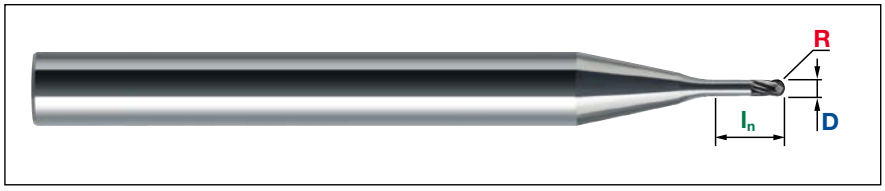
CBN-EPSB | Epoch CBN Ball End Mill | Recommended Cutting Conditions



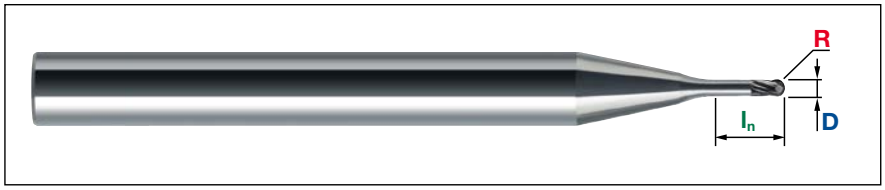
Material			Hardened steels ~55HRC · STAVAX. 1.2344. 1.2379											
Parameter			Roughing (efficiency)						Finishing (surface, tool life)					
D	R	l_n	a_p (mm)	a_e (mm)	n (min^{-1})	V_c (m/min)	f_z (mm/t)	V_f (mm/min)	a_p (mm)	a_e (mm)	n (min^{-1})	V_c (m/min)	f_z (mm/t)	V_f (mm/min)
0.2	0.1	0.5	0.006	0.018	50,000	32	0.018	1,800	0.005	0.005 ~ 0.015	58,000	37	0.0125	1,450
		1	0.005	0.015	46,000	29	0.018	1,660	0.005	0.005 ~ 0.015	53,000	33	0.0125	1,330
0.3	0.15	0.75	0.010	0.030	50,000	47	0.018	1,800	0.005	0.005 ~ 0.015	58,000	55	0.0125	1,450
		1.5	0.008	0.024	45,000	42	0.018	1,620	0.005	0.005 ~ 0.015	53,000	50	0.0125	1,330
0.4	0.2	1	0.015	0.045	46,000	58	0.024	2,210	0.005	0.005 ~ 0.015	54,000	68	0.0125	1,350
		2	0.012	0.036	41,000	52	0.024	1,970	0.005	0.005 ~ 0.015	49,000	61	0.0125	1,230
0.5	0.25	1.5	0.025	0.075	46,000	72	0.027	2,480	0.008	0.008 ~ 0.024	54,000	85	0.0200	2,160
		3	0.020	0.060	41,000	65	0.027	2,210	0.008	0.008 ~ 0.024	48,000	76	0.0200	1,920
0.6	0.3	1.5	0.030	0.090	42,000	80	0.030	2,520	0.008	0.008 ~ 0.024	48,000	91	0.0200	1,920
		3	0.025	0.075	38,000	72	0.030	2,280	0.008	0.008 ~ 0.024	44,000	82	0.0200	1,760
0.8	0.4	2.5	0.040	0.120	42,000	105	0.033	2,770	0.008	0.008 ~ 0.024	48,000	120	0.0300	2,880
		5	0.032	0.096	38,000	95	0.033	2,510	0.008	0.008 ~ 0.024	43,000	108	0.0300	2,580
1	0.5	2.5	0.050	0.150	38,200	120	0.036	2,750	0.010	0.010 ~ 0.030	44,000	139	0.0300	2,640
		5	0.040	0.120	34,400	108	0.036	2,480	0.010	0.010 ~ 0.030	40,000	125	0.0300	2,400
		10	0.010	0.030	26,700	84	0.029	1,550	0.010	0.010 ~ 0.030	31,000	97	0.0240	1,490
1.5	0.75	5	0.070	0.210	32,000	151	0.040	2,560	0.010	0.010 ~ 0.030	38,000	180	0.0400	3,040
		10	0.020	0.060	22,500	106	0.032	1,440	0.010	0.010 ~ 0.030	27,000	126	0.0320	1,730
2	1	5	0.080	0.240	28,000	176	0.052	2,910	0.010	0.010 ~ 0.030	34,000	215	0.0500	3,400
		10	0.065	0.195	25,100	158	0.052	2,610	0.010	0.010 ~ 0.030	31,000	194	0.0500	3,100
		20	0.017	0.051	19,600	123	0.042	1,650	0.010	0.010 ~ 0.030	24,000	150	0.0400	1,920

