5. Utensili PCD/CVD/ CBN

Index - Utensili PCD/CVD/CBN

		Pagina
5. Utensili PCD/CVD/CBN		**71**
4010	Fresa PCD l_1=1xd_1	75
4015	Fresa PCD l_1=1.5xd_1	76
4020	Fresa PCD l_1=2xd_1	77
4100	Fresa a T in PCD	78
4119-3	Fresa a incidere PCD - ¾ - Piatto	79
4120	Fresa a incidere in PCD 90°	80
4200	Fresa raggiata PCD	81
4500	Punta elicoidale in PCD	82
45200	Fresa a filettare in PCD	84

Utensili PCD/CVD/CBN

Tabella dei contenuti

Frese PCD (CVD & CBN a richiesta)

						Pagina
REF. 4010	Ø 0.5 - Ø20.0	Ø 6 - Ø 20	⌟	Z1-2	λ 0°	75
REF. 4015	Ø 1.0 - Ø12.0	Ø 6 - Ø 12	⌟	Z1-2	λ 0°	76
REF. 4020	Ø 2.0 - Ø8.0	Ø 6 - Ø 8	⌟	Z1-2	λ 0°	77

Frese raggiate PCD (CVD & CBN a richiesta)

						Pagina
REF. 4200	Ø 1.0 - Ø12.0	Ø 6 - Ø 12	∪	Z1-2	λ 0°	81

Frese a T in PCD (CVD & CBN a richiesta)

						Pagina
REF. 4100	Ø 3.0 - Ø16.0	Ø 4 - Ø 10	⌟	Z1-2	λ 0°	78

Punte elicoidali in PCD (CVD & CBN a richiesta)

						Pagina
REF. 4500	Ø 0.48 - Ø2.50	Ø 3	118°	Z2	λ 30°	82

Fresa a incidere - PCD (CVD & CBN a richiesta)

						Pagina
REF. 4119-3		Ø 3	±0.03	Z1	λ 0°	79
REF. 4120		Ø 3 - Ø 6	0.1	Z1	λ 0°	80

Frese a filettare in PCD (CVD & CBN a richiesta)

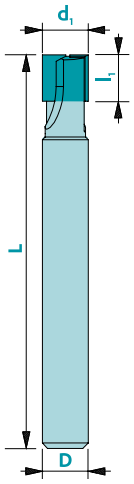
						Pagina
REF. 45200	M2.0 - M8.0	Ø 3 - Ø 6		Z1-2	λ 0°	84

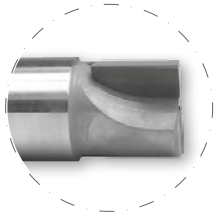
► Utensili speciali in PCD / CBN / CVD a richiesta, vedi esempi alla pagina 28.

Fresa PCD l_1=1xd_1

Materiale	Vc	Senza rivestimento
Acciaio < 700 N/mm²	-	-
Acciaio > 700 N/mm²	-	-
Acciaio inox	-	-
Ghisa	-	-
Rame	350	■
Ottone - Bronzo	500	■
Alluminio	1000	■
Oro - argento	300	■
Platino - Palladio	130	■
Superleghe	-	-
Titanio	120	■

non adatto - adatto □ molto adatto ■





Tolleranze
d_1 < 1mm ▶ +0/-0.01 l_1: +0.2/-0
d_1 > 1mm ▶ +0/-0.02 D: h5

Art. n°	d_1	l_1	D	L	Z
4010d0.50L38Z1	0.5	0.5	6	38	1
4010d1.00L38Z1	1.0	1.0	6	38	1
4010d1.50L38Z1	1.5	1.5	6	38	1
4010d2.00L38Z1	2.0	2.0	6	38	1
4010d2.50L38Z1	2.5	2.5	6	38	1
4010d3.00L38Z1	3.0	3.0	6	38	1
4010d3.50L38Z1	3.5	3.5	6	38	1
4010d4.00L51Z1	4.0	4.0	6	51	1
4010d4.00L51Z2	4.0	4.0	6	51	2
4010d5.00L51Z2	5.0	5.0	6	51	2
4010d6.00L51Z2	6.0	6.0	6	51	2
4010d7.00L61Z2	7.0	7.0	8	61	2
4010d8.00L61Z2	8.0	8.0	8	61	2
4010d8.00L120Z2	8.0	8.0	8	120	2
4010d10.00L72Z2	10.0	10.0	10	72	2
4010d10.00L120Z2	10.0	10.0	10	120	2
4010d12.00L83Z2	12.0	12.0	12	83	2
4010d12.00L150Z2	12.0	12.0	12	150	2
4010d14.00L83Z2	14.0	14.0	14	83	2
4010d14.00L150Z2	14.0	14.0	14	150	2
4010d16.00L92Z2	16.0	16.0	16	92	2
4010d16.00L180Z2	16.0	16.0	16	180	2
4010d20.00L104Z2	20.0	20.0	20	104	2
4010d20.00L180Z2	20.0	20.0	20	180	2

