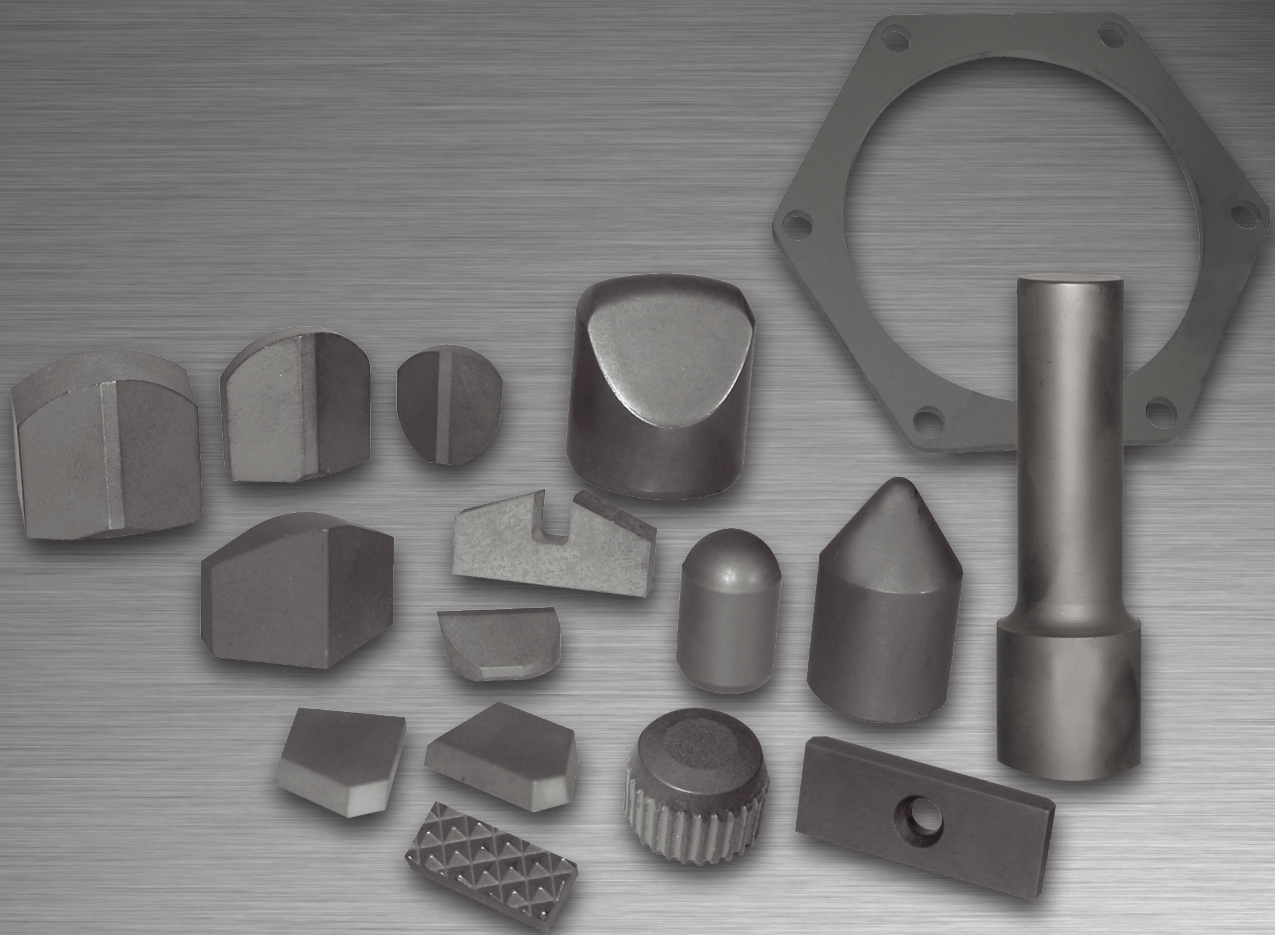


HARDMETALS



TUNGSTEN CARBIDE & ALLOY PRODUCTS



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COMPANY OVERVIEW

Hardmetals Australia Pty Limited is a precision engineering company specialising in the design and manufacture of Tungsten Carbide and Polycrystalline diamond tools for the drilling, construction, mining and agricultural industries. Formed in 1982 as Australasian distributor for a world leading Tungsten Carbide Manufacture, Hardmetals Australia was instrumental in the development and application of Tungsten Carbide for agricultural ground engaging tools during the 80's and early 90's. Since then our range of products have significantly increased.

Hardmetals Australia now manufactures tungsten carbide tools for:

- Mining and Exploration
- Foundation and Piling Drilling Tools.
- Trenching and Road Profiling Tools
- Horizontal Directional Drilling
- Agricultural Tillage Tools
- Forestry and Recycling Industry Tools
- Special or Custom Designed Wear Parts

TUNGSTEN CARBIDE & ALLOY PRODUCTS

RECTANGULAR TUNGSTEN CARBIDE BLANKS

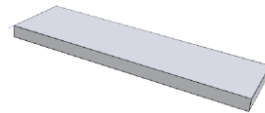
Hardmetals Australia carries a large range of rectangular Tungsten Carbide Blanks for immediate delivery to the Mining, Earthmoving and Agricultural industries.

