




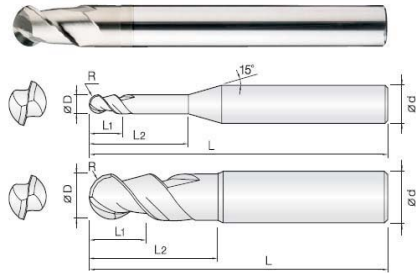
## 500 Series FOR COPPER



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**2 Flutes 45° Helix Rib Ball End Mills for Copper**



Endmills for copper, copper alloy, nonferrous and non-metallic materials.

High speed, feed applicable by 45° degree helix and deep chip pocket design

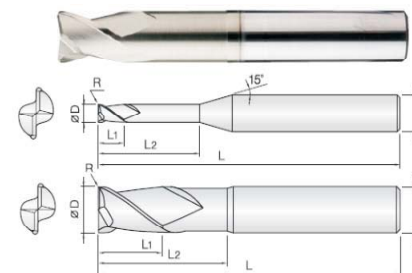
Outstanding performance at high speed machining by ultra fine (0.2um) WC grade.

**Cutting Data**  
P135

Size	D Tolerance
D ≤ Φ6	+0~ -0.01mm
D > Φ6	+0~ -0.015mm

Type	Part Number	Dimensions in mm					d
		R X D	L1	L2	L		
2	510010030H04Z2-TIN	0.5R X 1	1.5	3	50	4	
	510010050H04Z2-TIN	0.5R X 1	1.5	5	50	4	
	510010080H04Z2-TIN	0.5R X 1	1.5	8	50	4	
	510010100H04Z2-TIN	0.5R X 1	1.5	10	50	4	
	510010120H04Z2-TIN	0.5R X 1	1.5	12	50	4	
	510010160H04Z2-TIN	0.5R X 1	1.5	16	50	4	
	510010200H04Z2-TIN	0.5R X 1	1.5	20	50	4	
	510015050H04Z2-TIN	0.75R X 1.5	2	5	50	4	
	510015080H04Z2-TIN	0.75R X 1.5	2	8	50	4	
	510015100H04Z2-TIN	0.75R X 1.5	2	10	50	4	
510015120H04Z2-TIN	0.75R X 1.5	2	12	50	4		
510015160H04Z2-TIN	0.75R X 1.5	2	16	50	4		
510015200H04Z2-TIN	0.75R X 1.5	2	20	50	4		
UWC	510020050H06Z2-TIN	1R X 2	3	5	60	6	
	510020080H06Z2-TIN	1R X 2	3	8	60	6	
	510020100H06Z2-TIN	1R X 2	3	10	60	6	
	510020120H06Z2-TIN	1R X 2	3	12	60	6	
	510020160H06Z2-TIN	1R X 2	3	16	60	6	
	510020200H06Z2-TIN	1R X 2	3	20	60	6	
	510020250H06Z2-TIN	1R X 2	3	25	60	6	
	510025060H06Z2-TIN	1.25R X 2.5	4	6	60	6	
	510025100H06Z2-TIN	1.25R X 2.5	4	10	60	6	
	510025120H06Z2-TIN	1.25R X 2.5	4	12	60	6	
510025160H06Z2-TIN	1.25R X 2.5	4	16	60	6		
510025200H06Z2-TIN	1.25R X 2.5	4	20	60	6		
TISIN Coating	510030080H06Z2-TIN	1.5R X 3	4.5	8	70	6	
	510030120H06Z2-TIN	1.5R X 3	4.5	12	70	6	
	510030160H06Z2-TIN	1.5R X 3	4.5	16	70	6	
	510030200H06Z2-TIN	1.5R X 3	4.5	20	70	6	
	510030250H06Z2-TIN	1.5R X 3	4.5	25	70	6	
	510030300H06Z2-TIN	1.5R X 3	4.5	30	70	6	
	510030400H06Z2-TIN	1.5R X 3	4.5	40	80	6	
	510040100H06Z2-TIN	2R X 4	6	10	70	6	
	510040160H06Z2-TIN	2R X 4	6	16	70	6	
	510040200H06Z2-TIN	2R X 4	6	20	70	6	
510040250H06Z2-TIN	2R X 4	6	25	70	6		
510040300H06Z2-TIN	2R X 4	6	30	70	6		
510040400H06Z2-TIN	2R X 4	6	40	80	6		
510050160H06Z2-TIN	2.5R X 5	8	16	80	6		
510050200H06Z2-TIN	2.5R X 5	8	20	80	6		
510050250H06Z2-TIN	2.5R X 5	8	25	80	6		
510060150H06Z2-TIN	3R X 6	9	15	90	6		
510060300H06Z2-TIN	3R X 6	9	30	90	6		
510060400H06Z2-TIN	3R X 6	9	40	90	6		
510080200H08Z2-TIN	4R X 8	12	20	100	8		
510100250H10Z2-TIN	5R X 10	15	25	100	10		
510120300H12Z2-TIN	6R X 12	18	30	110	12		
510160600H16Z2-TIN	8R X 16	30	60	160	16		

**2 Flutes Rib Corner Radius End Mills for Copper**



Endmills for copper, copper alloy, nonferrous and non-metallic materials.

