



ADVANCED TOOL INC
END MILL SOLUTIONS





BEST PRICE FOR PERFORMANCE END MILLS

Why we are different:

- We strive for quality produced, over quantity produced
- During final inspection; we reject what many competitors pass as "industry acceptable"
- Consistent results guaranteed. Made in the USA
- We run our machines at a pace that produces the best finishes and the most accurate geometry
- Continuous in-process inspection

Try us, you'll notice the difference.

High Performance Miniature

• SQUARE END / 2 FLUTE	2
• BALL END / 2 FLUTE	2
• BLUEPRINT END MILLS	3

High Performance Finishing

• 3 FLUTE FOR ALUMINUM	4
• 5 FLUTE VARIABLE DESIGN FOR TITANIUM & EXOTIC ALLOYS	4
• 6 FLUTE 40 DEGREE HELIX SQUARE END	4

High Performance Roughing

• GENERAL PURPOSE: STEELS & STAINLESS STEELS.....	5
• HIGH TEMP ALLOYS: TITANIUM & EXOTIC ALLOYS	5
• LIGHT ALLOYS: ALUMINUM & NON-FERROUS MATERIALS.....	5

Standard Length

• SQUARE END / 2 FLUTE	6
• SQUARE END / 3 FLUTE	6
• SQUARE END / 4 FLUTE	6
• BALL END / 2 FLUTE	7
• BALL END / 3 FLUTE	7
• BALL END / 4 FLUTE	7
• CORNER RADIUS / 2 FLUTE	8
• CORNER RADIUS / 4 FLUTE	9

Extra Length

• SQUARE END / 2 FLUTE	10
• SQUARE END / 4 FLUTE	10
• BALL END / 2 FLUTE	11
• BALL END / 4 FLUTE	11

Stub Length

• SQUARE END / 2 / 4 FLUTE	12
• BALL END / 2 / 4 FLUTE	12

Miniature / Square & Ball End

HIGH PERFORMANCE / 2 FLUTE / SOLID CARBIDE



2 Flute Square



2 Flute Ball

				2 FLUTE SQUARE		2 FLUTE BALL	
Flute	Flute	Shank	Overall	Uncoated	ALTiN Coated	Uncoated	ALTiN Coated
Dia.	Lgth.	Dia.	Lgth.	EDP#	EDP#	EDP#	EDP#
0.015	0.045	1/8	1-1/2	2AES2-0150	2AES2-0150-Z5	2AEB2-0150	2AEB2-0150-Z5
0.020	0.060	1/8	1-1/2	2AES2-0200	2AES2-0200-Z5	2AEB2-0200	2AEB2-0200-Z5
0.025	0.075	1/8	1-1/2	2AES2-0250	2AES2-0250-Z5	2AEB2-0250	2AEB2-0250-Z5
0.030	0.090	1/8	1-1/2	2AES2-0300	2AES2-0300-Z5	2AEB2-0300	2AEB2-0300-Z5
0.035	0.105	1/8	1-1/2	2AES2-0350	2AES2-0350-Z5	2AEB2-0350	2AEB2-0350-Z5
0.040	0.120	1/8	1-1/2	2AES2-0400	2AES2-0400-Z5	2AEB2-0400	2AEB2-0400-Z5
0.045	0.135	1/8	1-1/2	2AES2-0450	2AES2-0450-Z5	2AEB2-0450	2AEB2-0450-Z5
0.050	0.150	1/8	1-1/2	2AES2-0500	2AES2-0500-Z5	2AEB2-0500	2AEB2-0500-Z5
0.055	0.165	1/8	1-1/2	2AES2-0550	2AES2-0550-Z5	2AEB2-0550	2AEB2-0550-Z5
0.060	0.180	1/8	1-1/2	2AES2-0600	2AES2-0600-Z5	2AEB2-0600	2AEB2-0600-Z5
0.065	0.195	1/8	1-1/2	2AES2-0650	2AES2-0650-Z5	2AEB2-0650	2AEB2-0650-Z5
0.070	0.210	1/8	1-1/2	2AES2-0700	2AES2-0700-Z5	2AEB2-0700	2AEB2-0700-Z5
0.075	0.225	1/8	1-1/2	2AES2-0750	2AES2-0750-Z5	2AEB2-0750	2AEB2-0750-Z5
0.080	0.240	1/8	1-1/2	2AES2-0800	2AES2-0800-Z5	2AEB2-0800	2AEB2-0800-Z5
0.085	0.255	1/8	1-1/2	2AES2-0850	2AES2-0850-Z5	2AEB2-0850	2AEB2-0850-Z5
0.090	0.270	1/8	1-1/2	2AES2-0900	2AES2-0900-Z5	2AEB2-0900	2AEB2-0900-Z5
0.095	0.285	1/8	1-1/2	2AES2-0950	2AES2-0950-Z5	2AEB2-0950	2AEB2-0950-Z5
0.100	0.300	1/8	1-1/2	2AES2-1000	2AES2-1000-Z5	2AEB2-1000	2AEB2-1000-Z5
0.105	0.315	1/8	1-1/2	2AES2-1050	2AES2-1050-Z5	2AEB2-1050	2AEB2-1050-Z5
0.110	0.330	1/8	1-1/2	2AES2-1100	2AES2-1100-Z5	2AEB2-1100	2AEB2-1100-Z5
0.115	0.345	1/8	1-1/2	2AES2-1150	2AES2-1150-Z5	2AEB2-1150	2AEB2-1150-Z5
0.120	0.360	1/8	1-1/2	2AES2-1200	2AES2-1200-Z5	2AEB2-1200	2AEB2-1200-Z5

