

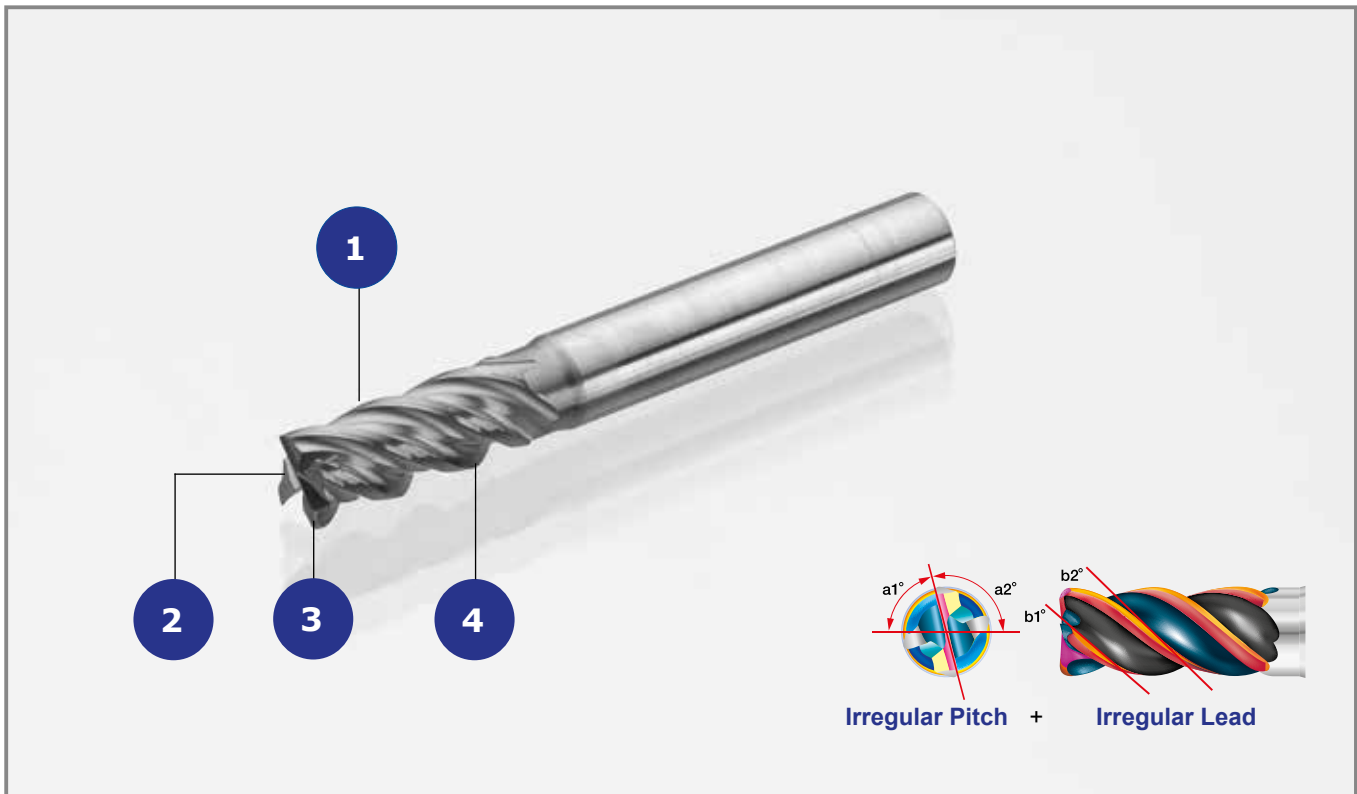
EPMP - High Efficiency Endmill

for Steel Machining

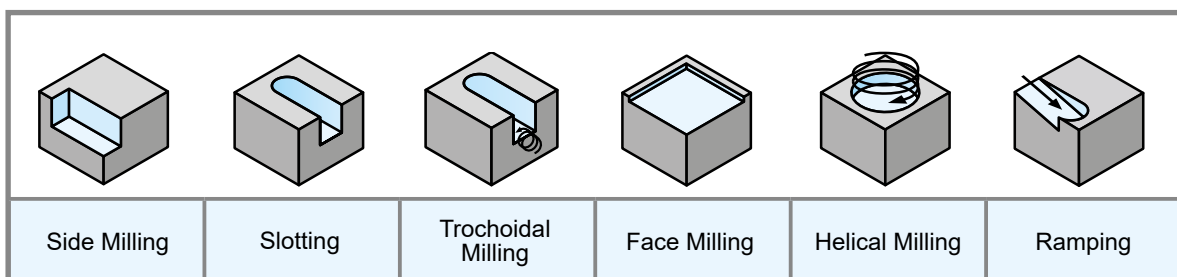


EPMP - Solid Carbide Endmill

■ Features



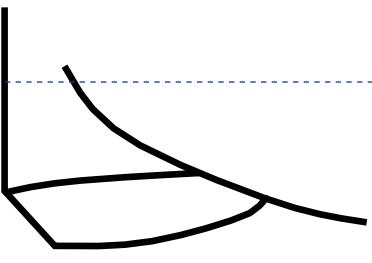
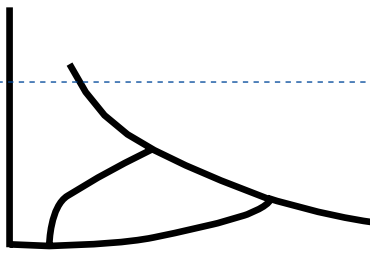
- 1** The optimised flute geometry ensures reliable chip removal.
- 2** Anti-vibration design - the irregular pitch and irregular lead of the mill prevent vibrations.
- 3** Stable cutting corner increases process reliability and productivity.
Enhanced cutting edge stability due to double relief angle.
- 4** The Power-Mill coating and a newly developed carbide substrate ensure high wear protection with long tool life.



EPMP - Solid Carbide Endmill

■ Corner Geometry

Increased fracture resistance due to enhanced cutting edge stability.

	Chamfer	Flat land type
		
	EPMP5	EPMP4

■ Endmills - Stock Situation

EPMP 4000	Cat. No.	Stock	EPMP 5000	Cat. No.	Stock
