

 **LOUIS BELET**<sup>®</sup>  
Swiss Cutting tools



*Image Willemijn-Macodet, machining on 408MT machine*

# JEWELRY

luxury accessories



**SWISS MADE**

# PLATINUM

78  
**Pt**  
Platinum  
195.08

46  
**Pd**  
Palladium  
106.42

# PALLADIUM

## Milling

**REF. 4010** - PCD end mill  $l_1=1x d_1$



**REF. 4200** - PCD end mill with ball end



**REF. 4100** - T-slot cutter in PCD



## Drilling

**REF. 4500** - PCD twist drill - 2 teeth



**REF. 353** - Twist drill Z3 (SUN coated)



## Threading

**REF. 45600** - PCD Whirling tools



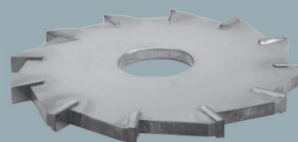
## Engraving

**REF. 4119-3** - Engraving mill in PCD -  $\frac{3}{4}$



## Sawing

PCD custom Slitting saw



Options :  
(see p.10)



79

**Au**

Gold  
196.97

# GOLD

## Milling

**REF. 114-2** - End mill with ball end Z2



**REF. 114-3** - End mill with ball end Z3



**REF. 1510** - End mill Z3 l<sub>1</sub>=1xd<sub>1</sub>



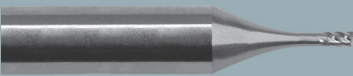
**REF. 1520C01** - Ceramic end mill Z3 l<sub>1</sub>=2xd<sub>1</sub>  
EXPERT gold



**REF. 1120** - Multi-uses end mill



**REF. 1430/1450** - Micro end mill for deep machining



## Drilling

**REF. 339** - Micro twist drill - helix 24°



**REF. 340-1** - Twist drill - helix 24°



**REF. 353** - Twist drill Z3



**REF. 335** - Step drill



## Engraving

**REF. 119-2** - Helical engraving mill



**REF. 4119-3** - Engraving mill in PCD - 3/4



## Threading

**REF. 5600** - Whirling tools Z3



## Sawing

**REF.223-1** - Slitting saw DIN 1837 fine pitch



**REF.228-2** - Angle cutter 12° to 20°




Options :  
(see p.10)






# SILVER

### Milling


**REF. 114-2** - End mill with ball end Z2  


**REF. 114-3** - End mill with ball end Z3  


**REF. 1510** - End mill Z3  $l_1=1x d_1$   



**REF. 1520C01** - Ceramic end mill Z3  $l_1=2x d_1$   
 EXPERT gold



**REF. 1120** - Multi-uses end mill  


### Engraving

**REF. 119-2** - Helical engraving mill  


**REF. 4119-3** - Engraving mill in PCD -  $\frac{3}{4}$   



### Drilling

**REF. 339** - Micro twist drill - helix 24°  


**REF. 340-1** - Twist drill - helix 24°  



**REF. 353** - Twist drill Z3  



### Threading

**REF. 5600** - Whirling tools Z3  




### Sawing

**REF.223-1** - Slitting saw DIN 1837 fine pitch  


**REF.228-2** - Angle cutter 12° to 20°  


Options :  
 (see p.10)



22

Ti

Titanium  
47.87

# TITANIUM

## Milling

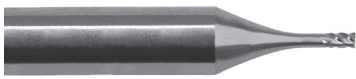
**REF. 114-2** - End mill with ball end Z2



**REF. 114-3** - End mill with ball end Z3



**REF. 1430/1450** - Micro end mill for deep machining



**REF. 104-0** - Finishing end mill Z3



**REF. 3100** - EXPERT end mill titanium



**REF. 1620F** - End mill for superfine finishing



**REF. 1120** - Multi-uses end mill



## Engraving

**REF. 119-3** - Engraving mill - 3/4



**REF. 119-4** - Engraving mill V-shape



## Drilling

**REF. 353** - Micro-foret Z3



## Threading

**REF. 5600** - Whirling tools Z3



## Sawing

**REF. 226** - Slitting saw staggered teeth

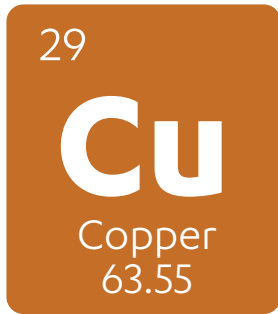


**REF. 228-2** - Angle cutter 12° to 20°



Options :  
(see p.10)





+



# BRASS

## LEAD-FREE BRASS

### Milling

**REF. 1820C01** - Ceramic EXPERT end mill for brass



**REF. 1820** - EXPERT end mill for brass



**REF. 114-2** - End mill with ball end Z2



**REF. 114-3** - End mill with ball end Z3



**REF. 4010** - PCD end mill  $l_1 = l_{xd_1}$

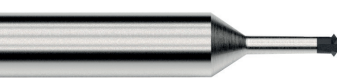


### Threading

**REF. 5600** - Whirling tools Z3



**REF. 45600** - PCD Whirling tools



### Engraving

**REF. 119-3** - Engraving mill -  $\frac{3}{4}$



**REF. 119-4** - Engraving mill V-shape



**REF. 4119-3** - Engraving mill in PCD -  $\frac{3}{4}$



### Drilling

**REF. 375** - EXPERT drill for brass



**REF. 353** - Twist drill Z3



**REF. 343** - Micro twist drill



### Sawing

**REF.223-1** - Slitting saw DIN 1837 fine pitch



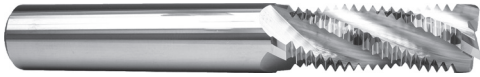
**REF.228-2** - Angle cutter 12° to 20°



Options :  
(see p.10)



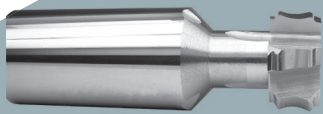
# CUSTOM FORM TOOLS FOR ALL MATERIALS



End mill

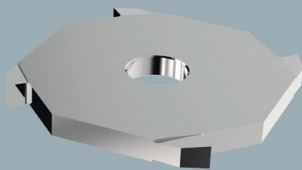


Step drill (1, 2 and 3 flutes)



T-slot end mill

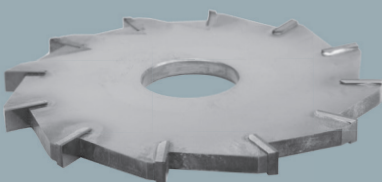
22 <b>Ti</b> Titanium 47.87	78 <b>Pt</b> Platinum 195.08	79 <b>Au</b> Gold 196.97
	<b>Cu</b> +	<b>Zn</b>
	47 <b>Ag</b> Silver 107.87	



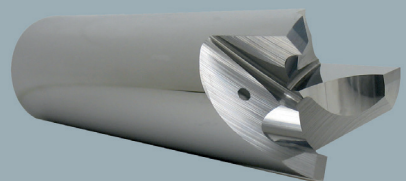
Polygon cutter



Thread mill

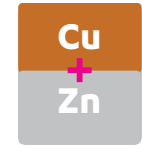
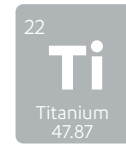
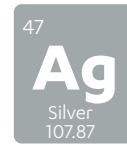
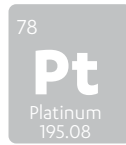


PCD Slitting saw



End mills with internal coolant

## Material



Rec. Coating

SUN

SOLO

SOLO

MARC

SOLO

## Tools

## Page

Platinum /  
Palladium

Gold

Silver

Titanium

Brass

Milling

**REF. 104-0** - Finishing end mill Z3



11



**REF. 114-2** - End mill with ball end Z2



12



**REF. 114-3** - End mill with ball end Z3



13



**REF. 1120** - Multi-uses end mills



14



**REF. 1430**-Micro end mill deep machining  $l_2=3x d_1$



15



**REF. 1450**-Micro end mill deep machining  $l_2=5x d_1$



16



**REF. 1510** - End mill Z3  $l_1=1x d_1$



17-18



**REF. 1520C01** - Ceramic end mill EXPERT gold



19



**REF. 1620F** - End mill for superfine finishing



20



**REF. 1820** - EXPERT end mill for brass



21



**REF. 1820C01** - Ceramic end mill EXPERT brass



22



**REF. 3100** - EXPERT end mill titanium



23



**REF. 4010** - PCD end mill  $l_1=1x d_1$



24



**REF. 4100** - T-slot cutter in PCD



25



**REF. 4200** - PCD end mill with ball end

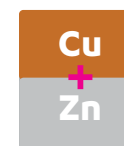


26-27





## Material



### Rec. Coating

SUN

SOLO

SOLO

MARC

SOLO

### Tools

### Page

Platinum /  
Palladium

Gold

Silver

Titanium

Brass

### Drilling

**REF. 335** - Step drill



28



**REF. 339** - Micro twist drill - helix 24°



29



**REF. 340-1** - Twist drill - helix 24°



30-31



**REF. 343** - Drill - helix 34°



32-33



**REF. 353** - Twist drill Z3



34-36



**REF. 375** - EXPERT drill for brass



37



**REF. 4500** - PCD twist drill - 2 teeth



38-39



### Sawing

**REF. 223-1** - Slitting saw DIN 1837 fine pitch



41-46



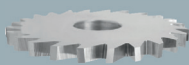
**REF. 228-2** - Angle cutter 12° to 20°



47



**REF. 226** - Slitting saw staggered teeth



48-49



### Engraving

**REF. 119-2** - Helical engraving mill - flat tip



50



**REF. 119-3** - Engraving mill - 3/4 - flat tip



51



**REF. 119-4** - Engraving mill V-shape



52



**REF. 4119-3** - Engraving mill in PCD - 3/4



53



### Threading

**REF. 5600** - Whirling tools Z3



54



**REF. 45600** - PCD Whirling tools



55



# Options



**C01**

## Ceramic (with beveled edge )

To order a ceramic tool, add the code "**C01**" after the part number.

**Example:** 104C01d0.50



**H**

## Internal coolant

To order a tool with internal coolant, add the code "**H**" after the part number.

**Example:** 104Hd0.50



**MCU**  
≤  $\varnothing 3$

## Micro machining centre

To order a tool compatible with micro machining centres, add the code "**M**" before the part number.

**Example:** M104d0.50



**701S**  
≤  $\varnothing 3.2$

## 701S

To order a WM701S-compatible tool, add the code "**7**" before the part number.

**Example:** 7104d0.50

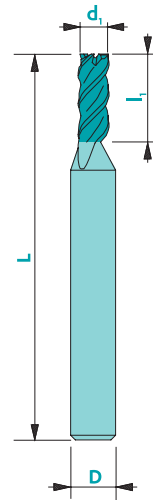
# Finishing end mill Z3

104-0

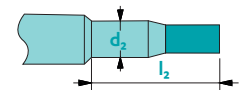
Material	Vc uncoated [m/min]	Vc coated [m/min]	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm <sup>2</sup>	80	100	□	■	Trio (PO)
Steel > 700 N/mm <sup>2</sup>	60	80	□	■	Trio (PO)
Stainless steel	60	80	□	■	Tisi (BQ)
Cast iron	50	70	□	■	Nemo (NM)
Copper	80	100	□	■	Solo (DA)
Brass - Bronze	120	150	■	■	Solo (DA)
Aluminium	150	190	□	■	Solo (DA)
Gold - Silver	120	150	■	■	Solo (DA)
Platinum - Palladium	-	55	-	□	Sun (DG)
Superalloys	-	40	-	■	Tisi(BQ)
Titanium	40	60	■	■	Marc (ME)

not adapted - adapted □ highly adapted ■

Tolerances  $d_1 \leq 1 \text{ mm} \rightarrow 0/-0.01$  D: h5  
 $d_1 > 1 \text{ mm} \rightarrow 0/-0.02$   
 $d_1 = D \rightarrow d_1: e8$



Upon request



Art. n°	d <sub>1</sub>	l <sub>1</sub>	D	L
104-0d0.30	0.30	1.5	3	38
104-0d0.40	0.40	2.0	3	38
104-0d0.50	0.50	2.0	3	38
104-0d0.60	0.60	2.0	3	38
104-0d0.70	0.70	2.0	3	38
104-0d0.80	0.80	3.0	3	38
104-0d0.90	0.90	3.0	3	38
104-0d1.00	1.00	3.0	3	38
104-0d1.10	1.10	4.0	3	38
104-0d1.20	1.20	5.0	3	38
104-0d1.30	1.30	5.0	3	38
104-0d1.40	1.40	5.0	3	38
104-0d1.50	1.50	5.0	3	38
104-0d1.60	1.60	5.0	3	38
104-0d1.70	1.70	5.0	3	38
104-0d1.80	1.80	6.0	3	38
104-0d1.90	1.90	6.0	3	38
104-0d2.00	2.00	6.0	3	38
104-0d2.50	2.50	6.0	3	38
104-0d3.00	3.00	9.0	3	38
104-0d3.50	3.50	9.0	6	51
104-0d4.00	4.00	12.0	6	51
104-0d5.00	5.00	15.0	6	51
104-0d6.00	6.00	18.0	6	51
104-0d8.00	8.00	20.0	8	61
104-0d10.00	10.00	22.0	10	72
104-0d10.00	10.00	22.0	10	72
104-0d10.00	10.00	22.0	10	72

\* Prices for coatings: contact us!  
 To order a coated tool, add the 2-letter coating code to the article number

Available uncoated or coated

Z3



$\lambda$  45°  $\gamma$  8-10°

CARB



$$ap = 0.25 \times d_1 \quad ap = l_1 \text{ max.}$$

$$ae = \frac{d_1^2}{4 \times Ap}$$

If  $d_1 \leq 0.5 \text{ mm}$ , a double cone applies

Options

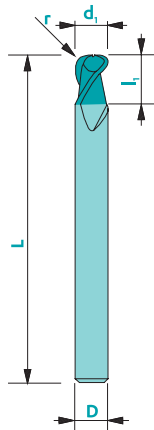
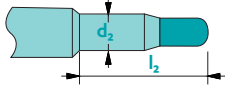
C01 H

MCU  $\leq \varnothing 3$  701S  $\leq \varnothing 3.2$

## End mill with ball end Z2



Upon request



Material	Vc uncoated [m/min]	Vc coated [m/min]	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm <sup>2</sup>	80	100	□	■	Trio (PO)
Steel > 700 N/mm <sup>2</sup>	60	80	□	■	Trio (PO)
Stainless steel	60	80	□	■	Tisi (BQ)
Cast iron	50	70	□	■	Nemo (NM)
Copper	80	100	□	■	Solo (DA)
Brass - Bronze	120	150	■	■	Solo (DA)
Aluminium	150	190	□	■	Solo (DA)
Gold - Silver	120	150	■	■	Solo (DA)
Platinum - Palladium	-	55	-	□	Sun (DG)
Superalloys	-	40	-	■	Tisi(BQ)
Titanium	40	60	■	■	Marc (ME)

not adapted - adapted □ highly adapted ■

Tolerances  $d_1 \leq 1 \text{ mm} \rightarrow 0/-0.01$   
 $d_1 > 1 \text{ mm} \rightarrow 0/-0.02$   
 $d_1 = D \rightarrow d_1 / r: e8$   
 $+0/-0.01$   
 $D: h5$

Available uncoated or coated

**Z2**

**λ 35°** **γ 8-10°**

**CARB**

$ap = 0.25 \times d_1$   $ap = l_1 \text{ max.}$   
 $ae = \frac{d_1^2}{4 \times Ap}$

Art. n°	d <sub>1</sub>	l <sub>1</sub>	D	L	r
114-2d0.10	0.10	0.20	3	38	0.050
114-2d0.15	0.15	0.30	3	38	0.075
114-2d0.20	0.20	0.40	3	38	0.100
114-2d0.25	0.25	0.50	3	38	0.125
114-2d0.30	0.30	0.60	3	38	0.150
114-2d0.40	0.40	0.80	3	38	0.200
114-2d0.50	0.50	1.00	3	38	0.250
114-2d0.60	0.60	1.20	3	38	0.300
114-2d0.70	0.70	1.40	3	38	0.350
114-2d0.80	0.80	1.60	3	38	0.400
114-2d0.90	0.90	1.80	3	38	0.450
114-2d1.00	1.00	2.00	3	38	0.500
114-2d1.10	1.10	2.10	3	38	0.550
114-2d1.20	1.20	2.20	3	38	0.600
114-2d1.30	1.30	2.30	3	38	0.650
114-2d1.40	1.40	2.40	3	38	0.700
114-2d1.50	1.50	2.50	3	38	0.750
114-2d1.60	1.60	2.50	3	38	0.800

Art. n°	d <sub>1</sub>	l <sub>1</sub>	D	L	r
114-2d1.70	1.70	2.60	3	38	0.850
114-2d1.80	1.80	2.60	3	38	0.900
114-2d1.90	1.90	3.00	3	38	0.950
114-2d2.00	2.00	3.00	3	38	1.000
114-2d2.10	2.10	3.00	3	38	1.050
114-2d2.20	2.20	3.50	3	38	1.100
114-2d2.30	2.30	3.50	3	38	1.150
114-2d2.40	2.40	3.50	3	38	1.200
114-2d2.50	2.50	4.00	3	38	1.250
114-2d3.00	3.00	4.50	3	38	1.500
114-2d3.50	3.50	5.00	6	51	1.750
114-2d4.00	4.00	6.00	6	51	2.000
114-2d5.00	5.00	8.00	6	51	2.500
114-2d6.00	6.00	9.00	6	51	3.000
114-2d8.00	8.00	12.00	8	61	4.000
114-2d10.00	10.00	15.00	10	72	5.000
114-2d12.00	12.00	18.00	12	83	6.000

To order a coated tool, add the 2-letter coating code to the article number

If  $d_1 \leq 0.5 \text{ mm}$ , a double cone applies

### Options

**C01** **H**

**MCU** **701S**  
 $\leq \varnothing 3$   $\leq \varnothing 3.2$

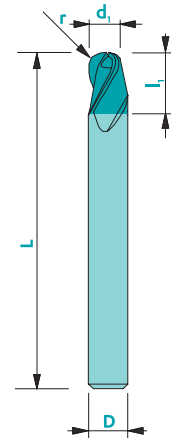
# End mill with ball end Z3

114-3

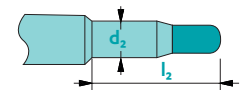
Material	Vc uncoated [m/min]	Vc coated [m/min]	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm <sup>2</sup>	80	100	□	■	Trio (PO)
Steel > 700 N/mm <sup>2</sup>	60	80	□	■	Trio (PO)
Stainless steel	60	80	□	■	Tisi (BQ)
Cast iron	50	70	□	■	Nemo (NM)
Copper	80	100	□	■	Solo (DA)
Brass - Bronze	120	150	■	■	Solo (DA)
Aluminium	150	190	□	■	Solo (DA)
Gold - Silver	120	150	■	■	Solo (DA)
Platinum - Palladium	-	55	-	□	Sun (DG)
Superalloys	-	40	-	■	Tisi(BQ)
Titanium	40	60	■	■	Marc (ME)

not adapted - adapted □ highly adapted ■

Tolerances  $d_1 \leq 1 \text{ mm}$  ▶ 0/-0.01  $D: h5$   
 $d_1 > 1 \text{ mm}$  ▶ 0/-0.02  $\text{C} +0/-0.01$   
 $d_1 = D$  ▶  $d_1 / r: e8$



Upon request



Art. n°	d <sub>1</sub>	l <sub>1</sub>	D	L	r
114-3d1.00	1.0	2.0	3	38	0.50
114-3d1.50	1.5	2.5	3	38	0.75
114-3d2.00	2.0	3.0	3	38	1.00
114-3d2.50	2.5	4.0	3	38	1.25
114-3d3.00	3.0	4.5	3	38	1.50
114-3d3.50	3.5	5.0	6	51	1.75
114-3d4.00	4.0	6.0	6	51	2.00
114-3d5.00	5.0	8.0	6	51	2.50
114-3d6.00	6.0	9.0	6	51	3.00
114-3d8.00	8.0	12.0	8	61	4.00
114-3d10.00	10.0	15.0	10	72	5.00
114-3d12.00	12.0	18.0	12	83	6.00
114-3d12.00	12.0	18.0	12	83	6.00

\* Prices for coatings: contact us!  
 To order a coated tool, add the 2-letter coating code to the article number

Available uncoated or coated



Z3



$\lambda$   
30°

$\gamma$   
8-10°

CARB



$$ap = 0.25 \times d_1$$

$$ap = l_1 \text{ max.}$$

$$ae = \frac{d_1^2}{4 \times Ap}$$

Options

C01

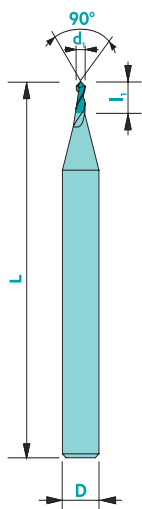


MCU  
≤ Ø3

701S  
≤ Ø3.2

# 1120

## Multi-uses end mill



Material	Vc uncoated	Vc coated	Uncoated	Coated	Rec. Coating
Steel < 700 N/mm <sup>2</sup>	100	130	□	■	Trio (PO)
Steel > 700 N/mm <sup>2</sup>	80	100	-	■	Trio (PO)
Stainless steel	50	70	□	■	Trio (PO)
Cast iron	60	100	□	■	Nemo (NM)
Copper	130	160	□	■	Solo (DA)
Brass - Bronze	140	190	■	□	Solo (DA)
Aluminium	200	350	□	■	Solo (DA)
Gold - Silver	140	180	■	■	Solo (DA)
Platinum - Palladium	-	35	-	□	Sun (DG)
Superalloys	-	40	-	■	Solo (DA)
Titanium	40	60	■	■	Marc (ME)

not adapted - adapted □ highly adapted ■

Tolerances  $d_1 \leq 1 \text{ mm} \rightarrow +0/-0.01$   $D: h5$   
 $d_1 > 1 \text{ mm} \rightarrow +0/-0.02$   
 $d_1 = D \rightarrow d_1: e8$