Z1-2

λ 0°

γ 0°

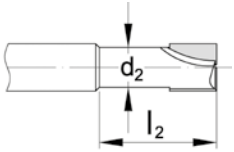
PCD

HSC

ap=0.15xd_1

ae=0.03xd_1
ap=1xd_1

A richiesta



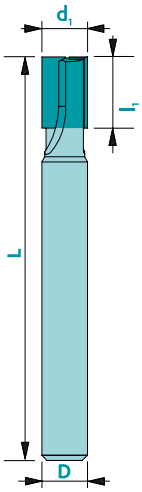
45° 0.03-0.20

r 0.05-2.00

Altre dimensioni, CVD/CBN a richiesta

4015

Fresa PCD l_1=1.5xd_1



Materiale	Vc	Senza rivestimento
Acciaio < 700 N/mm²	-	-
Acciaio > 700 N/mm²	-	-
Acciaio inox	-	-
Ghisa	-	-
Rame	350	■
Ottone - Bronzo	500	■
Alluminio	1000	■
Oro - argento	300	■
Platino - Palladio	130	■
Superleghe	-	-
Titanio	120	■

non adatto - adatto □ molto adatto ■

Tolleranze d_1<1mm ▶ +0/-0.01 D: h5
d_1>1mm ▶ +0/-0.02

Z1-2

λ 0°

γ 0°

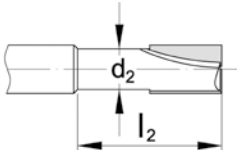
PCD

HSC

ap=0.1xd_1

ae=0.03xd_1
ap=1.5xd_1

A richiesta



45° 0.03-0.20

r 0.05-2.00

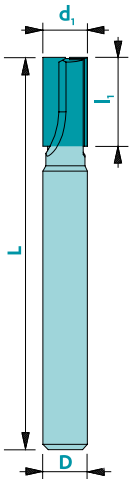
Art. n°	d_1	l_1	D	L	Z
4015d1.00L38Z1	1.0	1.5	6	38	1
4015d1.50L38Z1	1.5	2.5	6	38	1
4015d2.00L38Z1	2.0	3.0	6	38	1
4015d2.50L38Z1	2.5	3.5	6	38	1
4015d3.00L38Z1	3.0	4.5	6	38	1
4015d3.50L38Z1	3.5	5.0	6	38	1
4015d4.00L51Z1	4.0	6.0	6	51	1
4015d4.00L51Z2	4.0	6.0	6	51	2
4015d5.00L51Z2	5.0	7.5	6	51	2
4015d6.00L51Z2	6.0	9.0	6	51	2
4015d7.00L61Z2	7.0	10.5	8	61	2
4015d8.00L61Z2	8.0	12.0	8	61	2
4015d8.00L120Z2	8.0	12.0	8	120	2
4015d10.00L72Z2	10.0	15.0	10	72	2
4015d10.00L120Z2	10.0	15.0	10	120	2
4015d12.00L83Z2	12.0	18.0	12	83	2
4015d12.00L150Z2	12.0	18.0	12	150	2