	EPMP4030U2.5CECP300	●		EPMP5060U3BCTECP300	●
	EPMP4040U2.5CECP300	●		EPMP5060U3BWCTECP300	●
	EPMP4050U2.5CECP300	●		EPMP5080U3BCTECP300	●
	EPMP4060U2.5CECP300	●		EPMP5080U3BWCTECP300	●
	EPMP4080U2.5CECP300	●		EPMP5100U3BCTECP300	●
	EPMP4100U2.5CECP300	●		EPMP5100U3BWCTECP300	●
	EPMP4120U2.5CECP300	●		EPMP5120U3BCTECP300	●
	EPMP4120U2.5WCECP300	●		EPMP5120U3BWCTECP300	●
	EPMP4160U2.5CECP300	●		EPMP5160U3BCTECP300	●
	EPMP4160U2.5WCECP300	●		EPMP5160U3BWCTECP300	●
	EPMP4200U2.5CECP300	●		EPMP5200U3BCTECP300	●
	EPMP4200U2.5WCECP300	●		EPMP5200U3BWCTECP300	●

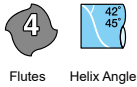
■ Identification Details

EPMP	4	100	U2.5	(W)C	ECP300
Endmill series	Flute	Diameter	U: Underneck type 2.5: Length of cutting edge, 2,5 x DC	W: Weldon C: Cutting edge, sharp	Grade
EPMP	5	100	U3	B(W)CT	ECP300
Endmill series	Flute	Diameter	U: Underneck type 3: Length of cutting edge, 3,0 x DC	B: Chip breaker W: Weldon shank CT: Corner with K-land	Grade