Available uncoated or coated

Art. n°	$d_1$	$l_1$	D	L
1120d0.50	0.50	1.0	3	38
1120d0.60	0.60	1.2	3	38
1120d0.70	0.70	1.4	3	38
1120d0.80	0.80	1.6	3	38
1120d0.90	0.90	1.8	3	38
1120d1.00	1.00	2.0	3	38
1120d1.50	1.50	3.0	3	38
1120d2.00	2.00	4.0	3	38
1120d3.00	3.00	6.0	6	51
1120d4.00	4.00	8.0	6	51
1120d6.00	6.00	12.0	6	51



90°

Z2



$\lambda$   
35°

$\gamma$   
8-10°

MG10

N



$ap=0.25xd_1$

$ae=0.5xd_1$   
 $ap=0.5xd_1$

Upon request



120°



60°

Options

C01



MCU  
 $\leq \varnothing 3$

701S  
 $\leq \varnothing 3.2$

# Micro end mill for deep machining $l_2=3xd_1$

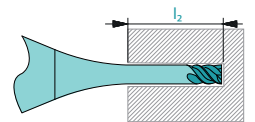
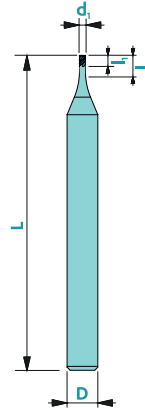
# 1430

Material	Vc uncoated [m/min]	Vc coated [m/min]	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm <sup>2</sup>	-	-	-	-	-
Steel > 700 N/mm <sup>2</sup>	-	-	-	-	-
Stainless steel	-	40	-	■	Tisi (BQ)
Cast iron	-	-	-	-	-
Copper	-	-	-	-	-
Brass - Bronze	-	-	■	■	Solo (DA)
Aluminium	-	-	-	-	-
Gold - Silver	120	150	■	■	Solo (DA)
Platinum - Palladium	-	-	-	-	-
Cobalt-chrome	-	100	-	■	Trio (PO)
Titanium	40	60	■	■	Marc (ME)

not adapted - adapted ■ highly adapted ■

Tolerances  $d_1$ : 0/-0.01  
 $l_1$ : +0.05/0  
 $l_2$ : +0.2/0

D: h5  
L: ±0.5



Art. n°	$d_1$	$l_1$	$l_2$	D	L	Z
1430d0.20	0.20	0.30	0.60	3.0	38	3
1430d0.25	0.25	0.38	0.75	3.0	38	3
1430d0.30	0.30	0.45	0.90	3.0	38	3
1430d0.35	0.35	0.52	1.05	3.0	38	4
1430d0.40	0.40	0.60	1.20	3.0	38	4
1430d0.45	0.45	0.68	1.35	3.0	38	4
1430d0.50	0.50	0.75	1.50	3.0	38	4
1430d0.60	0.60	0.90	1.80	3.0	38	4
1430d0.70	0.70	1.05	2.10	3.0	38	4
1430d0.80	0.80	1.20	2.40	3.0	38	4
1430d0.90	0.90	1.35	2.70	3.0	38	4
1430d1.00	1.00	1.50	3.00	3.0	38	4

\* Prices for coatings: contact us!  
To order a coated tool, add the 2-letter coating code to the article number

Available uncoated or coated

Z3-4



$\lambda$  45°  $\gamma$  14°

CARB



$$pas = 0.8 \times d_1 \quad ap = l_1 \max. \quad ae = \frac{d_1^2}{4 \times Ap}$$

If  $d_1 \leq 0.5$  mm, a double cone applies

Options

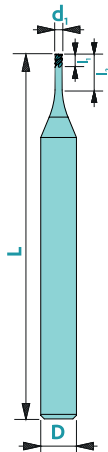
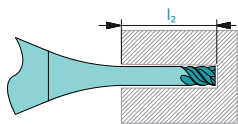
C01

MCU  $\leq \varnothing 3$

701S  $\leq \varnothing 3.2$

# 1450

## Micro end mill for deep machining $l_2=5d_1$



Material	Vc uncoated [m/min]	Vc coated [m/min]	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm <sup>2</sup>	-	-	-	-	-
Steel > 700 N/mm <sup>2</sup>	-	-	-	-	-
Stainless steel	-	40	-	■	Tisi (BQ)
Cast iron	-	-	-	-	-
Copper	-	-	-	-	-
Brass - Bronze	-	-	■	■	Solo (DA)
Aluminium	-	-	-	-	-
Gold - Silver	120	150	■	■	Solo (DA)
Platinum - Palladium	-	-	-	-	-
Cobalt-chrome	-	100	-	■	Trio (PO)
Titanium	40	60	■	■	Marc (ME)

not adapted - adapted ■ highly adapted ■

### Tolerances

$d_1$ : 0/-0.01  
 $l_1$ : +0.05/0  
 $l_2$ : +0.2/0

D: h5  
L: ±0.5

Available uncoated or coated



Z3-4



$\lambda$   
45°

$\gamma$   
14°

CARB



$$pas=0.8d_1$$

$$ap= l_1 \max. \frac{d_1^2}{4xAp}$$

If  $d_1 \leq 0.5$  mm, a double cone applies

Art. n°	$d_1$	$l_1$	$l_2$	D	L	Z
1450d0.20	0.20	0.30	1.00	3.0	38	3
1450d0.25	0.25	0.38	1.25	3.0	38	3
1450d0.30	0.30	0.45	1.50	3.0	38	3
1450d0.35	0.35	0.52	1.75	3.0	38	4
1450d0.40	0.40	0.60	2.00	3.0	38	4
1450d0.45	0.45	0.68	2.25	3.0	38	4
1450d0.50	0.50	0.75	2.50	3.0	38	4
1450d0.60	0.60	0.90	3.00	3.0	38	4
1450d0.70	0.70	1.05	3.50	3.0	38	4
1450d0.80	0.80	1.20	4.00	3.0	38	4
1450d0.90	0.90	1.35	4.50	3.0	38	4
1450d1.00	1.00	1.50	5.00	3.0	38	4

\* Prices for coatings: contact us!

To order a coated tool, add the 2-letter coating code to the article number

### Options

C01

MCU  
≤ Ø3

701S  
≤ Ø3.2



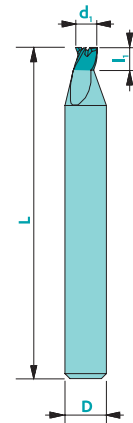
# End mill Z3 $l_1=1xd_1$

1510

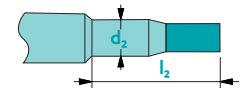
Material	Vc uncoated [m/min]	Vc coated [m/min]	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm <sup>2</sup>	80	100	□	■	Trio (PO)
Steel > 700 N/mm <sup>2</sup>	60	80	□	■	Trio (PO)
Stainless steel	60	80	□	■	Tisi (BQ)
Cast iron	50	70	□	■	Nemo (NM)
Copper	80	100	□	■	Solo (DA)
Brass - Bronze	120	150	■	■	Solo (DA)
Aluminium	150	190	□	■	Solo (DA)
Gold - Silver	120	150	■	■	Solo (DA)
Platinum - Palladium	-	55	-	□	Sun (DG)
Superalloys	-	40	-	■	Tisi(BQ)
Titanium	40	60	■	■	Marc (ME)

not adapted - adapted □ highly adapted ■

Tolerances  $d_1 \leq 1 \text{ mm} \rightarrow 0/-0.01$  D: h5  
 $d_1 > 1 \text{ mm} \rightarrow 0/-0.02$   
 $d_1 = D \rightarrow d_1: e8$



Upon request



Art. n°	$d_1$	$l_1$	D	L
1510d0.30	0.30	0.30	3	38
1510d0.35	0.35	0.35	3	38
1510d0.40	0.40	0.40	3	38
1510d0.45	0.45	0.45	3	38
1510d0.50	0.50	0.50	3	38
1510d0.55	0.55	0.55	3	38
1510d0.60	0.60	0.60	3	38
1510d0.65	0.65	0.65	3	38
1510d0.70	0.70	0.70	3	38
1510d0.75	0.75	0.75	3	38
1510d0.80	0.80	0.80	3	38
1510d0.85	0.85	0.85	3	38
1510d0.90	0.90	0.90	3	38
1510d0.95	0.95	0.95	3	38
1510d1.00	1.00	1.00	3	38
1510d1.05	1.05	1.05	3	38
1510d1.10	1.10	1.10	3	38
1510d1.15	1.15	1.15	3	38
1510d1.20	1.20	1.20	3	38
1510d1.25	1.25	1.25	3	38
1510d1.30	1.30	1.30	3	38
1510d1.35	1.35	1.35	3	38
1510d1.40	1.40	1.40	3	38
1510d1.45	1.45	1.45	3	38
1510d1.50	1.50	1.50	3	38
1510d1.55	1.55	1.55	3	38
1510d1.60	1.60	1.60	3	38
1510d1.65	1.65	1.65	3	38
1510d1.70	1.70	1.70	3	38
1510d1.75	1.75	1.75	3	38
1510d1.80	1.80	1.80	3	38

Art. n°	$d_1$	$l_1$	D	L
1510d1.85	1.85	1.85	3	38
1510d1.90	1.90	1.90	3	38
1510d1.95	1.95	1.95	3	38
1510d2.00	2.00	2.00	3	38
1510d2.05	2.05	2.05	3	38
1510d2.10	2.10	2.10	3	38
1510d2.15	2.15	2.15	3	38
1510d2.20	2.20	2.20	3	38
1510d2.25	2.25	2.25	3	38
1510d2.30	2.30	2.30	3	38
1510d2.35	2.35	2.35	3	38
1510d2.40	2.40	2.40	3	38
1510d2.45	2.45	2.45	3	38
1510d2.50	2.50	2.50	3	38
1510d2.55	2.55	2.55	3	38
1510d2.60	2.60	2.60	3	38
1510d2.65	2.65	2.65	3	38
1510d2.70	2.70	2.70	3	38
1510d2.75	2.75	2.75	3	38
1510d2.80	2.80	2.80	3	38
1510d2.85	2.85	2.85	3	38
1510d2.90	2.90	2.90	3	38
1510d2.95	2.95	2.95	3	38
1510d3.00	3.00	3.00	6	51
1510d3.10	3.10	3.10	6	51
1510d3.20	3.20	3.20	6	51
1510d3.30	3.30	3.30	6	51
1510d3.40	3.40	3.40	6	51
1510d3.50	3.50	3.50	6	51
1510d3.60	3.60	3.60	6	51
1510d3.70	3.70	3.70	6	51

Available uncoated or coated

Z3



$\lambda$  30°  $\gamma$  8-10°

CARB



$$ap = 0.25xd_1 \quad ap = l_1 \max.$$

$$ae = \frac{d_1^2}{4xAp}$$

If  $d_1 \leq 0.5 \text{ mm}$ , a double cone applies

Options

C01

MCU  $\leq \varnothing 3$  701S  $\leq \varnothing 3.2$

To order a coated tool, add the 2-letter coating code to the article number

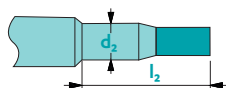


**1510**

Continuation

**End mill Z3  $l_1=1xd_1$** 

Upon request

Available  
uncoated or coated

**Z3**

 $\lambda$   
30°

 $\gamma$   
8-10°
**CARB**

$$ap=0.25xd_1$$

$$ap= l_1 \text{ max.}$$

$$ae= \frac{d_1^2}{4xAp}$$

Art. n°	$d_1$	$l_1$	D	L
1510d3.80	3.80	3.80	6	51
1510d3.90	3.90	3.90	6	51
1510d4.00	4.00	4.00	6	51
1510d4.10	4.10	4.10	6	51
1510d4.20	4.20	4.20	6	51
1510d4.30	4.30	4.30	6	51
1510d4.40	4.40	4.40	6	51
1510d4.50	4.50	4.50	6	51
1510d4.60	4.60	4.60	6	51
1510d4.70	4.70	4.70	6	51
1510d4.80	4.80	4.80	6	51
1510d4.90	4.90	4.90	6	51
1510d5.00	5.00	5.00	6	51
1510d5.10	5.10	5.10	6	51
1510d5.20	5.20	5.20	6	51
1510d5.30	5.30	5.30	6	51
1510d5.40	5.40	5.40	6	51
1510d5.50	5.50	5.50	6	51
1510d5.60	5.60	5.60	6	51
1510d5.70	5.70	5.70	6	51
1510d5.80	5.80	5.80	6	51
1510d5.90	5.90	5.90	6	51
1510d6.00	6.00	6.00	6	51
1510d6.50	6.50	6.50	8	61
1510d7.00	7.00	7.00	8	61
1510d7.50	7.50	7.50	8	61
1510d8.00	8.00	8.00	8	61
1510d8.50	8.50	8.50	10	72
1510d9.00	9.00	9.00	10	72
1510d9.50	9.50	9.50	10	72
1510d10.00	10.00	10.00	10	72
1510d11.00	11.00	11.00	11	83
1510d12.00	12.00	12.00	12	83
1510d13.00	13.00	13.00	13	83
1510d14.00	14.00	14.00	14	83
1510d15.00	15.00	15.00	15	83
1510d16.00	16.00	16.00	16	92

To order a coated tool, add the 2-letter coating code to the article number

**Options**
**C01**
**MCU**  
 $\leq \varnothing 3$ 
**701S**  
 $\leq \varnothing 3.2$

# Ceramic end mill Z3 $l_1=2xd_1$ EXPERT gold



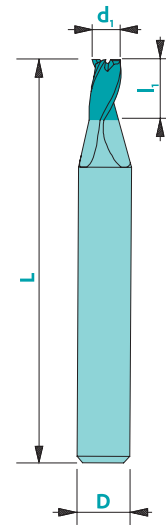
## 1520C01

Material	Vc uncoated [m/min]	Vc coated [m/min]	Uncoated	Coated	Rec. Coating*
Composite	-	-	-	-	-
Steel < 700 N/mm <sup>2</sup>	-	-	-	-	-
Steel > 700 N/mm <sup>2</sup>	-	-	-	-	-
Stainless steel	-	-	-	-	-
Cast iron	-	-	-	-	-
Copper	150-500	-	■	-	-
Brass - Bronze	250	-	■	-	-
Aluminium	100-200	-	■	-	-
Gold - Silver	200	-	■	-	-
Platinum - Palladium	-	-	-	-	-
Superalloys	-	-	-	-	-
Titanium	-	-	-	-	-

not adapted - adapted ■ highly adapted ■

Tolerances  $d_1 \leq 1 \text{ mm}$  ▶ 0/-0.01  
 $d_1 > 1 \text{ mm}$  ▶ 0/-0.02

D: h5



Art. n°	$d_1$	$l_1$	D	L
1520C01d0.50	0.50	1.00	3	38
1520C01d0.80	0.80	1.60	3	38
1520C01d1.00	1.00	2.00	3	38
1520C01d1.50	1.50	3.00	3	38
1520C01d2.00	2.00	4.00	3	38
1520C01d3.00	3.00	5.00	6	51

Available uncoated



Z3



$\lambda$   
30°

$\gamma$   
8-10°

C01



$$ap=0.25xd_1$$

$$ap= l_1 \text{ max.}$$

$$ae= \frac{d_1^2}{4xAp}$$

If  $d_1 \leq 0.5 \text{ mm}$ , a double cone applies

Options

MCU  
 $\leq \varnothing 3$

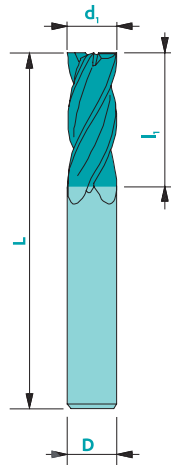
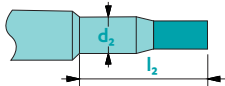
701S  
 $\leq \varnothing 3.2$

# 1620F

## End mill for superfine finishing



Upon request



Material	Vc uncoated [m/min]	Vc coated [m/min]	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm <sup>2</sup>	-	-	-	-	-
Steel > 700 N/mm <sup>2</sup>	-	-	-	-	-
Stainless steel	-	100	-	■	Tisi (BQ)
Cast iron	-	-	-	-	-
Copper	-	-	-	-	-
Brass - Bronze	-	-	-	□	Tisi (BQ)
Aluminium	-	-	-	-	-
Gold - Silver	-	-	-	■	Tisi (BQ)
Platinum - Palladium	-	-	-	-	-
Superalloys	-	-	-	-	-
Titanium	-	60	-	■	Tisi (BQ)

not adapted - adapted □ highly adapted ■

Tolerances  $d_1 \leq 1 \text{ mm} \rightarrow 0/-0.01$   
 $d_1 > 1 \text{ mm} \rightarrow 0/-0.02$   
 $d_1 = D \rightarrow d_1: e8$  D: h5

Available coated only

**Z4**



$\lambda$   
35-40°

$\gamma$   
8°

**CARB**



$$ap = l_1 \text{ max.}$$

$$ae = \frac{d_1^2}{4 \times Ap}$$

Art. n°	$d_1$	$l_1$	D	L
1620Fd2.00BQ	2.0	4	6	51
1620Fd3.00BQ	3.0	6	6	51
1620Fd4.00BQ	4.0	8	6	51
1620Fd5.00BQ	5.0	10	6	51
1620Fd6.00BQ	6.0	12	6	51
1620Fd8.00BQ	8.0	16	8	61
1620Fd10.00BQ	10.0	20	10	72
1620Fd12.00BQ	12.0	24	12	83

To order a coated tool, add the 2-letter coating code to the article number

Options

**MCU**  
≤ Ø3

**701S**  
≤ Ø3.2

# EXPERT end mill for brass - spiral tothing

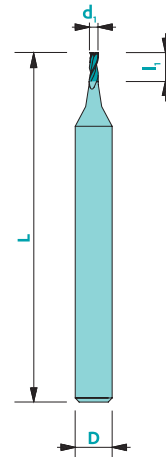


1820

Material	Vc uncoated [m/min]	Vc coated [m/min]	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm <sup>2</sup>	-	-	-	-	-
Steel > 700 N/mm <sup>2</sup>	-	-	-	-	-
Stainless steel	-	-	-	-	-
Cast iron	-	-	-	-	-
Copper	-	-	-	-	-
Brass - Bronze	140	190	■	□	Solo (DA)
Aluminium	-	-	-	-	-
Gold - Silver	-	-	□	□	Solo (DA)
Platinum - Palladium	-	-	-	-	-
Superalloys	-	-	-	-	-
Titanium	-	-	-	■	Marc (ME)

not adapted - adapted □ highly adapted ■

Tolerances  $d_1 \leq 1 \text{ mm} \rightarrow 0/-0.01$  D: h5  
 $d_1 > 1 \text{ mm} \rightarrow 0/-0.02$



Art. n°	d <sub>1</sub>	l <sub>1</sub>	D	L
1820d0.50	0.50	1.00	4	38
1820d0.80	0.80	1.60	4	38
1820d1.00	1.00	2.00	4	38
1820d1.50	1.50	3.00	4	38
1820d2.00	2.00	4.00	4	38
1820d3.00	3.00	5.00	4	38

Other dimensions available upon request

\* Prices for coatings: contact us!  
 To order a coated tool, add the 2-letter coating code to the article number

Available uncoated or coated

Z3



$\lambda$   
30°

$\gamma$   
4°

CARB



$$ap = 0.25 \times d_1$$

$$ap = l_1 \text{ max.}$$

$$ae = \frac{d_1^2}{4 \times Ap}$$

If  $d_1 \leq 0.5 \text{ mm}$ , a double cone applies

## Options

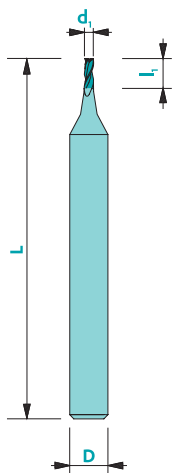
H

MCU  
≤ Ø3

701S  
≤ Ø3.2

# 1820C01

## Ceramic end mill EXPERT brass



Material	Vc uncoated [m/min]	Vc coated [m/min]	Uncoated	Coated	Rec. Coating*
Composite	-	-	-	-	-
Steel < 700 N/mm <sup>2</sup>	-	-	-	-	-
Steel > 700 N/mm <sup>2</sup>	-	-	-	-	-
Stainless steel	-	-	-	-	-
Cast iron	-	-	-	-	-
Copper	-	-	-	-	-
Brass - Bronze	150-500	-	■	-	-
Aluminium	-	-	-	-	-
Gold - Silver	100-200	-	■	-	-
Platinum - Palladium	-	-	-	-	-
Superalloys	-	-	-	-	-
Titanium	-	-	-	-	-

not adapted - adapted ■ highly adapted ■

Tolerances  $d_1 \leq 1 \text{ mm} \rightarrow 0/-0.01$   $D: h5$   
 $d_1 > 1 \text{ mm} \rightarrow 0/-0.02$