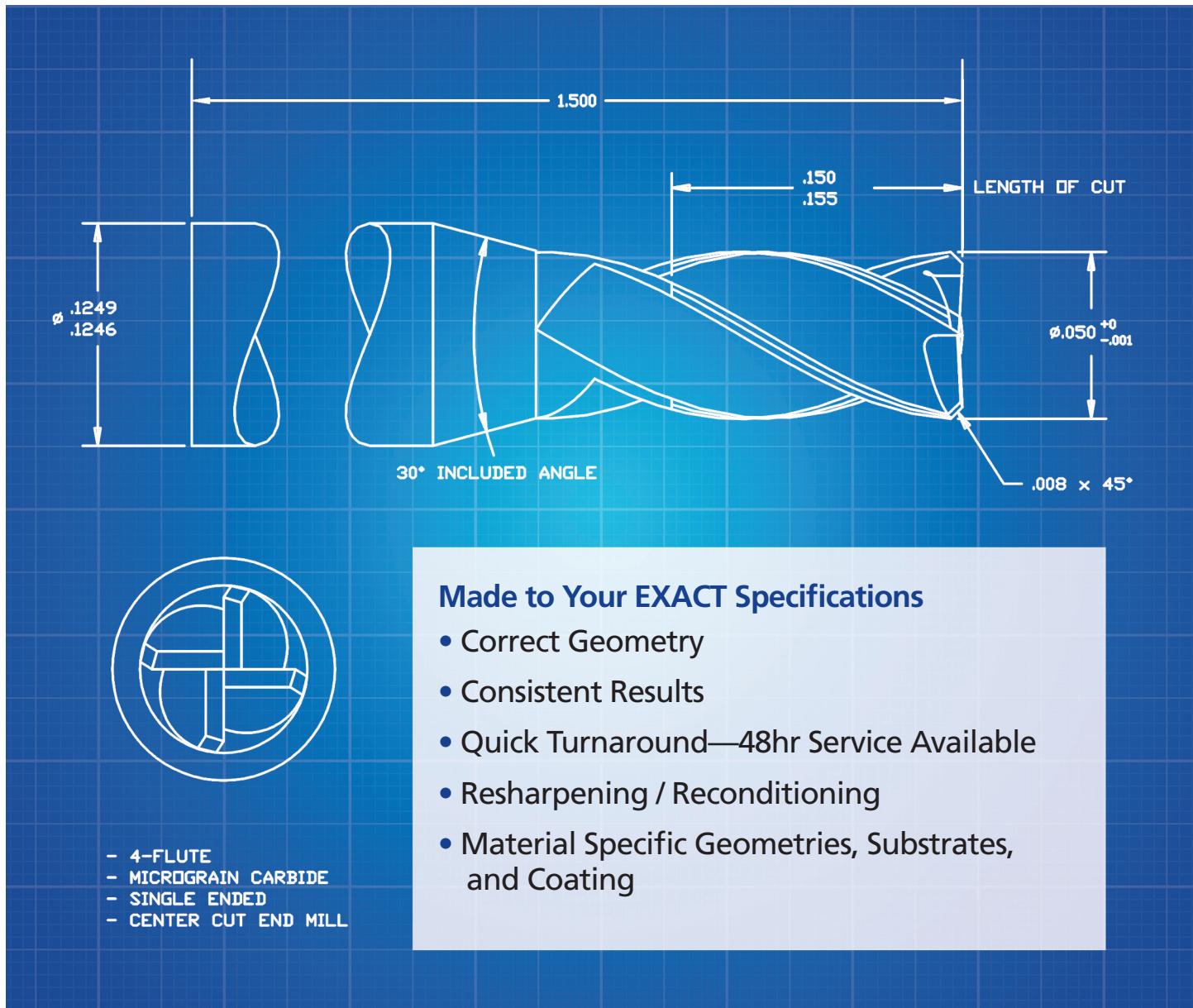
High Performance Design with Advanced Geometries

