

CBN



Being the best through innovation



CBN (Cubic Boron Nitride)

- CBN 铣刀，能够加工HRc70以下的高硬度钢，镜面加工

Cubic Boron Nitride, Machining High Hardened Steels up to HRc70,
Mirror Finish

SELECTION GUIDE

项目 ITEM	型号 MODEL	规格 DESCRIPTION	尺寸 SIZE		页 PAGE
			最小 MIN	最大 MAX	
ESB94		CBN, 2刃 球头 CBN, 2 FLUTE BALL NOSE	R0.2	R1.5	566
ESD02		CBN, 2刃 圆鼻铣刀 CBN, 2 FLUTE CORNER RADIUS	D0.5	D2.0	567
		推荐的切削条件 RECOMMENDED CUTTING CONDITIONS			568

CBN END MILLS

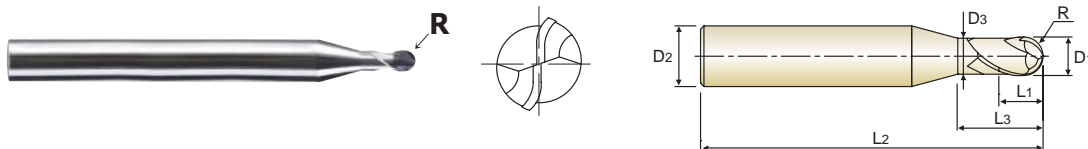
◎ : 优(Excellent) ○ : 良(Good)

碳钢	合金钢	预硬钢	硬化钢		高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	铬镍铁合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
				◎	◎							
				◎	◎							

CBN, 2刃 球头
CBN, 2 FLUTE BALL NOSE

- ▶ 可持续得到稳定的高精度加工
- ▶ 由于减少频繁地更换刀具的次数而节省了调试时间和成本
- ▶ 提高性能的可重复性
- ▶ 特殊的参数设计在高速加工时提高了刀具的刚性
- ▶ 紧凑的半径公差 $\pm 0.005\text{mm}$ 有着更高的精度和更长的寿命

- ▶ Achieve stable machining and higher accuracy for the duration.
- ▶ Save the setting time and cost due to reducing of frequent tool change.
- ▶ Improve repeatability in performance.
- ▶ Special designed geometry improves tool rigidity at High Speed Cutting.
- ▶ Higher accuracy and longer tool life due to tight radius tolerance ($\pm 0.005\text{mm}$) and raw materials.



单位(Unit) : mm

型号 EDP No.	球头半径 Radius of Ball Nose R (± 0.005)	刃部直径 Mill Diameter D1	柄部直径 Shank Diameter D2	刃长 Length of Cut L1	颈长 Length Below Shank L3	全长 Overall Length L2	颈径 Neck Diameter D3
ESB94004012	RO.2	0.4	4	0.3	1.2	50	0.37
ESB94005015	RO.25	0.5	4	0.4	1.5	50	0.46
ESB94006015	RO.3	0.6	4	0.5	1.5	50	0.56
ESB94008020	RO.4	0.8	4	0.6	2	50	0.76
ESB94010025	RO.5	1.0	4	0.6	2.5	50	0.95
ESB94010040	RO.5	1.0	4	0.6	4	50	0.95
ESB94010060	RO.5	1.0	4	0.6	6	50	0.95
ESB94012030	RO.6	1.2	4	0.8	3	50	1.15
ESB94015030	RO.75	1.5	4	0.95	3	50	1.45
ESB94015040	RO.75	1.5	4	0.95	4	50	1.45
ESB94015060	RO.75	1.5	4	0.95	6	50	1.45
ESB94020050	R1.0	2.0	4	1.2	5	50	1.95
ESB94020060	R1.0	2.0	4	1.2	6	50	1.95
ESB94030060	R1.5	3.0	4	1.8	6	50	2.85

半径公差 Radius Tolerance(mm)	柄部公差 Shank Dia. Tolerance
± 0.005	h5

◎ : 优(Excellent) ○ : 良(Good)

碳钢 Carbon Steels	合金钢 Alloy Steels	预硬钢 Prehardened Steels	硬化钢 Hardened Steels		高硬钢 High Hardened Steels	铜 Copper	石墨 Graphite	铸铁 Cast Iron	铝 Aluminum	不锈钢 Stainless Steels	钛 Titanium	镍铁合金 Inconel
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
				◎	◎							