Altre dimensioni, CVD/CBN a richiesta

Fresa PCD l_1=2xd_1

Materiale	Vc	Senza rivestimento
Acciaio < 700 N/mm²	-	-
Acciaio > 700 N/mm²	-	-
Acciaio inox	-	-
Ghisa	-	-
Rame	350	■
Ottone - Bronzo	500	■
Alluminio	1000	■
Oro - argento	300	■
Platino - Palladio	130	■
Superleghe	-	-
Titanio	120	■

non adatto - adatto □ molto adatto ■



Tolleranze d_1 < 1mm ▶ +0/-0.01 D: h5
d_1 > 1mm ▶ +0/-0.02

Art. n°	d_1	l_1	D	L	Z
4020d2.00L38Z1	2.0	4.0	6	38	1
4020d2.50L38Z1	2.5	5.0	6	38	1
4020d3.00L38Z1	3.0	6.0	6	38	1
4020d3.50L38Z1	3.5	7.0	6	38	1
4020d4.00L38Z1	4.0	8.0	6	38	1
4020d5.00L51Z2	5.0	10.0	6	51	2
4020d6.00L51Z2	6.0	12.0	6	51	2
4020d8.00L61Z2	8.0	16.0	8	61	2
4020d8.00L120Z2	8.0	16.0	8	120	2

Z1-2

λ 0°

γ 0°

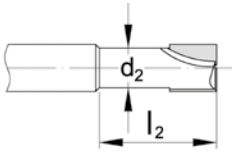
PCD

HSC

ap=0.15xd_1

ae=0.03xd_1
ap=1xd_1

A richiesta



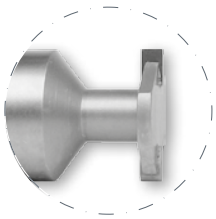
45° 0.03-0.20

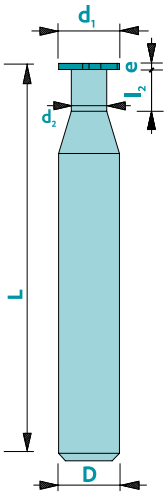
r 0.05-2.00

Altre dimensioni, CVD/CBN a richiesta

4100

Fresa a T in PCD





Materiale	Vc	Senza rivestimento
Acciaio < 700 N/mm²	-	-
Acciaio > 700 N/mm²	-	-
Acciaio inox	-	-
Ghisa	-	-
Rame	350	■
Ottone - Bronzo	500	■
Alluminio	1000	■
Oro - argento	300	■
Platino - Palladio	130	■
Superleghe	-	-
Titanio	120	■

non adatto - adatto □ molto adatto ■

Tolleranze
d_1 < 1mm ▶ +0/-0.01 e: +0.01/-0.01 l_2: +0.2/-0
d_1 > 1mm ▶ +0/-0.02 d_2: +0/-0.5 D: h5

Z1-2

λ 0° γ 0°

PCD HSC

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

☐ **Ordine** ☐ **Domanda d'offerta**

Dimensioni :

d_1 : _____ e : _____ d_2 : _____

D : _____ L : _____ l_2 : _____

Materiale da lavorare: _____

Persona di contatto : _____

Quantità : _____

No. Ordine : _____

Timbro della ditta e data : _____

Dimensioni standard delle barre : Ø 3x L 38, Ø 4x L 38, Ø 6x L 38, Ø 6x L 51, Ø 8x L 61, Ø 10x L 72, Ø 12x L 83, Ø 16x L 92, Ø 20x L 104

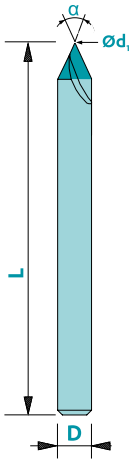
Altre dimensioni, CVD/CBN a richiesta

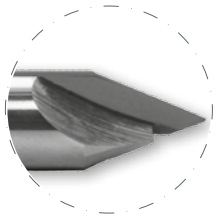
Fresa a incidere PCD - ¾ - Piatto a la punta

4119-3

Materiale	n [tr/min]	Ap	Senza rivestimento
Acciaio < 700 N/mm²	-	-	-
Acciaio > 700 N/mm²	-	-	-
Acciaio inox	-	-	-
Ghisa	-	-	-
Rame	20 - 40'000	0.05 - 0.40	■
Ottone - Bronzo	25 - 40'000	0.05 -0.40	■
Alluminio	25 - 40'000	0.05 - 0.50	■
Oro - argento	20 - 40'000	0.05 -0.40	■
Platino - Palladio	25 - 40'000	0.05 -0.40	■
Superleghe	-	-	-
Titanio	25 - 40'000	0.05 - 0.40	□

non adatto - adatto □ molto adatto ■





Tolleranze d_1: +/- 0.01
D: h5

Art. n°	α	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°	α	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