Rectangular Blanks are available in a range of straight tungsten carbide grades.

Typically, the Cobalt percentage is 6-15%

Lower cobalt - higher hardness

Higher cobalt - higher toughness



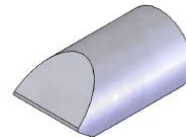
SHAPED TUNGSTEN CARBIDE BLANKS

Special shapes carbide blanks can be manufactured by Hardmetals Australia to suit client's specifications with appropriate grades, competitive pricing and prompt delivery for mining, construction, forestry and agriculture industries.

Tungsten carbide shapes are available in grades 5-15%.

High hardness for abrasive conditions

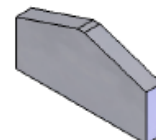
High toughness for high impact conditions



DRILL INSERTS BLANKS

Special shapes and sizes for both rotary and percussive drilling applications can be manufactured by Hardmetals Australia.

Our patented spade insert combines the reliability of a spade insert with the speed of a two wing bit insert.



GRADE DESCRIPTION

GRADE	DESCRIPTION
HM6	6% Co Medium Grain Size
HM6N	6% Ni Medium Grain Size
HMA7C	7% Co V. Coarse Grain Size
HM8C	8% Co Coarse Grain Size
HM8	8% Co Medium Grain Size
HM8NC	8% Ni/Co Medium Grain Size
HM9	9% Co Medium Grain Size
HMA9C	9% Co V. Coarse Grain Size
HM10	10% Co Medium Grain Size
HMA10C	10% Co V. Coarse Grain Size
HM11	11% Co Medium Grain Size
HMA11C	11% Co V. Coarse Grain Size
HM11C	11% Co Coarse Grain Size
HM12	12% Co Medium Grain Size
HMA13C	13% Co V. Coarse Grain Size
HM15	15% Co Medium Grain Size
HMK20	ISO K20 7% Co, Fine Grain

CLASS DESCRIPTION

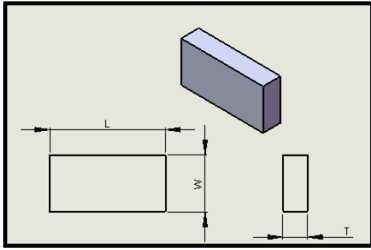
ITEM CLASS	DESCRIPTION
0	Phased Out Item
1	Standard Stock Item / Min Stock is required to be kept on hand
3	Irregular stock item / Minimum order quantity may be required
6	New Stock Item / Stock code undefined
8	Non stock Item / Minimum quantity required



RECTANGULAR TUNGSTEN CARBIDE BLANKS

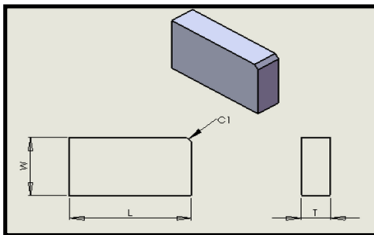
DESIGNATION SYSTEM- RECTANGULAR BLANKS

Designation System (a)



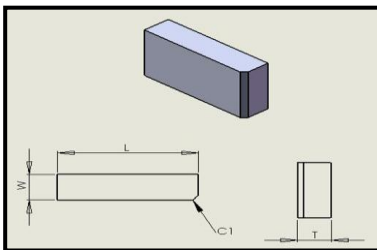
Item No.	Item Class	Thickness (T) mm	Width (W) mm	Length (L) mm	Carbide Grade
6.0X13X25 HM15	1	6	13	25	HM15

Designation System (b)



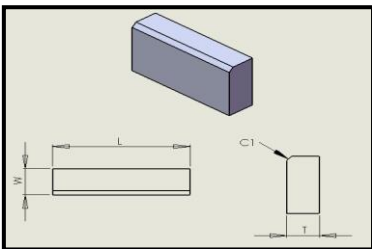
Item No.	Item Class	Thickness (T) mm	Width (W) mm	Length (L) mm	Chamfer (C1)	Carbide Grade
6.0(C1)X13X25 HM15	1	6	13	25	1X45°	HM15

Designation System (C)



Item No.	Item Class	Thickness (T) mm	Width (W) mm	Length (L) mm	Chamfer (C1)	Carbide Grade
6.0X13(C1)X25 HM15	1	6	13	25	1X45°	HM15

Designation System (D)



Item No.	Item Class	Thickness (T) mm	Width (W) mm	Length (L) mm	Chamfer (C1)	Carbide Grade
6.0X13X25 (C1)HM15	1	6	13	25	1X45°	HM15

