



Z-Carb-HTA™ End Mills

Engineered Geometry for High Temperature Alloys



Based on the original **Z-CARB**, the new **Z-CARB-HTA** (High Temperature Alloy) features geometric enhancements that make it uniquely suited for difficult-to-machine materials.

Design Benefits

The **Z-CARB-HTA** end mill maximizes stock removal and improves productivity in most milling operations. Chatter is the most common problem associated with aggressive milling. The SGS **Z-CARB-HTA** design features reduce chatter, increase tool life and optimize performance. **Z-CARB-HTA** tools are coated with SGS Ti-NAMITE-A® coating that resists heat generated in aggressive cutting operations. **Z-CARB-HTA** combines the patented anti-chatter design of the original **Z-CARB** end mill with specific geometry enhancements for exceptional performance in high temperature alloys.

Chatter Reduction Design

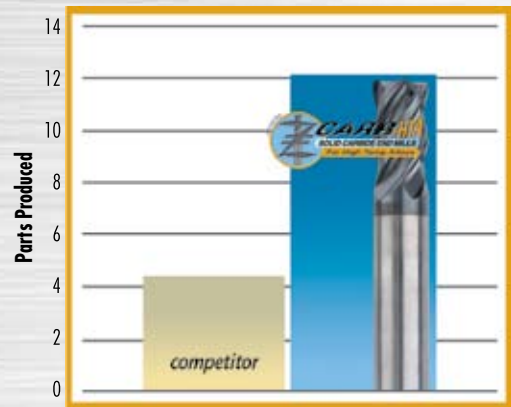
The unique patented design of the SGS **Z-CARB-HTA** decreases chatter, which improves workpiece finish. Less tuning (manually adjusting speed and feed rates) increases operator confidence and productivity. Increases in axial depth of cut to 275% have been realized without chatter. SGS **Z-CARB-HTA** can achieve a 100% increase in radial width of cut over standard geometry end mills.

Features and Benefits

- Maximum rigidity provides additional resistance against chipping and breakage and allows higher material removal rates
- Reduced cutting forces provide superior dimensional control and workpiece finishes, lower heat generation and improved wear resistance
- Certified Premium Micro-Grain Carbide
- Ti-Namite-A® (AlTiN) Coating

Performance Comparison

Inconel 718 32 Rc - Slotting • 1/2" Diameter • 610 rpm - 4 ipm



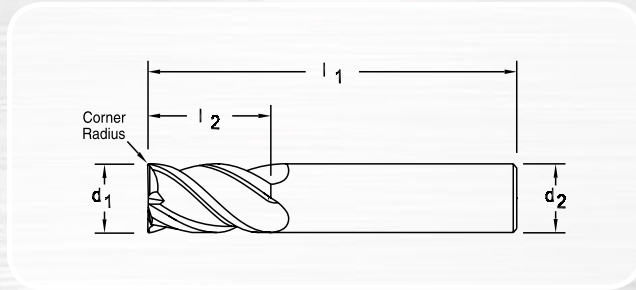
The 4-flute end mill of Competitor A broke after 4.5 parts. The Z-Carb-HTA produced 12 parts without breaking.

Z-Carb-HTA makes quick work of:

- Inconel
- Hastelloy
- A-286
- IN-738
- Udimet 500
- Waspaloy
- Rene
- Stellite
- MAR-M200
- FSX-414



Fractional

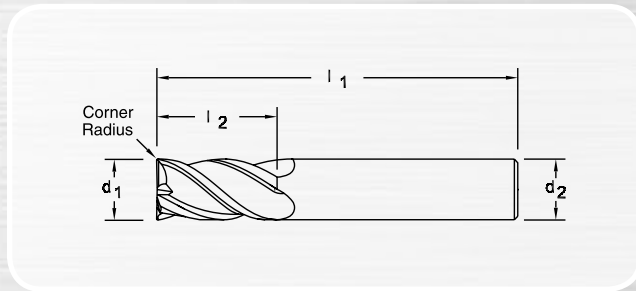


FRACTIONAL TOLERANCES	
Cutting Diameter d1	Shank Diameter d2
1/8 - 1/4 = +.0000/-0.0012	1/8 - 3/8 = -.0001/-0.0003
>1/4 - 3/8 = +.0000/-0.0016	>3/8 - 1 = -.0001/-0.0004
>3/8 - 1 = +.0000/-0.002	

Z-CARB HTA™ SERIES ZH1CR 4 FLUTE - SINGLE END - CORNER RADIUS

Cutting Diameter d1	Length of Cut l2	Overall Length l1	Shank Diameter d2	Corner Radius	Ti-NAMITE-A (AlTiN) EDP No.	Ti-NAMITE-A (AlTiN) EDP No. w/Flat
1/4	1/2	2-1/2	1/4	.015 - .020	36570	
5/16	13/16	2-1/2	5/16	.015 - .020	36571	
3/8	7/8	2-1/2	3/8	.015 - .020	36572	36555
7/16	1	2-3/4	7/16	.015 - .020	36573	36556
1/2	1	3	1/2	.025 - .030	36574	36557
9/16	1-1/8	3-1/2	9/16	.025 - .030	36575	36558
5/8	1-1/4	3-1/2	5/8	.035 - .040	36576	36559
3/4	1-1/2	4	3/4	.035 - .040	36577	36560
1	1-1/2	4	1	.035 - .040	36578	36561

Metric



METRIC TOLERANCES	
Cutting Diameter d1	Shank Diameter d2
3 - 6 = +0 / -0,030	6 - 10 = -0,0025 / -0,0075
6 = +0 / -0,030	6 - 10 = -0,0025 / -0,0075
> 6 - 10 = +0 / -0,040	> 10 - 20 = -0,0025 / -0,010
> 10 - 20 = +0 / -0,050	

CORNER RADIUS TOLERANCES	
+.000/-0.002	

Z-CARB HTA™ SERIES ZH1MCR 4 FLUTE - SINGLE END - CORNER RADIUS - SPECIFIC

Cutting Diameter d1 mm	Length of Cut l2 mm	Overall Length l1 mm	Shank Diameter d2 mm	Corner Radius mm	Ti-NAMITE-A (AlTiN) EDP No.	Ti-NAMITE-A (AlTiN) EDP No. w/Flat
6	13	57	6	0.5	46450	
6	13	57	6	1.0	46451	
6	13	57	6	1.5	46452	
8	19	63	8	0.5	46453	
8	19	63	8	1.0	46454	
8	19	63	8	1.5	46455	
10	22	72	10	0.5	46456	
10	22	72	10	1.0	46457	
10	22	72	10	1.5	46458	
10	22	72	10	2.0	46459	
12	26	83	12	0.5	46460	46471
12	26	83	12	1.0	46461	46472
12	26	83	12	1.5	46462	46473
12	26	83	12	2.0	46463	46474
12	26	83	12	3.0	46464	46475
16	32	92	16	1.5	46465	46476
16	32	92	16	2.0	46466	46477
16	32	92	16	3.0	46467	46478
20	38	104	20	3.0	46468	46479
20	38	104	20	4.0	46469	46480
20	38	104	20	5.0	46470	46481