- Center Cutting, 30 Degree Helix, RHC/RHS
- Premium Sub-Micron Carbide
- ALTiN Coating: Wear Resistance, Extended Tool Life, and Faster Speeds & Feeds

Tolerances: Cutting Dia: +.0005/-0.0005
Shank Dia: -.0001/-0.0004

Blueprint / Custom End Mills

ALWAYS CONSISTENT / ALWAYS ON TIME



Available in Any Size with a Batch to Batch Performance Guarantee

- Made exactly the same, every time you order
- Don't see what you need, we can make it

CONSISTENT RESULTS GUARANTEED  MADE IN USA

High Performance Finishing

SOLID CARBIDE



Tolerances

Cutting Dia: -.0001/-0.0004

Shank Dia: -.0001/-0.0004

Flute Dia.	Flute Lgth.	Shank Dia.	Overall Lgth.	Uncoated EDP#	ALX Coated EDP#
1/4	3/4	1/4	2-1/2	3AL-250	3AL-0250-ALX
3/8	7/8	3/8	2-1/2	3AL-375	3AL-0375-ALX
1/2	1	1/2	3	3AL-500	3AL-0500-ALX
5/8	1-1/4	5/8	3-1/2	3AL-625	3AL-0625-ALX
3/4	1-1/2	3/4	4	3AL-750	3AL-0750-ALX

3 Flute for Aluminum

- Prevents Sticking and Galling
- Better Chip Evacuation
- High Performance Finishing
- Premium Sub-Micron Carbide
- Center cutting, Square End, RHC/RHS
- ALX Coating: Outstanding Self-Lubricating Properties for Extended Wear & Tool Life.



Tolerances

Cutting Dia: +.000/-0.002

Shank Dia: -.0001/-0.0004

Flute Dia.	Corner Radius	Flute Lgth.	Shank Dia.	Overall Lgth.	TTX Coated EDP#
3/8	.020	1	3/8	2-1/2	325-0375-TTX
1/2	.030	1-1/4	1/2	3	325-0500-TTX
5/8	.030	1-1/4	5/8	3-1/2	325-0625-TTX
3/4	.030	1-1/2	4	4	325-0750-TTX

5 Flute Variable Design For Titanium and Exotic Alloys

- Aggressive Machining/ Extended Tool Life
- Premium Sub-Micron Carbide for Titanium
- Center cutting, RHC/RHS, Variable Helix
- TTX Coating for Titanium
- Wear & Fracture Resistant



Tolerances

Cutting Dia: +.000/-0.002

Shank Dia: -.0001/-0.0004

Flute Dia.	Flute Lgth.	Shank Dia.	Overall Lgth.	Uncoated EDP#	ALTiN Coated EDP#
3/16	5/8	3/16	2	08100-600	08100-600-Z5
1/4	3/4	1/4	2-1/2	08110-600	08110-600-Z5
5/16	7/8	5/16	2-1/2	08120-600	08120-600-Z5
3/8	7/8	3/8	2-1/2	08130-600	08130-600-Z5
7/16	1	7/16	2-1/2	08140-600	08140-600-Z5
1/2	1	1/2	3	08150-600	08150-600-Z5
5/8	1-1/4	5/8	3-1/2	08160-600	08160-600-Z5
3/4	1-1/2	3/4	4	08170-600	08170-600-Z5
1	1-1/2	1	4	08180-600	08180-600-Z5

6 Flute 40 Degree Helix Square End

- High Performance Finishing/ Increased Feeds & Speeds
- Premium Sub-Micron Carbide
- Improved Surface Finish
- Center Cutting, 40 Degree Helix, RHC/RHS
- ALTiN Coating: Wear Resistance, Extended Tool Life, and Faster Speeds & Feeds