RECTANGULAR BLANKS

Item Number	Item Class	Description
1.2X3.0X27 HM9	1	Rectangular Blank
1.6X3.0X23 HM9	1	Rectangular Blank
1.6X3.0X30 HM9	8	Rectangular Blank
1.6X3.0X35 HM9	8	Rectangular Blank
1.6X3.0X40 HM9	1	Rectangular Blank
1.6X3.0X50 HM9	8	Rectangular Blank
1.6X3.0X57 HM9	1	Rectangular Blank
1.6X3.0X70 HM9	8	Rectangular Blank
1.6X3.2X38 HM9	1	Rectangular Blank
1.6X3.3X100 HM8C	1	Rectangular Blank
1.6X5.0X25 HM9	8	Rectangular Blank
1.6X5.0X35 HM9	8	Rectangular Blank
1.6X5.0X40 HM9	8	Rectangular Blank
1.6X5.0X50 HM9	1	Rectangular Blank
1.6X5.0X60 HM9	8	Rectangular Blank
1.6X5.0X75 HM8C	1	Rectangular Blank
1.6X5.0X75 HM9	8	Rectangular Blank
2.0X10X25 (C1.0) HM9	1	Rectangular Blank
2.0X10X35 HM9	8	Rectangular Blank
2.0X10X45 HM9	8	Rectangular Blank
2.0X10X50 HM9	8	Rectangular Blank
2.0X12X25 HM9	8	Rectangular Blank
2.0X12X35 HM9	8	Rectangular Blank
2.0X12X40 HM9	1	Rectangular Blank
2.0X12X50 HM9	1	Rectangular Blank
2.0X13X19 HM8C	0	Rectangular Blank
2.0X13X19 HM9	1	Rectangular Blank
2.0X13X25 HM8C	3	Rectangular Blank
2.0X13X32 HM9	8	Rectangular Blank
2.0X13X45 HM9	8	Rectangular Blank
2.0X13X50 HM9	1	Rectangular Blank
2.0X14X50 HM9	3	Rectangular Blank
2.0X16X25 HM9	8	Rectangular Blank
2.0X16X35 HM9	3	Rectangular Blank
2.0X16X45 HM9	8	Rectangular Blank
2.0X16X50 HM9	8	Rectangular Blank
2.0X17X25 HM8C	0	Rectangular Blank
2.0X19X25 HM9	1	Rectangular Blank
2.0X3.0X23 HM6	1	Rectangular Blank
2.0X5.0X60 HM8C	1	Rectangular Blank
2.0X6.0X25 HM9	1	Rectangular Blank
2.0X6.0X35 HM9	1	Rectangular Blank
2.0X8.0X35 HM9	8	Rectangular Blank
2.0X8.0X50 HM9	8	Rectangular Blank
2.5X10X10 HM9	0	Rectangular Blank
2.5X12X50 HM8C	1	Rectangular Blank
2.5X20X70 HM11	8	Rectangular Blank
2.5X5.0X35 HM9	1	Rectangular Blank
3.0X10X16 HM8C	1	Rectangular Blank
3.0X10X25 HM8C	1	Rectangular Blank
3.0X10X25 HM9	8	Rectangular Blank
3.0X10X35 HM9	1	Rectangular Blank

RECTANGULAR BLANKS

Item Number	Item Class	Description
3.0X10X38 HM9	1	Rectangular Blank
3.0X10X45 HM9	8	Rectangular Blank
3.0X10X50 HM9	1	Rectangular Blank
3.0X12X20 HM9	8	Rectangular Blank
3.0X12X25 HM9	8	Rectangular Blank
3.0X12X30 HM9	1	Rectangular Blank
3.0X12X32 HM9	8	Rectangular Blank
3.0X12X38 HM9	8	Rectangular Blank
3.0X12X45 HM9	8	Rectangular Blank
3.0X12X50 HM9	1	Rectangular Blank
3.0X13X25 HM9	8	Rectangular Blank
3.0X13X38 HM8C	1	Rectangular Blank
3.0X13X40 HM9	1	Rectangular Blank
3.0X16X25 HM9	1	Rectangular Blank
3.0X16X32 HM9	1	Rectangular Blank
3.0X16X35 HM9	1	Rectangular Blank
3.0X16X40 HM9	8	Rectangular Blank
3.0X16X50 HM8C	1	Rectangular Blank
3.0X17X35 HM9	8	Rectangular Blank
3.0X17X50 HM9	0	Rectangular Blank
3.0X20X52 HM9	8	Prec. Rectangular Blank
3.0X25X25 HM8C	3	Rectangular Blank
3.0X25X25(C1.0X2) HM11	3	Rectangular Blank With 2 Chamfers
3.0X25X32 HM11	3	Rectangular Blank
3.0X25X36 HM11	8	Rectangular Blank
3.0X30X100 HM11	3	Rectangular Blank
3.0X5.0X40 HM9	1	Rectangular Blank
3.0X6.0X25 HM9	1	Rectangular Blank
3.0X6.0X30 HM9	1	Rectangular Blank
3.0X6.0X32 HM9	1	Rectangular Blank
3.0X6.0X35 HM9	1	Rectangular Blank
3.0X6.0X40 HM9	1	Rectangular Blank
3.0X6.0X45 HM9	1	Rectangular Blank
3.0X6.0X50 HM9	1	Rectangular Blank
3.0X6.0X55 HM9	1	Rectangular Blank
3.0X6.0X60 HM9	1	Rectangular Blank
3.0X6.0X65 HM8C	1	Rectangular Blank
3.0X8.0X30 HM9	1	Rectangular Blank
3.0X9.0X45 HM9	1	Rectangular Blank
3.2X13X13 HM9	1	Rectangular Blank- 1200ASA
3.2X13X19 HM11	1	Rectangular Blank- 1210ASA
3.2X13X19 HM9	1	Rectangular Blank- 1210ASA
3.2X13X25 HM8C	1	Rectangular Blank- WT1
3.2X13X25 HM9	1	Rectangular Blank- WT1
3.2X13X32 HM9	1	Rectangular Blank- WT2
3.2X13X38 HM9	1	Rectangular Blank- WT3
3.2X13X45 HM9	1	Rectangular Blank- WT4
3.2X13X50 HM9	1	Rectangular Blank- WT5
3.2X13X57 HM8C	3	Rectangular Blank- WT5

