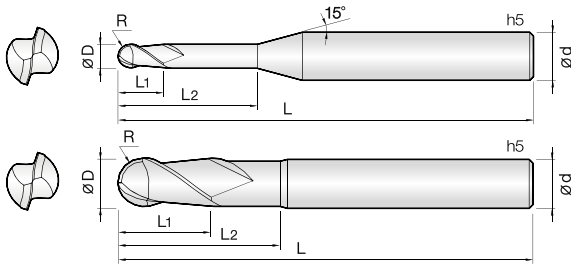


2HRB 2 Flutes High Speed Rib Ball End Mills



- Endmills for pre-hardened and hardened steel (HRC50~62)
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Very nice work surface finish.
- Outstanding performance at high speed machining by ultra fine (0.2 μm) WC grade.

2

UWC

TISIN
Coating

R
 ± 0.005
0.05 ~ 2.5R

R
 ± 0.01
3 ~ 6R

30°
Helix Angle

D Size	D Tolerance
Ø0.1	+0 ~ -0.005 mm
Ø0.2 ~ 5	+0 ~ -0.01 mm
Ø6 ~ 12	-0.005 ~ -0.015 mm

Material		Copper				Prehardened Steel / Hardened Steel				Hardened Steels				Hardened Steels			
Hardness						30 ~ 45HRC				45 ~ 55HRC				55 ~ 62HRC			
Radius	Effective Length	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
R0.05	0.3	50,000	85	0.004	0.004	45,000	70	0.004	0.004	45,000	50	0.002	0.002	45,000	40	0.002	0.002
"	0.5	50,000	75	0.004	0.004	45,000	60	0.002	0.002	45,000	30	0.002	0.002	45,000	30	0.002	0.002
R0.1	0.5	50,000	492	0.010	0.010	45,000	396	0.006	0.007	45,000	260	0.006	0.006	45,000	220	0.005	0.006
"	1	50,000	432	0.007	0.008	45,000	372	0.004	0.005	45,000	276	0.004	0.004	45,000	200	0.004	0.004
"	1.5	50,000	360	0.006	0.006	42,000	276	0.003	0.004	42,000	216	0.003	0.004	42,000	180	0.003	0.003
R0.15	1	50,000	744	0.012	0.013	45,000	552	0.010	0.010	38,000	420	0.090	0.010	38,000	348	0.007	0.009
"	3	48,000	528	0.008	0.009	40,800	360	0.006	0.007	33,600	264	0.005	0.005	33,600	216	0.004	0.005
"	5	39,600	336	0.004	0.005	28,800	216	0.003	0.003	24,000	168	0.003	0.003	21,600	120	0.002	0.002
R0.2	1	61,200	1,020	0.021	0.034	54,000	768	0.016	0.022	39,600	516	0.013	0.022	39,600	432	0.011	0.021
"	3	55,200	768	0.015	0.016	44,400	480	0.010	0.010	32,400	312	0.009	0.010	32,400	264	0.008	0.010
"	5	39,600	468	0.008	0.016	30,000	372	0.008	0.010	26,400	288	0.006	0.010	26,400	228	0.004	0.005
R0.25	1	63,600	1,560	0.026	0.047	45,600	960	0.020	0.033	33,600	636	0.014	0.032	33,600	312	0.007	0.020
"	5	52,800	1,032	0.012	0.014	34,800	552	0.008	0.008	31,200	444	0.007	0.010	31,200	216	0.006	0.009
"	10	38,400	528	0.008	0.016	28,800	456	0.007	0.010	28,800	372	0.005	0.010	27,600	216	0.005	0.009
R0.3	1	63,600	1,956	0.030	0.140	39,600	960	0.022	0.091	27,600	600	0.019	0.091	26,400	516	0.014	0.091
"	5	50,400	1,104	0.014	0.068	28,800	504	0.012	0.043	26,400	396	0.008	0.042	26,400	336	0.007	0.040
"	10	31,200	540	0.006	0.032	24,000	360	0.005	0.020	22,800	312	0.004	0.020	22,800	240	0.003	0.018
R0.4	2	61,200	2,280	0.054	0.160	34,800	816	0.045	0.100	27,600	552	0.038	0.100	26,400	456	0.030	0.100
"	6	51,600	1,452	0.035	0.100	28,800	636	0.028	0.068	21,600	420	0.020	0.068	21,600	348	0.015	0.065
"	10	31,000	630	0.022	0.080	23,400	468	0.020	0.050	17,300	408	0.015	0.050	16,800	336	0.010	0.050
R0.5	2	50,400	2,160	0.068	0.320	33,600	900	0.052	0.220	21,600	540	0.040	0.220	18,000	540	0.008	0.140
"	5	50,400	2,160	0.068	0.320	33,600	900	0.052	0.220	21,600	540	0.040	0.220	18,000	540	0.008	0.140
"	10	30,000	1,164	0.024	0.086	16,320	600	0.020	0.056	15,000	456	0.014	0.056	13,680	312	0.008	0.050
"	16	17,640	720	0.018	0.086	13,680	480	0.016	0.056	12,360	384	0.012	0.056	11,520	252	0.005	0.030
R0.75	3	31,200	2,400	0.167	0.320	21,600	1,152	0.120	0.210	12,960	672	0.100	0.210	12,000	600	0.090	0.210