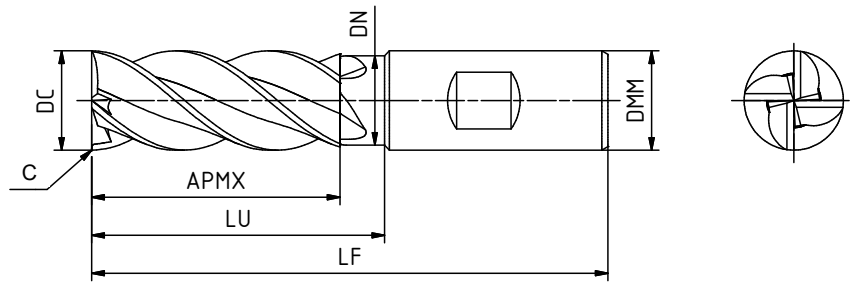
EPMP - Solid Carbide Endmill

Endmill Types

EPMP 4000



Flutes Helix Angle



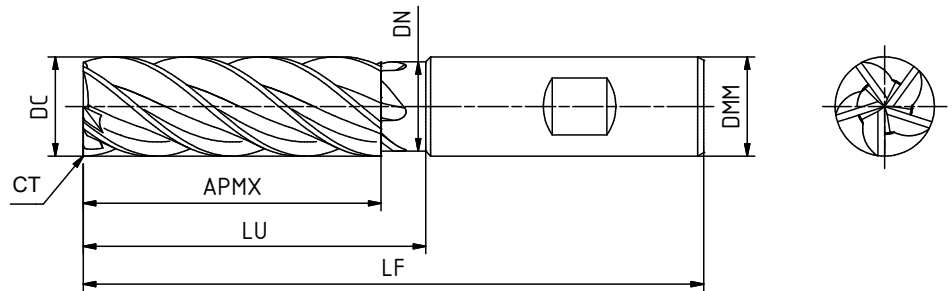
EPMP 4120U2.5CECP300 (Shank DIN6535HA)
 EPMP 4120U2.5WCECP300 (Shank DIN6535HB)
 Cutting edge diameter tolerance (0/-0,04)

Cat. No.	DC	APMX	LU	DN	LF	DMM	Flute	Weldon	Chipbreaker
EPMP4030U2.5CECP300	3	7,5	9	2,87	50	6	4		
EPMP4040U2.5CECP300	4	10	12	3,69	50	6	4		
EPMP4050U2.5CECP300	5	12,5	15	4,59	57	6	4		
EPMP4060U2.5CECP300	6	15	18	5,5	57	6	4		
EPMP4080U2.5CECP300	8	20	24	7,3	63	8	4		
EPMP4100U2.5CECP300	10	25	30	9,1	72	10	4		
EPMP4120U2.5CECP300	12	30	36	11	83	12	4		
EPMP4120U2.5WCECP300	12	30	36	11	83	12	4	x	
EPMP4160U2.5CECP300	16	40	48	14,5	92	16	4		
EPMP4160U2.5WCECP300	16	40	48	14,5	92	16	4	x	
EPMP4200U2.5CECP300	20	50	60	18	104	20	4		
EPMP4200U2.5WCECP300	20	50	60	18	104	20	4	x	

EPMP 5000



Flutes Helix Angle



EPMP5120U3BCTECP300
 (Shank: DIN6535HA
 Chamfer CT = 0,2 x 45°)
 EPMP5120U3BWCTECP300
 (Shank: DIN6535HB
 Chamfer CT = 0,2 x 45°)
 Cutting edge diameter tolerance (0/-0,04)