Material			Hardened steels 55~65HRC · 1.2379, 1.3343											
Parameter			Roughing (efficiency)						Finishing (surface, tool life)					
D	R	l_n	a_p (mm)	a_e (mm)	n (min^{-1})	V_c (m/min)	f_z (mm/t)	V_f (mm/min)	a_p (mm)	a_e (mm)	n (min^{-1})	V_c (m/min)	f_z (mm/t)	V_f (mm/min)
0.2	0.1	0.5	0.005	0.015	48,000	30	0.016	1,510	0.0045	0.0045 ~ 0.0135	55,000	35	0.0119	1,310
		1	0.004	0.013	44,000	28	0.016	1,390	0.0045	0.0045 ~ 0.0135	50,000	31	0.0119	1,190
0.3	0.15	0.75	0.009	0.026	47,000	45	0.016	1,480	0.0045	0.0045 ~ 0.0135	55,000	52	0.0119	1,310
		1.5	0.007	0.020	42,000	40	0.016	1,320	0.0045	0.0045 ~ 0.0135	50,000	48	0.0119	1,190
0.4	0.2	1	0.013	0.038	44,000	55	0.021	1,850	0.0045	0.0045 ~ 0.0135	51,000	65	0.0119	1,210
		2	0.010	0.031	39,000	49	0.021	1,640	0.0045	0.0045 ~ 0.0135	46,000	58	0.0119	1,090
0.5	0.25	1.5	0.021	0.064	44,000	68	0.024	2,080	0.0072	0.0072 ~ 0.0216	51,000	81	0.0190	1,940
		3	0.017	0.051	39,000	62	0.024	1,840	0.0072	0.0072 ~ 0.0216	46,000	72	0.0190	1,750
0.6	0.3	1.5	0.026	0.077	40,000	76	0.026	2,100	0.0072	0.0072 ~ 0.0216	46,000	86	0.0190	1,750
		3	0.021	0.064	36,000	68	0.026	1,890	0.0072	0.0072 ~ 0.0216	41,000	78	0.0190	1,560
0.8	0.4	2.5	0.034	0.102	40,000	100	0.029	2,310	0.0072	0.0072 ~ 0.0216	45,000	114	0.0285	2,570
		5	0.027	0.082	36,000	90	0.029	2,080	0.0072	0.0072 ~ 0.0216	41,000	103	0.0285	2,340
1	0.5	2.5	0.043	0.128	36,300	114	0.032	2,290	0.0090	0.0090 ~ 0.0270	42,000	132	0.0285	2,390
		5	0.034	0.102	32,700	103	0.032	2,060	0.0090	0.0090 ~ 0.0270	38,000	119	0.0285	2,170
		10	0.009	0.026	25,400	80	0.025	1,290	0.0090	0.0090 ~ 0.0270	29,000	92	0.0228	1,320
1.5	0.75	5	0.060	0.179	30,400	143	0.035	2,130	0.0090	0.0090 ~ 0.0270	36,000	171	0.0380	2,740
		10	0.017	0.051	21,400	101	0.028	1,200	0.0090	0.0090 ~ 0.0270	25,000	120	0.0304	1,520
2	1	5	0.068	0.204	26,600	167	0.046	2,420	0.0090	0.0090 ~ 0.0270	33,000	204	0.0475	3,140
		10	0.055	0.166	23,900	150	0.046	2,170	0.0090	0.0090 ~ 0.0270	29,000	184	0.0475	2,760
		20	0.014	0.043	18,600	117	0.037	1,370	0.0090	0.0090 ~ 0.0270	23,000	143	0.0380	1,750