Smooth chip outflow by deep chip pocket

Outstanding performance at high speed machining by ultra fine (0.2um) WC grade.

**Cutting Data**  
P134

Size	D Tolerance
D ≤ Φ6	+0~ -0.01mm
D > Φ6	+0~ -0.015mm

Type	Part Number	Dimensions in mm					d
		D X R	L1	L2	L		
2	570010001040Z2-TIN	1 X R0.1	1.5	4	50	4	
	570010001060Z2-TIN	1 X R0.1	1.5	6	50	4	
	570010001080Z2-TIN	1 X R0.1	1.5	8	50	4	
	570010001100Z2-TIN	1 X R0.1	1.5	10	50	4	
	570010001120Z2-TIN	1 X R0.1	1.5	12	50	4	
	570010001160Z2-TIN	1 X R0.1	1.5	16	50	4	
	570010001200Z2-TIN	1 X R0.1	1.5	20	50	4	
	570015001060Z2-TIN	1.5 X R0.1	2	6	50	4	
	570015001100Z2-TIN	1.5 X R0.1	2	10	50	4	
	570015001120Z2-TIN	1.5 X R0.1	2	12	50	4	
570015001160Z2-TIN	1.5 X R0.1	2	16	50	4		
570015001200Z2-TIN	1.5 X R0.1	2	20	50	4		
UWC	570015001250Z2-TIN	1.5 X R0.1	2	25	60	4	
	570015002060Z2-TIN	1.5 X R0.2	2	6	50	4	
	570015002100Z2-TIN	1.5 X R0.2	2	10	50	4	
	570015002120Z2-TIN	1.5 X R0.2	2	12	50	4	
	570015002160Z2-TIN	1.5 X R0.2	2	16	50	4	
	570015002200Z2-TIN	1.5 X R0.2	2	20	50	4	
	570015002250Z2-TIN	1.5 X R0.2	2	25	60	4	
	570020002060Z2-TIN	2 X R0.2	3	6	50	4	
	570020002100Z2-TIN	2 X R0.2	3	10	50	4	
	570020002120Z2-TIN	2 X R0.2	3	12	50	4	
570020002160Z2-TIN	2 X R0.2	3	16	50	4		
570020002200Z2-TIN	2 X R0.2	3	20	50	4		
570020002250Z2-TIN	2 X R0.2	3	25	60	4		
TISIN Coating	570020005060Z2-TIN	2 X R0.5	3	6	50	4	
	570020005100Z2-TIN	2 X R0.5	3	10	50	4	
	570020005120Z2-TIN	2 X R0.5	3	12	50	4	
	570020005140Z2-TIN	2 X R0.5	3	14	50	4	
	570020005160Z2-TIN	2 X R0.5	3	16	50	4	
	570020005200Z2-TIN	2 X R0.5	3	20	50	4	
	570020005250Z2-TIN	2 X R0.5	3	25	60	4	
	570025002060Z2-TIN	2.5 X R0.2	3.5	6	50	4	
	570025002100Z2-TIN	2.5 X R0.2	3.5	10	50	4	
	570025002120Z2-TIN	2.5 X R0.2	3.5	12	50	4	
570025002160Z2-TIN	2.5 X R0.2	3.5	16	50	4		
570025002200Z2-TIN	2.5 X R0.2	3.5	20	50	4		
570025002250Z2-TIN	2.5 X R0.2	3.5	25	60	4		
570025005060Z2-TIN	2.5 X R0.5	3.5	6	50	4		
570025005100Z2-TIN	2.5 X R0.5	3.5	10	50	4		
570025005120Z2-TIN	2.5 X R0.5	3.5	12	50	4		
570025005160Z2-TIN	2.5 X R0.5	3.5	16	50	4		
570025005200Z2-TIN	2.5 X R0.5	3.5	20	50	4		
570025005250Z2-TIN	2.5 X R0.5	3.5	25	60	4		
570030002100Z2-TIN	3 X R0.2	4	10	55	6		
570030002120Z2-TIN	3 X R0.2	4	12	55	6		
570030002160Z2-TIN	3 X R0.2	4	16	55	6		
570030002200Z2-TIN	3 X R0.2	4	20	55	6		