Available uncoated



**Z3**

0.02-0.05



$\lambda$   
**30°**

$\gamma$   
**4°**

**C01**



$$ap = 0.25 \times d_1 \quad ap = l_1 \text{ max.}$$

$$ae = \frac{d_1^2}{4 \times Ap}$$

If  $d_1 \leq 0.5 \text{ mm}$ , a double cone applies

Art. n°	$d_1$	$l_1$	D	L
1820C01d0.50	0.50	1.00	4	38
1820C01d0.80	0.80	1.60	4	38
1820C01d1.00	1.00	2.00	4	38
1820C01d1.50	1.50	3.00	4	38
1820C01d2.00	2.00	4.00	4	38
1820C01d3.00	3.00	5.00	4	38

### Options

**MCU**  
 $\leq \varnothing 3$

**701S**  
 $\leq \varnothing 3.2$

# EXPERT end mill titanium

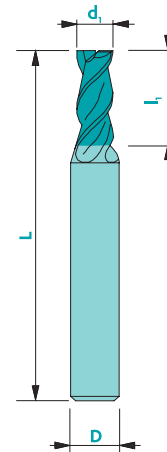


# 3100

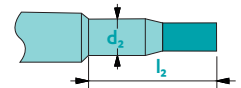
Material	Vc uncoated [m/min]	Vc coated [m/min]	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm <sup>2</sup>	-	-	-	-	-
Steel > 700 N/mm <sup>2</sup>	-	-	-	-	-
Stainless steel	-	-	-	-	-
Cast iron	-	-	-	-	-
Copper	-	-	-	-	-
Brass - Bronze	-	-	-	-	-
Aluminium	-	-	-	-	-
Gold - Silver	-	-	-	-	-
Platinum - Palladium	-	-	-	-	-
Superalloys	-	-	-	-	-
Titanium	40	60	■	■	Marc (ME)

not adapted - adapted ■ highly adapted ■

Tolerances  $d_1 \leq 1 \text{ mm}$  ▶ 0/-0.01  
 $d_1 > 1 \text{ mm}$  ▶ 0/-0.02  
 $d_1 = D$  ▶  $d_1: e8$  D: h5



Upon request



Art. n°	$d_1$	$l_1$	D	L	Z
3100d0.50	0.5	1.0	6	57	3
3100d0.60	0.6	1.2	6	57	3
3100d0.70	0.7	1.4	6	57	3
3100d0.80	0.8	1.6	6	57	3
3100d0.90	0.9	1.8	6	57	3
3100d1.00	1.0	2.0	6	57	3
3100d1.10	1.1	2.2	6	57	3
3100d1.20	1.2	2.4	6	57	3
3100d1.30	1.3	2.6	6	57	3
3100d1.40	1.4	2.8	6	57	3
3100d1.50	1.5	3.0	6	57	3
3100d1.60	1.6	3.2	6	57	3
3100d1.70	1.7	3.4	6	57	3
3100d1.80	1.8	3.6	6	57	3
3100d1.90	1.9	3.8	6	57	3
3100d2.00	2.0	4.0	6	57	3
3100d2.10	2.1	4.2	6	57	3
3100d2.20	2.2	4.4	6	57	3
3100d2.30	2.3	4.6	6	57	3
3100d2.40	2.4	4.8	6	57	3
3100d2.50	2.5	5.0	6	57	3
3100d2.60	2.6	5.2	6	57	3
3100d2.70	2.7	5.4	6	57	3
3100d2.80	2.8	5.6	6	57	3

Art. n°	$d_1$	$l_1$	D	L	Z
3100d2.90	2.9	5.8	6	57	3
3100d3.00	3.0	6.0	6	57	3
3100d3.50	3.5	7.0	6	57	3
3100d4.00	4.0	8.0	6	57	3
3100d5.00	5.0	10.0	6	57	3
3100d6.00	6.0	12.0	8	63	3
3100d8.00	8.0	16.0	8	63	3
3100d10.00	10.0	20.0	10	72	4
3100d12.00	12.0	24.0	12	83	4

Available uncoated or coated



Z3-4



$\lambda$   
45°

$\gamma$   
8°

CARB



$$ap = 0.25 \times d_1$$

$$ap = l_1 \text{ max.}$$

$$ae = \frac{d_1^2}{4 \times Ap}$$

If  $d_1 \leq 0.5 \text{ mm}$ , a double cone applies

\* Prices for coatings: contact us!  
 To order a coated tool, add the 2-letter coating code to the article number

Options

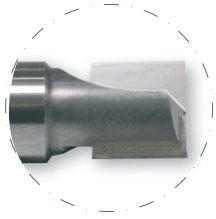


MCU  
≤ 3

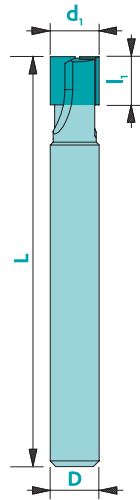
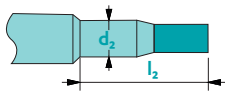
701S  
≤ 3.2

# 4010

## PCD end mill $l_1=1xd_1$



Upon request



Material

Steel < 700 N/mm<sup>2</sup>

Steel > 700 N/mm<sup>2</sup>

Stainless steel

Cast iron

Copper

Brass - Bronze

Aluminium

Gold - Silver

Platinum - Palladium

Superalloys

Titanium

Composite

Vc [m/min]

Uncoated

Steel < 700 N/mm <sup>2</sup>	-	-
Steel > 700 N/mm <sup>2</sup>	-	-
Stainless steel	-	-
Cast iron	-	-
Copper	350	■
Brass - Bronze	500	■
Aluminium	1000	■
Gold - Silver	300	■
Platinum - Palladium	130	■
Superalloys	-	-
Titanium	-	-
Composite	500	■

not adapted - adapted ■ highly adapted ■

Tolerances

$d_1 < 1\text{ mm}$  ▶ 0/-0.01  
 $d_1 > 1\text{ mm}$  ▶ 0/-0.02

$l_1$ : +0.2/-0  
 D: h5

Available uncoated only



Z1-2



$\lambda$   
0°

$\gamma$   
0°

PCD



$ap=0.15xd_1$



$ae=0.03xd_1$   
 $ap=1xd_1$

If  $d_1 \leq 0.5\text{ mm}$ , a double cone applies

Options



0.03-0.20



0.05-2.00



MCU

$\leq \varnothing 3$

701S

$\leq \varnothing 6$

Art. n°	$d_1$	$l_1$	D	L	Z
4010d0.20L38Z1	0.2	0.2	6	38	1
4010d0.30L38Z1	0.3	0.3	6	38	1
4010d0.40L38Z1	0.4	0.4	6	38	1
4010d0.40L38Z2	0.4	0.4	6	38	2
4010d0.50L38Z1	0.5	0.5	6	38	1
4010d0.50L38Z2	0.5	0.5	6	38	2
4010d0.60L38Z1	0.6	0.6	6	38	1
4010d0.60L38Z2	0.6	0.6	6	38	2
4010d0.70L38Z1	0.7	0.7	6	38	1
4010d0.70L38Z2	0.7	0.7	6	38	2
4010d0.80L38Z1	0.8	0.8	6	38	1
4010d0.80L38Z2	0.8	0.8	6	38	2
4010d0.90L38Z1	0.9	0.9	6	38	1
4010d0.90L38Z2	0.9	0.9	6	38	2
4010d1.00L38Z1	1.0	1.0	6	38	1
4010d1.00L38Z2	1.0	1.0	6	38	2
4010d1.50L38Z1	1.5	1.5	6	38	1
4010d1.50L38Z2	1.5	1.5	6	38	2
4010d2.00L38Z1	2.0	2.0	6	38	1
4010d2.00L38Z2	2.0	2.0	6	38	2
4010d2.50L38Z1	2.5	2.5	6	38	1
4010d2.50L38Z2	2.5	2.5	6	38	2
4010d3.00L38Z1	3.0	3.0	6	38	1
4010d3.00L38Z2	3.0	3.0	6	38	2
4010d3.50L38Z1	3.5	3.5	6	38	1
4010d3.50L38Z2	3.5	3.5	6	38	2
4010d4.00L51Z1	4.0	4.0	6	51	1
4010d4.00L51Z2	4.0	4.0	6	51	2
4010d5.00L51Z1	5.0	5.0	6	51	1

Art. n°	$d_1$	$l_1$	D	L	Z
4010d5.00L51Z2	5.0	5.0	6	51	2
4010d6.00L51Z1	6.0	6.0	6	51	1
4010d6.00L51Z2	6.0	6.0	6	51	2
4010d7.00L61Z1	7.0	7.0	8	61	1
4010d7.00L61Z2	7.0	7.0	8	61	2
4010d8.00L61Z1	8.0	8.0	8	61	1
4010d8.00L61Z2	8.0	8.0	8	61	2
4010d8.00L120Z1	8.0	8.0	8	120	1
4010d8.00L120Z2	8.0	8.0	8	120	2
4010d10.00L72Z1	10.0	10.0	10	72	1
4010d10.00L72Z2	10.0	10.0	10	72	2
4010d10.00L120Z1	10.0	10.0	10	120	1
4010d10.00L120Z2	10.0	10.0	10	120	2
4010d12.00L83Z1	12.0	12.0	12	83	1
4010d12.00L83Z2	12.0	12.0	12	83	2
4010d12.00L150Z1	12.0	12.0	12	150	1
4010d12.00L150Z2	12.0	12.0	12	150	2
4010d14.00L83Z1	14.0	14.0	14	83	1
4010d14.00L83Z2	14.0	14.0	14	83	2
4010d14.00L150Z1	14.0	14.0	14	150	1
4010d14.00L150Z2	14.0	14.0	14	150	2
4010d16.00L92Z1	16.0	16.0	16	92	1
4010d16.00L92Z2	16.0	16.0	16	92	2
4010d16.00L180Z1	16.0	16.0	16	180	1
4010d16.00L180Z2	16.0	16.0	16	180	2
4010d20.00L104Z1	20.0	20.0	20	104	1
4010d20.00L104Z2	20.0	20.0	20	104	2
4010d20.00L180Z1	20.0	20.0	20	180	1
4010d20.00L180Z2	20.0	20.0	20	180	2

$d_1$  possible every 0.1 mm, other dimensions, CVD/CBN available upon request.  
 $d_1 \leq 1.0\text{ mm}$ : Z2 possible in «PCD Monobloc» instead of soldered inserts

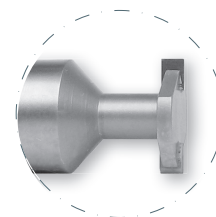
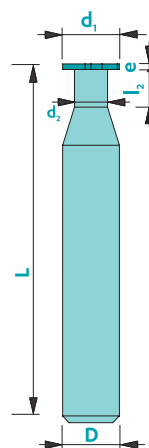


# T-slot cutter in PCD

4100

Material	Vc [m/min]	Uncoated
Steel < 700 N/mm <sup>2</sup>	-	-
Steel > 700 N/mm <sup>2</sup>	-	-
Stainless steel	-	-
Cast iron	-	-
Copper	350	■
Brass - Bronze	500	■
Aluminium	1000	■
Gold - Silver	300	■
Platinum - Palladium	130	■
Superalloys	-	-
Titanium	-	-
Composite	500	■

not adapted - adapted  highly adapted



Tolerances  $d_1 < 1\text{mm}$  ▶ 0/-0.01  $d_1 > 1\text{mm}$  ▶ 0/-0.02  $e$ : +0.01/-0.01  $d_2$ : 0/-0.1  $l_2$ : +0.2/0  $D$ : h5

Art. n°	$d_1$	e	$d_2$	$l_2$	D	L	Z
4100d3.00e#.#Z1	3	0.6-1.5	1.5	2	4	38	1
4100d4.00e#.#Z1	4	0.6-1.5	2.5	3	4	38	1
4100d4.00e#.#Z2	4	0.6-1.5	2.5	3	4	38	2
4100d5.00e#.#Z1	5	0.6-1.5	3.0	3	5	38	1
4100d5.00e#.#Z2	5	0.6-1.5	3.0	3	5	38	2
4100d6.00e#.#Z2	6	0.6-2.0	3.5	4	6	38	2
4100d8.00e#.#Z2	8	0.6-3.0	4.0	5	8	51	2
4100d10.00e#.#Z2	10	0.6-3.0	5.0	5	10	51	2
4100d12.00e#.#Z2	12	0.6-4.0	6.0	6	10	51	2
4100d15.00e#.#Z2	15	0.6-5.0	8.0	8	10	61	2
4100d16.00e#.#Z2	16	0.6-2.9	8.0	8	10	61	2
4100d16.00e#.#Z2	16	3.0-6.0	8.0	8	10	61	2

Available uncoated only

Z1-2

$\lambda$  0°  $\gamma$  0°

PCD

Order  Quotation request

<b>Dimensions :</b>			<b>Machined material :</b>		
$d_1$ : _____	$e$ : _____	$d_2$ : _____	_____		
D: _____	L: _____	$l_2$ : _____	<b>Contact person :</b>		
<b>Quantity :</b>		<b>Order No :</b>			
_____		_____			
<b>Company's stamp &amp; date :</b>					
_____					

Standard dimensions of the bars :  $\varnothing 3 \times L 38, \varnothing 4 \times L 38, \varnothing 6 \times L 38, \varnothing 6 \times L 51, \varnothing 8 \times L 61, \varnothing 10 \times L 72, \varnothing 12 \times L 83, \varnothing 16 \times L 92, \varnothing 20 \times L 104$

$d_1$  possible every 0.1 mm, other dimensions, CVD/CBN available upon request.

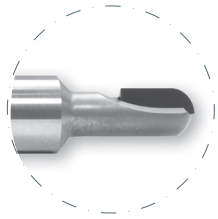
Options

H

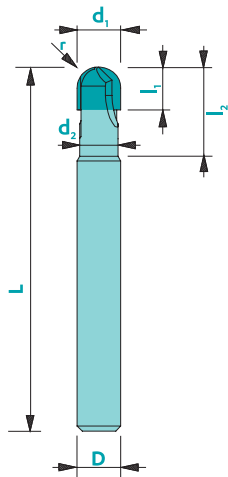
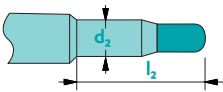
MCU  $\leq \varnothing 3$  701S  $\leq \varnothing 6$

# 4200

## PCD end mill with ball end



Upon request



Material

Steel < 700 N/mm <sup>2</sup>
Steel > 700 N/mm <sup>2</sup>
Stainless steel
Cast iron
Copper
Brass - Bronze
Aluminium
Gold - Silver
Platinum - Palladium
Superalloys
Titanium
Composite

Vc [m/min]

Uncoated

not adapted - adapted ■ highly adapted ■

Tolerances

$d_1 < 1\text{mm}$  ▶ 0/-0.01  
 $d_1 > 1\text{mm}$  ▶ 0/-0.02

$\text{R}$  0/-0.01  
 D: h5

Available uncoated only



Z1-2



$\lambda$   
0°



$\gamma$   
0°

PCD



$ae = 0.1x d_1$   
 $ap = 0.1x d_1$

$d_1 \leq 1.0\text{ mm}$ : Z2 possible in «PCD Monobloc» instead of soldered inserts

Options



MCU  
≤ Ø3

701S  
≤ Ø6

Art. n°	$d_1$	$l_1$	r	$d_2$	$l_2$	D	L	Z
4200d0.30L38Z1	0.30	0.30	0.15	-	-	6	38	1
4200d0.40L38Z1	0.40	0.40	0.20	-	-	6	38	1
4200d0.50L38Z1	0.50	0.50	0.25	-	-	6	38	1
4200d0.50L38Z2	0.50	0.50	0.25	-	-	6	38	2
4200d0.60L38Z1	0.60	0.60	0.30	-	-	6	38	1
4200d0.60L38Z2	0.60	0.60	0.30	-	-	6	38	2
4200d0.70L38Z1	0.70	0.70	0.35	-	-	6	38	1
4200d0.70L38Z2	0.70	0.70	0.35	-	-	6	38	2
4200d0.80L38Z1	0.80	0.80	0.40	-	-	6	38	1
4200d0.80L38Z2	0.80	0.80	0.40	-	-	6	38	2
4200d0.90L38Z1	0.90	0.90	0.45	-	-	6	38	1
4200d0.90L38Z2	0.90	0.90	0.45	-	-	6	38	2
4200d1.00L38Z1	1.00	1.00	0.50	-	-	6	38	1
4200d1.00L38Z2	1.00	1.00	0.50	-	-	6	38	2
4200d1.50L38Z1	1.50	1.50	0.75	-	-	6	38	1
4200d1.50L38Z2	1.50	1.50	0.75	-	-	6	38	2
4200d2.00L38Z1	2.00	2.00	1.00	1.75	6.50	6	38	1
4200d2.00L38Z2	2.00	2.00	1.00	1.75	6.50	6	38	2
4200d2.50L38Z1	2.50	2.50	1.25	2.20	7.50	6	38	1
4200d2.50L38Z2	2.50	2.50	1.25	2.20	7.50	6	38	2
4200d3.00L38Z1	3.00	3.00	1.50	2.60	8.00	6	38	1
4200d3.00L38Z2	3.00	3.00	1.50	2.60	8.00	6	38	2
4200d3.50L38Z1	3.50	3.50	1.75	3.00	9.00	6	38	1
4200d3.50L38Z2	3.50	3.50	1.75	3.00	9.00	6	38	2
4200d4.00L51Z1	4.00	4.00	2.00	3.50	10.00	6	51	1
4200d4.00L51Z2	4.00	4.00	2.00	3.50	10.00	6	51	2
4200d5.00L51Z1	5.00	5.00	2.50	4.40	11.00	6	51	1
4200d5.00L51Z2	5.00	5.00	2.50	4.40	11.00	6	51	2

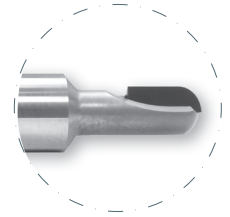


# PCD end mill with ball end

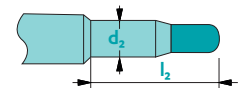
**4200**

Continuation

Art. n°	d <sub>1</sub>	l <sub>1</sub>	r	d <sub>2</sub>	l <sub>2</sub>	D	L	Z
4200d6.00L51Z1	6.00	6.00	3.00	5.25	12.50	6	51	1
4200d6.00L51Z2	6.00	6.00	3.00	5.25	12.50	6	51	2
4200d8.00L61Z1	8.00	8.00	4.00	7.00	15.00	8	61	1
4200d8.00L61Z2	8.00	8.00	4.00	7.00	15.00	8	61	2
4200d8.00L120Z1	8.00	8.00	4.00	7.00	15.00	8	120	1
4200d8.00L120Z2	8.00	8.00	4.00	7.00	15.00	8	120	2
4200d10.00L72Z1	10.00	10.00	5.00	8.75	17.00	10	72	1
4200d10.00L72Z2	10.00	10.00	5.00	8.75	17.00	10	72	2
4200d10.00L120Z1	10.00	10.00	5.00	8.75	17.00	10	120	1
4200d10.00L120Z2	10.00	10.00	5.00	8.75	17.00	10	120	2
4200d12.00L83Z1	12.00	12.00	6.00	10.50	20.00	12	83	1
4200d12.00L83Z2	12.00	12.00	6.00	10.50	20.00	12	83	2
4200d12.00L150Z1	12.00	12.00	6.00	10.50	20.00	12	150	1
4200d12.00L150Z2	12.00	12.00	6.00	10.50	20.00	12	150	2



Upon request



Available uncoated only



Z1-2



$\lambda$   
0°

$\gamma$   
0°

PCD



ae=0.1xd<sub>1</sub>  
ap=0.1xd<sub>1</sub>

Options



MCU  
≤ Ø3

701S  
≤ Ø6



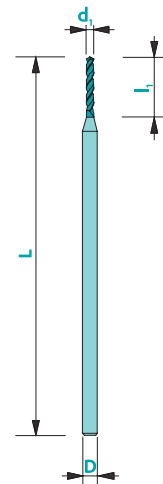
# Micro twist drill - helix 24°

339

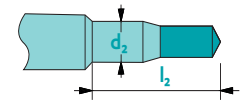
Material	Vc uncoated [m/min]	Vc coated [m/min]	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm <sup>2</sup>	70	80	☐	■	Tisi (BQ)
Steel > 700 N/mm <sup>2</sup>	60	70	☐	■	Tisi (BQ)
Stainless steel	20	40	☐	☐	Tisi (BQ)
Cast iron	60	70	☐	■	Tisi (BQ)
Copper	100	130	☐	☐	Solo (DA)
Brass - Bronze	80	120	■	■	Solo (DA)
Aluminium	100	120	☐	■	Solo (DA)
Gold - Silver	80	100	■	■	Solo (DA)
Platinum - Palladium	-	20	-	☐	Sun (DG)
Superalloys	-	25	-	■	Trio (PO)
Titanium	40	60	☐	☐	Marc (ME)

not adapted - adapted ☐ highly adapted ■

Tolerances  $d_1$ : -0.002/-0.004  
D: h5



Upon request



Art. n°	$d_1$	$l_1$	D	L
339d0.05	0.05	0.35	1	30
339d0.06	0.06	0.40	1	30
339d0.07	0.07	0.50	1	30
339d0.08	0.08	0.60	1	30
339d0.09	0.09	0.65	1	30
339d0.10	0.10	0.70	1	30
339d0.11	0.11	0.70	1	30
339d0.12	0.12	0.70	1	30
339d0.13	0.13	0.70	1	30
339d0.14	0.14	0.70	1	30
339d0.15	0.15	1.00	1	30
339d0.16	0.16	1.00	1	30
339d0.17	0.17	1.00	1	30
339d0.18	0.18	1.00	1	30
339d0.19	0.19	1.00	1	30
339d0.20	0.20	1.00	1	30
339d0.21	0.21	1.00	1	30
339d0.22	0.22	1.00	1	30
339d0.23	0.23	1.00	1	30
339d0.24	0.24	1.00	1	30
339d0.25	0.25	1.00	1	30
339d0.26	0.26	1.00	1	30
339d0.27	0.27	1.00	1	30
339d0.28	0.28	1.00	1	30
339d0.29	0.29	1.00	1	30
339d0.30	0.30	1.50	1	30
339d0.31	0.31	1.50	1	30
339d0.32	0.32	1.50	1	30
339d0.33	0.33	1.50	1	30