RECTANGULAR BLANKS

Item Number	Item Class	Description
3.2X19X19 HM9	1	Rectangular Blank
3.2X19X25 HM9	1	Rectangular Blank
3.2X20X52 HM9	3	Rectangular Blank
3.2X6.5X13 HM8C	1	Rectangular blank- 1120ASA
3.2X6.5X19 HM9	1	Rectangular Blank- 1140ASA
3.2X9.5X13 HM9	1	Rectangular Blank- 1180ASA, C12-010
3.2X9.5X19 HM8C	1	Rectangular Blank -1190ASA
4.0X10X25 HM9	8	Rectangular Blank
4.0X10X50 HM9	1	Rectangular Blank
4.0X12X30 HM8C	1	Rectangular Blank
4.0X12X40 HM9	8	Rectangular Blank
4.0X12X45 HM9	1	Rectangular Blank
4.0X12X50 HM8C	1	Rectangular Blank
4.0X12X50 HM9	8	Rectangular Blank
4.0X13X17.5 HM8C	1	Rectangular Blank
4.0X13X19 HM9	8	Rectangular Blank
4.0X13X25 HM9	3	Rectangular Blank
4.0X13X25 HMA11C	1	Rectangular Blank- MM082
4.0X13X32 HM9	1	Rectangular Blank
4.0X13X38 HM8C	3	Rectangular Blank- MM084
4.0X13X38 HM9	1	Rectangular Blank- MM084
4.0X13X50 HM9	1	Rectangular Blank
4.0X16X25 HM8C	1	Rectangular Blank
4.0X16X32 HM9	1	Rectangular Blank
4.0X16X40 HM9	1	Rectangular Blank
4.0X17X32 HM9	8	Rectangular Blank
4.0X6.0X25 HM9	3	Rectangular Blank
4.0X6.0X50 HM8C	3	Rectangular Blank
4.0X6.0X55 HM9	1	Rectangular Blank
4.0X8.0X30 HM9	1	Rectangular Blank
4.0X8.0X50 HM9	1	Rectangular Blank
4.5X13X32(C1.0) HM11	1	Rectangular Blank (Chamfered)
4.5X16X18 HM9	1	Rectangular Blank
4.5X17X25 HM8C	1	Rectangular Blank
4.8X10X13 HM8C	1	Rectangular Blank
4.8X10X16 HM8C	1	Rectangular Blank
4.8X13X13 HM9	1	Rectangular Blank
4.8X13X19 HM9	1	Rectangular Blank
4.8X13X25 HM9	1	Rectangular Blank
4.8X13X25 HMA11C	1	Rectangular Blank
4.8X13X32 HM9	1	Rectangular Blank
4.8X13X38 HM8C	1	Rectangular Blank
4.8X13X45 HM8C	1	Rectangular Blank
4.8X13X50 HM8C	3	Rectangular Blank

RECTANGULAR BLANKS

Item Number	Item Class	Description
4.8X13X50 HM9	1	Rectangular Blank
4.8X19X19 HM9	8	Rectangular Blank
4.8X19X25 HM9	3	Rectangular Blank
4.8X7.0X50 HM9	8	Rectangular Blank
5.0X10X50 HM9	1	Rectangular Blank
5.0X12X50 HM9	1	Rectangular Blank
5.0X16X32 HM9	1	Rectangular Blank
5.0X25X36 HM8C	3	Rectangular Blank
6.0X12X30 HM9	3	Rectangular Blank
6.0X12X40 HM9	3	Rectangular Blank
6.0X12X45 HM9	3	Rectangular Blank
6.0X12X50 HM9	3	Rectangular Blank
6.0(C1)X13X25 HM15	8	Rectangular Blank
6.0X13X25 HM9	1	Rectangular Blank
6.0X13X32 HM9	1	Rectangular blank
6.0X13X38 HM9	1	Rectangular Blank
6.0X13X50 HM9	8	Rectangular Blank
6.0X17X30 HM9	1	Rectangular Blank
6.0X17X30 HMA9C	8	Rectangular Blank
6.0X25X25 HM8C	3	Rectangular Blank
6.0X25X32 HM8C	3	Rectangular Blank
6.4X50(2C)X50 HM15	8	Rectangular Blank With Chamfer
6.5X19X19 HM9	1	Rectangular Blank
6.5X19X25 HM9	1	Rectangular Blank
7.0X13X25 HM8C	1	Rectangular Blank
7.0X13X25 HM9	1	Rectangular Blank
7.0X13X32 HM9	1	Rectangular Blank
7.0X13X38 HM9	1	Rectangular Blank
7.7X7.7X49(C0.8) HM9	1	Rectangular Blank
8.0X13(C1)X19 HM9	3	Rectangular Blank With Chamfer
8.0X17(C1)X20 HM9	3	Rectangular Blank With Chamfer
8.0X12X45 HM9	8	Rectangular Blank
8.0X17X40 HM9	8	Rectangular Blank
8.0X25CX38C HM11	8	Rectangular Blank With Chamfer
8.0X30X50 HM11C	8	Rectangular Blank
8.0X45X75 HM10C	8	Rectangular Blank
8.0X45X85 HMK20	3	Rectangular Blank
10X25X36 HM8C	3	Rectangular Blank
13X25X102 (C1.0) HM10	8	Rectangular Blank With Chamfer
13X25X25 (C1.0) HM10	3	Rectangular Blank With Chamfer
13X25X25 (C1.0) HM15C	8	Rectangular Blank With Chamfer
13X25X40 (C1.0) HM10	1	Rectangular Blank With Chamfer
13X25X51 (C1.0) HM10	1	Rectangular Blank With Chamfer
13X25X51 (C1.0) HM15C	8	Rectangular Blank With Chamfer
13X25X76 (C1.0) HM10	8	Rectangular Blank With Chamfer