Type	Part Number	Dimensions in mm				
		D X R	L1	L2	L	d
	570030002250Z2-TIN	3 X R0.2	4	25	65	6
	570030002300Z2-TIN	3 X R0.2	4	30	70	6
	570030002350Z2-TIN	3 X R0.2	4	35	75	6
	570030002400Z2-TIN	3 X R0.2	4	40	80	6
	570030005100Z2-TIN	3 X R0.5	4	10	55	6
	570030005120Z2-TIN	3 X R0.5	4	12	55	6
	570030005160Z2-TIN	3 X R0.5	4	16	55	6
	570030005200Z2-TIN	3 X R0.5	4	20	55	6
	570030005250Z2-TIN	3 X R0.5	4	25	65	6
	570030005300Z2-TIN	3 X R0.5	4	30	70	6
	570030005350Z2-TIN	3 X R0.5	4	35	75	6
	570030005400Z2-TIN	3 X R0.5	4	40	80	6
	570040002120Z2-TIN	4 X R0.2	5	12	55	6
	570040002160Z2-TIN	4 X R0.2	5	16	55	6
	570040002200Z2-TIN	4 X R0.2	5	20	55	6
	570040002300Z2-TIN	4 X R0.2	5	30	70	6
	570040002400Z2-TIN	4 X R0.2	5	40	80	6
	570040005120Z2-TIN	4 X R0.5	5	12	55	6
	570040005160Z2-TIN	4 X R0.5	5	16	55	6
	570040005200Z2-TIN	4 X R0.5	5	20	55	6
	570040005300Z2-TIN	4 X R0.5	5	30	70	6
	570040005400Z2-TIN	4 X R0.5	5	40	80	6
	570060002200Z2-TIN	6 X R0.2	7	20	60	6
	570060005200Z2-TIN	6 X R0.5	7	20	60	6
	570060010200Z2-TIN	6 X R1	7	20	60	6
	570060015200Z2-TIN	6 X R1.5	7	20	60	6
	570080005250Z2-TIN	8 X R0.5	9	25	65	8
	570080010250Z2-TIN	8 X R1	9	25	65	8
	570080015250Z2-TIN	8 X R1.5	9	25	65	8
	570100005320Z2-TIN	10 X R0.5	11	32	70	10
	570100010320Z2-TIN	10 X R1	11	32	70	10
	570100015320Z2-TIN	10 X R1.5	11	32	70	10
	570120005380Z2-TIN	12 X R0.5	12	38	80	12
	570120010380Z2-TIN	12 X R1	12	38	80	12
	570120015380Z2-TIN	12 X R1.5	12	38	80	12



**UWC**

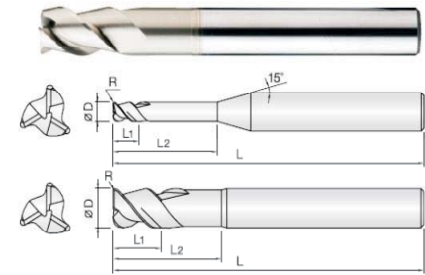
**TISIN Coating**

**R ±0.005**  
Φ1 - Φ6

**R ±0.01**  
Φ8 - Φ12

**30° Helix Angle**

**3 Flutes 45° Helix Rib Corner Radius End Mills for Copper**



Endmills for copper, copper alloy, nonferrous and non-metallic materials.  
High speed, feed applicable by 3 flute 45° degree helix and deep chip pocket design.  
Outstanding performance at high speed machining by ultra fine (0.2um) WC grade.