"	10	26,400	1,680	0.100	0.220	14,760	780	0.080	0.170	9,720	480	0.062	0.170	9,720	456	0.050	0.160
"	18	12,120	624	0.030	0.160	12,120	504	0.022	0.110	9,600	432	0.020	0.110	9,600	408	0.012	0.110
"	30	9,840	516	0.014	0.080	9,840	456	0.012	0.050	9,480	420	0.010	0.050	9,480	396	0.010	0.050
R1	4	26,400	2,448	0.220	0.520	21,000	1,392	0.180	0.350	14,640	1,080	0.140	0.350	14,640	900	0.120	0.350
"	10	26,400	2,256	0.180	0.350	21,000	1,224	0.140	0.230	14,640	972	0.110	0.230	14,640	792	0.090	0.230
"	20	15,960	1,164	0.090	0.165	15,960	600	0.060	0.110	12,720	600	0.055	0.110	12,720	492	0.035	0.110
"	30	10,200	636	0.025	0.070	10,200	480	0.020	0.050	10,200	480	0.015	0.050	10,200	384	0.015	0.045
R1.5	6	16,800	3,240	0.250	0.500	14,400	1,824	0.200	0.340	9,840	1,320	0.160	0.320	6,480	732	0.160	0.320
"	10	16,800	3,240	0.250	0.500	14,400	1,824	0.200	0.340	9,840	1,320	0.160	0.320	6,480	732	0.160	0.300
"	20	14,040	2,244	0.200	0.450	12,360	1,476	0.145	0.320	8,520	1,128	0.120	0.310	5,760	660	0.080	0.300
"	30	10,920	1,620	0.120	0.220	9,360	816	0.100	0.150	8,520	816	0.080	0.150	5,760	384	0.070	0.300
R2	8	12,600	3,012	0.350	0.850	10,440	1,752	0.290	0.550	7,200	1,332	0.220	0.500	7,200	1,056	0.150	0.500
"	20	12,600	3,012	0.350	0.850	10,440	1,752	0.290	0.550	7,200	1,332	0.220	0.500	7,200	1,056	0.150	0.500
"	30	11,160	2,040	0.250	0.500	8,880	1,380	0.200	0.320	6,600	1,056	0.150	0.300	6,600	816	0.130	0.300
"	40	8,160	1,464	0.150	0.500	7,200	1,056	0.132	0.320	6,600	1,056	0.100	0.300	6,600	816	0.090	0.300
R2.5	15	10,800	2,880	0.380	0.800	8,400	1,500	0.300	0.700	6,000	1,140	0.220	0.700	6,000	900	0.200	0.650
"	25	10,800	2,400	0.380	0.800	8,400	1,380	0.300	0.550	6,000	1,080	0.220	0.550	6,000	816	0.200	0.500
"	40	9,360	1,320	0.250	0.800	6,720	840	0.200	0.550	4,920	660	0.150	0.550	4,920	504	0.130	0.500
R3	15	8,400	2,676	0.500	1.000	8,160	1,764	0.420	0.800	5,760	1,320	0.300	0.800	4,440	864	0.300	0.800
"	30	8,400	1,812	0.380	0.900	7,200	1,680	0.300	0.650	5,040	1,176	0.220	0.650	4,440	792	0.220	0.600
R4	25	8,160	1,764	0.410	1.000	7,200	1,176	0.350	0.750	4,920	912	0.180	0.600	4,560	732	0.200	0.630
"	30	7,680	1,680	0.380	1.000	6,960	1,128	0.300	0.750	4,800	864	0.160	0.600	4,320	720	0.200	0.600
R5	30	6,240	1,344	0.560	1.200	5,880	1,128	0.370	0.900	4,800	852	0.200	0.670	4,200	708	0.200	0.650
"	35	6,000	1,296	0.500	1.000	5,400	1,080	0.350	0.850	4,560	816	0.150	0.600	3,840	648	0.200	0.600
R6	30	5,160	1,104	0.650	1.400	4,800	984	0.420	0.900	4,320	828	0.250	0.600	3,600	600	0.250	0.600
"	40	4,920	1,080	0.600	1.200	4,560	960	0.400	0.850	4,080	780	0.200	0.600	3,600	600	0.200	0.600

Depth of Cut

- Ap : Axial Depth
- Ae : Radial Depth
- D : Outside Diameter
- n : Speed
- Vf : Feed

- If the effective length is long, reduce the RPM and feed in the same proportion.
- Use this table for your reference. Adjust the parameters depending on your machining geometry, machining purpose and CNC.
- If the table over the maximum RPM and feed of your machine, adjust RPM and feed in the same proportion.
- Use a machine with low vibration and good rigidity (ϕ 1 or less, the vibration tolerance management should be within 5 μ m).
- Air blow or oil mist is recommended for smooth chip emission, and dry milling is recommended for copper material.