
ZM02
PIRANHA
ZUTO D8*C0.16*Z1*D8*6Z1*4F
ZUTO
HITECH METAL

	Rough Mill	Semi Mill	Finish Mill	Stainless Mill
Benefits	It is suitable for high speed and high feed violent processing of general steel parts, stainless steel, titanium alloy, superalloy and kovar alloy.	*TiSiNi* is an good choice for increased wear resistance and edge strength in Cast iron, high temp alloys, and hardened steels up to 60HRc. Also an excellent choice for increased wear resistance in a wide variety of Steel	prevents tool breakage - even under very unstable conditions TiAlCrN coating provides resist wear protection at all cutting speeds Corner protection chamfer provides more strong and edge strength	Base material with the hardest carbide & Smoothest Coating for cutting cover any kind of Stainless Steel that 2-3 times of competitor tool life.
For Materials	TITANIUM AND SUPERALLOY WORKPEICE	CAST IRON, STEEL , CARBON STEEL	High Harden Steel , Difficult to Cut SKD61,SKD11,STKM	SUS304,SUS4125,SUS316, SUS202 ,STAVAX
Coating Appearance	Bright Grey 	Bronze 	Deep Gray 	Gray & Black 
Max. Temp	1,100° C	1,000° C	1,200° C	1,100° C
Hardness	4487 HV	4,300 HV	3600 HV	4100 HV
Coefficient Friction	0.45	0.30	0.30	0.25
Coating Thickness	0.45	1-3µm	1-5µm	0.4-4µm
Ingredient	AlCrSi	TiSiN	TiAlCrSi	AlCrN

Unequal Helix & Space Design

Is *MultiX* coating the right option for you, and your next project? Let us answer that question for you in our "In the Loupe" blog post: *The Advantageous Qualities of Helical Solutions' MultiX Coating*." There, we bring you through the many benefits of this unique coating option, but also tell you when N*plus* may not be your best option.

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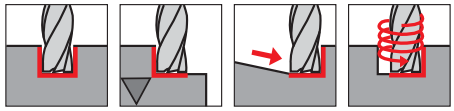
SCAN TO READ

ROUGH ENDMILL

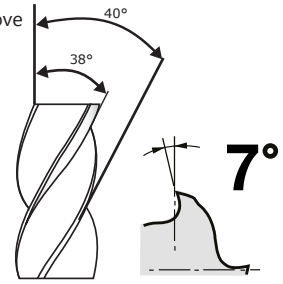


New Product

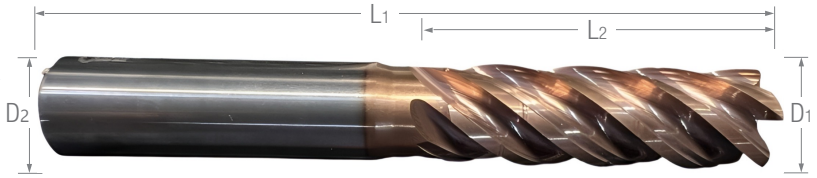
4 FLUTE - Ramp Rough

Chipbreaker Rougher - Variable Pitch

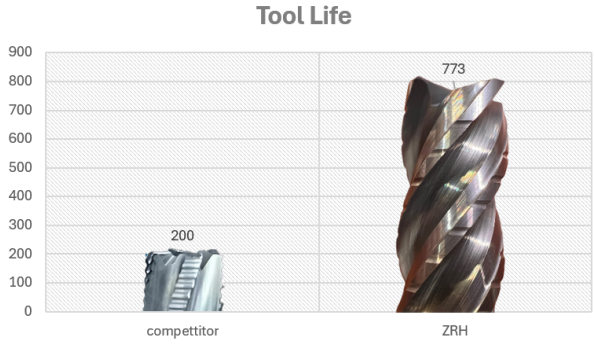
- Offers outstanding performance and high temperature resistance in a wide range of ferrous materials, including low and medium alloy steels, tool steels, and cast iron
- Sharp front corner & special wave design
  small spindle load and chip breakage even process viscous material
- 4 flute variable pitch and offset chipbreaker geometry for optimal chip evacuation, reduced harmonics, and reduced tool pressure
- End cutting geometry (non-center cutting)
- h6 shank tolerance for high precision tool holders
- Special wave spacing design
  enhance anti collapse and blade resistance
- Circular arc chip design breaking groove
- Large uneven design to suppress tool vibration