≥ 0.02

Z1

λ 0°

PCD

HSC

☐ **Ordine** ☐ **Domanda d'offerta**

Angolo (α):

☐ Per impostazione predefinita : 60°
☐ 30° ☐ 35° ☐ 45°
☐ Altro : _____
☐ 50° ☐ 55° ☐ 90°

Codolo Ø :

☐ Per impostazione predefinita : D=3
☐ Altro : D= _____

No. Ordine : _____

Materiale da lavorare : _____

Quantità : _____

d_1 (da 0.02 mm) : _____

Persona di contatto : _____

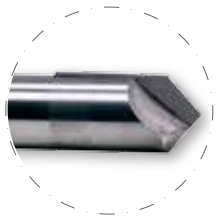
Timbro della ditta e data : _____

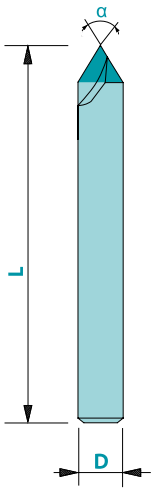
Dimensioni standard delle barre : Ø 3x L 38, Ø 4x L 38, Ø 6x L 38, Ø 6x L 51, Ø 8x L 61, Ø 10x L 72, Ø 12x L 83, Ø 16x L 92, Ø 20x L 104

Altre dimensioni, CVD/CBN a richiesta

4120

Fresa a incidere in PCD 90°





Materiale	Vc	Senza rivestimento
Acciaio < 700 N/mm²	-	-
Acciaio > 700 N/mm²	-	-
Acciaio inox	-	-
Ghisa	-	-
Rame	300	■
Ottone - Bronzo	400	■
Alluminio	800	■
Oro - argento	220	■
Platino - Palladio	110	■
Superleghe	-	-
Titanio	100	■

non adatto - adatto □ molto adatto ■

Tolleranze d_1: +/- 0.01
D: h5

0.1 | Z1-2

λ 0° | PCD | HSC

Art. n°	α	D	L	Z
4120D3.00	90°	3	38	1
4120D4.00	90°	4	50	1
4120D6.00	90°	6	50	2

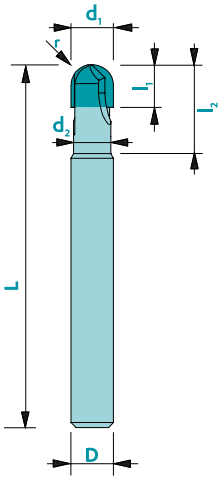
Altre dimensioni, CVD/CBN a richiesta

LOUIS BELET
swiss made

Fresa raggiata PCD

Materiale	Vc	Senza rivestimento
Acciaio < 700 N/mm²	-	-
Acciaio > 700 N/mm²	-	-
Acciaio inox	-	-
Ghisa	-	-
Rame	300	■
Ottone - Bronzo	400	■
Alluminio	800	■
Oro - argento	220	■
Platino - Palladio	110	■
Superleghe	-	-
Titanio	100	■