ADVANCED TOOL INC
END MILL SOLUTIONS

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High Performance Roughing

SOLID CARBIDE



Tolerances

Cutting Dia: +.000/-0.002
Shank Dia: -.0001/-0.0004

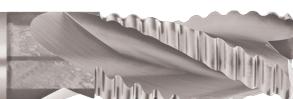
Flute	No. of	Flute	Shank	Overall	Uncoated	ALTiN Coated
Dia.	Flutes	Lgth.	Dia.	Lgth.	EDP#	EDP#
1/4	3	3/4	1/4	2-1/2	310120	310120-Z5
5/16	3	7/8	5/16	2-1/2	310130	310130-Z5
3/8	3	7/8	3/8	2-1/2	310140	310140-Z5
1/2	4	1	1/2	3	310150	310150-Z5
5/8	4	1-1/4	5/8	3-1/2	310160	310160-Z5
3/4	4	1-1/2	3/4	4	310170	310170-Z5
1	5	1-1/2	1	4	310180	310180-Z5



Tolerances

Cutting Dia: +.000/-0.002
Shank Dia: -.0001/-0.0004

Flute	No. of	Flute	Shank	Overall	Uncoated	ALTiN Coated
Dia.	Flutes	Lgth.	Dia.	Lgth.	EDP#	EDP#
1/4	3	3/4	1/4	2-1/2	312120	312120-Z5
5/16	3	7/8	5/16	2-1/2	312130	312130-Z5
3/8	3	7/8	3/8	2-1/2	312140	312140-Z5
1/2	4	1	1/2	3	312150	312150-Z5
5/8	4	1-1/4	5/8	3-1/2	312160	312160-Z5
3/4	4	1-1/2	3/4	4	312170	312170-Z5
1	5	1-1/2	1	4	312180	312180-Z5



Tolerances

Cutting Dia: +.000/-0.002
Shank Dia: -.0001/-0.0004

Flute	No. of	Flute	Shank	Overall	Uncoated	ALX Coated
Dia.	Flutes	Lgth.	Dia.	Lgth.	EDP#	EDP#
1/4	3	3/4	1/4	2-1/2	314120	314120-Z7
5/16	3	7/8	5/16	2-1/2	314130	314130-Z7
3/8	3	7/8	3/8	2-1/2	314140	314140-Z7
1/2	3	1	1/2	3	314150	314150-Z7
5/8	3	1-1/4	5/8	3-1/2	314160	314160-Z7
3/4	3	1-1/2	3/4	4	314170	314170-Z7
1	3	1-1/2	1	4	314180	314180-Z7

General Purpose: Steels & Stainless Steels

- Maximum Removal Rates in Steel and Stainless Steels
- Fine Pitch, 20 Degree Helix, Center Cutting, RHC/RHS
- Premium Sub-Micron Carbide
- ALTiN Coating: Wear Resistance, Extended Tool Life, and Faster Speeds & Feeds

High Temp Alloys: Titanium and Exotic Alloys

- Maximum Removal Rates in Titanium and Exotic Alloys
- Fine Pitch, 30 Degree Helix, Center Cutting, RHC/RHS
- Premium Sub-Micron Carbide
- ALTiN Coating: Wear Resistance, Extended Tool Life, and Faster Speeds & Feeds

Light Alloys: Aluminum and Non-Ferrous Materials

- Maximum Removal Rates in Aluminum and Non-Ferrous Materials
- Course Pitch, 30 Degree Helix, Center Cutting, RHC/RHS
- Premium Sub-Micron Carbide
- ALX Coating: Outstanding Self-Lubricating Properties for Extended Wear & Tool Life.