Special Hard Material
Excellent wear resistance



Tool Description	Diameter D_1	Length of Cut L_2	Overall Length L_1	Flutes F	Shank D_2	ZCode	Stock
ZRH615504F	6	15	50	4	6	1615504	TH
ZRH820604F	8	20	60	4	8	1820604	TH
ZRH8301004F	8	30	100	4	8	18301004	TH
ZRH1025754F	10	25	75	4	10	11025754	TH
ZRH1025754F	10	30	75	4	10	11030754	TH
ZRH10401004F	10	40	100	4	10	110401004	TH
ZRH1230754F	12	30	75	4	12	11230754	TH
ZRH12451004F	12	45	100	4	12	112451004	TH
ZRH14401004F	14	40	100	4	14	114401004	OVS
ZRH1632804F	16	32	80	4	16	11632804	OVS
ZRH16451004F	16	45	100	4	16	116451004	OVS
ZRH20451004F	20	45	100	4	20	120451004	OVS

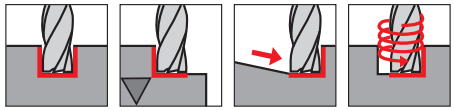


RECOMMENDED CUTTING CONDITIONS

ISO	Hardness	vc	fz (mm/z) / Ø 3	6	8	10	12	16	20
			ap = 1 x D				ae = 1 x D		
P	≤ 850 N/mm²	135	0.009	0.018	0.024	0.032	0.038	0.051	0.064
	≥ 850 N/mm²	100	0.008	0.017	0.022	0.030	0.036	0.048	0.060
M	≤ 750 N/mm²	90	0.008	0.017	0.022	0.030	0.036	0.048	0.060
	≥ 750 N/mm²	55	0.007	0.013	0.018	0.025	0.030	0.040	0.050
S	Ni-based	25	0.006	0.012	0.016	0.022	0.026	0.035	0.044
	Ti-based	50	0.007	0.013	0.018	0.025	0.030	0.040	0.050
K	≤ 240 HB	120	0.009	0.018	0.024	0.032	0.038	0.051	0.064
	≥ 240 HB	105	0.008	0.017	0.022	0.030	0.036	0.048	0.060

ISO	Hardness	vc	fz (mm/z) / Ø 3	6	8	10	12	16	20
			ap = 1.5 x D				ae max = 0.75 x D		
P	≤ 850 N/mm²	160	0.010	0.021	0.028	0.037	0.044	0.059	0.074
	≥ 850 N/mm²	120	0.010	0.019	0.026	0.035	0.041	0.055	0.069
M	≤ 750 N/mm²	110	0.010	0.019	0.026	0.035	0.041	0.055	0.069
	≥ 750 N/mm²	70	0.008	0.016	0.021	0.030	0.036	0.048	0.060
S	Ni-based	40	0.007	0.014	0.019	0.026	0.032	0.042	0.053
	Ti-based	70	0.008	0.016	0.021	0.030	0.036	0.048	0.060
K	≤ 240 HB	140	0.010	0.021	0.028	0.037	0.044	0.059	0.074
	≥ 240 HB	130	0.010	0.019	0.026	0.035	0.041	0.055	0.069

SHARP ENDMILL

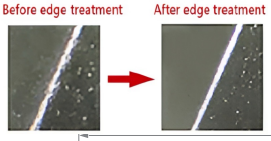


New Product

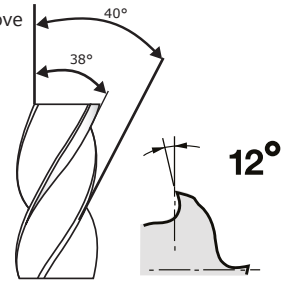
4 FLUTE - Anti Resonant

Ueqaual Flute Space & Helix

- The multi-layer coating design is highly wear-resistant, according to the latest research.
- Smooth edge Treatment reduces friction between the cutter and iron chips.