Cat. No.	DC	APMX	LU	DN	LF	DMM	Flute	Weldon	Chipbreaker
EPMP5060U3BCTECP300	6	18	21	5,5	60	6	5		x
EPMP5060U3BWCTECP300	6	18	21	5,5	60	6	5	x	x
EPMP5080U3BCTECP300	8	24	28	7,3	67	8	5		x
EPMP5080U3BWCTECP300	8	24	28	7,3	67	8	5	x	x
EPMP5100U3BCTECP300	10	30	35	9,1	78	10	5		x
EPMP5100U3BWCTECP300	10	30	35	9,1	78	10	5	x	x
EPMP5120U3BCTECP300	12	36	42	11	90	12	5		x
EPMP5120U3BWCTECP300	12	36	42	11	90	12	5	x	x
EPMP5160U3BCTECP300	16	48	56	14,5	110	16	5		x
EPMP5160U3BWCTECP300	16	48	56	14,5	110	16	5	x	x
EPMP5200U3BCTECP300	20	60	70	18	125	20	5		x
EPMP5200U3BWCTECP300	20	60	70	18	125	20	5	x	x

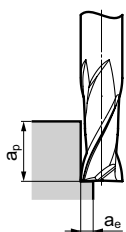
EPMP - Solid Carbide Endmill

■ Recommended Cutting Conditions

EPMP Z4 - Side Milling

Work Material	Parameter		Diameter (mm)								
			3	4	5	6	8	10	12	16	20
Carbon Steel Cast Iron (-250HB)	V_c Range	(m/min)	150 - 200 - 280								
	V_c	(m/min)	200	200	200	200	200	200	200	200	200
	n	(min ⁻¹)	21.200	15.900	12.700	10.600	8.000	6.400	5.300	4.000	3.200
	f_z	(mm/t)	0,039	0,055	0,072	0,088	0,116	0,132	0,143	0,165	0,198
	v_f	(mm/min)	3260	3500	3630	3730	3700	3380	3030	2640	2530
	a_p	(mm)	6	8	10	12	16	20	24	32	40
	a_e	(mm)	0,36	0,48	0,6	0,72	0,96	1,2	1,44	1,92	2,4
Alloy Steel (25-35HRC)	V_c Range	(m/min)	100 - 170 - 250								
	V_c	(m/min)	170	170	170	170	170	170	170	170	170
	n	(min ⁻¹)	18.000	13.500	10.800	9.000	6.800	5.400	4.500	3.400	2.700
	f_z	(mm/t)	0,035	0,050	0,064	0,079	0,104	0,119	0,129	0,149	0,178
	v_f	(mm/min)	2490	2670	2780	2850	2830	2570	2320	2020	1920
	a_p	(mm)	6	8	10	12	16	20	24	32	40
	a_e	(mm)	0,3	0,4	0,5	0,6	0,8	1	1,2	1,6	2
Prehardened Steel Alloy Steel (35-45HRC)	V_c Range	(m/min)	85 - 130 - 180								
	V_c	(m/min)	130	130	130	130	130	130	130	130	130
	n	(min ⁻¹)	13.800	10.400	8.300	6.900	5.200	4.100	3.500	2.600	2.100
	f_z	(mm/t)	0,027	0,039	0,050	0,062	0,081	0,092	0,100	0,116	0,139
	v_f	(mm/min)	1490	1600	1660	1700	1680	1520	1400	1200	1160
	a_p	(mm)	4,5	6	7,5	9	12	15	18	24	30
	a_e	(mm)	0,3	0,4	0,5	0,6	0,8	1	1,2	1,6	2
Stainless Steel	V_c Range	(m/min)	55 - 75 - 120								
	V_c	(m/min)	75	75	75	75	75	75	75	75	75
	n	(min ⁻¹)	8.000	6.000	4.800	4.000	3.000	2.400	2.000	1.500	1.200
	f_z	(mm/t)	0,027	0,031	0,040	0,049	0,065	0,074	0,080	0,092	0,111
	v_f	(mm/min)	860	740	770	790	780	710	640	550	530
	a_p	(mm)	6	8	10	12	16	20	24	32	40
	a_e	(mm)	0,27	0,36	0,45	0,54	0,72	0,9	1,08	1,44	1,8