CONSISTENT RESULTS GUARANTEED



MADE IN USA

Standard Length / Square End

2 / 3 / 4 FLUTE / SOLID CARBIDE



3 Flute Available

				2 FLUTE SQUARE		3 FLUTE SQUARE		4 FLUTE SQUARE	
Flute	Flute	Shank	Overall	Uncoated	ALTiN Coated	Uncoated	ALTiN Coated	Uncoated	ALTiN Coated
Dia.	Lgth.	Dia.	Lgth.	EDP#	EDP#	EDP#	EDP#	EDP#	EDP#
1/64	1/32	1/8	1-1/2	00055-200	00055-200-Z5	—	—	—	—
1/32	1/8	1/8	1-1/2	00065-200	00065-200-Z5	—	—	00065-400	00065-400-Z5
3/64	1/8	1/8	1-1/2	00075-200	00075-200-Z5	—	—	00075-400	00075-400-Z5
1/16	1/4	1/8	1-1/2	00100-200	00100-200-Z5	00100-300	00100-300-Z5	00100-400	00100-400-Z5
5/64	1/4	1/8	1-1/2	00110-200	00110-200-Z5	00110-300	00110-300-Z5	00110-400	00110-400-Z5
3/32	3/8	1/8	1-1/2	00120-200	00120-200-Z5	00120-300	00120-300-Z5	00120-400	00120-400-Z5
7/64	3/8	1/8	1-1/2	00130-200	00130-200-Z5	00130-300	00130-300-Z5	00130-400	00130-400-Z5
1/8	1/2	1/8	1-1/2	00140-200	00140-200-Z5	00140-300	00140-300-Z5	00140-400	00140-400-Z5
9/64	9/16	3/16	2	00150-200	00150-200-Z5	00150-300	00150-300-Z5	00150-400	00150-400-Z5
5/32	9/16	3/16	2	00160-200	00160-200-Z5	00160-300	00160-300-Z5	00160-400	00160-400-Z5
11/64	9/16	3/16	2	00170-200	00170-200-Z5	00170-300	00170-300-Z5	00170-400	00170-400-Z5
3/16	5/8	3/16	2	00180-200	00180-200-Z5	00180-300	00180-300-Z5	00180-400	00180-400-Z5
13/64	5/8	1/4	2-1/2	00190-200	00190-200-Z5	00190-300	00190-300-Z5	00190-400	00190-400-Z5
7/32	5/8	1/4	2-1/2	00200-200	00200-200-Z5	00200-300	00200-300-Z5	00200-400	00200-400-Z5
15/64	3/4	1/4	2-1/2	00210-200	00210-200-Z5	00210-300	00210-300-Z5	00210-400	00210-400-Z5
1/4	3/4	1/4	2-1/2	00220-200	00220-200-Z5	00220-300	00220-300-Z5	00220-400	00220-400-Z5
17/64	7/8	5/16	2-1/2	00230-200	00230-200-Z5	00230-300	00230-300-Z5	00230-400	00230-400-Z5
9/32	7/8	5/16	2-1/2	00240-200	00240-200-Z5	00240-300	00240-300-Z5	00240-400	00240-400-Z5
19/64	7/8	5/16	2-1/2	00250-200	00250-200-Z5	00250-300	00250-300-Z5	00250-400	00250-400-Z5
5/16	7/8	5/16	2-1/2	00260-200	00260-200-Z5	00260-300	00260-300-Z5	00260-400	00260-400-Z5
21/64	7/8	3/8	2-1/2	00270-200	00270-200-Z5	00270-300	00270-300-Z5	00270-400	00270-400-Z5
11/32	7/8	3/8	2-1/2	00280-200	00280-200-Z5	00280-300	00280-300-Z5	00280-400	00280-400-Z5
23/64	7/8	3/8	2-1/2	00290-200	00290-200-Z5	00290-300	00290-300-Z5	00290-400	00290-400-Z5
3/8	7/8	3/8	2-1/2	00300-200	00300-200-Z5	00300-300	00300-300-Z5	00300-400	00300-400-Z5
25/64	7/8	7/16	2-1/2	00310-200	00310-200-Z5	00310-300	00310-300-Z5	00310-400	00310-400-Z5
13/32	7/8	7/16	2-1/2	00320-200	00320-200-Z5	00320-300	00320-300-Z5	00320-400	00320-400-Z5
27/64	7/8	7/16	2-1/2	00330-200	00330-200-Z5	00330-300	00330-300-Z5	00330-400	00330-400-Z5
7/16	1	7/16	2-1/2	00340-200	00340-200-Z5	00340-300	00340-300-Z5	00340-400	00340-400-Z5
29/64	1	1/2	3	00350-200	00350-200-Z5	00350-300	00350-300-Z5	00350-400	00350-400-Z5
15/32	1	1/2	3	00360-200	00360-200-Z5	00360-300	00360-300-Z5	00360-400	00360-400-Z5
31/64	1	1/2	3	00370-200	00370-200-Z5	00370-300	00370-300-Z5	00370-400	00370-400-Z5
1/2	1	1/2	3	00380-200	00380-200-Z5	00380-300	00380-300-Z5	00380-400	00380-400-Z5
9/16	1-1/4	9/16	3-1/2	00390-200	00390-200-Z5	00390-300	00390-300-Z5	00390-400	00390-400-Z5
5/8	1-1/4	5/8	3-1/2	00400-200	00400-200-Z5	00400-300	00400-300-Z5	00400-400	00400-400-Z5
11/16	1-1/2	3/4	4	00410-200	00410-200-Z5	00410-300	00410-300-Z5	00410-400	00410-400-Z5
3/4	1-1/2	3/4	4	00420-200	00420-200-Z5	00420-300	00420-300-Z5	00420-400	00420-400-Z5
7/8	1-1/2	7/8	4	00430-200	00430-200-Z5	00430-300	00430-300-Z5	00430-400	00430-400-Z5
1	1-1/2	1	4	00440-200	00440-200-Z5	00440-300	00440-300-Z5	00440-400	00440-400-Z5