SHAPED TUNGSTEN CARBIDE BLANKS

SHAPED BLANKS

Item Number	Item Class	Description	Drawing
101L HM11 (OR HM9C, Item class 8)	1	Limestone Saw Tooth-Left	
101R HM11 (OR HM9C, Item class 8)	1	Limestone Saw Tooth Right	
201L HM11C (OR HM9C, Item class 3)	1	Limestone Saw Tooth- Left	
201R HM11C (OR HM9C, Item class 3)	1	Limestone Saw Tooth-Right	

SHAPED BLANKS

Item Number	Item Class	Description	Drawing
2.0X10X65(C2.0) HM9	8	Shaped Blank	
2.0X12(R18.5)X38 HM9	1	Shaped Knife Point Blank	
3.0X9.0X45-C7 HM9	1	Shaped Blank	
A1000 HM9	1	Shaped Blank	
A1000-30 HM9	8	Shaped Blank	
A1000-50 HM9	8	Shaped Blank	
A1000-50R HM9	1	Scraper Blank- DDO	

SHAPED BLANKS

Item Number	Item Class	Description	Drawing
AS5.0X5.0X5.0 HM9	1	Shaped Blank-Triangular Prism	
AS5.0X6.4X6.4 HM9	3	Shaped Blank-Triangular Prism	
AS6.4X6.4X6.4 HM9	1	Shaped Blank-Triangular Prism	
AT4X13X17.5 HM9	3	Shaped Blank- Auger Tip	
D0200 HM8C	1	Shaped Blank-Triangular	
D1609 HM9 (OR HM8C, Item class 1)	1	Shaped Blank (Diamond)	

SHAPED BLANKS

Item Number	Item Class	Description	Drawing
EM6 HM8C	1	Shaped Blank-EM6 Tip	
EM8L HM8C	1	Shaped Blank- L/H Centre Bit Tip	
EM8R HM8C	1	Shaped Blank- R/H Centre Bit Tip	

SHAPED BLANKS

Item Number	Item Class	Description	Drawing
FD-01A HM9	1	2174385 Debarking Insert	
FD-02A HM9	1	2174386 Debarking Blank	
FD-03A HM9	1	2174385 Debarking Insert	
FD-04A HM9	1	2174388 Debarking Blank	
FF4.5X13X25 HM9	1	Rectangular Blank- Tapered	
FF4.5X17X25 HM9	1	Rectangular Blank- Tapered	
FF4.5X19X25 HM9	1	Rectangular Blank- Tapered	

SHAPED BLANKS

Item No.	Item Class	Description	Drawing
FW3X6X10 HM8C	8	Trencher Blade Blank	
FW8B HM11C	1	Shaped Blank- Em4 Rock Tip	
FW8B-16 HM11C	1	Shaped Blank- Rock Tip W=16	
FW8B-19 HM11C	1	Shaped Blank- Rock Tip W=19	
FW8B-19X17.5 HM15	8	Shaped Blank- HD W=19	
FW8B-24X17.5 HM11C	1	Shaped Blank-XHD Rock Tip W=24	
FW8B-R7 HM11C	1	Shaped Blank- Radiused FW8B	
FW8S-22.5X12 HMA11C	1	Shaped Blank- HD Slotted Rock Tip	

SHAPED BLANKS

Item Number	Item Class	Description	Drawing
GA4.75X11.5X38.5R125 HMK20	1	Shaped Blank-Gin Rib Insert	
GA4.75X11.7X38.1 HM6	1	Shaped Blank-Gin Rib Insert	
HP3.0X10X16 HM9	1	Shaped Blank-35 Ser Tooth Insert	
HB250-1 HM11	1	HB250 Road Stabilizing Outer Blank	
HB250-2 HM11	1	HB250 Road Stabilizing Centre Blank	