Art. n°	$d_1$	$l_1$	D	L
339d0.34	0.34	1.50	1	30
339d0.35	0.35	1.50	1	30
339d0.36	0.36	1.50	1	30
339d0.37	0.37	1.50	1	30
339d0.38	0.38	1.50	1	30
339d0.39	0.39	1.50	1	30
339d0.40	0.40	2.00	1	30
339d0.41	0.41	2.00	1	30
339d0.42	0.42	2.00	1	30
339d0.43	0.43	2.00	1	30
339d0.44	0.44	2.00	1	30
339d0.45	0.45	3.50	1	30
339d0.46	0.46	3.50	1	30
339d0.47	0.47	3.50	1	30
339d0.48	0.48	3.50	1	30
339d0.49	0.49	4.00	1	30
339d0.50	0.50	4.00	1	30

Available uncoated or coated



118°

Z2



λ  
24°

CARB

If  $d_1 \leq 0.2$  mm, a double cone applies

Options

MCU  
≤ Ø3

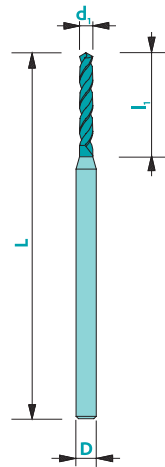
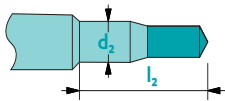
701S  
≤ Ø6

# 340-1

## Micro twist drill - helix 34°



Upon request



Material	Vc uncoated [m/min]	Vc coated [m/min]	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm <sup>2</sup>	70	80	☐	■	Tisi (BQ)
Steel > 700 N/mm <sup>2</sup>	60	70	☐	■	Tisi (BQ)
Stainless steel	20	40	☐	☐	Tisi (BQ)
Cast iron	60	70	☐	■	Tisi (BQ)
Copper	100	130	☐	☐	Solo (DA)
Brass - Bronze	80	120	■	■	Solo (DA)
Aluminium	100	120	☐	■	Solo (DA)
Gold - Silver	80	100	■	■	Solo (DA)
Platinum - Palladium	-	20	-	☐	Sun (DG)
Superalloys	-	25	-	■	Trio (PC)
Titanium	40	60	☐	☐	Marc (ME)

not adapted - adapted ☐ highly adapted ■

Tolerances  $d_1$ : -0.002/-0.004  
D: h5

Available uncoated or coated (see page 314)

**118°** **Z2**



**λ** **24°**

**CARB**

Options

**MCU** ≤ Ø3 **701S** ≤ Ø6

Art. n°	$d_1$	$l_1$	D	L
340-1d0.40	0.40	3.0	1.5	30
340-1d0.41	0.41	3.0	1.5	30
340-1d0.42	0.42	3.0	1.5	30
340-1d0.43	0.43	3.0	1.5	30
340-1d0.44	0.44	3.0	1.5	30
340-1d0.45	0.45	3.0	1.5	30
340-1d0.46	0.46	3.0	1.5	30
340-1d0.47	0.47	3.0	1.5	30
340-1d0.48	0.48	3.0	1.5	30
340-1d0.49	0.49	3.0	1.5	30
340-1d0.50	0.50	4.0	1.5	30
340-1d0.51	0.51	4.0	1.5	30
340-1d0.52	0.52	4.0	1.5	30
340-1d0.53	0.53	4.0	1.5	30
340-1d0.54	0.54	4.0	1.5	30
340-1d0.55	0.55	4.0	1.5	30
340-1d0.56	0.56	4.0	1.5	30
340-1d0.57	0.57	4.0	1.5	30
340-1d0.58	0.58	4.0	1.5	30
340-1d0.59	0.59	4.0	1.5	30
340-1d0.60	0.60	5.0	1.5	30
340-1d0.61	0.61	5.0	1.5	30
340-1d0.62	0.62	5.0	1.5	30
340-1d0.63	0.63	5.0	1.5	30
340-1d0.64	0.64	5.0	1.5	30
340-1d0.65	0.65	5.0	1.5	30
340-1d0.66	0.66	5.0	1.5	30
340-1d0.67	0.67	5.0	1.5	30
340-1d0.68	0.68	5.0	1.5	30
340-1d0.69	0.69	5.0	1.5	30
340-1d0.70	0.70	5.0	1.5	30
340-1d0.71	0.71	5.0	1.5	30

Art. n°	$d_1$	$l_1$	D	L
340-1d0.72	0.72	5.0	1.5	30
340-1d0.73	0.73	5.0	1.5	30
340-1d0.74	0.74	5.0	1.5	30
340-1d0.75	0.75	5.0	1.5	30
340-1d0.76	0.76	5.0	1.5	30
340-1d0.77	0.77	5.0	1.5	30
340-1d0.78	0.78	5.0	1.5	30
340-1d0.79	0.79	5.0	1.5	30
340-1d0.80	0.80	6.0	1.5	30
340-1d0.81	0.81	6.0	1.5	30
340-1d0.82	0.82	6.0	1.5	30
340-1d0.83	0.83	6.0	1.5	30
340-1d0.84	0.84	6.0	1.5	30
340-1d0.85	0.85	6.0	1.5	30
340-1d0.86	0.86	6.0	1.5	30
340-1d0.87	0.87	6.0	1.5	30
340-1d0.88	0.88	6.0	1.5	30
340-1d0.89	0.89	6.0	1.5	30
340-1d0.90	0.90	7.0	1.5	30
340-1d0.91	0.91	7.0	1.5	30
340-1d0.92	0.92	7.0	1.5	30
340-1d0.93	0.93	7.0	1.5	30
340-1d0.94	0.94	7.0	1.5	30
340-1d0.95	0.95	7.0	1.5	30
340-1d0.96	0.96	7.0	1.5	30
340-1d0.97	0.97	7.0	1.5	30
340-1d0.98	0.98	7.0	1.5	30
340-1d0.99	0.99	7.0	1.5	30
340-1d1.00	1.00	8.0	1.5	30
340-1d1.01	1.01	8.0	1.5	30
340-1d1.02	1.02	8.0	1.5	30
340-1d1.03	1.03	8.0	1.5	30

\* Prices for other coatings: contact us!

To order a coated tool, add the 2-letter coating code to the article number

30

LOUIS BELET

swiss made



# Micro twist drill - helix 34°

## 340-1

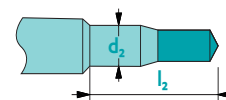
Continuation

Art. n°	d <sub>1</sub>	l <sub>1</sub>	D	L
340-1d1.04	1.04	8.0	1.5	30
340-1d1.05	1.05	8.0	1.5	30
340-1d1.06	1.06	8.0	1.5	30
340-1d1.07	1.07	8.0	1.5	30
340-1d1.08	1.08	8.0	1.5	30
340-1d1.09	1.09	8.0	1.5	30
340-1d1.10	1.10	9.0	1.5	30
340-1d1.11	1.11	9.0	1.5	30
340-1d1.12	1.12	9.0	1.5	30
340-1d1.13	1.13	9.0	1.5	30
340-1d1.14	1.14	9.0	1.5	30
340-1d1.15	1.15	9.0	1.5	30
340-1d1.16	1.16	9.0	1.5	30
340-1d1.17	1.17	9.0	1.5	30
340-1d1.18	1.18	9.0	1.5	30
340-1d1.19	1.19	9.0	1.5	30
340-1d1.20	1.20	10.0	1.5	30
340-1d1.21	1.21	10.0	1.5	30
340-1d1.22	1.22	10.0	1.5	30
340-1d1.23	1.23	10.0	1.5	30
340-1d1.24	1.24	10.0	1.5	30
340-1d1.25	1.25	10.0	1.5	30
340-1d1.26	1.26	10.0	1.5	30
340-1d1.27	1.27	10.0	1.5	30
340-1d1.28	1.28	10.0	1.5	30
340-1d1.29	1.29	10.0	1.5	30
340-1d1.30	1.30	10.0	1.5	30
340-1d1.31	1.31	10.0	1.5	30
340-1d1.32	1.32	10.0	1.5	30
340-1d1.33	1.33	10.0	1.5	30
340-1d1.34	1.34	10.0	1.5	30
340-1d1.35	1.35	11.0	1.5	30
340-1d1.36	1.36	11.0	1.5	30
340-1d1.37	1.37	11.0	1.5	30
340-1d1.38	1.38	11.0	1.5	30
340-1d1.39	1.39	11.0	1.5	30
340-1d1.40	1.40	11.0	1.5	30
340-1d1.41	1.41	11.0	1.5	30
340-1d1.42	1.42	11.0	1.5	30
340-1d1.43	1.43	11.0	1.5	30
340-1d1.44	1.44	11.0	1.5	30
340-1d1.45	1.45	11.0	1.5	30
340-1d1.46	1.46	11.0	1.5	30
340-1d1.47	1.47	11.0	1.5	30
340-1d1.48	1.48	11.0	1.5	30
340-1d1.49	1.49	11.0	1.5	30
340-1d1.50	1.50	12.0	2.0	38
340-1d1.51	1.51	12.0	2.0	38

Art. n°	d <sub>1</sub>	l <sub>1</sub>	D	L
340-1d1.52	1.52	12.0	2.0	38
340-1d1.53	1.53	12.0	2.0	38
340-1d1.54	1.54	12.0	2.0	38
340-1d1.55	1.55	12.0	2.0	38
340-1d1.56	1.56	12.0	2.0	38
340-1d1.57	1.57	12.0	2.0	38
340-1d1.58	1.58	12.0	2.0	38
340-1d1.59	1.59	12.0	2.0	38
340-1d1.60	1.60	12.0	2.0	38
340-1d1.61	1.61	12.0	2.0	38
340-1d1.62	1.62	12.0	2.0	38
340-1d1.63	1.63	12.0	2.0	38
340-1d1.64	1.64	12.0	2.0	38
340-1d1.65	1.65	12.0	2.0	38
340-1d1.66	1.66	12.0	2.0	38
340-1d1.67	1.67	12.0	2.0	38
340-1d1.68	1.68	12.0	2.0	38
340-1d1.69	1.69	12.0	2.0	38
340-1d1.70	1.70	12.0	2.0	38
340-1d1.71	1.71	12.0	2.0	38
340-1d1.72	1.72	12.0	2.0	38
340-1d1.73	1.73	12.0	2.0	38
340-1d1.74	1.74	12.0	2.0	38
340-1d1.75	1.75	12.0	2.0	38
340-1d1.76	1.76	12.0	2.0	38
340-1d1.77	1.77	12.0	2.0	38
340-1d1.78	1.78	12.0	2.0	38
340-1d1.79	1.79	12.0	2.0	38
340-1d1.80	1.80	12.0	2.0	38
340-1d1.81	1.81	12.0	2.0	38
340-1d1.82	1.82	12.0	2.0	38
340-1d1.83	1.83	12.0	2.0	38
340-1d1.84	1.84	12.0	2.0	38
340-1d1.85	1.85	12.0	2.0	38
340-1d1.86	1.86	12.0	2.0	38
340-1d1.87	1.87	12.0	2.0	38
340-1d1.88	1.88	12.0	2.0	38
340-1d1.89	1.89	12.0	2.0	38
340-1d1.90	1.90	12.0	2.0	38
340-1d1.91	1.91	12.0	2.0	38
340-1d1.92	1.92	12.0	2.0	38
340-1d1.93	1.93	12.0	2.0	38
340-1d1.94	1.94	12.0	2.0	38
340-1d1.95	1.95	12.0	2.0	38
340-1d1.96	1.96	12.0	2.0	38
340-1d1.97	1.97	12.0	2.0	38
340-1d1.98	1.98	12.0	2.0	38
340-1d1.99	1.99	12.0	2.0	38



Upon request



Available uncoated or coated (see page 314)



118°

Z2



λ  
24°

CARB

Options

MCU  
≤ Ø3

701S  
≤ Ø6

\* Prices for other coatings: contact us!

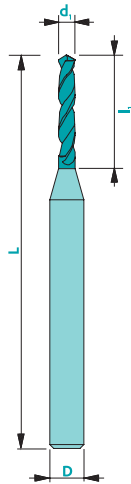
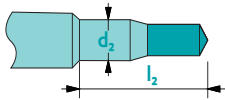
To order a coated tool, add the 2-letter coating code to the article number

# 343-6

## Drill - helix 34° - l<sub>1</sub>=6 mm



Upon request



Material	Vc uncoated [m/min]	Vc coated [m/min]	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm <sup>2</sup>	70	80	□	□	Tisi (BQ)
Steel > 700 N/mm <sup>2</sup>	60	70	□	■	Tisi (BQ)
Stainless steel	20	40	□	■	Tisi (BQ)
Cast iron	60	70	□	■	Tisi (BQ)
Copper	100	130	□	■	Solo (DA)
Brass - Bronze	80	120	■	■	Solo (DA)
Aluminium	100	120	■	■	Solo (DA)
Gold - Silver	80	100	□	□	Solo (DA)
Platinum - Palladium	-	20	-	□	Sun (DG)
Superalloys	-	25	-	□	Trio (PO)
Titanium	40	60	□	□	Marc (ME)

not adapted - adapted □ highly adapted ■

Tolerances d<sub>1</sub>: -0.002/-0.004  
D: h5

Available uncoated or coated



Z2

118°



λ  
34°

CARB

Options

MCU  
≤ Ø3

701S  
≤ Ø6

Art. n°	d <sub>1</sub>	l <sub>1</sub>	D	L	Art. n°	d <sub>1</sub>	l <sub>1</sub>	D	L
343-6d0.60	0.60	6.0	2.0	38	343-6d0.89	0.89	6.0	2.0	38
343-6d0.61	0.61	6.0	2.0	38	343-6d0.90	0.90	6.0	2.0	38
343-6d0.62	0.62	6.0	2.0	38	343-6d0.91	0.91	6.0	2.0	38
343-6d0.63	0.63	6.0	2.0	38	343-6d0.92	0.92	6.0	2.0	38
343-6d0.64	0.64	6.0	2.0	38	343-6d0.93	0.93	6.0	2.0	38
343-6d0.65	0.65	6.0	2.0	38	343-6d0.94	0.94	6.0	2.0	38
343-6d0.66	0.66	6.0	2.0	38	343-6d0.95	0.95	6.0	2.0	38
343-6d0.67	0.67	6.0	2.0	38	343-6d0.96	0.96	6.0	2.0	38
343-6d0.68	0.68	6.0	2.0	38	343-6d0.97	0.97	6.0	2.0	38
343-6d0.69	0.69	6.0	2.0	38	343-6d0.98	0.98	6.0	2.0	38
343-6d0.70	0.70	6.0	2.0	38	343-6d0.99	0.99	6.0	2.0	38
343-6d0.71	0.71	6.0	2.0	38	343-6d1.00	1.00	6.0	2.0	38
343-6d0.72	0.72	6.0	2.0	38	343-6d1.01	1.01	6.0	2.0	38
343-6d0.73	0.73	6.0	2.0	38	343-6d1.02	1.02	6.0	2.0	38
343-6d0.74	0.74	6.0	2.0	38	343-6d1.03	1.03	6.0	2.0	38
343-6d0.75	0.75	6.0	2.0	38	343-6d1.04	1.04	6.0	2.0	38
343-6d0.76	0.76	6.0	2.0	38	343-6d1.05	1.05	6.0	2.0	38
343-6d0.77	0.77	6.0	2.0	38	343-6d1.06	1.06	6.0	2.0	38
343-6d0.78	0.78	6.0	2.0	38	343-6d1.07	1.07	6.0	2.0	38
343-6d0.79	0.79	6.0	2.0	38	343-6d1.08	1.08	6.0	2.0	38
343-6d0.80	0.80	6.0	2.0	38	343-6d1.09	1.09	6.0	2.0	38
343-6d0.81	0.81	6.0	2.0	38	343-6d1.09	1.09	6.0	2.0	38
343-6d0.82	0.82	6.0	2.0	38	343-6d1.10	1.10	6.0	2.0	38
343-6d0.83	0.83	6.0	2.0	38	343-6d1.11	1.11	6.0	2.0	38
343-6d0.84	0.84	6.0	2.0	38	343-6d1.12	1.12	6.0	2.0	38
343-6d0.85	0.85	6.0	2.0	38	343-6d1.13	1.13	6.0	2.0	38
343-6d0.86	0.86	6.0	2.0	38	343-6d1.14	1.14	6.0	2.0	38
343-6d0.87	0.87	6.0	2.0	38	343-6d1.15	1.15	6.0	2.0	38
343-6d0.88	0.88	6.0	2.0	38	343-6d1.16	1.16	6.0	2.0	38

To order a coated tool, add the 2-letter coating code to the article number





# Drill - helix 34° - l<sub>1</sub>=6 mm

## 343-6

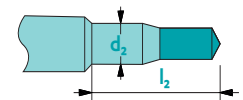
Continuation

Art. n°	d <sub>1</sub>	l <sub>1</sub>	D	L
343-6d1.17	1.17	6.0	2.0	38
343-6d1.18	1.18	6.0	2.0	38
343-6d1.19	1.19	6.0	2.0	38
343-6d1.20	1.20	6.0	2.0	38
343-6d1.21	1.21	6.0	2.0	38
343-6d1.22	1.22	6.0	2.0	38
343-6d1.23	1.23	6.0	2.0	38
343-6d1.24	1.24	6.0	2.0	38
343-6d1.25	1.25	6.0	2.0	38
343-6d1.26	1.26	6.0	2.0	38
343-6d1.27	1.27	6.0	2.0	38
343-6d1.28	1.28	6.0	2.0	38
343-6d1.29	1.29	6.0	2.0	38
343-6d1.30	1.30	6.0	2.0	38
343-6d1.31	1.31	6.0	2.0	38
343-6d1.32	1.32	6.0	2.0	38
343-6d1.33	1.33	6.0	2.0	38
343-6d1.34	1.34	6.0	2.0	38
343-6d1.35	1.35	6.0	2.0	38
343-6d1.36	1.36	6.0	2.0	38
343-6d1.37	1.37	6.0	2.0	38
343-6d1.38	1.38	6.0	2.0	38
343-6d1.39	1.39	6.0	2.0	38
343-6d1.40	1.40	6.0	2.0	38
343-6d1.41	1.41	6.0	2.0	38
343-6d1.42	1.42	6.0	2.0	38
343-6d1.43	1.43	6.0	2.0	38
343-6d1.44	1.44	6.0	2.0	38
343-6d1.45	1.45	6.0	2.0	38
343-6d1.46	1.46	6.0	2.0	38
343-6d1.47	1.47	6.0	2.0	38
343-6d1.48	1.48	6.0	2.0	38
343-6d1.49	1.49	6.0	2.0	38
343-6d1.50	1.50	6.0	2.0	38
343-6d1.51	1.51	6.0	2.0	38
343-6d1.52	1.52	6.0	2.0	38
343-6d1.53	1.53	6.0	2.0	38
343-6d1.54	1.54	6.0	2.0	38
343-6d1.55	1.55	6.0	2.0	38
343-6d1.56	1.56	6.0	2.0	38
343-6d1.57	1.57	6.0	2.0	38
343-6d1.58	1.58	6.0	2.0	38
343-6d1.59	1.59	6.0	2.0	38
343-6d1.60	1.60	6.0	2.0	38
343-6d1.61	1.61	6.0	2.0	38

Art. n°	d <sub>1</sub>	l <sub>1</sub>	D	L
343-6d1.62	1.62	6.0	2.0	38
343-6d1.63	1.63	6.0	2.0	38
343-6d1.64	1.64	6.0	2.0	38
343-6d1.65	1.65	6.0	2.0	38
343-6d1.66	1.66	6.0	2.0	38
343-6d1.67	1.67	6.0	2.0	38
343-6d1.68	1.68	6.0	2.0	38
343-6d1.69	1.69	6.0	2.0	38
343-6d1.70	1.70	6.0	2.0	38
343-6d1.71	1.71	6.0	2.0	38
343-6d1.72	1.72	6.0	2.0	38
343-6d1.73	1.73	6.0	2.0	38
343-6d1.74	1.74	6.0	2.0	38
343-6d1.75	1.75	6.0	2.0	38
343-6d1.76	1.76	6.0	2.0	38
343-6d1.77	1.77	6.0	2.0	38
343-6d1.78	1.78	6.0	2.0	38
343-6d1.79	1.79	6.0	2.0	38
343-6d1.80	1.80	6.0	2.0	38
343-6d1.81	1.81	6.0	2.0	38
343-6d1.82	1.82	6.0	2.0	38
343-6d1.83	1.83	6.0	2.0	38
343-6d1.84	1.84	6.0	2.0	38
343-6d1.85	1.85	6.0	2.0	38
343-6d1.86	1.86	6.0	2.0	38
343-6d1.87	1.87	6.0	2.0	38
343-6d1.88	1.88	6.0	2.0	38
343-6d1.89	1.89	6.0	2.0	38
343-6d1.90	1.90	6.0	2.0	38
343-6d1.91	1.91	6.0	2.0	38
343-6d1.92	1.92	6.0	2.0	38
343-6d1.93	1.93	6.0	2.0	38
343-6d1.94	1.94	6.0	2.0	38
343-6d1.95	1.95	6.0	2.0	38
343-6d1.96	1.96	6.0	2.0	38
343-6d1.97	1.97	6.0	2.0	38
343-6d1.98	1.98	6.0	2.0	38
343-6d1.99	1.99	6.0	2.0	38
343-6d2.00	2.00	6.0	2.0	38