- Center Cutting, 30 Degree Helix, RHC/RHS
- Premium Sub-Micron Carbide
- ALTiN Coating: Wear Resistance, Extended Tool Life, and Faster Speeds & Feeds

Tolerances: Cutting Dia: +.000/-0.002
Shank Dia: -.0001/-0.004

Standard Length / Ball End

2 / 3 / 4 FLUTE / SOLID CARBIDE

				2 FLUTE BALL		3 FLUTE BALL		4 FLUTE BALL	
Flute	Flute	Shank	Overall	Uncoated	ALTiN Coated	Uncoated	ALTiN Coated	Uncoated	ALTiN Coated
Dia.	Lgth.	Dia.	Lgth.	EDP#	EDP#	EDP#	EDP#	EDP#	EDP#
2 Flute	1/64	1/32	1/8	1-1/2	01055-200	01055-200-Z5	—	—	—
	1/32	1/8	1/8	1-1/2	01065-200	01065-200-Z5	—	—	01065-400 01065-400-Z5
	3/64	1/8	1/8	1-1/2	01075-200	01075-200-Z5	—	—	01075-400 01075-400-Z5
	1/16	1/4	1/8	1-1/2	01100-200	01100-200-Z5	01100-300	01100-300-Z5	01100-400 01100-400-Z5
	5/64	1/4	1/8	1-1/2	01110-200	01110-200-Z5	01110-300	01110-300-Z5	01110-400 01110-400-Z5
	3/32	3/8	1/8	1-1/2	01120-200	01120-200-Z5	01120-300	01120-300-Z5	01120-400 01120-400-Z5
	7/64	3/8	1/8	1-1/2	01130-200	01130-200-Z5	01130-300	01130-300-Z5	01130-400 01130-400-Z5
	1/8	1/2	1/8	1-1/2	01140-200	01140-200-Z5	01140-300	01140-300-Z5	01140-400 01140-400-Z5
	9/64	9/16	3/16	2	01150-200	01150-200-Z5	01150-300	01150-300-Z5	01150-400 01150-400-Z5
	5/32	9/16	3/16	2	01160-200	01160-200-Z5	01160-300	01160-300-Z5	01160-400 01160-400-Z5
	11/64	9/16	3/16	2	01170-200	01170-200-Z5	01170-300	01170-300-Z5	01170-400 01170-400-Z5
	3/16	5/8	3/16	2	01180-200	01180-200-Z5	01180-300	01180-300-Z5	01180-400 01180-400-Z5
	13/64	5/8	1/4	2-1/2	01190-200	01190-200-Z5	01190-300	01190-300-Z5	01190-400 01190-400-Z5
	7/32	5/8	1/4	2-1/2	01200-200	01200-200-Z5	01200-300	01200-300-Z5	01200-400 01200-400-Z5
	15/64	3/4	1/4	2-1/2	01210-200	01210-200-Z5	01210-300	01210-300-Z5	01210-400 01210-400-Z5
	1/4	3/4	1/4	2-1/2	01220-200	01220-200-Z5	01220-300	01220-300-Z5	01220-400 01220-400-Z5
	17/64	7/8	5/16	2-1/2	01230-200	01230-200-Z5	01230-300	01230-300-Z5	01230-400 01230-400-Z5