(Min - Optimum - Max)



Side Milling

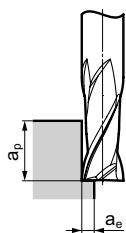
EPMP - Solid Carbide Endmill

■ Recommended Cutting Conditions

EPMP Z5 - Side Milling

Work Material	Parameter		Diameter (mm)					
			6	8	10	12	16	20
Carbon Steel Cast Iron (-250HB)	V_c Range	(m/min)	150 - 200 - 280					
	v_c	(m/min)	200	200	200	200	200	200
	n	(min ⁻¹)	10.600	8.000	6.400	5.300	4.000	3.200
	f_z	(mm/t)	0,084	0,110	0,126	0,137	0,158	0,189
	v_f	(mm/min)	4450	4410	4030	3620	3150	3020
	a_p	(mm)	12	16	20	24	32	40
	a_e	(mm)	0,72	0,96	1,2	1,44	1,92	2,4
Alloy Steel (25-35HRC)	V_c Range	(m/min)	100 - 170 - 250					
	v_c	(m/min)	170	170	170	170	170	170
	n	(min ⁻¹)	9.000	6.800	5.400	4.500	3.400	2.700
	f_z	(mm/t)	0,076	0,099	0,113	0,123	0,142	0,170
	v_f	(mm/min)	3400	3370	3060	2760	2410	2300
	a_p	(mm)	12	16	20	24	32	40
	a_e	(mm)	0,6	0,8	1	1,2	1,6	2
Prehardened Steel Alloy Steel (35-45HRC)	V_c Range	(m/min)	85 - 130 - 180					
	v_c	(m/min)	130	130	130	130	130	130
	n	(min ⁻¹)	6.900	5.200	4.100	3.500	2.600	2.100
	f_z	(mm/t)	0,059	0,077	0,088	0,096	0,110	0,132
	v_f	(mm/min)	2030	2010	1810	1670	1430	1390
	a_p	(mm)	9	12	15	18	24	30
	a_e	(mm)	0,6	0,8	1	1,2	1,6	2
Stainless Steel	V_c Range	(m/min)	55 - 75 - 120					
	v_c	(m/min)	75	75	75	75	75	75
	n	(min ⁻¹)	4.000	3.000	2.400	2.000	1.500	1.200
	f_z	(mm/t)	0,050	0,066	0,075	0,081	0,094	0,112
	v_f	(mm/min)	1000	980	900	810	700	670
	a_p	(mm)	12	16	20	24	32	40
	a_e	(mm)	0,54	0,72	0,9	1,08	1,44	1,8

(Min - **Optimum** - Max)



