 de-bonded secura bolt after load has been applied



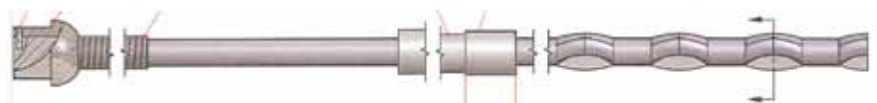
Lab testing resin mix quality – toe end of bolt



Lab testing resin mix quality – middle section of bolt

## Testing Standards

Steel Bar	AS/NZS 4671
Threading	AS1275
Galvanising	AS4680
Polyethylene Tube	AS/NZS 4130:2009



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## Plate

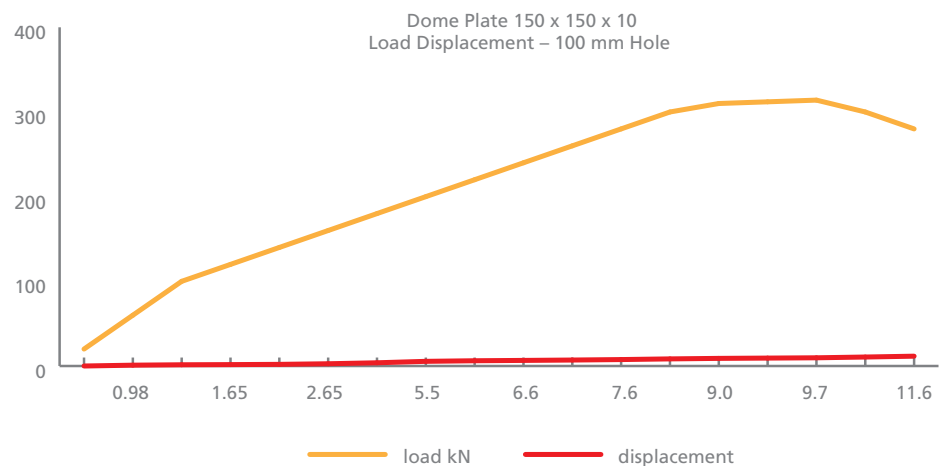
The R27 De-bonded Secura Bolt has been developed through extensive testing using the Dome Plate 36 150x150x10.

The 10 mm dome plate has been load tested consistently to a minimum of 315kN which is in excess of the maximum tensile strength of the R27 De-bonded Secura Bolt Y500 D-Bar.

The load tests on the dome plate were independently conducted and the results are available on request.

## Important parameters to consider for the installation of the R27 De-bonded Secura Bolt

1. Use only Minova Lokset resin anchors or Minova "Supamix" resin anchors.
2. Require ACTUAL hole size 37.0 – 38.0 mm.
3. R27 De-bonded Secura Bolt requires the 3 ½ x 32 mm paddle system.
4. R27 De-bonded Secura Bolt should not be fed into the bolt hole any further than 200 mm before applying full rotation & feed.
5. Jumbo's, Boltec's, Robolter's need to have their rotation speed set at approximately 280 rpm
6. The general spin & feed times for i.e. a 2.4m bolts should be 15 seconds plus additional 5 seconds spin when the bolt has reached the back of the hole. There may be a case where the medium/slow set resins need to be used in preference to fast / slow set so that the spin & feed times ( above ) are maintained.
7. It is important that the correct 10 mm dome plate is used for the installation of the R27 de-bonded Secura Bolt.



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## Product Codes, Description, Weight and Pack Size

### Bolt

Product Code	Description	Unit Weight	Pack Size
SB202407	Secura Bolt R27x2400 LHT DBWSPNut 3.5x32 Pdl Gal – 1m debonded	9.4 kg	100
SB202408	Secura Bolt R27x3000 LHT DBWSPNut 3.5x32 Pdl Gal – 1.0m debonded	11.7 kg	100
SB202404	Secura Bolt R27x2400 LHT DBWSPNut 3.5x32 Pdl Blk – 1.5m debonded	9.2 kg	100
SB202407	Secura Bolt R27x2400 LHT DBWSPNut 3.5x32 Pdl Gal – 1.5m debonded	9.3 kg	100

### Plate

Product Code	Description	Unit Weight	Pack Size
DP302149	Dome Plate 36 150x150x10 Blk	2.1 kg	400
DP302552	Dome Plate 36 150x150x10 Gal	2.2 kg	400

### Resin

Product Code	Description	Box Qty	Pallet Qty
TS120030FSX2Q	Toospeedie Resin Anchor 1200/30 Fast / Slow x 2 QC Cap	7	294
TS150030FSX2Q	Toospeedie Resin Anchor 1500/30 Fast / Slow x 2 QC Cap	6	252
SMTS120030FSX2Q	Supamix Toospeedie Resin Anchor 1200/30 Fast / Slow x 2 QC Cap	7	294
SMTS150030FSX2Q	Supamix Toospeedie Resin Anchor 1500/30 Fast / Slow x 2 QC Cap	6	252

### Accessories

Product Code	Description	Unit Weight	Pack Size
AC905042	Driver Socket T38 x 600 Hex 42AF	7.5 kg	Each
C947	30mm Quick Chem Insertion Tube x 3.0m Complete		20
C1054	30mm Quick Chem Insertion Tube x 3.6m Complete		20

### 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](mailto:technicalsupport@minovaint.com)

Secura Bolt is a registered trademark of Minova Australia Pty Ltd

## Minova Australia

### Production / Operations Sites

#### Smithfield NSW

8 Tarlington Place  
+61 (0)2 8788 7800

#### Nowra NSW

102 Albatross Road  
+61 (0)2 4428 5200

#### Wyong NSW

Amsterdam Circuit  
+61 (0)2 4350 8700

#### Arndell Park NSW

2 Squill Place

#### Mackay QLD

Southgate Drive Paget  
+61 (0)7 4968 5300

#### Welshpool WA

8 Dampier Place  
+61 (0)8 9356 5902

### Sales Offices & Branches

#### Parkes NSW

#### Adelaide SA

#### Townsville QLD

## Minova Worldwide

### Australia

Group Headquarters

### Production Sites

#### Germany

Minova CarboTech GmbH  
Minova BWZ GmbH

#### India

Minova Minetek Pvt. Ltd.

#### Poland

Minova Ekochem S.A.  
Minova Arnall Sp. z o.o.  
Minova-Ksante Sp. z o.o.

#### Russia

ZAO Carbo-ZAKK  
OOO Minova TPS  
Branch OOO Minova (Ural)

#### South Africa

Minova RSA

#### Kazakhstan

TOO Minova Kasachstan

#### Ukraine

OOO Minova Ukraina  
AOZT Carbo i Crep

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Minova Weldgrip Ltd.

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(Minova SA)

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Minova Canada Inc.

### Chile

Minova Mining Services SA

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### Taiwan R.O.C.

Minova Asia Pacific Ltd.

### USA

Minova USA Inc.

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Branch Italy

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#### Russia

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#### Sweden

Minova Nordic AB

#### Switzerland

Minova AG

#### Turkey

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Branch Turkey

#### United Kingdom

Minova Weldgrip Ltd.



The Ground Support Company



A member of the Orica Group