Upon request



Available uncoated or coated



118°

Z2



λ  
34°

CARB

Options

MCU  
≤ Ø3

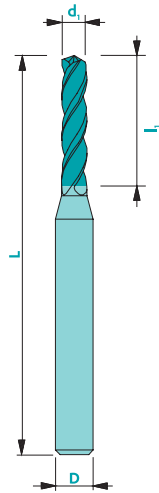
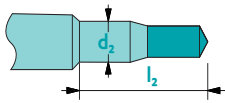
701S  
≤ Ø6

To order a coated tool, add the 2-letter coating code to the article number

## Twist drill Z3 - shank Ø3



Upon request



Material	Vc uncoated [m/min]	Vc coated [m/min]	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm <sup>2</sup>	70	80	□	□	Tisi (BQ)
Steel > 700 N/mm <sup>2</sup>	60	70	□	□	Tisi (BQ)
Stainless steel	20	40	□	□	Tisi (BQ)
Cast iron	60	70	□	□	Tisi (BQ)
Copper	100	130	□	□	Solo (DA)
Brass - Bronze	80	120	□	□	Solo (DA)
Aluminium	100	120	□	□	Solo (DA)
Gold - Silver	80	100	■	■	Solo (DA)
Platinum - Palladium	-	20	-	□	Sun (DG)
Superalloys	-	25	-	■	Trio (PO)
Titanium	40	60	■	■	Marc (DG)

not adapted - adapted □ highly adapted ■

Tolerances d<sub>1</sub>: -0.002/-0.004  
D: h5

Available uncoated or coated

**Z3**  
140°

**CARB**  
λ 34°

If d<sub>1</sub> ≤ 0.2 mm, a double cone applies

### Options

**MCU** ≤ Ø3

**701S** ≤ Ø6

Art. n°	d <sub>1</sub>	l <sub>1</sub>	D	L
353d0.15	0.15	2.0	3.0	38
353d0.18	0.18	2.0	3.0	38
353d0.20	0.20	3.0	3.0	38
353d0.21	0.21	3.0	3.0	38
353d0.22	0.22	3.0	3.0	38
353d0.23	0.23	3.0	3.0	38
353d0.24	0.24	3.0	3.0	38
353d0.25	0.25	3.5	3.0	38
353d0.26	0.26	3.5	3.0	38
353d0.27	0.27	3.5	3.0	38
353d0.28	0.28	3.5	3.0	38
353d0.29	0.29	3.5	3.0	38
353d0.30	0.30	5.0	3.0	38
353d0.31	0.31	5.0	3.0	38
353d0.32	0.32	5.0	3.0	38
353d0.33	0.33	5.0	3.0	38
353d0.34	0.34	5.0	3.0	38
353d0.35	0.35	5.0	3.0	38
353d0.36	0.36	5.0	3.0	38
353d0.37	0.37	5.0	3.0	38
353d0.38	0.38	5.0	3.0	38
353d0.39	0.39	5.0	3.0	38
353d0.40	0.40	6.0	3.0	38
353d0.41	0.41	6.0	3.0	38
353d0.42	0.42	6.0	3.0	38
353d0.43	0.43	6.0	3.0	38
353d0.44	0.44	6.0	3.0	38
353d0.45	0.45	6.0	3.0	38
353d0.46	0.46	6.0	3.0	38

Art. n°	d <sub>1</sub>	l <sub>1</sub>	D	L
353d0.47	0.47	6.0	3.0	38
353d0.48	0.48	6.0	3.0	38
353d0.49	0.49	6.0	3.0	38
353d0.50	0.50	6.0	3.0	38
353d0.51	0.51	6.0	3.0	38
353d0.52	0.52	6.0	3.0	38
353d0.53	0.53	6.0	3.0	38
353d0.54	0.54	6.0	3.0	38
353d0.55	0.55	7.0	3.0	38
353d0.56	0.56	7.0	3.0	38
353d0.57	0.57	7.0	3.0	38
353d0.58	0.58	7.0	3.0	38
353d0.59	0.59	7.0	3.0	38
353d0.60	0.60	7.0	3.0	38
353d0.61	0.61	7.0	3.0	38
353d0.62	0.62	7.0	3.0	38
353d0.63	0.63	7.0	3.0	38
353d0.64	0.64	7.0	3.0	38
353d0.65	0.65	7.0	3.0	38
353d0.66	0.66	7.0	3.0	38
353d0.67	0.67	7.0	3.0	38
353d0.68	0.68	7.0	3.0	38
353d0.69	0.69	7.0	3.0	38
353d0.70	0.70	9.5	3.0	38
353d0.71	0.71	9.5	3.0	38
353d0.72	0.72	9.5	3.0	38
353d0.73	0.73	9.5	3.0	38
353d0.74	0.74	9.5	3.0	38
353d0.75	0.75	9.5	3.0	38

To order a coated tool, add the 2-letter coating code to the article number



# Twist drill Z3 - shank Ø3

**353**

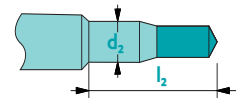
Continuation

Art. n°	d <sub>1</sub>	l <sub>1</sub>	D	L
353d0.76	0.76	9.5	3.0	38
353d0.77	0.77	9.5	3.0	38
353d0.78	0.78	9.5	3.0	38
353d0.79	0.79	9.5	3.0	38
353d0.80	0.80	9.5	3.0	38
353d0.81	0.81	9.5	3.0	38
353d0.82	0.82	9.5	3.0	38
353d0.83	0.83	9.5	3.0	38
353d0.84	0.84	9.5	3.0	38
353d0.85	0.85	9.5	3.0	38
353d0.86	0.86	9.5	3.0	38
353d0.87	0.87	9.5	3.0	38
353d0.88	0.88	9.5	3.0	38
353d0.89	0.89	9.5	3.0	38
353d0.90	0.90	9.5	3.0	38
353d0.91	0.91	9.5	3.0	38
353d0.92	0.92	9.5	3.0	38
353d0.93	0.93	9.5	3.0	38
353d0.94	0.94	9.5	3.0	38
353d0.95	0.95	9.5	3.0	38
353d0.96	0.96	9.5	3.0	38
353d0.97	0.97	9.5	3.0	38
353d0.98	0.98	9.5	3.0	38
353d0.99	0.99	9.5	3.0	38
353d1.00	1.00	9.5	3.0	38
353d1.01	1.01	9.5	3.0	38
353d1.02	1.02	9.5	3.0	38
353d1.03	1.03	9.5	3.0	38
353d1.04	1.04	9.5	3.0	38
353d1.05	1.05	10.5	3.0	38
353d1.06	1.06	10.5	3.0	38
353d1.07	1.07	10.5	3.0	38
353d1.08	1.08	10.5	3.0	38
353d1.09	1.09	10.5	3.0	38
353d1.10	1.10	10.5	3.0	38
353d1.11	1.11	10.5	3.0	38
353d1.12	1.12	10.5	3.0	38
353d1.13	1.13	10.5	3.0	38
353d1.14	1.14	10.5	3.0	38
353d1.15	1.15	10.5	3.0	38
353d1.16	1.16	10.5	3.0	38
353d1.17	1.17	10.5	3.0	38
353d1.18	1.18	10.5	3.0	38
353d1.19	1.19	10.5	3.0	38

Art. n°	d <sub>1</sub>	l <sub>1</sub>	D	L
353d1.20	1.20	10.5	3.0	38
353d1.21	1.21	10.5	3.0	38
353d1.22	1.22	10.5	3.0	38
353d1.23	1.23	10.5	3.0	38
353d1.24	1.24	10.5	3.0	38
353d1.25	1.25	10.5	3.0	38
353d1.26	1.26	10.5	3.0	38
353d1.27	1.27	10.5	3.0	38
353d1.28	1.28	10.5	3.0	38
353d1.29	1.29	10.5	3.0	38
353d1.30	1.30	10.5	3.0	38
353d1.31	1.31	10.5	3.0	38
353d1.32	1.32	10.5	3.0	38
353d1.33	1.33	10.5	3.0	38
353d1.34	1.34	10.5	3.0	38
353d1.35	1.35	10.5	3.0	38
353d1.36	1.36	10.5	3.0	38
353d1.37	1.37	10.5	3.0	38
353d1.38	1.38	10.5	3.0	38
353d1.39	1.39	10.5	3.0	38
353d1.40	1.40	10.5	3.0	38
353d1.41	1.41	10.5	3.0	38
353d1.42	1.42	10.5	3.0	38
353d1.43	1.43	10.5	3.0	38
353d1.44	1.44	10.5	3.0	38
353d1.45	1.45	10.5	3.0	38
353d1.46	1.46	10.5	3.0	38
353d1.47	1.47	10.5	3.0	38
353d1.48	1.48	10.5	3.0	38
353d1.49	1.49	10.5	3.0	38
353d1.50	1.50	10.5	3.0	38
353d1.51	1.51	10.5	3.0	38
353d1.52	1.52	10.5	3.0	38
353d1.53	1.53	10.5	3.0	38
353d1.54	1.54	10.5	3.0	38
353d1.55	1.55	10.5	3.0	38
353d1.56	1.56	10.5	3.0	38
353d1.57	1.57	10.5	3.0	38
353d1.58	1.58	10.5	3.0	38
353d1.59	1.59	10.5	3.0	38
353d1.60	1.60	10.5	3.0	38
353d1.61	1.61	10.5	3.0	38
353d1.62	1.62	10.5	3.0	38
353d1.63	1.63	10.5	3.0	38



Upon request



Available uncoated or coated



140°

**Z3**



λ  
34°

**CARB**

Options

**MCU**  
≤ Ø3

**701S**  
≤ Ø6

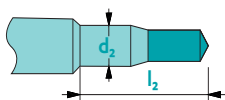
To order a coated tool, add the 2-letter coating code to the article number



## Twist drill Z3 - shank Ø3



Upon request

Available  
uncoated or coated

140°

Z3

λ  
34°

CARB

## Options

MCU  
≤ Ø3701S  
≤ Ø6

Art. n°	d <sub>1</sub>	l <sub>1</sub>	D	L
353d1.64	1.64	10.5	3.0	38
353d1.65	1.65	10.5	3.0	38
353d1.66	1.66	10.5	3.0	38
353d1.67	1.67	10.5	3.0	38
353d1.68	1.68	10.5	3.0	38
353d1.69	1.69	10.5	3.0	38
353d1.70	1.70	10.5	3.0	38
353d1.71	1.71	10.5	3.0	38
353d1.72	1.72	10.5	3.0	38
353d1.73	1.73	10.5	3.0	38
353d1.74	1.74	10.5	3.0	38
353d1.75	1.75	10.5	3.0	38
353d1.76	1.76	10.5	3.0	38
353d1.77	1.77	10.5	3.0	38
353d1.78	1.78	10.5	3.0	38
353d1.79	1.79	10.5	3.0	38
353d1.80	1.80	10.5	3.0	38
353d1.81	1.81	10.5	3.0	38
353d1.82	1.82	10.5	3.0	38
353d1.83	1.83	10.5	3.0	38
353d1.84	1.84	10.5	3.0	38
353d1.85	1.85	10.5	3.0	38
353d1.86	1.86	10.5	3.0	38
353d1.87	1.87	10.5	3.0	38
353d1.88	1.88	10.5	3.0	38
353d1.89	1.89	10.5	3.0	38
353d1.90	1.90	10.5	3.0	38
353d1.91	1.91	10.5	3.0	38
353d1.92	1.92	10.5	3.0	38
353d1.93	1.93	10.5	3.0	38
353d1.94	1.94	10.5	3.0	38
353d1.95	1.95	10.5	3.0	38
353d1.96	1.96	10.5	3.0	38
353d1.97	1.97	10.5	3.0	38
353d1.98	1.98	10.5	3.0	38
353d1.99	1.99	10.5	3.0	38
353d2.00	2.00	10.5	3.0	38
353d2.05	2.05	10.5	3.0	38
353d2.10	2.10	10.5	3.0	38
353d2.15	2.15	10.5	3.0	38
353d2.20	2.20	10.5	3.0	38
353d2.25	2.25	10.5	3.0	38
353d2.30	2.30	10.5	3.0	38
353d2.35	2.35	10.5	3.0	38

Art. n°	d <sub>1</sub>	l <sub>1</sub>	D	L
353d2.40	2.40	10.5	3.0	38
353d2.45	2.45	10.5	3.0	38
353d2.50	2.50	10.5	3.0	38
353d2.55	2.55	10.5	3.0	38
353d2.60	2.60	10.5	3.0	38
353d2.65	2.65	10.5	3.0	38
353d2.70	2.70	10.5	3.0	38
353d2.75	2.75	10.5	3.0	38
353d2.80	2.80	10.5	3.0	38
353d2.85	2.85	10.5	3.0	38
353d2.90	2.90	10.5	3.0	38
353d2.95	2.95	10.5	3.0	38
353d3.00	3.00	10.5	3.0	38

To order a coated tool, add the 2-letter coating code to the article number

# Expert drill for brass

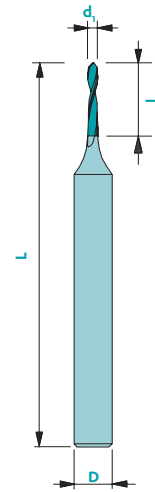


**375**

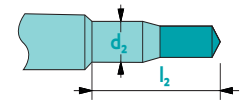
Material	Vc uncoated [m/min]	Vc coated [m/min]	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm <sup>2</sup>	-	-	-	-	-
Steel > 700 N/mm <sup>2</sup>	-	-	-	-	-
Stainless steel	-	-	-	-	-
Cast iron	-	-	-	-	-
Copper	-	-	-	-	-
Brass - Bronze	115	130	■	■	Solo (DA)
Aluminium	-	-	-	-	-
Gold - Silver	-	-	□	□	Solo (DA)
Platinum - Palladium	-	-	-	-	-
Superalloys	-	-	-	-	-
Titanium	-	-	-	-	-

not adapted - adapted □ highly adapted ■

Tolerances  $d_1$ : -0.002/-0.004  
 $l_1$ : 0.1/-0  
 D: h5



Upon request



Art. n°	$d_1$	$l_1$	D	L
375d#.#	0.20-0.29	1.0	3	38
375d#.#	0.30-0.34	1.5	3	38
375d#.#	0.35-0.39	2.0	3	38
375d#.#	0.40-0.49	3.0	3	38
375d#.#	0.50-0.79	4.0	3	38
375d#.#	0.80-1.19	6.0	3	38
375d#.#	1.20-1.50	8.0	3	38

\* Prices for other coatings: contact us!  
 To order a coated tool, add the 2-letter coating code to the article number

Available uncoated or coated



90°

**Z2**



**Variable**

**CARB**

If  $d_1 \leq 0.2$  mm, a double cone applies

## Options

**MCU**  
 $\leq \varnothing 3$

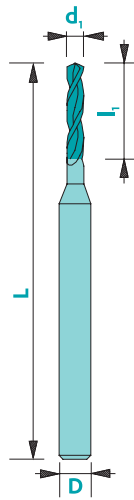
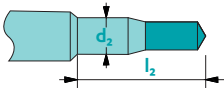
**701S**  
 $\leq \varnothing 6$

# 4500

## PCD twist drill - 2 teeth



Upon request



Material

Steel < 700 N/mm <sup>2</sup>	-	-
Steel > 700 N/mm <sup>2</sup>	-	-
Stainless steel	-	-
Cast iron	-	-
Copper	180	■
Brass - Bronze	280	■
Aluminium	250	■
Gold - Silver	200	■
Platinum - Palladium	100	■
Superalloys	-	-
Titanium	-	-
Composite	500	■

Vc [m/min]

Uncoated

not adapted - adapted ■ highly adapted ■

Tolerances  $d_1 = 0/-0.013$   
D: h6

Available uncoated only

**118°** **Z2**



$\lambda$  **30°**

**PCD**

If  $d_1 \leq 0.5$  mm, a double cone applies

Options



**MCU**  
 $\leq \varnothing 3$

Art. n°	$d_1$	$l_1$	D	L
4500d0.48	0.48	4.0	3	38
4500d0.49	0.49	4.0	3	38
4500d0.50	0.50	4.0	3	38
4500d0.51	0.51	4.0	3	38
4500d0.52	0.52	4.0	3	38
4500d0.53	0.53	4.0	3	38
4500d0.54	0.54	4.0	3	38
4500d0.55	0.55	4.0	3	38
4500d0.56	0.56	4.0	3	38
4500d0.57	0.57	4.0	3	38
4500d0.58	0.58	4.0	3	38
4500d0.59	0.59	4.0	3	38
4500d0.60	0.60	5.0	3	38
4500d0.61	0.61	5.0	3	38
4500d0.62	0.62	5.0	3	38
4500d0.63	0.63	5.0	3	38
4500d0.64	0.64	5.0	3	38
4500d0.65	0.65	5.0	3	38
4500d0.66	0.66	5.0	3	38
4500d0.67	0.67	5.0	3	38
4500d0.68	0.68	5.0	3	38
4500d0.69	0.69	5.0	3	38
4500d0.70	0.70	5.0	3	38
4500d0.71	0.71	5.0	3	38
4500d0.72	0.72	5.0	3	38
4500d0.73	0.73	5.0	3	38
4500d0.74	0.74	5.0	3	38
4500d0.75	0.75	5.0	3	38
4500d0.76	0.76	5.0	3	38
4500d0.77	0.77	5.0	3	38

Art. n°	$d_1$	$l_1$	D	L
4500d0.78	0.78	5.0	3	38
4500d0.79	0.79	5.0	3	38
4500d0.80	0.80	6.0	3	38
4500d0.81	0.81	6.0	3	38
4500d0.82	0.82	6.0	3	38
4500d0.83	0.83	6.0	3	38
4500d0.84	0.84	6.0	3	38
4500d0.85	0.85	6.0	3	38
4500d0.86	0.86	6.0	3	38
4500d0.87	0.87	6.0	3	38
4500d0.88	0.88	6.0	3	38
4500d0.89	0.89	6.0	3	38
4500d0.90	0.90	7.0	3	38
4500d0.91	0.91	7.0	3	38
4500d0.92	0.92	7.0	3	38
4500d0.93	0.93	7.0	3	38
4500d0.94	0.94	7.0	3	38
4500d0.95	0.95	7.0	3	38
4500d0.96	0.96	7.0	3	38
4500d0.97	0.97	7.0	3	38
4500d0.98	0.98	7.0	3	38
4500d0.99	0.99	7.0	3	38
4500d1.00	1.00	8.0	3	38
4500d1.01	1.01	8.0	3	38
4500d1.02	1.02	8.0	3	38
4500d1.03	1.03	8.0	3	38
4500d1.04	1.04	8.0	3	38
4500d1.05	1.05	8.0	3	38
4500d1.06	1.06	8.0	3	38
4500d1.07	1.07	8.0	3	38

Other dimensions, CVD/CBN available upon request.



# PCD twist drill - 2 teeth

# 4500

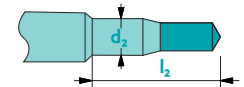
Continuation

Art. n°	d <sub>1</sub>	l <sub>1</sub>	D	L
4500d1.08	1.08	8.0	3	38
4500d1.09	1.09	8.0	3	38
4500d1.10	1.10	9.0	3	38
4500d1.11	1.11	9.0	3	38
4500d1.12	1.12	9.0	3	38
4500d1.13	1.13	9.0	3	38
4500d1.14	1.14	9.0	3	38
4500d1.15	1.15	9.0	3	38
4500d1.16	1.16	9.0	3	38
4500d1.17	1.17	9.0	3	38
4500d1.18	1.18	9.0	3	38
4500d1.19	1.19	9.0	3	38
4500d1.20	1.20	9.0	3	38
4500d1.21	1.21	9.0	3	38
4500d1.22	1.22	9.0	3	38
4500d1.23	1.23	9.0	3	38
4500d1.24	1.24	9.0	3	38
4500d1.25	1.25	9.0	3	38
4500d1.26	1.26	9.0	3	38
4500d1.27	1.27	9.0	3	38
4500d1.28	1.28	9.0	3	38
4500d1.29	1.29	9.0	3	38
4500d1.30	1.30	9.0	3	38
4500d1.31	1.31	9.0	3	38
4500d1.32	1.32	9.0	3	38
4500d1.33	1.33	9.0	3	38
4500d1.34	1.34	9.0	3	38
4500d1.35	1.35	9.0	3	38
4500d1.36	1.36	9.0	3	38
4500d1.37	1.37	9.0	3	38
4500d1.38	1.38	9.0	3	38
4500d1.39	1.39	9.0	3	38
4500d1.40	1.40	9.0	3	38
4500d1.41	1.41	9.0	3	38
4500d1.42	1.42	9.0	3	38
4500d1.43	1.43	9.0	3	38
4500d1.44	1.44	9.0	3	38
4500d1.45	1.45	9.0	3	38
4500d1.46	1.46	9.0	3	38
4500d1.47	1.47	9.0	3	38
4500d1.48	1.48	9.0	3	38
4500d1.49	1.49	9.0	3	38
4500d1.50	1.50	9.0	3	38
4500d1.55	1.55	9.0	3	38
4500d1.60	1.60	9.0	3	38

Art. n°	d <sub>1</sub>	l <sub>1</sub>	D	L
4500d1.65	1.65	9.0	3	38
4500d1.70	1.70	9.0	3	38
4500d1.75	1.75	9.0	3	38
4500d1.80	1.80	9.0	3	38
4500d1.85	1.85	9.0	3	38
4500d1.90	1.90	9.0	3	38
4500d1.95	1.95	9.0	3	38
4500d2.00	2.00	9.0	3	38
4500d2.05	2.05	9.0	3	38
4500d2.10	2.10	9.0	3	38
4500d2.15	2.15	9.0	3	38
4500d2.20	2.20	9.0	3	38
4500d2.25	2.25	9.0	3	38
4500d2.29	2.29	9.0	3	38
4500d2.30	2.30	9.0	3	38
4500d2.40	2.40	9.0	3	38
4500d2.50	2.50	9.0	3	38



Upon request



Available uncoated only



118°

Z2



λ  
30°

PCD

Options

MCU  
≤ Ø3

Other dimensions available upon request.