- End cutting geometry (non-center cutting)
- h6 shank tolerance for high precision tool holders
- Special wave spacing design
  enhance anti collapse and blade resistance
- Circular arc chip design breaking groove
- Large uneven design to suppress tool vibration



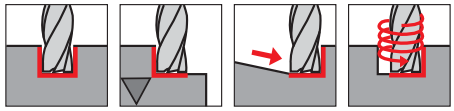
Top Class Carbide well-known brand with competitive price

Tool Description	Diameter D_1	Length of Cut L_2	Overall Length L_1	Flutes F	Shank D_2	ZCode	Stock
ZSM615504F	6	15	50	4	6	1615504	TH
ZSM820604F	8	20	60	4	8	1820604	TH
ZSM8301004F	8	30	100	4	8	18301004	TH
ZSM1025754F	10	25	75	4	10	11025754	TH
ZSM1025754F	10	30	75	4	10	11030754	TH
ZSM10401004F	10	40	100	4	10	110401004	TH
ZSM1230754F	12	30	75	4	12	11230754	TH
ZSM12451004F	12	45	100	4	12	112451004	TH
ZSM14401004F	14	40	100	4	14	114401004	OVS
ZSM1632804F	16	32	92	4	16	11632804	OVS
ZSM16451004F	16	45	100	4	16	116451004	OVS
ZSM20451004F	20	45	100	4	20	120451004	OVS

RECOMMENDED CUTTING CONDITIONS

ISO	Hardness	vc	fz (mm/z) / Ø 3	6	8	10	12	16	20	vc	fz (mm/z) / Ø 3	6	8	10	12	16	20
			ap = 1 x D				ae = 1 x D				ap = 1.5 x D				ae max = 0.75 x D		
P	≤ 850 N/mm²	135	0.009	0.018	0.024	0.032	0.038	0.051	0.064	160	0.010	0.021	0.028	0.037	0.044	0.059	0.074
	≥ 850 N/mm²	100	0.008	0.017	0.022	0.030	0.036	0.048	0.060	120	0.010	0.019	0.026	0.035	0.041	0.055	0.069
M	≤ 750 N/mm²	90	0.008	0.017	0.022	0.030	0.036	0.048	0.060	110	0.010	0.019	0.026	0.035	0.041	0.055	0.069
	≥ 750 N/mm²	55	0.007	0.013	0.018	0.025	0.030	0.040	0.050	70	0.008	0.016	0.021	0.030	0.036	0.048	0.060
S	Ni-based	25	0.006	0.012	0.016	0.022	0.026	0.035	0.044	40	0.007	0.014	0.019	0.026	0.032	0.042	0.053
	Ti-based	50	0.007	0.013	0.018	0.025	0.030	0.040	0.050	70	0.008	0.016	0.021	0.030	0.036	0.048	0.060
K	≤ 240 HB	120	0.009	0.018	0.024	0.032	0.038	0.051	0.064	140	0.010	0.021	0.028	0.037	0.044	0.059	0.074
	≥ 240 HB	105	0.008	0.017	0.022	0.030	0.036	0.048	0.060	130	0.010	0.019	0.026	0.035	0.041	0.055	0.069