Side Milling

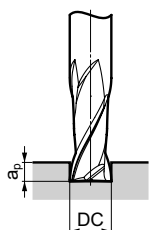
EPMP - Solid Carbide Endmill

■ Recommended Cutting Conditions

EPMP Z4 - Slot Milling

Work Material	Parameter		Diameter (mm)								
			3	4	5	6	8	10	12	16	20
Carbon Steel Cast Iron (-250HB)	V_c Range	(m/min)	70 - 100 - 130								
	v_c	(m/min)	100	100	100	100	100	100	100	100	100
	n	(min ⁻¹)	10.600	8.000	6.400	5.300	4.000	3.200	2.700	2.000	1.600
	f_z	(mm/t)	0,022	0,030	0,038	0,041	0,059	0,073	0,083	0,104	0,115
	v_f	(mm/min)	920	960	980	860	940	940	890	840	740
	a_p	(mm)	3	4	5	6	8	10	12	16	20
	a_e	(mm)	3	4	5	6	8	10	12	16	20
Alloy Steel (25-35HRC)	V_c Range	(m/min)	60 - 80 - 115								
	v_c	(m/min)	80	80	80	80	80	80	80	80	80
	n	(min ⁻¹)	8.500	6.400	5.100	4.200	3.200	2.500	2.100	1.600	1.300
	f_z	(mm/t)	0,018	0,025	0,032	0,034	0,049	0,061	0,069	0,087	0,096
	v_f	(mm/min)	610	640	650	570	630	610	580	560	500
	a_p	(mm)	3	4	5	6	8	10	12	16	20
	a_e	(mm)	3	4	5	6	8	10	12	16	20
Prehardened Steel Alloy Steel (35-45HRC)	V_c Range	(m/min)	65 - 70 - 85								
	v_c	(m/min)	70	70	70	70	70	70	70	70	70
	n	(min ⁻¹)	7.400	5.600	4.500	3.700	2.800	2.200	1.900	1.400	1.100
	f_z	(mm/t)	0,014	0,020	0,026	0,027	0,039	0,049	0,055	0,070	0,077
	v_f	(mm/min)	430	450	460	400	440	430	420	390	340
	a_p	(mm)	2,4	3,2	4	4,8	6,4	8	9,6	12,8	16
	a_e	(mm)	3	4	5	6	8	10	12	16	20
Stainless Steel	V_c Range	(m/min)	50 - 70 - 120								
	v_c	(m/min)	70	70	70	70	70	70	70	70	70
	n	(min ⁻¹)	5800	4400	3500	2900	2200	1800	1500	1100	900
	f_z	(mm/t)	0,014	0,020	0,026	0,027	0,039	0,049	0,055	0,070	0,077
	v_f	(mm/min)	230	250	260	260	260	270	240	220	220
	a_p	(mm)	3	4	5	6	8	10	12	16	20
	a_e	(mm)	3	4	5	6	8	10	12	16	20

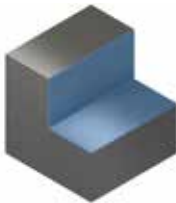
(Min - **Optimum** - Max)



Slot Milling

EPMP - Solid Carbide Endmill

Application Examples

		Competitor	Sumitomo
	Endmill	Competitor (4 teeth)	EPMP4
	Cutting Edges	4	4
	Diameter (mm)	8	6
	v_c (m/min)	110	130
	n (rpm)	4379	6900,2
	f_z (mm/t)	0,02	0,04
	v_f (mm/min)	350	1104
	a_p (mm)	10	10
	a_e (mm)	0,2	0,2
	Q (cm ³ /min)	0,7	2,2
	Machining time (min/part)	0,25	0,1
	Tool life (pcs)	300	300
Result	Efficiency increased up to 300%. No vibrations.		



EPMP (4 teeth)

Coolant		Competitor	Sumitomo
	Endmill	Competitor (3 teeth)	EPMP4060
	Cutting Edges	3	4
	Diameter (mm)	6	6
	v_c (m/min)	151	170
	n (rpm)	8000	9000
	f_z (mm/t)	0,029	0,025
	v_f (mm/min)	700	900
	a_p (mm)	8	8
	a_e (mm)	6	6
	Q (cm ³ /min)	33,6	43,2
	Machining time (min/part)	2	1,6
	Tool life (pcs)	80	130
Result	20% increase in efficiency. 60% longer tool life.		



EPMP (4 teeth)



(Germany)
SUMITOMO ELECTRIC Hartmetall GmbH
Konrad-Zuse-Straße 9, 47877 Willich

Tel. +49 2154 4992-0, Fax +49 2154 4992-161
Info@SumitomoTool.com
www.SumitomoTool.com



(UK and Ireland)
SUMITOMO ELECTRIC Hardmetal Ltd.
3 Paper Mill Drive
Redditch, B98 8QJ, UK

Tel. +44 1844 342081, Fax: +44 1844 342415
InfoUK@SumitomoTool.com
www.SumitomoTool.com



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