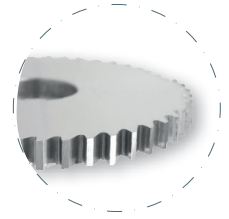
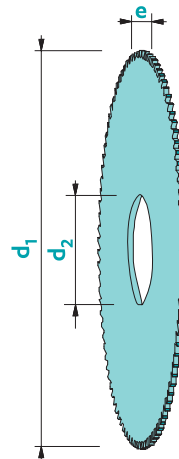
# Slitting saw DIN 1837 fine pitch

223-1

Material	Vc uncoated [m/min]	Vc coated [m/min]	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm <sup>2</sup>	80	120	□	■	Tisi (BQ)
Steel > 700 N/mm <sup>2</sup>	60	100	□	■	Tisi (BQ)
Stainless steel	60	100	□	■	Tisi (BQ)
Cast iron	50	90	□	■	Tisi (BQ)
Copper	200	300	□	■	Solo (DA)
Brass - Bronze	200	300	■	□	Solo (DA)
Aluminium	250	400	□	■	Solo (DA)
Gold - Silver	150	300	□	■	Solo (DA)
Platinum - Palladium	-	-	-	-	-
Superalloys	20	40	□	■	Trio (PO)
Titanium	40	60	□	□	Marc (ME)

not adapted - adapted □ highly adapted ■

Tolerances e : ± 0.01  
d<sub>2</sub>: H7



Art. n°	d <sub>1</sub>	e	d <sub>2</sub>	Z
223-1d15e0.10A5Z64	15	0.10	5	64
223-1d15e0.15A5Z64	15	0.15	5	64
223-1d15e0.20A5Z64	15	0.20	5	64
223-1d15e0.25A5Z64	15	0.25	5	64
223-1d15e0.30A5Z64	15	0.30	5	64
223-1d15e0.35A5Z64	15	0.35	5	64
223-1d15e0.40A5Z64	15	0.40	5	64
223-1d15e0.45A5Z48	15	0.45	5	48
223-1d15e0.50A5Z48	15	0.50	5	48
223-1d15e0.60A5Z48	15	0.60	5	48
223-1d15e0.70A5Z48	15	0.70	5	48
223-1d15e0.80A5Z40	15	0.80	5	40
223-1d15e0.90A5Z40	15	0.90	5	40
223-1d15e1.00A5Z40	15	1.00	5	40
223-1d15e1.10A5Z40	15	1.10	5	40
223-1d15e1.20A5Z40	15	1.20	5	40
223-1d15e1.30A5Z40	15	1.30	5	40
223-1d15e1.40A5Z40	15	1.40	5	40
223-1d15e1.50A5Z40	15	1.50	5	40
223-1d15e1.60A5Z40	15	1.60	5	40
223-1d15e1.70A5Z40	15	1.70	5	40
223-1d15e1.80A5Z40	15	1.80	5	40
223-1d15e1.90A5Z40	15	1.90	5	40
223-1d15e2.00A5Z40	15	2.00	5	40
223-1d15e2.10A5Z40	15	2.10	5	40
223-1d15e2.20A5Z40	15	2.20	5	40
223-1d15e2.30A5Z40	15	2.30	5	40
223-1d15e2.40A5Z40	15	2.40	5	40
223-1d15e2.50A5Z40	15	2.50	5	40
223-1d15e2.60A5Z40	15	2.60	5	40

Art. n°	d <sub>1</sub>	e	d <sub>2</sub>	Z
223-1d15e2.70A5Z40	15	2.70	5	40
223-1d15e2.80A5Z40	15	2.80	5	40
223-1d15e2.90A5Z40	15	2.90	5	40
223-1d15e3.00A5Z40	15	3.00	5	40
223-1d15e3.10A5Z24	15	3.10	5	24
223-1d15e3.20A5Z24	15	3.20	5	24
223-1d15e3.30A5Z24	15	3.30	5	24
223-1d15e3.40A5Z24	15	3.40	5	24
223-1d15e3.50A5Z24	15	3.50	5	24
223-1d15e3.60A5Z24	15	3.60	5	24
223-1d15e3.70A5Z24	15	3.70	5	24
223-1d15e3.80A5Z24	15	3.80	5	24
223-1d15e3.90A5Z24	15	3.90	5	24
223-1d15e4.00A5Z24	15	4.00	5	24
223-1d15e4.50A5Z24	15	4.50	5	24
223-1d15e5.00A5Z24	15	5.00	5	24
223-1d15e5.50A5Z24	15	5.50	5	24
223-1d15e6.00A5Z24	15	6.00	5	24
223-1d20e0.10A5Z80	20	0.10	5	80
223-1d20e0.15A5Z80	20	0.15	5	80
223-1d20e0.20A5Z80	20	0.20	5	80
223-1d20e0.25A5Z64	20	0.25	5	64
223-1d20e0.30A5Z64	20	0.30	5	64
223-1d20e0.35A5Z64	20	0.35	5	64
223-1d20e0.40A5Z64	20	0.40	5	64
223-1d20e0.45A5Z48	20	0.45	5	48
223-1d20e0.50A5Z48	20	0.50	5	48
223-1d20e0.60A5Z48	20	0.60	5	48
223-1d20e0.70A5Z48	20	0.70	5	48
223-1d20e0.80A5Z40	20	0.80	5	40

Available uncoated or coated



Z  
24-160



λ  
0°

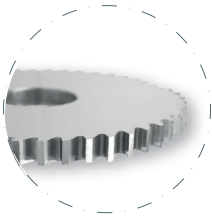
γ  
6°

CARB

To order a coated tool, add the 2-letter coating code to the article number.



## Slitting saw DIN 1837 fine pitch



Available uncoated or coated



**Z**  
24-160



$\lambda$   
0°

$\gamma$   
6°

**CARB**

Art. n°	d <sub>1</sub>	e	d <sub>2</sub>	Z
223-1d20e0.90A5Z40	20	0.90	5	40
223-1d20e1.00A5Z40	20	1.00	5	40
223-1d20e1.10A5Z40	20	1.10	5	40
223-1d20e1.20A5Z40	20	1.20	5	40
223-1d20e1.30A5Z40	20	1.30	5	40
223-1d20e1.40A5Z40	20	1.40	5	40
223-1d20e1.50A5Z40	20	1.50	5	40
223-1d20e1.60A5Z40	20	1.60	5	40
223-1d20e1.70A5Z32	20	1.70	5	32
223-1d20e1.80A5Z32	20	1.80	5	32
223-1d20e1.90A5Z32	20	1.90	5	32
223-1d20e2.00A5Z32	20	2.00	5	32
223-1d20e2.10A5Z32	20	2.10	5	32
223-1d20e2.20A5Z32	20	2.20	5	32
223-1d20e2.30A5Z32	20	2.30	5	32
223-1d20e2.40A5Z32	20	2.40	5	32
223-1d20e2.50A5Z32	20	2.50	5	32
223-1d20e2.60A5Z32	20	2.60	5	32
223-1d20e2.70A5Z32	20	2.70	5	32
223-1d20e2.80A5Z32	20	2.80	5	32
223-1d20e2.90A5Z32	20	2.90	5	32
223-1d20e3.00A5Z32	20	3.00	5	32
223-1d20e3.10A5Z24	20	3.10	5	24
223-1d20e3.20A5Z24	20	3.20	5	24
223-1d20e3.30A5Z24	20	3.30	5	24
223-1d20e3.40A5Z24	20	3.40	5	24
223-1d20e3.50A5Z24	20	3.50	5	24
223-1d20e3.60A5Z24	20	3.60	5	24
223-1d20e3.70A5Z24	20	3.70	5	24
223-1d20e3.80A5Z24	20	3.80	5	24
223-1d20e3.90A5Z24	20	3.90	5	24
223-1d20e4.00A5Z24	20	4.00	5	24
223-1d20e4.50A5Z24	20	4.50	5	24
223-1d20e5.00A5Z24	20	5.00	5	24
223-1d20e5.50A5Z24	20	5.50	5	24
223-1d20e6.00A5Z24	20	6.00	5	24
223-1d25e0.10A8Z80	25	0.10	8	80
223-1d25e0.15A8Z80	25	0.15	8	80
223-1d25e0.20A8Z80	25	0.20	8	80
223-1d25e0.25A8Z80	25	0.25	8	80
223-1d25e0.30A8Z80	25	0.30	8	80
223-1d25e0.35A8Z64	25	0.35	8	64
223-1d25e0.40A8Z64	25	0.40	8	64
223-1d25e0.45A8Z64	25	0.45	8	64
223-1d25e0.50A8Z64	25	0.50	8	64

Art. n°	d <sub>1</sub>	e	d <sub>2</sub>	Z
223-1d25e0.60A8Z64	25	0.60	8	64
223-1d25e0.70A8Z48	25	0.70	8	48
223-1d25e0.80A8Z48	25	0.80	8	48
223-1d25e0.90A8Z48	25	0.90	8	48
223-1d25e1.00A8Z48	25	1.00	8	48
223-1d25e1.10A8Z48	25	1.10	8	48
223-1d25e1.20A8Z48	25	1.20	8	48
223-1d25e1.30A8Z40	25	1.30	8	40
223-1d25e1.40A8Z40	25	1.40	8	40
223-1d25e1.50A8Z40	25	1.50	8	40
223-1d25e1.60A8Z40	25	1.60	8	40
223-1d25e1.70A8Z40	25	1.70	8	40
223-1d25e1.80A8Z40	25	1.80	8	40
223-1d25e1.90A8Z40	25	1.90	8	40
223-1d25e2.00A8Z40	25	2.00	8	40
223-1d25e2.10A8Z40	25	2.10	8	40
223-1d25e2.20A8Z40	25	2.20	8	40
223-1d25e2.30A8Z40	25	2.30	8	40
223-1d25e2.40A8Z40	25	2.40	8	40
223-1d25e2.50A8Z40	25	2.50	8	40
223-1d25e2.60A8Z32	25	2.60	8	32
223-1d25e2.70A8Z32	25	2.70	8	32
223-1d25e2.80A8Z32	25	2.80	8	32
223-1d25e2.90A8Z32	25	2.90	8	32
223-1d25e3.00A8Z32	25	3.00	8	32
223-1d25e3.10A8Z32	25	3.10	8	32
223-1d25e3.20A8Z32	25	3.20	8	32
223-1d25e3.30A8Z32	25	3.30	8	32
223-1d25e3.40A8Z32	25	3.40	8	32
223-1d25e3.50A8Z32	25	3.50	8	32
223-1d25e3.60A8Z32	25	3.60	8	32
223-1d25e3.70A8Z32	25	3.70	8	32
223-1d25e3.80A8Z32	25	3.80	8	32
223-1d25e3.90A8Z32	25	3.90	8	32
223-1d25e4.00A8Z32	25	4.00	8	32
223-1d25e4.50A8Z32	25	4.50	8	32
223-1d25e5.00A8Z32	25	5.00	8	32
223-1d25e5.50A8Z24	25	5.50	8	24
223-1d25e6.00A8Z24	25	6.00	8	24
--> Ref. 223-2	30	0.10	8	100
--> Ref. 223-2	30	0.15	8	100
--> Ref. 223-2	30	0.20	8	100
--> Ref. 223-2	30	0.25	8	100
223-1d30e0.30A8Z80	30	0.30	8	80
223-1d30e0.35A8Z80	30	0.35	8	80

To order a coated tool, add the 2-letter coating code to the article number.



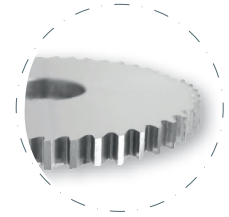
# Slitting saw DIN 1837 fine pitch

**223-1**

Continuation

Art. n°	d <sub>1</sub>	e	d <sub>2</sub>	Z
223-1d30e0.40A8Z80	30	0.40	8	80
223-1d30e0.45A8Z80	30	0.45	8	80
223-1d30e0.50A8Z80	30	0.50	8	80
223-1d30e0.60A8Z64	30	0.60	8	64
223-1d30e0.70A8Z64	30	0.70	8	64
223-1d30e0.80A8Z64	30	0.80	8	64
223-1d30e0.90A8Z64	30	0.90	8	64
223-1d30e1.00A8Z64	30	1.00	8	64
223-1d30e1.10A8Z48	30	1.10	8	48
223-1d30e1.20A8Z48	30	1.20	8	48
223-1d30e1.30A8Z48	30	1.30	8	48
223-1d30e1.40A8Z48	30	1.40	8	48
223-1d30e1.50A8Z48	30	1.50	8	48
223-1d30e1.60A8Z48	30	1.60	8	48
223-1d30e1.70A8Z48	30	1.70	8	48
223-1d30e1.80A8Z48	30	1.80	8	48
223-1d30e1.90A8Z48	30	1.90	8	48
223-1d30e2.00A8Z48	30	2.00	8	48
223-1d30e2.10A8Z40	30	2.10	8	40
223-1d30e2.20A8Z40	30	2.20	8	40
223-1d30e2.30A8Z40	30	2.30	8	40
223-1d30e2.40A8Z40	30	2.40	8	40
223-1d30e2.50A8Z40	30	2.50	8	40
223-1d30e2.60A8Z40	30	2.60	8	40
223-1d30e2.70A8Z40	30	2.70	8	40
223-1d30e2.80A8Z40	30	2.80	8	40
223-1d30e2.90A8Z40	30	2.90	8	40
223-1d30e3.00A8Z40	30	3.00	8	40
223-1d30e3.10A8Z40	30	3.10	8	40
223-1d30e3.20A8Z40	30	3.20	8	40
223-1d30e3.30A8Z40	30	3.30	8	40
223-1d30e3.40A8Z40	30	3.40	8	40
223-1d30e3.50A8Z40	30	3.50	8	40
223-1d30e3.60A8Z40	30	3.60	8	40
223-1d30e3.70A8Z40	30	3.70	8	40
223-1d30e3.80A8Z40	30	3.80	8	40
223-1d30e3.90A8Z40	30	3.90	8	40
223-1d30e4.00A8Z40	30	4.00	8	40
223-1d30e4.50A8Z32	30	4.50	8	32
223-1d30e5.00A8Z32	30	5.00	8	32
223-1d30e5.50A8Z32	30	5.50	8	32
223-1d30e6.00A8Z32	30	6.00	8	32
223-1d40e0.10A10Z128	40	0.10	10	128
223-1d40e0.15A10Z128	40	0.15	10	128
223-1d40e0.20A10Z128	40	0.20	10	128

Art. n°	d <sub>1</sub>	e	d <sub>2</sub>	Z
--> Ref. 223-2	40	0.25	10	100
--> Ref. 223-2	40	0.30	10	100
--> Ref. 223-2	40	0.35	10	100
--> Ref. 223-2	40	0.40	10	100
223-1d40e0.45A10Z80	40	0.45	10	80
223-1d40e0.50A10Z80	40	0.50	10	80
223-1d40e0.60A10Z80	40	0.60	10	80
223-1d40e0.70A10Z80	40	0.70	10	80
223-1d40e0.80A10Z80	40	0.80	10	80
223-1d40e0.90A10Z64	40	0.90	10	64
223-1d40e1.00A10Z64	40	1.00	10	64
223-1d40e1.10A10Z64	40	1.10	10	64
223-1d40e1.20A10Z64	40	1.20	10	64
223-1d40e1.30A10Z64	40	1.30	10	64
223-1d40e1.40A10Z64	40	1.40	10	64
223-1d40e1.50A10Z64	40	1.50	10	64
223-1d40e1.60A10Z64	40	1.60	10	64
223-1d40e1.70A10Z48	40	1.70	10	48
223-1d40e1.80A10Z48	40	1.80	10	48
223-1d40e1.90A10Z48	40	1.90	10	48
223-1d40e2.00A10Z48	40	2.00	10	48
223-1d40e2.10A10Z48	40	2.10	10	48
223-1d40e2.20A10Z48	40	2.20	10	48
223-1d40e2.30A10Z48	40	2.30	10	48
223-1d40e2.40A10Z48	40	2.40	10	48
223-1d40e2.50A10Z48	40	2.50	10	48
223-1d40e2.60A10Z48	40	2.60	10	48
223-1d40e2.70A10Z48	40	2.70	10	48
223-1d40e2.80A10Z48	40	2.80	10	48
223-1d40e2.90A10Z48	40	2.90	10	48
223-1d40e3.00A10Z48	40	3.00	10	48
223-1d40e3.10A10Z40	40	3.10	10	40
223-1d40e3.20A10Z40	40	3.20	10	40
223-1d40e3.30A10Z40	40	3.30	10	40
223-1d40e3.40A10Z40	40	3.40	10	40
223-1d40e3.50A10Z40	40	3.50	10	40
223-1d40e3.60A10Z40	40	3.60	10	40
223-1d40e3.70A10Z40	40	3.70	10	40
223-1d40e3.80A10Z40	40	3.80	10	40
223-1d40e3.90A10Z40	40	3.90	10	40
223-1d40e4.00A10Z40	40	4.00	10	40
223-1d40e4.50A10Z40	40	4.50	10	40
223-1d40e5.00A10Z40	40	5.00	10	40
223-1d40e5.50A10Z40	40	5.50	10	40
223-1d40e6.00A10Z40	40	6.00	10	40



Available uncoated or coated



**Z**  
24-160



$\lambda$   
0°

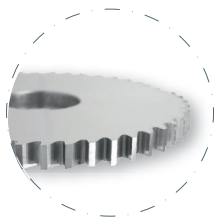
$\gamma$   
6°

**CARB**

To order a coated tool, add the 2-letter coating code to the article number.