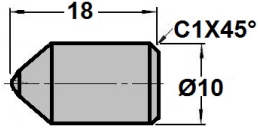
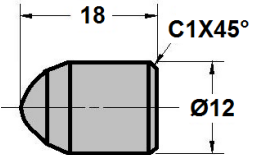
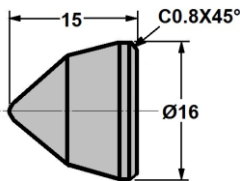
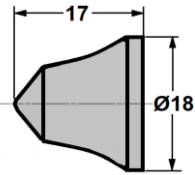
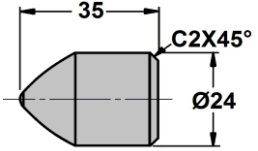
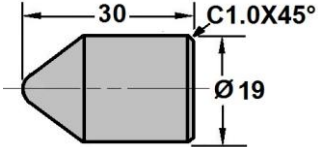
SHAPED BLANKS

Item Number	Item Class	Description	Drawing
KS3.2X7.5X12.7 HMA9C	3	Kalex Shoe Insert	
LC5X13X21.4 HMA10C	1	Limestone Cutting Blank	
LC6.0X17X23-20 HM9C	1	Limestone Cutting Blank	
P1656 HM10	1	Shaped Blank- 1656 Tooth Insert	
P1656-A HMA9C	1	Shaped Insert- 1656 Insert	

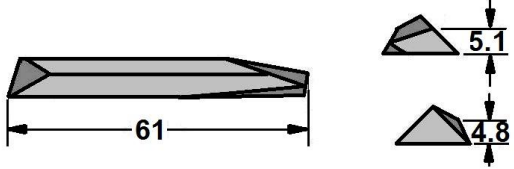
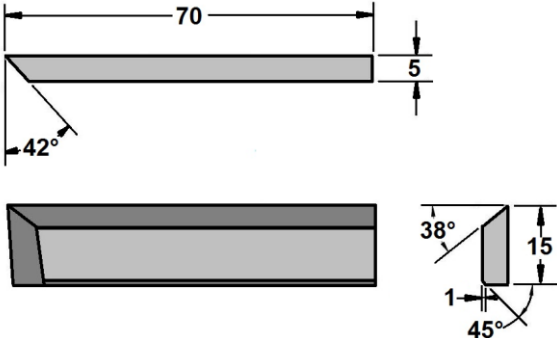
SHAPED BLANKS

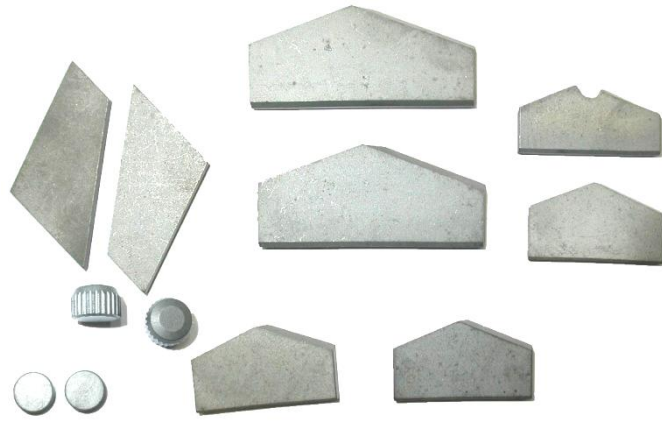
Item Number	Item Class	Description	Drawing
MT25FW HM9	8	Mulcher Tool insert	
MT25SQ HM9	8	Mulcher Tool insert	
RC20X27X30 HMA13C	1	Shaped Blank-Rock Crusher Blank	
SC-04 HM8C	1	Shaped Blank-Stump Grinding Insert	
SC-04.5 HM9	8	Shaped Blank-Stump Grinding Insert	
SR1221 HM8C	8	Shaped Blank-SR1 Stump Cutter Insert	
SS1000-L40 HM8C	1	Shaped Blank-CSN Seeder Tip L=40	

SHAPED BLANKS

Item Number	Item Class	Description	Drawing
TBB-10 HM11C	1	Single Cone Insert D=10mm	
TBB-12DCI HMA7C	1	Double Cone Insert D=12mm	
TBB-16DCC HMA9C	1	Double Conical Cap (TBB-CP23E)	
TBB-18BC HMA9C	3	Standard Bell Cap	
TBB-24BIX43 HM11C	8	Ballistic Insert D=24mm, L=43mm	
TBB-19PI HMA9C	1	Single Cone Insert (r3x70)	

SHAPED BLANKS

Item Number	Item Class	Description	Drawing
VK-1 HM12M	1	Valenkone Debarking Blank Replacement Insert	 <p>Technical drawing of the VK-1 blank. It shows a perspective view of a tapered rectangular blank with a length of 61. To the right, two cross-sectional views are provided: the top one shows a height of 5.1 and a width of 4.8, while the bottom one shows a height of 4.8.</p>
VK-2 HM12M	1	Valenkone Debarking Blank Replacement Insert	 <p>Technical drawing of the VK-2 blank. It shows a perspective view of a tapered rectangular blank with a length of 70 and a thickness of 5. The top edge is chamfered at a 42-degree angle. To the right, a cross-sectional view shows a height of 15, a chamfered top edge at 38 degrees, and a chamfered bottom edge at 45 degrees. A width of 1 is also indicated.</p>