PLEASE NOTE:
The values in these tables are only recommended under the following conditions:

1. The use of a machining centre and toolholder with highest precision, concentricity and rigidity
2. All components – including machine and controller – are of the latest technology

CBN-EPSB | Epoch CBN Ball End Mill | Recommended Cutting Conditions



Material			Hardened steels 65~68HRC · High speed steel											
Parameter			Roughing (efficiency)						Finishing (surface, tool life)					
D	R	l_n	a_p (mm)	a_e (mm)	n (min^{-1})	V_c (m/min)	f_z (mm/t)	V_f (mm/min)	a_p (mm)	a_e (mm)	n (min^{-1})	V_c (m/min)	f_z (mm/t)	V_f (mm/min)
0.2	0.1	0.5	0.004	0.013	45,000	28	0.014	1,220	0.004	0.004 ~ 0.012	52,000	33	0.0106	1,110
		1	0.004	0.011	42,000	26	0.014	1,130	0.004	0.004 ~ 0.012	47,000	30	0.0106	1,000
0.3	0.15	0.75	0.007	0.021	45,000	42	0.014	1,220	0.004	0.004 ~ 0.012	53,000	50	0.0106	1,130
		1.5	0.006	0.017	40,000	38	0.014	1,080	0.004	0.004 ~ 0.012	48,000	45	0.0106	1,020
0.4	0.2	1	0.011	0.032	42,000	52	0.018	1,510	0.004	0.004 ~ 0.012	49,000	61	0.0106	1,040
		2	0.008	0.025	37,000	47	0.018	1,330	0.004	0.004 ~ 0.012	44,000	55	0.0106	940
0.5	0.25	1.5	0.018	0.053	41,000	65	0.020	1,660	0.006	0.006 ~ 0.019	49,000	77	0.0170	1,670
		3	0.014	0.042	37,000	59	0.020	1,500	0.006	0.006 ~ 0.019	44,000	68	0.0170	1,500
0.6	0.3	1.5	0.021	0.063	38,000	72	0.023	1,710	0.006	0.006 ~ 0.019	43,000	82	0.0170	1,460
		3	0.018	0.053	34,000	65	0.023	1,530	0.006	0.006 ~ 0.019	39,000	74	0.0170	1,330
0.8	0.4	2.5	0.028	0.084	38,000	95	0.025	1,880	0.006	0.006 ~ 0.019	43,000	108	0.0255	2,190
		5	0.022	0.067	34,000	86	0.025	1,680	0.006	0.006 ~ 0.019	39,000	97	0.0255	1,990
1	0.5	2.5	0.035	0.105	34,000	108	0.027	1,840	0.008	0.008 ~ 0.024	40,000	125	0.0255	2,040
		5	0.028	0.084	31,000	97	0.027	1,670	0.008	0.008 ~ 0.024	36,000	113	0.0255	1,840
		10	0.007	0.021	24,000	76	0.022	1,040	0.008	0.008 ~ 0.024	28,000	87	0.0204	1,140
1.5	0.75	5	0.049	0.147	29,000	136	0.030	1,740	0.008	0.008 ~ 0.024	34,000	162	0.0340	2,310
		10	0.014	0.042	20,000	95	0.024	960	0.008	0.008 ~ 0.024	24,000	113	0.0272	1,310
2	1	5	0.056	0.168	25,000	158	0.039	1,950	0.008	0.008 ~ 0.024	31,000	194	0.0425	2,640
		10	0.046	0.137	23,000	142	0.039	1,790	0.008	0.008 ~ 0.024	28,000	175	0.0425	2,380
		20	0.012	0.036	18,000	111	0.032	1,130	0.008	0.008 ~ 0.024	21,000	135	0.0340	1,430