## Slitting saw DIN 1837 fine pitch



Available  
uncoated or coated



**Z**  
24-160



$\lambda$   
0°

$\gamma$   
6°

**CARB**

Art. n°	d <sub>1</sub>	e	d <sub>2</sub>	Z
223-1d50e0.20A13Z128	50	0.20	13	128
223-1d50e0.25A13Z128	50	0.25	13	128
223-1d50e0.30A13Z128	50	0.30	13	128
223-1d50e0.35A13Z100	50	0.35	13	100
223-1d50e0.40A13Z100	50	0.40	13	100
223-1d50e0.45A13Z100	50	0.45	13	100
223-1d50e0.50A13Z100	50	0.50	13	100
223-1d50e0.60A13Z100	50	0.60	13	100
223-1d50e0.70A13Z80	50	0.70	13	80
223-1d50e0.80A13Z80	50	0.80	13	80
223-1d50e0.90A13Z80	50	0.90	13	80
223-1d50e1.00A13Z80	50	1.00	13	80
223-1d50e1.10A13Z80	50	1.10	13	80
223-1d50e1.20A13Z80	50	1.20	13	80
223-1d50e1.30A13Z64	50	1.30	13	64
223-1d50e1.40A13Z64	50	1.40	13	64
223-1d50e1.50A13Z64	50	1.50	13	64
223-1d50e1.60A13Z64	50	1.60	13	64
223-1d50e1.70A13Z64	50	1.70	13	64
223-1d50e1.80A13Z64	50	1.80	13	64
223-1d50e1.90A13Z64	50	1.90	13	64
223-1d50e2.00A13Z64	50	2.00	13	64
223-1d50e2.10A13Z64	50	2.10	13	64
223-1d50e2.20A13Z64	50	2.20	13	64
223-1d50e2.30A13Z64	50	2.30	13	64
223-1d50e2.40A13Z64	50	2.40	13	64
223-1d50e2.50A13Z64	50	2.50	13	64
223-1d50e2.60A13Z48	50	2.60	13	48
223-1d50e2.70A13Z48	50	2.70	13	48
223-1d50e2.80A13Z48	50	2.80	13	48
223-1d50e2.90A13Z48	50	2.90	13	48
223-1d50e3.00A13Z48	50	3.00	13	48
223-1d50e3.10A13Z48	50	3.10	13	48
223-1d50e3.20A13Z48	50	3.20	13	48
223-1d50e3.30A13Z48	50	3.30	13	48
223-1d50e3.40A13Z48	50	3.40	13	48
223-1d50e3.50A13Z48	50	3.50	13	48
223-1d50e3.60A13Z48	50	3.60	13	48
223-1d50e3.70A13Z48	50	3.70	13	48
223-1d50e3.80A13Z48	50	3.80	13	48
223-1d50e3.90A13Z48	50	3.90	13	48
223-1d50e4.00A13Z48	50	4.00	13	48
223-1d50e4.50A13Z48	50	4.50	13	48
223-1d50e5.00A13Z48	50	5.00	13	48
223-1d50e5.50A13Z40	50	5.50	13	40

Art. n°	d <sub>1</sub>	e	d <sub>2</sub>	Z
223-1d50e6.00A13Z40	50	6.00	13	40
223-1d63e0.20A16Z160	63	0.20	16	160
223-1d63e0.25A16Z128	63	0.25	16	128
223-1d63e0.30A16Z128	63	0.30	16	128
223-1d63e0.35A16Z128	63	0.35	16	128
223-1d63e0.40A16Z128	63	0.40	16	128
223-1d63e0.45A16Z128	63	0.45	16	128
223-1d63e0.50A16Z128	63	0.50	16	128
223-1d63e0.60A16Z100	63	0.60	16	100
223-1d63e0.70A16Z100	63	0.70	16	100
223-1d63e0.80A16Z100	63	0.80	16	100
223-1d63e0.90A16Z100	63	0.90	16	100
223-1d63e1.00A16Z100	63	1.00	16	100
223-1d63e1.10A16Z80	63	1.10	16	80
223-1d63e1.20A16Z80	63	1.20	16	80
223-1d63e1.30A16Z80	63	1.30	16	80
223-1d63e1.40A16Z80	63	1.40	16	80
223-1d63e1.50A16Z80	63	1.50	16	80
223-1d63e1.60A16Z80	63	1.60	16	80
223-1d63e1.70A16Z80	63	1.70	16	80
223-1d63e1.80A16Z80	63	1.80	16	80
223-1d63e1.90A16Z80	63	1.90	16	80
223-1d63e2.00A16Z80	63	2.00	16	80
223-1d63e2.10A16Z64	63	2.10	16	64
223-1d63e2.20A16Z64	63	2.20	16	64
223-1d63e2.30A16Z64	63	2.30	16	64
223-1d63e2.40A16Z64	63	2.40	16	64
223-1d63e2.50A16Z64	63	2.50	16	64
223-1d63e2.60A16Z64	63	2.60	16	64
223-1d63e2.70A16Z64	63	2.70	16	64
223-1d63e2.80A16Z64	63	2.80	16	64
223-1d63e2.90A16Z64	63	2.90	16	64
223-1d63e3.00A16Z64	63	3.00	16	64
223-1d63e3.10A16Z64	63	3.10	16	64
223-1d63e3.20A16Z64	63	3.20	16	64
223-1d63e3.30A16Z64	63	3.30	16	64
223-1d63e3.40A16Z64	63	3.40	16	64
223-1d63e3.50A16Z64	63	3.50	16	64
223-1d63e3.60A16Z64	63	3.60	16	64
223-1d63e3.70A16Z64	63	3.70	16	64
223-1d63e3.80A16Z64	63	3.80	16	64
223-1d63e3.90A16Z64	63	3.90	16	64
223-1d63e4.00A16Z64	63	4.00	16	64
223-1d63e4.50A16Z48	63	4.50	16	48
223-1d63e5.00A16Z48	63	5.00	16	48

To order a coated tool, add the 2-letter coating code to the article number.

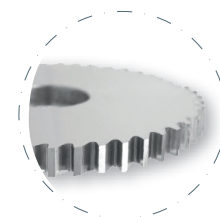


# Slitting saw DIN 1837 fine pitch

223-1

Art. n°	d <sub>1</sub>	e	d <sub>2</sub>	Z
223-1d63e5.50A16Z48	63	5.50	16	48
223-1d63e6.00A16Z48	63	6.00	16	48
223-1d80e0.25A22Z160	80	0.25	22	160
223-1d80e0.30A22Z160	80	0.30	22	160
223-1d80e0.35A22Z160	80	0.35	22	160
223-1d80e0.40A22Z160	80	0.40	22	160
223-1d80e0.45A22Z128	80	0.45	22	128
223-1d80e0.50A22Z128	80	0.50	22	128
223-1d80e0.60A22Z128	80	0.60	22	128
223-1d80e0.70A22Z128	80	0.70	22	128
223-1d80e0.80A22Z128	80	0.80	22	128
223-1d80e0.90A22Z100	80	0.90	22	100
223-1d80e1.00A22Z100	80	1.00	22	100
223-1d80e1.10A22Z100	80	1.10	22	100
223-1d80e1.20A22Z100	80	1.20	22	100
223-1d80e1.30A22Z100	80	1.30	22	100
223-1d80e1.40A22Z100	80	1.40	22	100
223-1d80e1.50A22Z100	80	1.50	22	100
223-1d80e1.60A22Z100	80	1.60	22	100
223-1d80e1.70A22Z80	80	1.70	22	80
223-1d80e1.80A22Z80	80	1.80	22	80
223-1d80e1.90A22Z80	80	1.90	22	80
223-1d80e2.00A22Z80	80	2.00	22	80
223-1d80e2.10A22Z80	80	2.10	22	80
223-1d80e2.20A22Z80	80	2.20	22	80
223-1d80e2.30A22Z80	80	2.30	22	80
223-1d80e2.40A22Z80	80	2.40	22	80
223-1d80e2.50A22Z80	80	2.50	22	80
223-1d80e2.60A22Z80	80	2.60	22	80
223-1d80e2.70A22Z80	80	2.70	22	80
223-1d80e2.80A22Z80	80	2.80	22	80
223-1d80e2.90A22Z80	80	2.90	22	80
223-1d80e3.00A22Z80	80	3.00	22	80
223-1d80e3.10A22Z64	80	3.10	22	64
223-1d80e3.20A22Z64	80	3.20	22	64
223-1d80e3.30A22Z64	80	3.30	22	64
223-1d80e3.40A22Z64	80	3.40	22	64
223-1d80e3.50A22Z64	80	3.50	22	64
223-1d80e3.60A22Z64	80	3.60	22	64
223-1d80e3.70A22Z64	80	3.70	22	64
223-1d80e3.80A22Z64	80	3.80	22	64
223-1d80e3.90A22Z64	80	3.90	22	64
223-1d80e4.00A22Z64	80	4.00	22	64
223-1d80e4.50A22Z64	80	4.50	22	64
223-1d80e5.00A22Z64	80	5.00	22	64

Art. n°	d <sub>1</sub>	e	d <sub>2</sub>	Z
223-1d80e5.50A22Z64	80	5.50	22	64
223-1d80e6.00A22Z64	80	6.00	22	64
223-1d100e0.50A22Z160	100	0.50	22	160
223-1d100e0.60A22Z160	100	0.60	22	160
223-1d100e0.70A22Z128	100	0.70	22	128
223-1d100e0.80A22Z128	100	0.80	22	128
223-1d100e0.90A22Z128	100	0.90	22	128
223-1d100e1.00A22Z128	100	1.00	22	128
223-1d100e1.10A22Z128	100	1.10	22	128
223-1d100e1.20A22Z128	100	1.20	22	128
223-1d100e1.30A22Z100	100	1.30	22	100
223-1d100e1.40A22Z100	100	1.40	22	100
223-1d100e1.50A22Z100	100	1.50	22	100
223-1d100e1.60A22Z100	100	1.60	22	100
223-1d100e1.70A22Z100	100	1.70	22	100
223-1d100e1.80A22Z100	100	1.80	22	100
223-1d100e1.90A22Z100	100	1.90	22	100
223-1d100e2.00A22Z100	100	2.00	22	100
223-1d100e2.10A22Z100	100	2.10	22	100
223-1d100e2.20A22Z100	100	2.20	22	100
223-1d100e2.30A22Z100	100	2.30	22	100
223-1d100e2.40A22Z100	100	2.40	22	100
223-1d100e2.50A22Z100	100	2.50	22	100
223-1d100e2.60A22Z80	100	2.60	22	80
223-1d100e2.70A22Z80	100	2.70	22	80
223-1d100e2.80A22Z80	100	2.80	22	80
223-1d100e2.90A22Z80	100	2.90	22	80
223-1d100e3.00A22Z80	100	3.00	22	80
223-1d100e3.10A22Z80	100	3.10	22	80
223-1d100e3.20A22Z80	100	3.20	22	80
223-1d100e3.30A22Z80	100	3.30	22	80
223-1d100e3.40A22Z80	100	3.40	22	80
223-1d100e3.50A22Z80	100	3.50	22	80
223-1d100e3.60A22Z80	100	3.60	22	80
223-1d100e3.70A22Z80	100	3.70	22	80
223-1d100e3.80A22Z80	100	3.80	22	80
223-1d100e3.90A22Z80	100	3.90	22	80
223-1d100e4.00A22Z80	100	4.00	22	80
223-1d100e4.50A22Z80	100	4.50	22	80
223-1d100e5.00A22Z80	100	5.00	22	80
223-1d100e5.50A22Z64	100	5.50	22	64
223-1d100e6.00A22Z64	100	6.00	22	64
223-1d125e0.60A22Z160	125	0.60	22	160
223-1d125e0.70A22Z160	125	0.70	22	160
223-1d125e0.80A22Z160	125	0.80	22	160



Available uncoated or coated



Z  
24-160



$\lambda$   
0°

$\gamma$   
6°

CARB

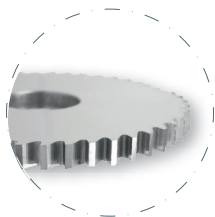
To order a coated tool, add the 2-letter coating code to the article number.



**223-1**

Continuation

# Slitting saw DIN 1837 fine pitch

Available  
uncoated or coated**Z**  
24-160 $\lambda$   
0° $\gamma$   
6°**CARB**

Art. n°	d <sub>1</sub>	e	d <sub>2</sub>	Z
223-1d125e0.90A22Z160	125	0.90	22	160
223-1d125e1.00A22Z160	125	1.00	22	160
223-1d125e1.10A22Z128	125	1.10	22	128
223-1d125e1.20A22Z128	125	1.20	22	128
223-1d125e1.30A22Z128	125	1.30	22	128
223-1d125e1.40A22Z128	125	1.40	22	128
223-1d125e1.50A22Z128	125	1.50	22	128
223-1d125e1.60A22Z128	125	1.60	22	128
223-1d125e1.70A22Z128	125	1.70	22	128
223-1d125e1.80A22Z128	125	1.80	22	128
223-1d125e1.90A22Z128	125	1.90	22	128
223-1d125e2.00A22Z128	125	2.00	22	128
223-1d125e2.10A22Z100	125	2.10	22	100
223-1d125e2.20A22Z100	125	2.20	22	100
223-1d125e2.30A22Z100	125	2.30	22	100
223-1d125e2.40A22Z100	125	2.40	22	100
223-1d125e2.50A22Z100	125	2.50	22	100
223-1d125e2.60A22Z100	125	2.60	22	100
223-1d125e2.70A22Z100	125	2.70	22	100
223-1d125e2.80A22Z100	125	2.80	22	100
223-1d125e2.90A22Z100	125	2.90	22	100
223-1d125e3.00A22Z100	125	3.00	22	100
223-1d125e3.10A22Z100	125	3.10	22	100
223-1d125e3.20A22Z100	125	3.20	22	100
223-1d125e3.30A22Z100	125	3.30	22	100
223-1d125e3.40A22Z100	125	3.40	22	100
223-1d125e3.50A22Z100	125	3.50	22	100
223-1d125e3.60A22Z100	125	3.60	22	100
223-1d125e3.70A22Z100	125	3.70	22	100
223-1d125e3.80A22Z100	125	3.80	22	100
223-1d125e3.90A22Z100	125	3.90	22	100
223-1d125e4.00A22Z100	125	4.00	22	100
223-1d125e4.50A22Z100	125	4.50	22	100
223-1d125e5.00A22Z100	125	5.00	22	100
223-1d125e5.50A22Z100	125	5.50	22	100
223-1d125e6.00A22Z100	125	6.00	22	100
223-1d160e1.00A32Z160	160	1.00	32	160
223-1d160e1.20A32Z160	160	1.20	32	160
223-1d160e1.50A32Z160	160	1.50	32	160
223-1d160e1.60A32Z160	160	1.60	32	160
223-1d160e1.80A32Z128	160	1.80	32	128
223-1d160e2.00A32Z128	160	2.00	32	128
223-1d160e2.50A32Z128	160	2.50	32	128
223-1d160e3.00A32Z128	160	3.00	32	128

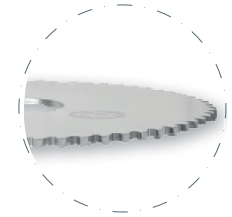
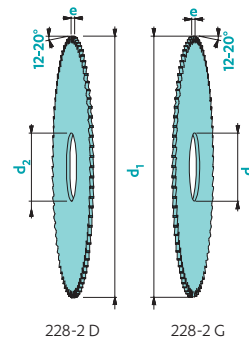
To order a coated tool, add the 2-letter coating code to the article number.

# Angle cutter 12° to 20°

# 228-2

Material	Vc uncoated [m/min]	Vc coated [m/min]	Uncoated	Coated	Rec. Coating *
Steel < 700 N/mm <sup>2</sup>	80	120	☐	■	Tisi (BQ)
Steel > 700 N/mm <sup>2</sup>	60	100	☐	■	Tisi (BQ)
Stainless steel	60	100	☐	■	Tisi (BQ)
Cast iron	50	90	☐	■	Tisi (BQ)
Copper	200	300	☐	■	Solo (DA)
Brass - Bronze	200	300	■	☐	Solo (DA)
Aluminium	250	400	☐	■	Solo (DA)
Gold - Silver	150	300	☐	■	Solo (DA)
Platinum - Palladium	-	-	-	-	-
Superalloys	20	40	☐	■	Trio (PO)
Titanium	40	60	■	■	Marc (ME)

not adapted - adapted ☐ highly adapted ■




Tolerances e : ± 0.01  
d<sub>2</sub>: H5


Right cut: 228-2D / Left cut: 228-2G


Art. n°	d <sub>1</sub>	e	d <sub>2</sub>	Z	a
228-2Dd30e0.5a### / 228-2Gd30e0.5a###	30	0.5	8	64	12-20°
228-2Dd30e0.7a### / 228-2Gd30e0.7a###	30	0.7	8	64	12-20°
228-2Dd30e0.8a### / 228-2Gd30e0.8a###	30	0.8	8	64	12-20°
228-2Dd30e1.0a### / 228-2Gd30e1.0a###	30	1.0	8	64	12-20°
228-2Dd30e1.5a### / 228-2Gd30e1.5a###	30	1.5	8	48	12-20°
228-2Dd40e0.5a### / 228-2Gd40e0.5a###	40	0.5	10	80	12-20°
228-2Dd40e0.8a### / 228-2Gd40e0.8a###	40	0.8	10	64	12-20°
228-2Dd40e1.0a### / 228-2Gd40e1.0a###	40	1.0	10	64	12-20°
228-2Dd50e0.5a### / 228-2Gd50e0.5a###	50	0.5	13	100	12-20°
228-2Dd50e0.8a### / 228-2Gd50e0.8a###	50	0.8	13	100	12-20°
228-2Dd50e1.0a### / 228-2Gd50e1.0a###	50	1.0	13	100	12-20°
228-2Dd63e0.5a### / 228-2Gd63e0.5a###	63	0.5	16	100	12-20°
228-2Dd63e0.7a### / 228-2Gd63e0.7a###	63	0.7	16	100	12-20°
228-2Dd63e0.8a### / 228-2Gd63e0.8a###	63	0.8	16	100	12-20°
228-2Dd63e1.0a### / 228-2Gd63e1.0a###	63	1.0	16	100	12-20°
228-2Dd80e0.5a### / 228-2Gd80e0.5a###	80	0.5	22	128	12-20°
228-2Dd80e0.8a### / 228-2Gd80e0.8a###	80	0.8	22	128	12-20°
228-2Dd80e1.0a### / 228-2Gd80e1.0a###	80	1.0	22	100	12-20°
228-2Dd100e0.6a### / 228-2Gd100e0.6a###	100	0.6	22	128	12-20°
228-2Dd100e0.7a### / 228-2Gd100e0.7a###	100	0.7	22	128	12-20°
228-2Dd100e0.8a### / 228-2Gd100e0.8a###	100	0.8	22	128	12-20°
228-2Dd100e1.0a### / 228-2Gd100e1.0a###	100	1.0	22	128	12-20°

To order a coated tool, add the 2-letter coating code to the article number.

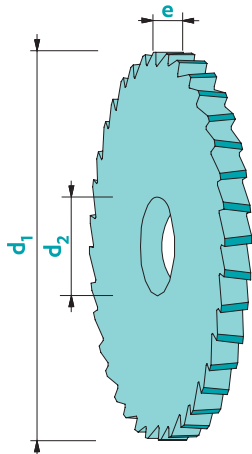
Available uncoated or coated

 **Z**  
**64-128**

 **CARB**

 **λ**  
**0°**

# Slitting saw staggered teeth



Material	Vc uncoated [m/min]	Vc coated [m/min]	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm <sup>2</sup>	80	120	□	■	Tisi (BQ)
Steel > 700 N/mm <sup>2</sup>	60	100	□	■	Tisi (BQ)
Stainless steel	60	100	□	■	Tisi (BQ)
Cast iron	50	90	□	■	Tisi (BQ)
Copper	200	300	□	■	Solo (DA)
Brass - Bronze	200	300	■	□	Solo (DA)
Aluminium	250	400	□	■	Solo (DA)
Gold - Silver	150	300	□	■	Solo (DA)
Platinum - Palladium	-	-	-	-	-
Superalloys	20	40	□	■	Trio (PO)
Titanium	40	60	■	■	Marc (ME)

not adapted - adapted □ highly adapted ■

Tolerances e : ± 0.01  
d<sub>2</sub>: H5

Available uncoated or coated

**Z**  
12-36

**λ**  
ALT

**γ**  
6°

**CARB**

Art. n°	d <sub>1</sub>	e	d <sub>2</sub>	Z
226d15e1.5a5Z##	15	1.5	5	12 - 18
226d15e2.0a5Z##	15	2.0	5	12 - 18
226d15e2.5a5Z##	15	2.5	5	12 - 18
226d15e3.0a5Z##	15	3.0	5	12 - 18
226d15e3.5a5Z##	15	3.5	5	12 - 18
226d15e4.0a5Z##	15	4.0	5	12 - 18
226d15e4.5a5Z##	15	4.5	5	12 - 18
226d15e5.0a5Z##	15	5.0	5	12 - 18
226d15e5.5a5Z##	15	5.5	5	12 - 18
226d15e6.0a5Z##	15	6.0	5	12 - 18
226d20e1.5a5Z##	20	1.5	5	20 - 24
226d20e2.0a5Z##	20	2.0	5	20 - 24
226d20e2.5a5Z##	20	2.5	5	20 - 24
226d20e3.0a5Z##	20	3.0	5	20 - 24
226d20e3.5a5Z##	20	3.5	5	20 - 24
226d20e4.0a5Z##	20	4.0	5	20 - 24
226d20e4.5a5Z##	20	4.5	5	20 - 24
226d20e5.0a5Z##	20	5.0	5	20 - 24
226d20e5.5a5Z##	20	5.5	5	20 - 24
226d20e6.0a5Z##	20	6.0	5	20 - 24
226d25e1.5a8Z##	25	1.5	8	24 - 28
226d25e2.0a8Z##	25	2.0	8	24 - 28
226d25e2.5a8Z##	25	2.5	8	24 - 28
226d25e3.0a8Z##	25	3.0	8	24 - 28
226d25e3.5a8Z##	25	3.5	8	24 - 28
226d25e4.0a8Z##	25	4.0	8	24 - 28
226d25e4.5a8Z##	25	4.5	8	24 - 28
226d25e5.0a8Z##	25	5.0	8	24 - 28
226d25e5.5a8Z##	25	5.5	8	24 - 28
226d25e6.0a8Z##	25	6.0	8	24 - 28

Art. n°	d <sub>1</sub>	e	d <sub>2</sub>	Z
226d25e6.5a8Z##	25	6.5	8	24 - 28
226d25e7.0a8Z##	25	7.0	8	24 - 28
226d25e7.5a8Z##	25	7.5	8	24 - 28
226d25e8.0a8Z##	25	8.0	8	24 - 28
226d30e1.5a8Z##	30	1.5	8	24 - 28
226d30e2.0a8Z##	30	2.0	8	24 - 28
226d30e2.5a8Z##	30	2.5	8	24 - 28
226d30e3.0a8Z##	30	3.0	8	24 - 28
226d30e3.5a8Z##	30	3.5	8	24 - 28
226d30e4.0a8Z##	30	4.0	8	24 - 28
226d30e4.5a8Z##	30	4.5	8	24 - 28
226d30e5.0a8Z##	30	5.0	8	24 - 28
226d30e5.5a8Z##	30	5.5	8	24 - 28
226d30e6.0a8Z##	30	6.0	8	24 - 28
226d30e6.5a8Z##	30	6.5	8	24 - 28
226d30e7.0a8Z##	30	7.0	8	24 - 28
226d30e7.5a8Z##	30	7.5	8	24 - 28
226d30e8.0a8Z##	30	8.0	8	24 - 28
226d30e8.5a8Z##	30	8.5	8	24 - 28
226d30e9.0a8Z##	30	9.0	8	24 - 28
226d30e9.5a8Z##	30	9.5	8	24 - 28
226d30e10.0a8Z##	30	10.0	8	24 - 28
226d40e2.0a10Z##	40	2.0	10	28 - 32
226d40e2.5a10Z##	40	2.5	10	28 - 32
226d40e3.0a10Z##	40	3.0	10	28 - 32
226d40e3.5a10Z##	40	3.5	10	28 - 32
226d40e4.0a10Z##	40	4.0	10	28 - 32
226d40e4.5a10Z##	40	4.5	10	28 - 32
226d40e5.0a10Z##	40	5.0	10	28 - 32
226d40e5.5a10Z##	40	5.5	10	28 - 32

\* Prices for other coatings: contact us!  
To order a coated tool, add the 2-letter coating code to the article number.