DRILL BLANKS

DRILL BLANKS

Item Number	Item Class	Description	Drawing
CBT-21X10X5 HM9	1	Drag Bit Insert	
CBT-44X19X4 HMA9C	8	Drag Bit Insert	
CBT-50X25X10 HM9	1	Drag Bit Insert	
CBT179 HMA11C	1	Drag Bit Insert- H=16,W=9.5, T=4.8	
CBT237 HMA11C	1	Drag Bit Insert- H=12.7,W=25.4 , T=4.8	
CBT467 HMA11C	1	Drag Bit Insert- H=15.9,W=28.6 , T=6.4	

DRILL BLANKS

Item Number	Item Class	Description	Drawing
E27L HMA7C	8	Eccentric 2 Wing Drill Bit Blank	
E27L-VC1 HMA7C	8	Eccentric 2 Wing Drill Bit Blank. Patented high performance geometry.	
E27LN-VC1 HMA7C	8	Eccentric 2 Wing Drill Bit Blank. Patented high performance geometry.	
E27R HMA7C	8	Eccentric 2 Wing Drill Bit Blank	
E27R-VC1 HMA7C	8	Eccentric 2 Wing Drill Bit Blank. Pat. HPG	
E27RN-VC1 HMA7C	8	Eccentric 2 Wing Drill Bit Blank. Pat HPG.	
E28L HMA8	1	Eccentric Bit Blank-QM2728L	

DRILL BLANKS

Item Number	Item Class	Description	Drawing
E28R HMA8	1	Eccentric Bit Blank-QM2728R	
E35L HM9	1	Eccentric 2 Wing Drill Bit Blank	
E35R HM9	3	Eccentric 2 Wing Drill Bit Blank	
E43L HM9	3	Eccentric 2 Wing Drill Bit Blank	
E43R HM9	3	Eccentric 2 Wing Drill Bit Blank	
E56L HM9	1	Eccentric 2 Wing Drill Bit Blank	
E56R HM9	1	Eccentric 2 Wing Drill Bit Blank	

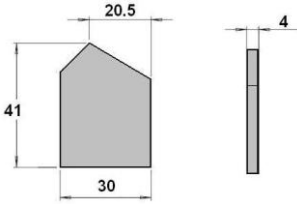
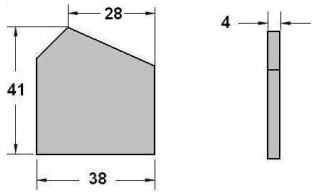
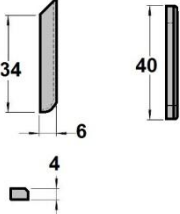
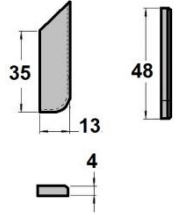
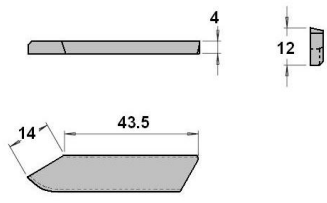
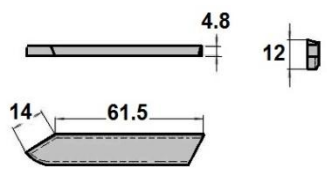
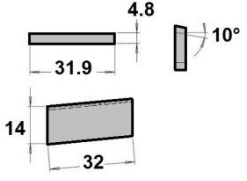
DRILL BLANKS

Item Number	Item Class	Description	Drawing
GP12.5OD HMK20	1	Gripper Pad- D=12.5, T=4	
JT2209 HM8C	1	Gripper Pad PIA4-445	
JT2209-N HM8C	1	Gripper Pad PIA4-445 NI Coated	
JT2209-NN HM8C	1	Gripper Pad PIA4-445 NI Coated, width 8.8, height 6.4	

DRILL BLANKS

Item Number	Item Class	Description	Drawing
KS27X4.5-V1 HM8C	8	Spade Bit Insert-K Style Pat. HPG D=27mm T=4.5mm	
KS27X4.5-V2 HM8C	8	Spade Bit Insert-K Style Pat. HPG D=27mm T=4.5mm	
KS27N HMA8	1	Spade Bit Insert- K Style D=27mm T=3.5mm	
KS28N HM7C	8	Spade Bit Insert K Style D=28mm, T=3.5mm	
NS28X4.0-V2 HM8	1	Spade bit Insert-N Type Pat. HPG D=28mm T=4mm	

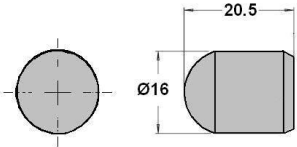
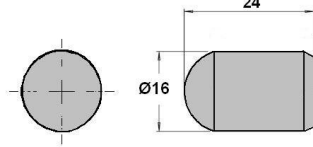
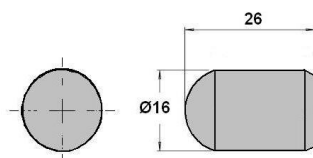
DRILL BLANKS