**Cutting Data**  
P134

Size	D Tolerance
D ≤ Φ6	+0~ -0.01mm
D > Φ6	+0~ -0.015mm

Type	Part Number	Dimensions in mm				
		D X R	L1	L2	L	d
	571010001030Z3-TIN	1 X R0.1	1.5	3	45	4
	571010001060Z3-TIN	1 X R0.1	1.5	6	45	4
	571010001100Z3-TIN	1 X R0.1	1.5	10	45	4
	571010002030Z3-TIN	1 X R0.2	1.5	3	45	4
	571010002060Z3-TIN	1 X R0.2	1.5	6	45	4
	571010002100Z3-TIN	1 X R0.2	1.5	10	45	4
	571015001050Z3-TIN	1.5 X R0.1	2	5	45	4
	571015001080Z3-TIN	1.5 X R0.1	2	8	45	4
	571015001120Z3-TIN	1.5 X R0.1	2	12	45	4
	571015002050Z3-TIN	1.5 X R0.2	2	5	45	4
	571015002080Z3-TIN	1.5 X R0.2	2	8	45	4
	571015002120Z3-TIN	1.5 X R0.2	2	12	45	4
	571020001060Z3-TIN	2 X R0.1	3	6	45	4
	571020001100Z3-TIN	2 X R0.1	3	10	45	4
	571020001140Z3-TIN	2 X R0.1	3	14	45	4
	571020002060Z3-TIN	2 X R0.2	3	6	45	4
	571020002100Z3-TIN	2 X R0.2	3	10	45	4
	571020002140Z3-TIN	2 X R0.2	3	14	45	4
	571025001080Z3-TIN	2.5 X R0.1	3.5	8	45	4
	571025001120Z3-TIN	2.5 X R0.1	3.5	12	45	4
	571025001160Z3-TIN	2.5 X R0.1	3.5	16	45	4
	571025002080Z3-TIN	2.5 X R0.2	3.5	8	45	4
	571025002120Z3-TIN	2.5 X R0.2	3.5	12	45	4
	571025002160Z3-TIN	2.5 X R0.2	3.5	16	45	4
	571025005080Z3-TIN	2.5 X R0.5	3.5	8	45	4
	571025005120Z3-TIN	2.5 X R0.5	3.5	12	45	4
	571025005160Z3-TIN	2.5 X R0.5	3.5	16	45	4
	571030002100Z3-TIN	3 X R0.2	4	10	50	4
	571030002160Z3-TIN	3 X R0.2	4	16	50	4
	571030002200Z3-TIN	3 X R0.2	4	20	50	4
	571030003100Z3-TIN	3 X R0.3	4	10	50	4
	571030003160Z3-TIN	3 X R0.3	4	16	50	4
	571030003200Z3-TIN	3 X R0.3	4	20	50	4
	571030005100Z3-TIN	3 X R0.5	4	10	50	4
	571030005160Z3-TIN	3 X R0.5	4	16	50	4
	571030005200Z3-TIN	3 X R0.5	4	20	50	4
	571040002120Z3-TIN	4 X R0.2	6	12	50	4
	571040002160Z3-TIN	4 X R0.2	6	16	50	4
	571040002200Z3-TIN	4 X R0.2	6	20	50	4
	571040003120Z3-TIN	4 X R0.3	6	12	50	4
	571040003160Z3-TIN	4 X R0.3	6	16	50	4
	571040003200Z3-TIN	4 X R0.3	6	20	50	4
	571040005120Z3-TIN	4 X R0.5	6	12	50	4
	571040005160Z3-TIN	4 X R0.5	6	16	50	4
	571040005200Z3-TIN	4 X R0.5	6	20	50	4
	571060003200Z3-TIN	6 X R0.3	9	20	55	6
	571060003300Z3-TIN	6 X R0.3	9	30	70	6
	571060005200Z3-TIN	6 X R0.5	9	20	55	6



**UWC**

**TISIN Coating**

**R ±0.005**  
Φ1 - Φ6

**R ±0.01**  
Φ8 - Φ12

**45° Helix Angle**



510

• RPM : rev./min • Feed : mm/min

Material	Aluminum Alloys		Copper Alloys	
Radius	RPM	FEED	RPM	FEED
R0.5	43,200	1,300	43,200	900
R0.75	31,500	1,200	31,500	1,000
R1	21,600	1,000	21,600	1,100
R1.5	14,400	840	14,400	1,100
R2	11,000	840	10,800	1,100
R2.5	8,700	840	8,700	1,100
R3	7,200	840	7,200	1,100
R4	5,400	810	5,400	1,100
R5	4,300	810	4,300	1,000
R6	3,600	810	3,600	950
R8	2,700	810	2,700	900

Depth of Cut	Aluminum Alloys		Copper Alloys	
	 <p>0.1 x R (~45H Rc) ~0.08 x R (~55H Rc)</p>	 <p>~0.15 x R R &lt; 0.1 ~0.2 x R 0.1 &lt; R &lt; 0.5 ~0.3 x R R &gt; 0.5</p> <p>~0.16 x R R ≤ 0.3 (~45 H Rc) ~0.25 x R R ≤ 3 (~45 H Rc) ~0.17 x R R ≥ 4 (~45 H Rc) ~0.05 x R (~55 H Rc)</p>		