# Slitting saw staggered teeth

226

Continuation

Art. n°	d <sub>1</sub>	e	d <sub>2</sub>	Z
226d40e6.0a10Z##	40	6.0	10	28-32
226d40e6.5a10Z##	40	6.5	10	28-32
226d40e7.0a10Z##	40	7.0	10	28-32
226d40e7.5a10Z##	40	7.5	10	28-32
226d40e8.0a10Z##	40	8.0	10	28-32
226d40e8.5a10Z##	40	8.5	10	28-32
226d40e9.0a10Z##	40	9.0	10	28-32
226d40e9.5a10Z##	40	9.5	10	28-32
226d40e10.0a10Z##	40	10.0	10	28-32
226d40e11.0a10Z##	40	11.0	10	28-32
226d40e12.0a10Z##	40	12.0	10	28-32
226d50e2.0a13Z##	50	2.0	13	28-32
226d50e2.5a13Z##	50	2.5	13	28-32
226d50e3.0a13Z##	50	3.0	13	28-32
226d50e3.5a13Z##	50	3.5	13	28-32
226d50e4.0a13Z##	50	4.0	13	28-32
226d50e4.5a13Z##	50	4.5	13	28-32
226d50e5.0a13Z##	50	5.0	13	28-32
226d50e5.5a13Z##	50	5.5	13	28-32
226d50e6.0a13Z##	50	6.0	13	28-32
226d50e6.5a13Z##	50	6.5	13	28-32
226d50e7.0a13Z##	50	7.0	13	28-32
226d50e7.5a13Z##	50	7.5	13	28-32
226d50e8.0a13Z##	50	8.0	13	28-32
226d50e8.5a13Z##	50	8.5	13	28-32
226d50e9.0a13Z##	50	9.0	13	28-32
226d50e9.5a13Z##	50	9.5	13	28-32
226d50e10.0a13Z##	50	10.0	13	28-32
226d50e11.0a13Z##	50	11.0	13	28-32
226d50e12.0a13Z##	50	12.0	13	28-32
226d63e2.0a16Z##	63	2.0	16	28-36
226d63e2.5a16Z##	63	2.5	16	28-36
226d63e3.0a16Z##	63	3.0	16	28-36
226d63e3.5a16Z##	63	3.5	16	28-36
226d63e4.0a16Z##	63	4.0	16	28-36
226d63e4.5a16Z##	63	4.5	16	28-36
226d63e5.0a16Z##	63	5.0	16	28-36
226d63e5.5a16Z##	63	5.5	16	28-36
226d63e6.0a16Z##	63	6.0	16	28-36
226d63e6.5a16Z##	63	6.5	16	28-36
226d63e7.0a16Z##	63	7.0	16	28-36
226d63e7.5a16Z##	63	7.5	16	28-36
226d63e8.0a16Z##	63	8.0	16	28-36
226d63e8.5a16Z##	63	8.5	16	28-36
226d63e9.0a16Z##	63	9.0	16	28-36

Art. n°	d <sub>1</sub>	e	d <sub>2</sub>	Z
226d63e10.0a16Z##	63	10.0	16	28-36
226d80e2.0a22Z##	80	2.0	22	28-36
226d80e2.5a22Z##	80	2.5	22	28-36
226d80e3.0a22Z##	80	3.0	22	28-36
226d80e3.5a22Z##	80	3.5	22	28-36
226d80e4.0a22Z##	80	4.0	22	28-36
226d80e4.5a22Z##	80	4.5	22	28-36
226d80e5.0a22Z##	80	5.0	22	28-36
226d80e5.5a22Z##	80	5.5	22	28-36
226d80e6.0a22Z##	80	6.0	22	28-36
226d80e6.5a22Z##	80	6.5	22	28-36
226d80e7.0a22Z##	80	7.0	22	28-36
226d80e7.5a22Z##	80	7.5	22	28-36
226d80e8.0a22Z##	80	8.0	22	28-36
226d80e8.5a22Z##	80	8.5	22	28-36
226d80e9.0a22Z##	80	9.0	22	28-36
226d80e9.5a22Z##	80	9.5	22	28-36
226d80e10.0a22Z##	80	10.0	22	28-36
226d80e11.0a22Z##	80	11.0	22	28-36
226d80e12.0a22Z##	80	12.0	22	28-36



Available uncoated or coated



Z  
12-36



λ  
ALT

γ  
6°

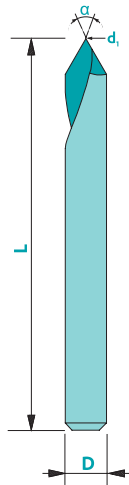
CARB

\* Prices for other coatings: contact us!

To order a coated tool, add the 2-letter coating code to the article number.

# 119-2

## Helical engraving mill - flat tip



Material	n [rpm]	Ap	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm <sup>2</sup>	25 - 40'000	0.05 - 0.40	☐	■	Tisi (BQ)
Steel > 700 N/mm <sup>2</sup>	20 - 40'000	0.05 - 0.30	-	■	Tisi (BQ)
Stainless steel	20 - 30'000	0.05 - 0.30	-	☐	Tisi (BQ)
Cast iron	25 - 40'000	0.05 - 0.40	☐	■	Tisi (BQ)
Copper	20 - 40'000	0.05 - 0.40	☐	■	Solo (DA)
Brass - Bronze	25 - 40'000	0.05 - 0.40	☐	☐	Solo (DA)
Aluminium	25 - 40'000	0.05 - 0.50	☐	■	Solo (DA)
Gold - Silver	20 - 40'000	0.05 - 0.40	■	☐	Solo (DA)
Platinum - Palladium	-	-	-	-	-
Superalloys	-	-	-	-	-
Titanium	25 - 40'000	0.05 - 0.40	☐	☐	Marc (ME)

not adapted - adapted ☐ highly adapted ■

Tolerances d<sub>1</sub>: ±0.01  
D: h5

Article number: 119-2a##d#.##  
Example: End mill ref. 119-2 with 25° angle and tip diameter 0.05 mm: 119-2a25d0.05

α*	d <sub>1</sub> **	D	L
15-45°	0.02-0.09	3	33
15-45°	0.10-0.30	3	33
50-140°	0.02-0.09	3	33
50-140°	0.10-0.30	3	33

\* Available angles: every 5° between 15° and 45°; every 10° between 50° and 140°  
\*\* Available diameters: every 0.01 mm between 0.02 and 0.09 mm; every 0.05 mm between 0.10 and 0.30 mm

Other dimensions (angle, tip diameter, shank) upon request

\* Prices for coatings: contact us!  
To order a coated tool, add the 2-letter coating code to the article number

Available uncoated or coated

0.02-0.20



λ  
24°

CARB

If α < 30°, a double cone applies

### Options

C01



MCU  
≤ Ø3

701S  
≤ Ø3.2

50

LOUIS BELET

swiss made

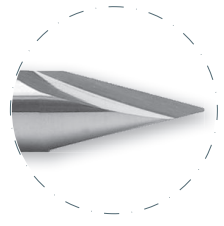
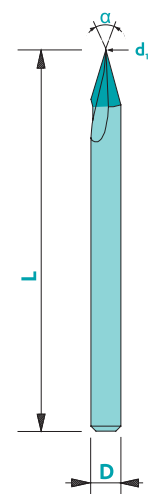
# Engraving mill- 3/4 - flat tip

119-3

Material	n [rpm]	Ap	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm <sup>2</sup>	25 - 40'000	0.05 - 0.40	☐	■	Tisi (BQ)
Steel > 700 N/mm <sup>2</sup>	20 - 40'000	0.05 - 0.30	-	■	Tisi (BQ)
Stainless steel	20 - 30'000	0.05 - 0.30	-	☐	Tisi (BQ)
Cast iron	25 - 40'000	0.05 - 0.40	☐	■	Tisi (BQ)
Copper	20 - 40'000	0.05 - 0.40	☐	■	Solo (DA)
Brass - Bronze	25 - 40'000	0.05 - 0.40	■	■	Solo (DA)
Aluminium	25 - 40'000	0.05 - 0.50	☐	■	Solo (DA)
Gold - Silver	20 - 40'000	0.05 - 0.40	■	☐	Solo (DA)
Platinum - Palladium	-	-	-	-	-
Superalloys	-	-	-	-	-
Titanium	25 - 40'000	0.05 - 0.40	☐	■	Marc (ME)

not adapted - adapted ☐ highly adapted ■

Tolerances  
 $d_1$ : ±0.01  
 D: h5



Article number: 119-3a##d#.#  
 Example: End mill ref. 119-3 with 25° angle and tip diameter 0.05 mm: 119-3a25d0.05

$\alpha$	$d_1$	D	L
15-45°	0.02-0.09	3	33
15-45°	0.10-0.30	3	33
50-140°	0.02-0.09	3	33
50-140°	0.10-0.30	3	33

Available angles: every 5° between 15° and 45°; every 10° between 50° and 140°  
 Available radius: every 0.01 mm between 0.02 and 0.09 mm; every 0.05mm between 0.10 and 0.30 mm

Other dimensions (angle, radius, shank) upon request

To order a coated tool, add the 2-letter coating code to the article number

Available uncoated or coated

0.02-0.20

0°

CARB

If  $\alpha < 30^\circ$ , a double cone applies

### Options

C01

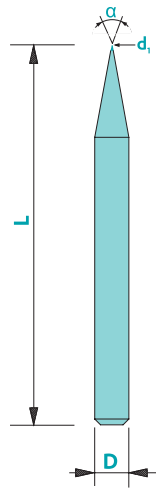
H

MCU ≤ Ø3

701S ≤ Ø3.2

# 119-4

## Engraving mill V-shape - reinforced



Material	n [rpm]	Ap	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm <sup>2</sup>	25 - 40'000	0.05 - 0.40	☐	■	Tisi (BQ)
Steel > 700 N/mm <sup>2</sup>	20 - 40'000	0.05 - 0.30	-	■	Tisi (BQ)
Stainless steel	20 - 30'000	0.05 - 0.30	-	☐	Tisi (BQ)
Cast iron	25 - 40'000	0.05 - 0.40	☐	■	Tisi (BQ)
Copper	20 - 40'000	0.05 - 0.40	☐	■	Solo (DA)
Brass - Bronze	25 - 40'000	0.05 - 0.40	■	■	Solo (DA)
Aluminium	25 - 40'000	0.05 - 0.50	☐	■	Solo (DA)
Gold - Silver	20 - 40'000	0.05 - 0.40	■	☐	Solo (DA)
Platinum - Palladium	-	-	-	-	-
Superalloys	-	-	-	-	-
Titanium	25 - 40'000	0.05 - 0.40	☐	■	Marc (ME)

not adapted - adapted ☐ highly adapted ■

Tolerances  $d_1$ : ±0.01  
D: h5

Article number: 119-4a##d#.##

Example: End mill ref. 119-4 with 25° angle and tip diameter 0.05 mm: 119-4a25d0.05

$\alpha$	$d_1$	D	L
15-45°	0.02-0.09	3	33
15-45°	0.10-0.30	3	33
50-140°	0.02-0.09	3	33
50-140°	0.10-0.30	3	33

Available angles: every 5° between 15° and 45°; every 10° between 50° and 140°

Available radius: every 0.01 mm between 0.02 and 0.09 mm; every 0.05mm between 0.10 and 0.30 mm

Other dimensions (angle, radius, shank) upon request

To order a coated tool, add the 2-letter coating code to the article number

Available uncoated or coated



$\lambda$   
0°

CARB

If  $\alpha < 30^\circ$ , a double cone applies

### Options

C01



MCU  
≤ ø3

701S  
≤ ø3.2

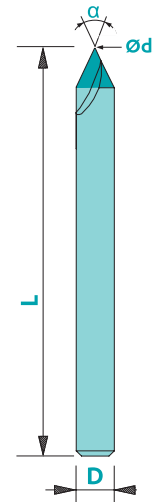
# Engraving mill in PCD - 3/4 - flat tip

4119-3

Material	n [rpm]	Ap	Uncoated
Steel < 700 N/mm <sup>2</sup>	-	-	-
Steel > 700 N/mm <sup>2</sup>	-	-	-
Stainless steel	-	-	-
Cast iron	-	-	-
Copper	20 - 40'000	0.05 - 0.40	■
Brass - Bronze	25 - 40'000	0.05 - 0.40	■
Aluminium	25 - 40'000	0.05 - 0.50	■
Gold - Silver	20 - 40'000	0.05 - 0.40	■
Platinum - Palladium	25 - 40'000	0.05 - 0.40	■
Superalloys	-	-	-
Titanium	-	-	-
Composite	40'000	0.05 - 0.40	■

not adapted - adapted  highly adapted

Tolerances  $d_1: \pm 0.01$   
D: h5



Art. n°	$\alpha$	$d_1$	D	L
4119-3a40d0.05	40°	0.05	3	33
4119-3a40d0.08	40°	0.08	3	33
4119-3a40d0.10	40°	0.10	3	33
4119-3a50d0.05	50°	0.05	3	33
4119-3a50d0.08	50°	0.08	3	33
4119-3a50d0.10	50°	0.10	3	33
4119-3a60d0.05	60°	0.05	3	33
4119-3a60d0.08	60°	0.08	3	33

Art. n°	$\alpha$	$d_1$	D	L
4119-3a60d0.10	60°	0.10	3	33
4119-3a70d0.05	70°	0.05	3	33
4119-3a70d0.08	70°	0.08	3	33
4119-3a70d0.10	70°	0.10	3	33
4119-3a90d0.05	90°	0.05	3	33
4119-3a90d0.08	90°	0.08	3	33
4119-3a90d0.10	90°	0.10	3	33

Available uncoated only



$\lambda$   
0°

PCD

If  $d_1 \leq 0.5$  mm, a double cone applies

Order  Quotation request

<b>Angle (<math>\alpha</math>):</b> <input type="checkbox"/> By default : 60° <input type="checkbox"/> 30° <input type="checkbox"/> 35° <input type="checkbox"/> 45° <input type="checkbox"/> Other : _____ <input type="checkbox"/> 50° <input type="checkbox"/> 55° <input type="checkbox"/> 90°		<b>Shank <math>\emptyset</math> :</b> <input type="checkbox"/> By default : D=3 <input type="checkbox"/> Other : D= _____	
<b>Machined material :</b> _____		<b>Quantity :</b> _____	
<b>Order No :</b> _____		<b><math>d_1</math> (from 0.02 mm) :</b> _____	
<b>Contact person :</b> _____		<b>Company's stamp &amp; date :</b> _____	

Standard dimensions of the bars :  $\emptyset 3 \times L 38$ ,  $\emptyset 4 \times L 38$ ,  $\emptyset 6 \times L 38$ ,  $\emptyset 6 \times L 51$ ,  $\emptyset 8 \times L 61$ ,  $\emptyset 10 \times L 72$ ,  $\emptyset 12 \times L 83$ ,  $\emptyset 16 \times L 92$ ,  $\emptyset 20 \times L 104$   
Other dimensions, CVD/CBN available upon request.

Options



MCU  
 $\leq \emptyset 3$

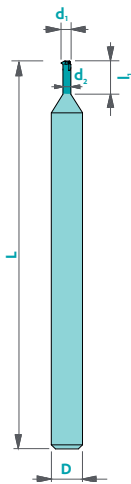
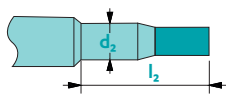
701S  
 $\leq \emptyset 6$

# 5600

## Whirling tools Z3 - NIHS norm 06-10



Upon request



Material	Vc	Uncoated	Coated	Rec. Coating*
Steel < 700 N/mm <sup>2</sup>	Max spindle speed	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Tisi (BQ)
Steel > 700 N/mm <sup>2</sup>	Max spindle speed	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Tisi (BQ)
Stainless steel	Max spindle speed	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Tisi (BQ)
Cast iron	Max spindle speed	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Tisi (BQ)
Copper	Max spindle speed	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Solo (DA)
Brass - Bronze	Max spindle speed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Solo (DA)
Aluminium	Max spindle speed	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Solo (DA)
Gold - Silver	Max spindle speed	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Solo (DA)
Platinum - Palladium	Max spindle speed	-	<input type="checkbox"/>	Sun (DG)
Superalloys	Max spindle speed	-	<input checked="" type="checkbox"/>	Nemo (NO)
Titanium	Max spindle speed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Marc (ME)

not adapted - adapted  highly adapted

Tolerances D: h5

Available uncoated or coated

**Z3**

**CARB**

Art. n°	Ø nominal	Pitch	d <sub>1</sub>	l <sub>1</sub>	d <sub>2</sub>	D	L
5600S0.80	S0.80	0.200	0.60	2.00	0.38	3	38
5600S0.90	S0.90	0.225	0.68	2.25	0.43	3	38
5600S1.00	S1.00	0.250	0.76	2.50	0.48	3	38
5600S1.20	S1.20	0.250	0.94	2.50	0.66	3	38
5600S1.40	S1.40	0.300	1.10	3.00	0.76	3	38
5600M1.00	M1.00	0.250	0.76	2.50	0.48	3	38
5600M1.20	M1.20	0.250	0.94	2.50	0.66	3	38
5600M1.40	M1.40	0.300	1.10	3.00	0.76	3	38
5600M1.60	M1.60	0.350	1.25	3.50	0.85	3	38
5600M1.80	M1.80	0.350	1.45	3.50	1.05	3	38
5600M2.00	M2.00	0.400	1.60	4.00	1.15	3	38
5600M2.20	M2.20	0.450	1.70	4.50	1.19	3	38
5600M2.50	M2.50	0.450	2.00	5.00	1.49	3	38
5600M3.00	M3.00	0.500	2.40	5.50	1.84	3	38

To order a coated tool, add the 2-letter coating code to the article number.

### Options

**C01**

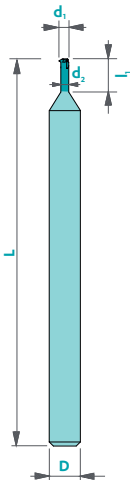


**MCU**  
≤ Ø3

**701S**  
≤ Ø6

# PCD Whirling tools

45600



Material	Vc	Uncoated
Steel < 700 N/mm²	Max spindle speed	-
Steel > 700 N/mm²	Max spindle speed	-
Stainless steel	Max spindle speed	-
Cast iron	Max spindle speed	-
Copper	Max spindle speed	■
Brass - Bronze	Max spindle speed	■
Aluminium	Max spindle speed	■
Gold - Silver	Max spindle speed	■
Platinum - Palladium	Max spindle speed	■
Superalloys	Max spindle speed	-
Titanium	Max spindle speed	-
Composite	Max spindle speed	□

not adapted - adapted ■ highly adapted ■

Tolerances D: h5



Art. n°	Ø nominal	pitch	d <sub>1</sub>	l <sub>2</sub>	d <sub>2</sub>	D	L
45600S0.60	S0.60	0.150	0.45	1.50	0.29	3	38
45600S0.70	S0.70	0.175	0.54	1.75	0.34	3	38
45600S0.80	S0.80	0.200	0.60	2.00	0.38	3	38
45600S0.90	S0.90	0.225	0.68	2.25	0.43	3	38
45600S1.00	S1.00	0.250	0.76	2.50	0.48	3	38
45600S1.20	S1.20	0.250	0.94	2.50	0.66	3	38
45600S1.40	S1.40	0.300	1.10	3.00	0.76	3	38
45600M1.00	M1.00	0.250	0.76	2.50	0.48	3	38
45600M1.20	M1.20	0.250	0.94	2.50	0.66	3	38
45600M1.40	M1.40	0.300	1.10	3.00	0.76	3	38
45600M1.60	M1.60	0.350	1.25	3.50	0.85	3	38
45600M1.80	M1.80	0.350	1.45	3.50	1.05	3	38
45600M2.00	M2.00	0.400	1.60	4.00	1.15	3	38
45600M2.20	M2.20	0.450	1.70	4.50	1.19	3	38
45600M2.50	M2.50	0.450	2.00	5.00	1.49	3	38
45600M3.00	M3.00	0.500	2.40	5.50	1.84	3	38

Z3

PCD

## Options



MCU  
≤ Ø3

701S  
≤ Ø6



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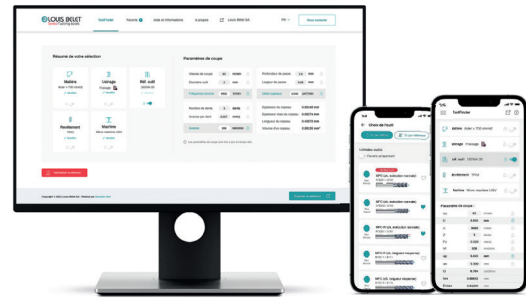
Les Gasses 11  
CH - 2943 Vendlincourt  
Tél. +41 (0) 32 474 04 10  
Fax +41 (0) 32 474 45 42  
[www.louisbelet.ch](http://www.louisbelet.ch)  
[info@louisbelet.ch](mailto:info@louisbelet.ch)

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