

## MINING BARS FOR ROCK TENDONS

### **RANGE**

Mining-specific rebars have been developed to improve on the performance of conventional rebar in mine rock - reinforcement applications. In summary these are:

#### **Step Bar™**

- Used mainly in small annulus resin spinning (chemical anchoring) applications.
- Suited to left or right spin.
- Typically applied in coal mine roof bolting.

#### **High Step Bar™**

- Used mainly in large annulus resin spinning (chemical anchoring) applications.
- Suited to left or right spin.
- Also effective used with cement grouting.
- Typically applied in hard rock bolting.

#### **Kat Bar™**

- Fully threaded bar with a coarse pitch hot-rolled double-start thread along the entire length.
- Typically used with mechanical anchoring and / or grouting, especially where re-tensioning or variable length is required.

### **PHYSICAL PROPERTIES**

Bar Type	Min-imum Yield Stress (MPa)	Min-imum ultimate Stress (MPa)	Min-imum Yield Load (kN)	Ultimate Load (kN)	Elong-ation	Aver- age Core Dia- meter (mm)	Aver- age Rib Pitch (mm)	Largest dia- meter (mm)	Average High rib height (mm)	Average Low rib height (mm)	Average cross- sectional area (mm <sup>2</sup> )	Linear mass (kg/m)
14.5mm Step Bar	557	600	90	104	10%	14.05	14.0	15.85	0.6	0.4	165	1.308
16 mm Step Bar	500	575	100	116	12%	15.9	11.5	17.8	0.85	0.45	201	1.578
18 mm Step Bar	590	678	150	180	12%	18.0	13.5	20.3	1.0	0.6	254	1.998
20 mm Step Bar	500	575	150	172	12%	20.0	13.5	22.3	1.0	0.6	317	2.489
20 mm High Step Bar	500	575	150	172	12%	20.0	13.5	23.3	1.5	0.9	324	2.543
16 mm Kat Bar	500	575	100	116	12%	15.8	5.0*	18.5	1.5		191	1.501
20 mm Kat Bar	500	575	150	172	12%	18.9	6.0*	22.9	1.7		309	2.420
25 mm Rebar	450	518	220	253	12%	24.2	15.8	28.5	1.6		491	3.85

\* NOTE: KAT BAR thread pitch is double the rib pitch due to the two-start thread.

## **COMMON FEATURES**

All the mining bars:

- Are made from 500 MPa (73000 psi) steel
- Have purpose-designed surface geometry to optimise performance in their application
- Comply with SABS 1408 (South African Standard Specification for "Mechanical components for tendon based rock support")
- Are supplied as rock bolts in various configurations of length and accessories (please refer to Resin Anchors and Mechanical Anchors information sheets)

## **DESCRIPTIONS**

Step Bar™

High Step Bar™

### STEP BAR GENERAL INFORMATION

STEP BAR and HIGH STEP BAR have been developed to improve in-hole bonding strengths and system stiffness for both chemical (resin) and cementitious (grout) anchoring in rock tendon applications. STEP BAR is used in slim hole, small annulus applications (mainly coal) and HIGH STEP BAR in larger annulus applications (most hard rock).

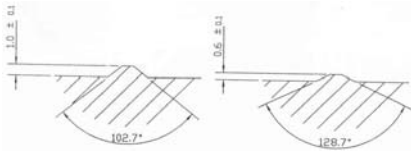
The surface geometry - rib profile, angle, pattern and height – is specifically designed to actively assist with in-hole mixing and distribution of resin and to optimise load transfer. This becomes critical with high speed resin gel times. Alternate high and low ribs increase bond length from wave crest to wave crest without sacrificing "spinability". The herringbone pattern allows for left or right spin.

STEP BAR is generally supplied in the form of rock bolt stud assemblies. Assemblies vary in the choice of bar diameter and length, washer type and size, nut and seat as well as in the provision of torque indicators, shear pins, nibs and mechanical expansion shells.

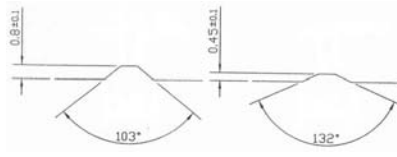
### STEP BAR FEATURES

- Alternating high and low ribs which improve bond length with the resin or cement
- Enhanced system stiffness and pull-out strengths
- Bi-directional (left or right) spin
- 14.5 mm, 16 mm, 18 mm and 20 mm diameters
- 18 mm Step Bar is made from higher strength steel to provide the tensile strength characteristics of a 20 mm bar while facilitating the use of a smaller diameter hole

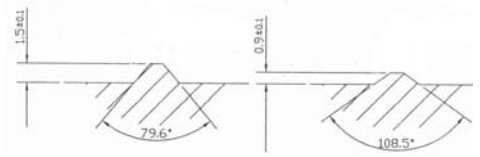
## STEP BAR APPEARANCE



20 mm STEP BAR high and low ribs



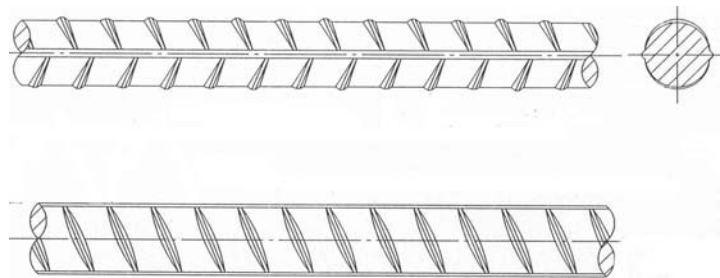
16 mm STEP BAR high and low ribs



20 mm HIGH STEP BAR high and low ribs



Close up: HIGH STEP Bar



Rib pattern

## Kat Bar™ Fully Threaded Bar

### KAT BAR GENERAL INFORMATION

KAT BAR is hot rolled during the milling process with a surface geometry that provides a continuous coarse-pitch twin-start thread. This alleviates the need to separately manufacture a thread onto the bar, enabling the bar to be simply cut to length. During use, fully threaded bar overcomes the limitations of a finite thread and is applied where re-tensioning of the installation is required (such as rock scaling) or where insertion depth is inconsistent.

KAT BAR is compatible with cementitious grout, chemical resin, mechanical anchoring or combinations of these. KAT BAR is generally supplied in the form of rock bolt / stud assemblies. Assemblies vary in the choice of bar diameter and length, washer type and size, nut and seat as well as in the provision of torque indicators, nibs and mechanical expansion shells.

### KAT BAR FEATURES

- Continuous hot rolled twin-start thread
- Permits re-tensioning of installations
- Allows variable insertion depth
- Thread profile also provides good contact surface area and geometry for anchoring media (resin or grout)
- 16 mm and 20 mm diameters

KAT BAR APPEARANCE

