

## ULET ■ Square Long Flute Type End Mills - 4 flutes

### Ultra Fine Micro Grain Carbide

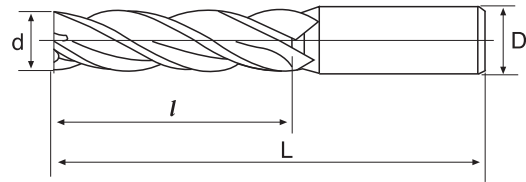
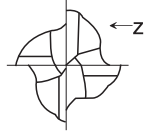
WC = 87 Co = 12 HRA = 92.1 Rupture = 3800N/mm<sup>2</sup> Grain Size = 0.4μm

#### Application

Iron, Carbon steel, Cast Iron, Alloy Steel, Tool Steel, Heat treatment Steel, Welding Steel

#### Main Character

Ultra fine micro grain carbide that has high toughness, coating ALTIN (TiAlN) and wear-resisting, non-general titanium aluminium is specialized in milling on M/C high hardness at a high speed and can carry on rough machining get to detailed process directly for heat treatment mould to reduce change times, improve machine flexible rate and shorten producing time.



MODE	Diameter d	Flute Length l	Full Length L	Shank Diameter D	Packing Quantity	Price
ULET0104-π HSC	1	5	50	4	6	
ULET0154-π HSC	1.5	6	50	4	6	
ULET0204-π HSC	2	9	50	4	6	
ULET0254-π HSC	2.5	10	50	4	6	
ULET0304-π HSC	3	12	50	6	6	
ULET0354-π HSC	3.5	14	50	6	6	
ULET0404-π HSC	4	16	60	6	4	
ULET0454-π HSC	4.5	18	60	6	4	
ULET0504-π HSC	5	25	75	6	2	
ULET0604-π HSC	6	25	75	6	2	
ULET0704-π HSC	7	30	75	8	2	
ULET0804-π HSC	8	35	100	8	2	
ULET1004-π HSC	10	40	100	10	2	
ULET1204-π HSC	12	45	100	12	2	
ULET1214-π HSC	12	60	150	12	1	
ULET1404-π HSC	14	45	100	14	1	
ULET1604-π HSC	16	65	150	16	1	
ULET2004-π HSC	20	75	150	20	1	
ULET2504-π HSC	25	80	150	25	1	

**Attention: In order to get better cutting surface and lengthen the life-time of the end mill, please use high accuracy, high rigidity and dynamic equilibrium of holder.**

1. Before using the end mill, please examine the end mill to lean towards and put, when the precision of the leaning towards of end mill exceeds 0.01mm, please cut after correcting.
2. It is better that end mill stretches out shorter from chuck, when the end mill stretches out longer, please adjust the rotational speed, feeding speed or cutting amount.
3. Unusual vibrations or sound happen when cutting, please adjust and lower the rotational speed of the main shaft one by one, feeding speed and cutting amount until improving the situation, or change the high-quality end mill.
4. It is the best way to cool steel material by spraying or air in order to make TiAlN efficiently; we commend to adopt non-water cutting liquid to cool the stainless steel, titanium alloy or heat-resisting alloy liquid.
5. Cutting will be influenced by work piece, machine and software; the above-mentioned data are only for reference, please improve feeding speed by 30%~50% up after cutting situation steadily.

### ULET 4F Recommended Milling conditions

Working material hardness	HRC30°		HRC50°		HRC60°	
	Rotational speed	Feeding speed	Rotational speed	Feeding speed	Rotational speed	Feeding speed
	RPM	mm/min.	RPM	mm/min.	RPM	mm/min.
Shank Diameter						
φ 1.0	8280	369	6405	276	4838	233
φ 1.5	7776	461	5940	365	4608	278
φ 2.0	6820	430	5898	369	4147	307
φ 2.5	6552	480	5796	403	4032	307
φ 3.0	5530	528	5148	461	3594	307
φ 3.5	5184	586	4932	499	3370	336
φ 4.0	5004	653	4572	557	3226	336
φ 4.5	4795	672	4382	576	3240	346
φ 5.0	4608	672	4212	576	3103	346
φ 5.5	4464	720	4248	624	2952	365
φ 6.0	4464	720	4248	624	2808	365
φ 6.5	4320	768	4104	682	2736	394
φ 7.0	4248	816	3600	730	2664	403
φ 7.5	4248	816	3312	730	2592	403
φ 8.0	3240	912	2074	768	1332	451
φ 8.5	2952	979	1764	864	1260	480
φ 10.0	2088	1344	1080	720	792	365
φ 10.5	2016	1344	972	653	720	336
φ 11.0	1944	1248	900	480	684	288
φ 11.5	1872	1248	792	432	612	240
φ 12.0	1764	960	734	403	569	202
φ 12.5	1512	864	684	365	490	192
φ 13.0	1296	672	626	336	446	173
φ 14.0	1210	624	533	307	410	163
φ 15.0	1080	476	504	307	374	163
φ 16.0	1080	576	482	288	353	163
φ 17.0	936	576	454	278	324	163
φ 18.0	857	528	418	259	310	154
φ 19.0	756	528	353	240	284	144
φ 20.0	662	528	317	202	223	115
φ 25.0	562	384	274	158	202	115