



**NEW**

## **NEUE HPC-VOLLHARTMETALLFRÄSER**

Dynamisches HPC-Fräsen mit dem HORN-System DS

## **NEW HPC SOLID CARBIDE END MILLS**

Dynamic HPC milling with the HORN DS system



# DER UNTERSCHIED: MEHR MÖGLICHKEITEN

THE DIFFERENCE:  
MORE POSSIBILITIES

- **Hohe Laufruhe durch abgestimmte Drallwinkel und Zahnteilung**

Quiet operation due to matched helix angle and tooth pitch

- **Große Zeitspanvolumen durch spezielle HPC-Geometrie**

High metal removal rates due to special HPC geometry

- **Optimierte Geometrie zum Bohrzirkularfräsen**

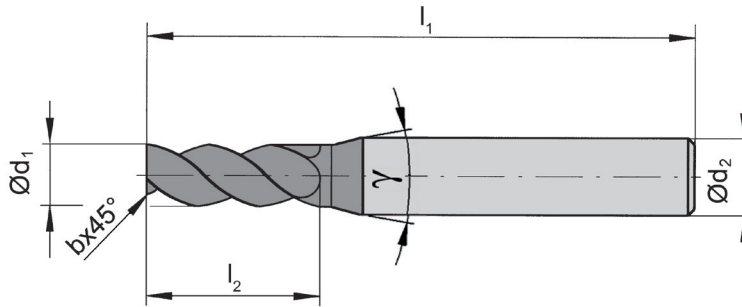
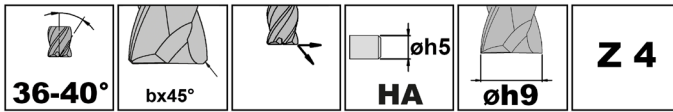
Optimised geometry for circular ramp milling

# Schaftfräser HPC, Eckfase

End Mill HPC, corner bevel



## DSHPC



Bestellnummer Part number	d <sub>1</sub>	b	l <sub>2</sub>	d <sub>2</sub>	l <sub>1</sub>	Z	γ	ES3P
DSHPC.4.020.008.25	2	0,07	5	6	50	4	40°	▲
DSHPC.4.030.010.23	3	0,10	7	6	50	4	40°	▲
DSHPC.4.040.010.22	4	0,10	9	6	50	4	40°	▲
DSHPC.4.050.010.22	5	0,10	11	6	54	4	40°	▲
DSHPC.4.060.015.21	6	0,15	13	6	54	4	-	▲
DSHPC.4.080.015.21	8	0,15	17	8	63	4	-	▲
DSHPC.4.100.020.21	10	0,20	21	10	66	4	-	▲
DSHPC.4.120.030.21	12	0,30	26	12	83	4	-	▲
DSHPC.4.160.050.21	16	0,50	34	16	92	4	-	▲
DSHPC.4.200.050.21	20	0,50	42	20	104	4	-	▲

▲ ab Lager / on stock Δ 4 Wochen / 4 weeks x auf Anfrage / upon request

● empfohlen / recommended

o bedingt einsetzbar / alternative recommendation

- nicht geeignet / not suitable

■ unbeschichtete HM-Sorten / uncoated grades

■ beschichtete HM-Sorten / coated grades

■ bestückt/Cermet / brazed/Cermet

Abmessungen in mm

Dimensions in mm

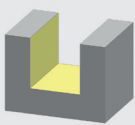
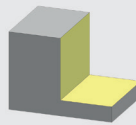
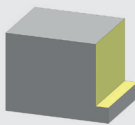
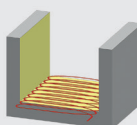
P	•
M	•
K	•
N	-
S	o
H	-






HM-Sorten  
Carbide grades

# Schnittdaten DSHPC Ø 2 - 20 mm

Cutting Data DSHPC Ø 2 - 20 mm



	 vc = m/min	 vc = m/min	 vc = m/min	 vc = m/min
P1.1	130	160	180	210
P1.2	130	160	180	210
P1.3	120	150	170	200
P2.1	110	140	150	180
P2.2	110	140	150	180
P2.3	110	140	150	180
P3.1	100	120	130	160
P3.2	100	120	130	160
M1.1	80	100	110	130
M2.1	70	90	100	120
M3.1	60	80	90	100
K1.1	110	140	150	180
K1.2	100	130	140	170
K2.1	100	120	130	160
K2.2	90	110	120	140
K3.1	70	90	100	120
K3.2	60	80	90	100
S1.1	50	60	70	80
S2.1	40	50	60	70
S3.1	30	40	40	50

d <sub>1</sub>	l <sub>2</sub>													
			fz	ae	ap	fz	ae	ap	fz	ae	ap	fz	ae	ap
2	5	3°	0,010	2	2	0,013	0,50	4	0,008	0,05	5	0,019	0,26	5
3	7	3°	0,016	3	3	0,022	0,75	6	0,011	0,08	7	0,03	0,39	7
4	9	3°	0,022	4	4	0,030	1,00	8	0,015	0,10	9	0,041	0,52	9
5	11	4°	0,029	5	5	0,038	1,25	10	0,019	0,13	11	0,053	0,65	11
6	13	4°	0,035	6	6	0,047	1,50	12	0,023	0,15	13	0,065	0,78	13
8	17	5°	0,047	8	8	0,063	2,00	16	0,030	0,20	17	0,088	1,04	17
10	21	5°	0,060	10	10	0,080	2,50	20	0,038	0,25	21	0,111	1,30	21
12	26	5°	0,070	12	12	0,093	3,00	24	0,046	0,30	26	0,129	1,56	26
16	34	5°	0,095	16	16	0,126	4,00	32	0,061	0,40	34	0,175	2,08	34
20	42	5°	0,120	20	20	0,160	5,00	40	0,076	0,50	42	0,222	2,60	42