SHARP ENDMILL

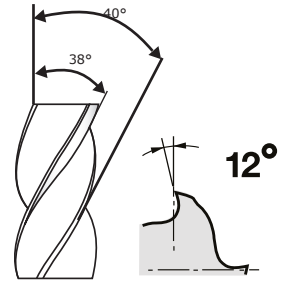


New Product

4 FLUTE - Anti Resonant

Ueqaual Flute Space & Helix

- *O*ffers outstanding performance and high temperature resistance in a wide range of ferrous materials, including low and medium alloy steels, tool steels, and cast iron
- Engineered with eccentric relief for maximum edge strength in both roughing and finishing applications
- Variable pitch geometry results in higher quality parts by decreasing chatter and harmonics
- Reduced neck provides maximum strength in long reach and deep pocketing applications
- h6 shank tolerance for high precision tool holders
- A*plus* coating offers added lubricity and high temperature resistance for faster speeds and feeds and improved tool life
- Solid carbide
- CNC ground in the USA



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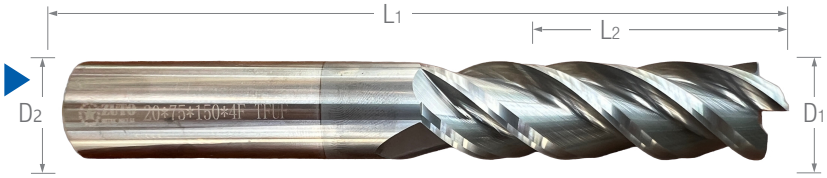

Tool Description	Diameter D1	Length of Cut L2	Overall Length L1	Flutes F	Shank D2	ZCode	Stock
ZFN615504F	6	15	50	4	6	1615504	TH
ZFN820604F	8	20	60	4	8	1820604	TH
ZFN8301004F	8	30	100	4	8	18301004	TH
ZFN1025754F	10	25	75	4	10	11025754	TH
ZFN1025754F	10	30	75	4	10	11030754	TH
ZFN10401004F	10	40	100	4	10	110401004	TH
ZFN1230754F	12	30	75	4	12	11230754	TH
ZFN12451004F	12	45	100	4	12	112451004	TH
ZFN14401004F	14	40	100	4	14	114401004	OVS
ZFN1632804F	16	32	80	4	16	11632804	OVS
ZFN16451004F	16	65	150	4	16	116451004	OVS
ZFN20451004F	20	80	150	4	20	120451004	OVS

RECOMMENDED CUTTING CONDITIONS

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			ap = 1 x D					ae = 1 x D			ap = 1.5 x D					ae max = 0.75 x D	
P	≤ 850 N/mm²	135	0.009	0.018	0.024	0.032	0.038	0.051	0.064	160	0.010	0.021	0.028	0.037	0.044	0.059	0.074
	≥ 850 N/mm²	100	0.008	0.017	0.022	0.030	0.036	0.048	0.060	120	0.010	0.019	0.026	0.035	0.041	0.055	0.069
M	≤ 750 N/mm²	90	0.008	0.017	0.022	0.030	0.036	0.048	0.060	110	0.010	0.019	0.026	0.035	0.041	0.055	0.069
	≥ 750 N/mm²	55	0.007	0.013	0.018	0.025	0.030	0.040	0.050	70	0.008	0.016	0.021	0.030	0.036	0.048	0.060
S	Ni-based	25	0.006	0.012	0.016	0.022	0.026	0.035	0.044	40	0.007	0.014	0.019	0.026	0.032	0.042	0.053
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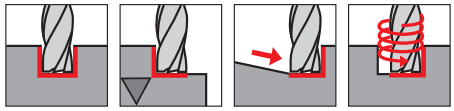

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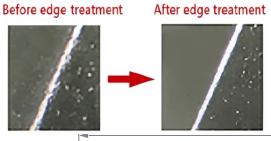

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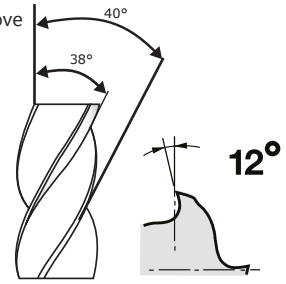

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