Material			Hardened steels 68~72HRC · High speed steel											
Parameter			Roughing (efficiency)						Finishing (surface, tool life)					
D	R	l_n	a_p (mm)	a_e (mm)	n (min^{-1})	V_c (m/min)	f_z (mm/t)	V_f (mm/min)	a_p (mm)	a_e (mm)	n (min^{-1})	V_c (m/min)	f_z (mm/t)	V_f (mm/min)
0.2	0.1	0.5	0.004	0.011	43,000	27	0.011	970	0.0035	0.0035 ~ 0.0105	49,000	31	0.0094	920
		1	0.003	0.009	39,000	25	0.011	880	0.0035	0.0035 ~ 0.0105	45,000	28	0.0094	840
0.3	0.15	0.75	0.006	0.018	42,000	40	0.011	950	0.0035	0.0035 ~ 0.0105	50,000	47	0.0094	940
		1.5	0.005	0.014	38,000	36	0.011	860	0.0035	0.0035 ~ 0.0105	45,000	43	0.0094	840
0.4	0.2	1	0.009	0.027	39,000	49	0.015	1,170	0.0035	0.0035 ~ 0.0105	46,000	58	0.0094	860
		2	0.007	0.022	35,000	44	0.015	1,050	0.0035	0.0035 ~ 0.0105	41,000	52	0.0094	770
0.5	0.25	1.5	0.015	0.045	39,000	61	0.017	1,320	0.0056	0.0056 ~ 0.0168	46,000	72	0.0150	1,380
		3	0.012	0.036	35,000	55	0.017	1,180	0.0056	0.0056 ~ 0.0168	41,000	65	0.0150	1,230
0.6	0.3	1.5	0.018	0.054	36,000	68	0.019	1,350	0.0056	0.0056 ~ 0.0168	41,000	77	0.0150	1,230
		3	0.015	0.045	32,000	61	0.019	1,200	0.0056	0.0056 ~ 0.0168	37,000	70	0.0150	1,110
0.8	0.4	2.5	0.024	0.072	36,000	89	0.021	1,490	0.0056	0.0056 ~ 0.0168	41,000	102	0.0225	1,850
		5	0.019	0.058	32,000	81	0.021	1,320	0.0056	0.0056 ~ 0.0168	37,000	92	0.0225	1,670
1	0.5	2.5	0.030	0.090	32,000	102	0.023	1,440	0.0070	0.0070 ~ 0.0210	38,000	118	0.0225	1,710
		5	0.024	0.072	29,000	92	0.023	1,310	0.0070	0.0070 ~ 0.0210	34,000	106	0.0225	1,530
		10	0.006	0.018	23,000	71	0.018	830	0.0070	0.0070 ~ 0.0210	26,000	82	0.0180	940
1.5	0.75	5	0.042	0.126	27,000	128	0.025	1,350	0.0070	0.0070 ~ 0.0210	32,000	153	0.0300	1,920
		10	0.012	0.036	19,000	90	0.020	760	0.0070	0.0070 ~ 0.0210	23,000	107	0.0240	1,100
2	1	5	0.048	0.144	24,000	150	0.033	1,560	0.0070	0.0070 ~ 0.0210	29,000	183	0.0375	2,180
		10	0.039	0.117	21,000	134	0.033	1,370	0.0070	0.0070 ~ 0.0210	26,000	165	0.0375	1,950
		20	0.010	0.031	17,000	105	0.026	890	0.0070	0.0070 ~ 0.0210	20,000	128	0.0300	1,200

PLEASE NOTE:

The values in these tables are only recommended under the following conditions:

1. The use of a machining centre and toolholder with highest precision, concentricity and rigidity
2. All components – including machine and controller – are of the latest technology