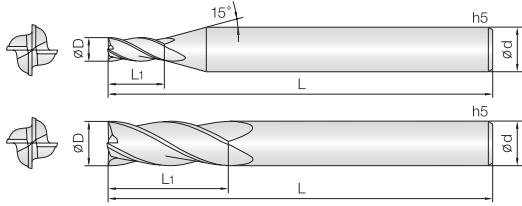


4HCEE

4 Flutes Standard Length End Mills for Heavy Cuts



- Endmills for various work materials (~HRC52), pre-hardened steel, carbon steel, mold steel.
- Good wear resistance by high quality Si-based PVD coating.
- Suitable shape is designed for tooling in wide areas.
- Maximize the manufacturing cost saving with low price of products.
- Minimize fracturing by high TRS fine(0.5 μm) WC grade.

4	WC	BLUE Coating	DI +0 -0.01	DI -0.01 -0.025	DI -0.015 -0.03	30° Helix Angle	Shield Edge	CUTTING DATA 322P
			1~ 5	6~ 12	16			

D Size	D Tolerance
ø1 ~ 5	+0 ~ -0.01 mm
ø6 ~ 12	-0.005 ~ -0.025 mm
ø16	-0.015 ~ -0.03 mm

Slotting												
Material	Alloy Steels				Prehardened Steels				Hardened Steels			
Hardness	30 ~ 40HRC				40 ~ 50HRC				50 ~ 52HRC			
Outside Diameter	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
∅0.2	50,000	230	0.02	0.15	45,000	207	0.02	0.15	40,000	176	0.02	0.15
∅0.5	50,000	660	0.05	0.45	45,000	594	0.05	0.45	40,000	505	0.05	0.45
∅0.7	50,000	810	0.07	0.65	45,000	729	0.07	0.65	37,500	620	0.07	0.65
∅0.9	49,000	1,180	0.09	0.80	39,000	1062	0.09	0.80	27,800	903	0.09	0.80
∅1	48,000	1,350	0.10	1.00	38,000	1215	0.10	1.00	25,500	1033	0.10	1.00
∅1.5	42,000	1,440	0.15	1.50	30,000	1296	0.15	1.50	21,500	1102	0.15	1.50
∅2	33,300	1,530	0.20	2.00	26,000	1377	0.20	2.00	17,500	1170	0.20	2.00
∅2.5	26,500	1,530	0.25	2.50	22,500	1377	0.25	2.50	15,800	1170	0.25	2.50
∅3	21,800	1,800	0.30	3.00	17,300	1620	0.30	3.00	11,500	1377	0.30	3.00
∅4	16,700	2,160	0.40	4.00	13,200	1944	0.40	4.00	8,800	1652	0.40	4.00
∅5	15,700	2,610	0.50	5.00	12,500	2349	0.50	5.00	8,300	1997	0.50	5.00
∅6	13,100	2,700	0.60	6.00	10,350	2430	0.60	6.00	6,900	2066	0.60	6.00
∅8	9,880	2,375	0.80	8.00	7,800	2137	0.80	8.00	5,200	1817	0.80	8.00
∅10	7,800	2,050	1.00	10.00	6,150	1845	1.00	10.00	4,100	1568	1.00	10.00
∅12	6,650	1,710	1.20	12.00	5,250	1539	1.20	12.00	3,500	1308	1.20	12.00
∅16	5,540	1,670	1.60	16.00	4,340	1503	1.60	16.00	2,600	1278	1.60	16.00

Depth of Cut

Side Cutting												
Material	Alloy Steels				Prehardened Steels				Hardened Steels			
Hardness	30 ~ 40HRC				40 ~ 50HRC				50 ~ 52HRC			
Outside Diameter	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
∅1	48,000	1,260	1.00	0.03	38,000	980	1.00	0.03	25,500	610	1.00	0.02
∅2	33,300	1,440	2.00	0.06	26,000	1160	2.00	0.06	17,500	720	2.00	0.04
∅3	21,800	1,440	3.00	0.09	17,300	1160	3.00	0.09	11,500	720	3.00	0.06
∅4	16,700	1,500	4.00	0.12	13,200	1200	4.00	0.12	8,800	750	4.00	0.08
∅5	15,700	1,740	5.00	0.15	12,500	1380	5.00	0.15	8,300	850	5.00	0.10
∅6	13,100	1,620	6.00	0.18	10,350	1320	6.00	0.18	6,900	830	6.00	0.12
∅8	9,880	1,584	8.00	0.24	7,800	1230	8.00	0.24	5,200	760	8.00	0.16
∅10	7,800	1,440	10.00	0.30	6,150	1160	10.00	0.30	4,100	700	10.00	0.20
∅12	6,650	1,440	12.00	0.36	5,250	1160	12.00	0.36	3,500	700	12.00	0.24
∅16	5,540	1,200	16.00	0.39	4,340	1055	16.00	0.39	2,600	630	16.00	0.32

Depth of Cut

- The edge of the flute precisely grinded. If you want to measure the tool, and to avoid damaging on the flutes, use non-contact measuring method.
- When milling workpiece HRC over 52 hardened steel , reduce 20% of the RPM and feed compared to the same diameter.
- The parameters on the table is based on 2flutes. For using 4flutes, use the same RPM and raise up the feed up to 30% in stable milling condition.
- 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, or found red heat on the material, adjust RPM and feed in the same proportion.
- Use a machine with low vibration and good rigidity (∅1 or less, the vibration tolerance management should be within 5 μm).
- Air blow or mist coolants are recommended and note for chip emission, heat, or ignition.