Abmessungen in mm  
Dimensions in mm

	Werkstoff	Material			Härte / Hardness
<b>P1.1</b>	Kohlenstoffstahl	Carbon steel	0,2% C		140 HB
<b>P1.2</b>	Kohlenstoffstahl	Carbon steel	0,4% C		180 HB
<b>P1.3</b>	Kohlenstoffstahl	Carbon steel	0,6% C		200 HB
<b>P2.1</b>	Legierter Stahl	Alloyed steel	geglüht	annealed	180 HB
<b>P2.2</b>	Legierter Stahl	Alloyed steel	vergütet	quenched	280 HB
<b>P2.3</b>	Legierter Stahl	Alloyed steel	vergütet	quenched	350 HB
<b>P3.1</b>	hochlegierter Stahl	High alloyed steel	geglüht	annealed	200 HB
<b>P3.2</b>	hochlegierter Stahl	High alloyed steel	vergütet	quenched	325 HB
<b>M1.1</b>	Rostfreier Stahl	Stainless steel	martensitisch, ferritisch	martensitic, ferritic	200 HB
<b>M2.1</b>	Rostfreier Stahl	Stainless steel	austenitisch	austenitic	180 HB
<b>M3.1</b>	Rostfreier Stahl	Stainless steel	austenitisch, ferritisch	austenitic, ferritic	260 HB
<b>K1.1</b>	Grauguss	Grey cast iron	niedrige Festigkeit	low tensile strength	180 HB
<b>K1.2</b>	Grauguss	Grey cast iron	hohe Festigkeit	high tensile strength	250 HB
<b>K2.1</b>	Kugelgraphitguss	Spheroidal graphite cast iron	ferritisch	ferritic	160 HB
<b>K2.2</b>	Kugelgraphitguss	Spheroidal graphite cast iron	perlitisch	perlitic	250 HB
<b>K3.1</b>	Temperguss	Malleable cast iron	ferritisch	ferritic	125 HB
<b>K3.2</b>	Temperguss	Malleable cast iron	perlitisch	perlitic	225 HB
<b>N1.1</b>	Aluminium-Legierungen	Aluminum alloys	nicht vergütbar	not heat treatable	80 HB
<b>N1.2</b>	Aluminium-Legierungen	Aluminum alloys	vergütbar	heat treatable	120 HB
<b>N2.1</b>	Aluminiumguss	Cast Aluminum	< 6% Si	< 6% Si	
<b>N2.2</b>	Aluminiumguss	Cast Aluminum	6 - 10% Si	6 - 10% Si	
<b>N2.3</b>	Aluminiumguss	Cast Aluminum	10 - 15% Si	10 - 15% Si	
<b>N3.1</b>	Kupfer-Legierungen	Copper alloys	nicht vergütbar	not heat treatable	90 HB
<b>N3.2</b>	Kupfer-Legierungen	Copper alloys	vergütbar	heat treatable	100 HB
<b>N4.1</b>	Kunststoffe	Synthetics			
<b>S1.1</b>	Titan-Legierungen	Titanium alloys			280 HB
<b>S2.1</b>	Nickel-Basis-Legierung	Nickel-base alloys			450 HB
<b>S3.1</b>	Cobalt-Basis-Legierung	Cobalt-base alloys			450 HB
<b>H1.1</b>	Gehärtete Stähle	Hardened steels			50-55 HRC
<b>H1.2</b>	Gehärtete Stähle	Hardened steels			56-59 HRC
<b>H1.3</b>	Gehärtete Stähle	Hardened steels			60-63 HRC
<b>H1.4</b>	Gehärtete Stähle	Hardened steels			> 63 HRC



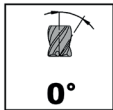
Zentrumsschneidend  
Centre cutting



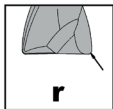
Zähnezahl  
Number of teeth



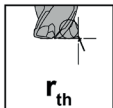
Wuchtgüte  
Balance quality



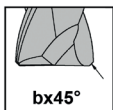
Drallwinkel  
Helix angle



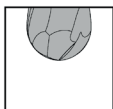
Eckenradius  
Corner radius



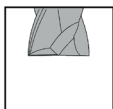
Radius theoretisch  
Radius theoretic



Eckfase  
Corner chamfer



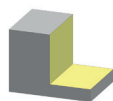
Vollradius  
Full radius



Scharfkantig  
Sharp



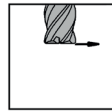
Vollnut  
Slot milling



Eckfräsen  
Corner milling



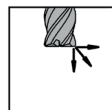
Kopierfräsen  
Copy milling



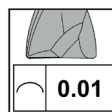
Eintauchen horizontal  
Diving horizontal



Eintauchen, Rampe, Helix,  
Diving, ramping, helical



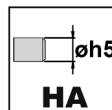
Eintauchen, Rampe, Helix, vertikal  
Diving, ramping, helical, vertical



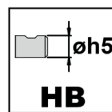
Formtoleranz  
Form tolerance



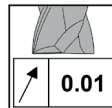
Toleranz  
Tolerance



Schaft DIN 6535 HA  
Shank DIN 6535 HA



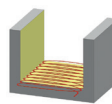
Schaft DIN 6535 HB  
Shank DIN 6535 HB



Rundlauf  
Run-out



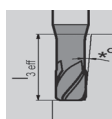
Innenkühlung  
Internal cooling



Trochoidalfräsen  
Trochoidal milling



Eintauchen  
Diving



Effektive Nutzlänge  
Effective neck length



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