	9/32	7/8	5/16	2-1/2	01240-200	01240-200-Z5	01240-300	01240-300-Z5	01240-400 01240-400-Z5
	19/64	7/8	5/16	2-1/2	01250-200	01250-200-Z5	01250-300	01250-300-Z5	01250-400 01250-400-Z5
	5/16	7/8	5/16	2-1/2	01260-200	01260-200-Z5	01260-300	01260-300-Z5	01260-400 01260-400-Z5
	21/64	7/8	3/8	2-1/2	01270-200	01270-200-Z5	01270-300	01270-300-Z5	01270-400 01270-400-Z5
	11/32	7/8	3/8	2-1/2	01280-200	01280-200-Z5	01280-300	01280-300-Z5	01280-400 01280-400-Z5
	23/64	7/8	3/8	2-1/2	01290-200	01290-200-Z5	01290-300	01290-300-Z5	01290-400 01290-400-Z5
	3/8	7/8	3/8	2-1/2	01300-200	01300-200-Z5	01300-300	01300-300-Z5	01300-400 01300-400-Z5
	25/64	7/8	7/16	2-1/2	01310-200	01310-200-Z5	01310-300	01310-300-Z5	01310-400 01310-400-Z5
	13/32	7/8	7/16	2-1/2	01320-200	01320-200-Z5	01320-300	01320-300-Z5	01320-400 01320-400-Z5
	27/64	7/8	7/16	2-1/2	01330-200	01330-200-Z5	01330-300	01330-300-Z5	01330-400 01330-400-Z5
	7/16	1	7/16	2-1/2	01340-200	01340-200-Z5	01340-300	01340-300-Z5	01340-400 01340-400-Z5
	29/64	1	1/2	3	01350-200	01350-200-Z5	01350-300	01350-300-Z5	01350-400 01350-400-Z5
	15/32	1	1/2	3	01360-200	01360-200-Z5	01360-300	01360-300-Z5	01360-400 01360-400-Z5
	31/64	1	1/2	3	01370-200	01370-200-Z5	01370-300	01370-300-Z5	01370-400 01370-400-Z5
	1/2	1	1/2	3	01380-200	01380-200-Z5	01380-300	01380-300-Z5	01380-400 01380-400-Z5
	9/16	1-1/4	9/16	3-1/2	01390-200	01390-200-Z5	01390-300	01390-300-Z5	01390-400 01390-400-Z5
	5/8	1-1/4	5/8	3-1/2	01400-200	01400-200-Z5	01400-300	01400-300-Z5	01400-400 01400-400-Z5
	11/16	1-1/2	3/4	4	01410-200	01410-200-Z5	01410-300	01410-300-Z5	01410-400 01410-400-Z5
	3/4	1-1/2	3/4	4	01420-200	01420-200-Z5	01420-300	01420-300-Z5	01420-400 01420-400-Z5
	7/8	1-1/2	7/8	4	01430-200	01430-200-Z5	01430-300	01430-300-Z5	01430-400 01430-400-Z5
	1	1-1/2	1	4	01440-200	01440-200-Z5	01440-300	01440-300-Z5	01440-400 01440-400-Z5
3 Flute Available									