**CBN
END MILLS**

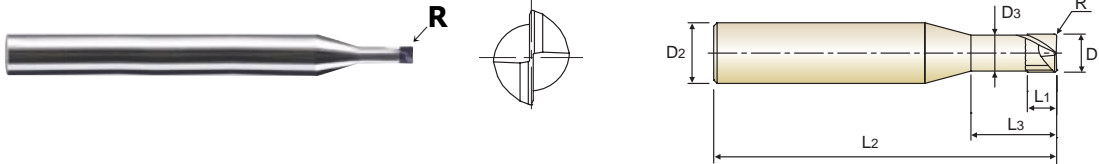
ESD02 SERIES

PLAIN SHANK

CBN, 2刃 圆鼻铣刀 CBN, 2 FLUTE CORNER RADIUS

- ▶ 可持续得到稳定的高精度加工
- ▶ 由于减少频繁地更换刀具的次数而节省了调试时间和成本
- ▶ 提高性能的可重复性
- ▶ 特殊的参数设计在高速加工时提高了刀具的刚性
- ▶ 紧凑的半径公差 $\pm 0.005\text{mm}$ 有着更高的精度和更长的寿命

- ▶ Achieve stable machining and higher accuracy for the duration.
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单位(Unit) : mm

型号 EDP No.	圆弧半径 Corner Radius R (± 0.005)	刃部直径 Mill Diameter D1	柄部直径 Shank Diameter D2	刃长 Length of Cut L1	颈长 Length Below Shank L3	全长 Overall Length L2	颈径 Neck Diameter D3
ESD02005052	RO.05	0.5	4	0.3	2	50	0.46
ESD02005053	RO.05	0.5	4	0.3	3	50	0.46
ESD02010053	RO.05	1.0	4	0.7	3	50	0.95
ESD02010055	RO.05	1.0	4	0.7	5	50	0.95
ESD02010103	RO.1	1.0	4	0.7	3	50	0.95
ESD02010105	RO.1	1.0	4	0.7	5	50	0.95
ESD02015105	RO.1	1.5	4	1.0	5	50	1.45
ESD02015108	RO.1	1.5	4	1.0	8	50	1.45
ESD02015205	RO.2	1.5	4	1.0	5	50	1.45
ESD02015208	RO.2	1.5	4	1.0	8	50	1.45
ESD02020106	RO.1	2.0	4	1.2	6	50	1.95
ESD02020100	RO.1	2.0	4	1.2	10	50	1.95
ESD02020206	RO.2	2.0	4	1.2	6	50	1.95
ESD02020200	RO.2	2.0	4	1.2	10	50	1.95

圆弧角公差 Corner Radius Tolerance(mm)	柄部公差 Shank Dia. Tolerance
± 0.005	h5

碳钢 Carbon Steels	合金钢 Alloy Steels	预硬钢 Prehardened Steels	硬化钢 Hardened Steels		高硬钢 High Hardened Steels	铜 Copper	石墨 Graphite	铸铁 Cast Iron	铝 Aluminum	不锈钢 Stainless Steels	钛 Titanium	镍钴铁合金 Inconel
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
				◎	◎							


CBN, 2刃 球头
CBN, 2 FLUTE BALL NOSE
ESB94 SERIES

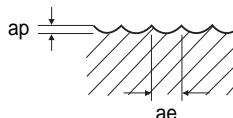
材质	硬化钢		高硬钢	
MATERIAL	HARDENED STEELS		HIGH HARDENED STEELS	
HARDNESS	HRc50 ~ HRc60		HRc60 ~ HRc70	
DIAMETER	RPM	FEED	RPM	FEED
R0.2 × 0.4	50,000	1,200	50,000	1,200
R0.25 × 0.5	50,000	1,500	50,000	1,500
R0.3 × 0.6	50,000	2,000	50,000	2,000
R0.4 × 0.8	50,000	2,000	50,000	2,000
R0.5 × 1.0	50,000	3,000	50,000	3,000
R0.6 × 1.2	50,000	3,000	50,000	3,000
R0.75 × 1.5	50,000	3,000	50,000	3,000
R1.0 × 2.0	40,000	3,200	32,000	2,500
R1.5 × 3.0	26,500	2,100	21,500	1,700

ap : R0.2 ~ R0.4 =0.005mm

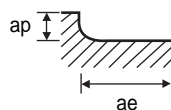
R0.5 ~ R1.5 =0.01mm

ae : R0.2 ~ R0.4 =0.005mm

R0.5 ~ R1.5 =0.01mm

RPM = rev./min. (转速/分钟)
FEED = mm/min. (进给量)
CBN, 2刃 圆鼻铣刀
CBN, 2 FLUTE CORNER RADIUS
ESD02 SERIES

材质	硬化钢				高硬钢			
MATERIAL	HARDENED STEELS				HIGH HARDENED STEELS			
HARDNESS	HRc50 ~ HRc60				HRc60 ~ HRc70			
DIAMETER	RPM	FEED	DEPTH OF CUT		RPM	FEED	DEPTH OF CUT	
			ae[mm]	ap[mm]			ae[mm]	ap[mm]
0.5	50,000	700	0.10	0.01	50,000	550	0.06	0.005
1.0	43,000	1,000	0.20	0.01	30,000	700	0.10	0.10
1.5	30,000	1,000	0.40	0.02	19,000	700	0.20	0.20
2.0	22,000	900	0.60	0.03	14,000	800	0.30	0.30

RPM = rev./min. (转速/分钟)
FEED = mm/min. (进给量)