non adatto - adatto ◘ molto adatto ■



Tolleranze
d_1 < 1mm ▶ +0/-0.01
d_1 > 1mm ▶ +0/-0.02
⌒ +0/-0.01
D: h5

Art. n°	d_1	l_1	r	d_2	l_2	D	L	Z
4200d1.0L38Z1	1.00	1.00	0.50	-	-	6	38	1
4200d1.5L38Z1	1.50	1.50	0.75	-	-	6	38	1
4200d2.0L38Z1	2.00	2.00	1.00	1.75	6.50	6	38	1
4200d2.5L38Z1	2.50	2.50	1.25	2.20	7.50	6	38	1
4200d2.5L38Z2	2.50	2.50	1.25	2.20	7.50	6	38	2
4200d3.0L38Z1	3.00	3.00	1.50	2.60	8.00	6	38	1
4200d3.0L38Z2	3.00	3.00	1.50	2.60	8.00	6	38	2
4200d3.5L38Z1	3.50	3.50	1.75	3.00	9.00	6	38	1
4200d3.5L38Z2	3.50	3.50	1.75	3.00	9.00	6	38	2
4200d4.0L51Z1	4.00	4.00	2.00	3.50	10.00	6	51	1
4200d4.0L51Z2	4.00	4.00	2.00	3.50	10.00	6	51	2
4200d5.0L51Z2	5.00	5.00	2.50	4.40	11.00	6	51	2
4200d6.0L51Z2	6.00	6.00	3.00	5.25	12.50	6	51	2
4200d8.0L61Z2	8.00	8.00	4.00	7.00	15.00	8	61	2
4200d8.0L120Z2	8.00	8.00	4.00	7.00	15.00	8	120	2
4200d10.0L72Z2	10.00	10.00	5.00	8.75	17.00	10	72	2
4200d10.0L120Z2	10.00	10.00	5.00	8.75	17.00	10	120	2
4200d12.0L83Z2	12.00	12.00	6.00	10.50	20.00	12	83	2
4200d12.0L150Z2	12.00	12.00	6.00	10.50	20.00	12	150	2

Z1-2

λ 0°

γ 0°

PCD

HSC

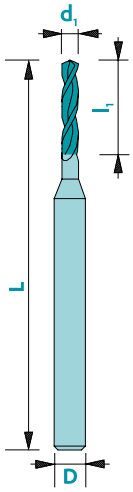
ap
ae

ae=0.1xd_1
ap=0.1xd_1

Altre dimensioni, CVD/CBN a richiesta

4500

Punta elicoidale in PCD



Materiale	Vc	Senza rivestimento
Acciaio < 700 N/mm²	-	-
Acciaio > 700 N/mm²	-	-
Acciaio inox	-	-
Ghisa	-	-
Rame	180	■
Ottone - Bronzo	280	■
Alluminio	250	■
Oro - argento	200	■
Platino - Palladio	100	■
Superleghe	-	-
Titanio	140	■

non adatto - adatto □ molto adatto ■

Tolleranze d_1=+0/-0.13
D: h6

118° | Z2

λ 30°

PCD | HSC

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

Art. n°	d_1	l_1	D	L
4500d0.77	0.77	5.0	3	38
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

Punta elicoidale in PCD

Art. n°	d_1	l_1	D	L
4500d1.06	1.06	8.0	3	38
4500d1.07	1.07	8.0	3	38
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

Art. n°	d_1	l_1	D	L
4500d1.55	1.55	9.0	3	38
4500d1.60	1.60	9.0	3	38
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

118° | Z2

λ 30°

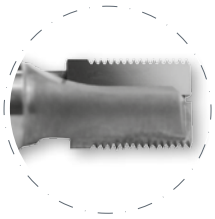
PCD | HSC

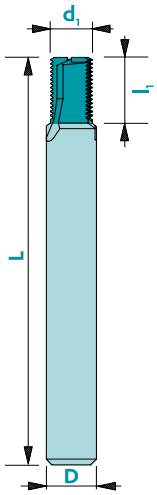
Altre dimensioni, CVD/CBN a richiesta

45200

Fresa a filettare in PCD

filettatura interna e esterna





Materiale	Vc	Senza rivestimento
Acciaio < 700 N/mm²	-	-
Acciaio > 700 N/mm²	-	-
Acciaio inox	-	-
Ghisa	-	-
Rame	150	■
Ottone - Bronzo	140	■
Alluminio	200	■
Oro - argento	140	■
Platino - Palladio	80	■
Superleghe	-	-
Titanio	40	◻

non adatto - adatto ◻ molto adatto ■

Tolleranze d_1=+0/-0.1
D: h5

Z1-2

λ **0°** γ **0°**

PCD **HSC**

Art. n°	Ø nominal	Passo	d_1	l_1	D	L	Z
45200M2.00	M2.00	0.40	1.40	4.0	3	38	1
45200M2.50	M2.50	0.45	1.80	5.0	6	57	1
45200M3.00	M3.00	0.50	2.30	6.0	6	57	1
45200M4.00	M4.00	0.70	3.00	8.0	6	57	2
45200M5.00	M5.00	0.80	3.80	10.0	6	57	2
45200M6.00	M6.00	1.00	4.50	12.0	6	57	2
45200M8.00	M8.00	1.25	5.00	16.0	6	57	2

Altre dimensioni, CVD/CBN a richiesta