Item Number	Item Class	Description	Drawing
MM079 HM8C	1	Shaped Blank-Drill Bit Insert	
MM080 HM8C	9	Shaped Blank- Drill Bit Insert	
MM080-WB114 HMA9C	1	Shaped Blank-Drill Bit Insert	
MM080-WB127 HMA9C	1	Shaped Blank-Drill Bit Insert	
MM081-SPB102A HMA11C	1	Shaped Blank-SPB127 Drill Bit Insert	
MM081-SPB127-1A HMA11C	1	Shaped Blank- SPB127 Drill Bit Insert	
MM081-SPB127-2A HMA11C	1	Shaped Blank- SPB127 Wing Insert	

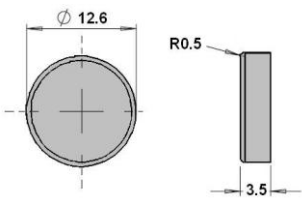
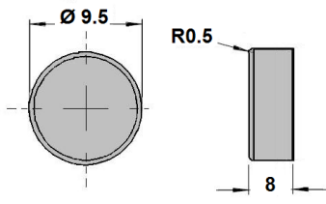
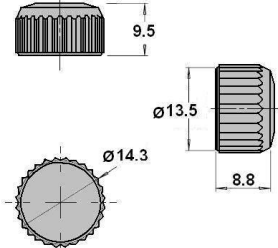
DRILL BLANKS

Item Number	Item Class	Description	Drawing
S21X13-0 HM8C	9	Spade Bit Insert W=21mm Neutral	
S25x13-0 HM8C	9	Spade Bit Insert W=25mm Neutral	
S26x4.5-0 HM8C	1	Spade Bit Insert W=26mm Neutral	
S27X4.5-VC1 HM8C	3	Spade Bit Insert- Pat HPG D=27, T=4.5, A=15°-25°	
S38X3.5-0 HM8C	1	Spade Bit Insert D=38mm Neutral	
S38X4.5-0 HM9	1	Shaped Blank For B1002	

DRILL BLANKS

Item Number	Item Class	Description	Drawing
SDI-16X20.5 HM6	3	Spherical Dome Insert D=16mm, L=20.5mm	
SDI-16X24 HM6	3	Spherical Dome Insert D=16mm, L=24mm	
SDI-16X26 HM6	3	Spherical Dome Insert D=16mm, L=26mm	

DRILL BLANKS

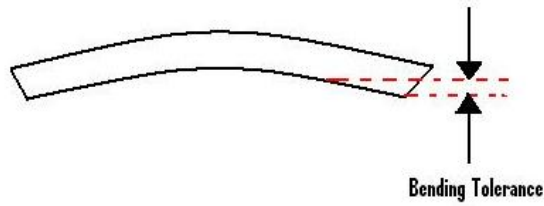
Item Number	Item Class	Description	Drawing
SIR-12.5X3.5 HM10 (OR HM9, Item class 1)	1	Stabilizer Insert PIA4-1151 D=12.6mm	
SIRS-9.5X8.0 HM10	3	Stabilizer Insert D=3/8 T=5/16 Serrated	
SIRS14.3X9.5 HM10	1	Stabilizer Insert- D=9/16", T=3/8" Serrated	



TECHNICAL INFORMATION

HARD METALS

Standard As Sintered Tolerances For Rectangular Blanks



Sintered tolerances for rectangular blanks- Less than 15% Cobalt

DIMENSION	OUTSIDE DIMENSION (OD)	INSIDE DIMENSION (ID)	TOLERANCE DUE TO BENDING
0-5	+0.2 0	0 -0.2	0.1
5-10	+0.2 0	0 -0.2	0.1
10-20	+0.3 0	0 -0.3	0.1
20-30	+0.3 0	0 -0.3	0.1
30-45	+0.5 0	0 -0.5	0.1
45-60	+0.5 0	0 -0.5	0.2
60-75	+0.6 0	0 -0.6	0.2
75-90	+0.8 0	0 -0.8	0.2
90-105	+0.8 0	0 -0.8	0.2
105-120	+1.1 0	0 -1.1	0.3
120-135	+1.2 0	0 -1.2	0.3
135-150	+1.3 0	0 -1.3	0.3
150-170	+1.4 0	0 -1.4	0.3
170-190	+1.5 0	0 -1.5	0.3
190-210	+1.6 0	0 -1.6	0.3
210-230	+1.7 0	0 -1.7	0.3
230-260	+1.8 0	0 -1.8	0.3
260-310	+2 0	0 -2	0.3

Sintered tolerances for rectangular blanks- More than 15% Cobalt

DIMENSION	OUTSIDE DIMENSION (OD)	INSIDE DIMENSION (ID)	TOLERANCE DUE TO BENDING
0-5	+0.2 0	0 -0.2	0.1
5-10	+0.3 0	0 -0.3	0.1
10-20	+0.3 0	0 -0.3	0.1
20-30	+0.4 0	0 -0.4	0.1
30-40	+0.5 0	0 -0.5	0.1
40-50	+0.7 0	0 -0.7	0.2
50-60	+0.8 0	0 -0.8	0.2
60-80	+1.0 0	0 -1.0	0.2
80-100	+1.0 0	0 -1.0	0.2

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