- Center Cutting, 30 Degree Helix, RHC/RHS
- Premium Sub-Micron Carbide
- ALTiN Coating: Wear Resistance, Extended Tool Life, and Faster Speeds & Feeds

Tolerances: Cutting Dia: +.000/-0.002
Shank Dia: -.0001/-0.004

CONSISTENT RESULTS GUARANTEED  MADE IN USA

Standard Length / Corner Radius

2 / 4 FLUTE / SOLID CARBIDE

					2 FLUTE CORNER RADIUS		4 FLUTE CORNER RADIUS	
Flute	Corner	Flute	Shank	Overall	Uncoated	ALTiN Coated	Uncoated	ALTiN Coated
Dia.	Radius	Lgth.	Dia.	Lgth.	EDP#	EDP#	EDP#	EDP#
1/8	.015	1/2	1/8	1-1/2	00140-200-015	00140-200-015-Z5	00140-400-015	00140-400-015-Z5
1/8	.020	1/2	1/8	1-1/2	00140-200-020	00140-200-020-Z5	00140-400-020	00140-400-020-Z5
3/16	.015	5/8	3/16	2	00180-200-015	00180-200-015-Z5	00180-400-015	00180-400-015-Z5
3/16	.020	5/8	3/16	2	00180-200-020	00180-200-020-Z5	00180-400-020	00180-400-020-Z5
3/16	.030	5/8	3/16	2	00180-200-030	00180-200-030-Z5	00180-400-030	00180-400-030-Z5
1/4	.015	3/4	1/4	2-1/2	00220-200-015	00220-200-015-Z5	00220-400-015	00220-400-015-Z5
1/4	.020	3/4	1/4	2-1/2	00220-200-020	00220-200-020-Z5	00220-400-020	00220-400-020-Z5
1/4	.030	3/4	1/4	2-1/2	00220-200-030	00220-200-030-Z5	00220-400-030	00220-400-030-Z5
1/4	.045	3/4	1/4	2-1/2	00220-200-045	00220-200-045-Z5	00220-400-045	00220-400-045-Z5
5/16	.015	7/8	5/16	2-1/2	00260-200-015	00260-200-015-Z5	00260-400-015	00260-400-015-Z5
5/16	.020	7/8	5/16	2-1/2	00260-200-020	00260-200-020-Z5	00260-400-020	00260-400-020-Z5
5/16	.030	7/8	5/16	2-1/2	00260-200-030	00260-200-030-Z5	00260-400-030	00260-400-030-Z5
5/16	.045	7/8	5/16	2-1/2	00260-200-045	00260-200-045-Z5	00260-400-045	00260-400-045-Z5
3/8	.015	7/8	3/8	2-1/2	00300-200-015	00300-200-015-Z5	00300-400-015	00300-400-015-Z5
3/8	.020	7/8	3/8	2-1/2	00300-200-020	00300-200-020-Z5	00300-400-020	00300-400-020-Z5
3/8	.030	7/8	3/8	2-1/2	00300-200-030	00300-200-030-Z5	00300-400-030	00300-400-030-Z5
3/8	.045	7/8	3/8	2-1/2	00300-200-045	00300-200-045-Z5	00300-400-045	00300-400-045-Z5
3/8	.060	7/8	3/8	2-1/2	00300-200-060	00300-200-060-Z5	00300-400-060	00300-400-060-Z5
1/2	.015	1	1/2	3	00380-200-015	00380-200-015-Z5	00380-400-015	00380-400-015-Z5
1/2	.020	1	1/2	3	00380-200-020	00380-200-020-Z5	00380-400-020	00380-400-020-Z5
1/2	.030	1	1/2	3	00380-200-030	00380-200-030-Z5	00380-400-030	00380-400-030-Z5
1/2	.045	1	1/2	3	00380-200-045	00380-200-045-Z5	00380-400-045	00380-400-045-Z5
1/2	.060	1	1/2	3	00380-200-060	00380-200-060-Z5	00380-400-060	00380-400-060-Z5
1/2	.090	1	1/2	3	00380-200-090	00380-200-090-Z5	00380-400-090	00380-400-090-Z5
1/2	.125	1	1/2	3	00380-200-125	00380-200-125-Z5	00380-400-125	00380-400-125-Z5

2 Flute



Stronger Corners / Radius Parts—Extremely Versatile in Various Materials

- Center Cutting, 30 Degree Helix – RHC/RHS
- Premium Sub-Micron Carbide
- ALTiN Coating: Wear Resistance, Extended Tool Life, and Faster Speeds & Feeds

Tolerances: Cutting Dia: +.000/-0.002
 Shank Dia: -.0001/-0.0004
 Radius: +.001/-0.001

Standard Length / Corner Radius

2 / 4 FLUTE / SOLID CARBIDE



					2 FLUTE CORNER RADIUS		4 FLUTE CORNER RADIUS	
Flute	Corner	Flute	Shank	Overall	Uncoated	ALTiN Coated	Uncoated	ALTiN Coated
Dia.	Radius	Lgth.	Dia.	Lgth.	EDP#	EDP#	EDP#	EDP#
5/8	.015	1-1/4	5/8	3-1/2	00400-200-015	00400-200-015-Z5	00400-400-015	00400-400-015-Z5
5/8	.020	1-1/4	5/8	3-1/2	00400-200-020	00400-200-020-Z5	00400-400-020	00400-400-020-Z5
5/8	.030	1-1/4	5/8	3-1/2	00400-200-030	00400-200-030-Z5	00400-400-030	00400-400-030-Z5
5/8	.045	1-1/4	5/8	3-1/2	00400-200-045	00400-200-045-Z5	00400-400-045	00400-400-045-Z5
5/8	.060	1-1/4	5/8	3-1/2	00400-200-060	00400-200-060-Z5	00400-400-060	00400-400-060-Z5
5/8	.090	1-1/4	5/8	3-1/2	00400-200-090	00400-200-090-Z5	00400-400-090	00400-400-090-Z5
3/4	.015	1-1/2	3/4	4	00420-200-015	00420-200-015-Z5	00420-400-015	00420-400-015-Z5
3/4	.020	1-1/2	3/4	4	00420-200-020	00420-200-020-Z5	00420-400-020	00420-400-020-Z5
3/4	.030	1-1/2	3/4	4	00420-200-030	00420-200-030-Z5	00420-400-030	00420-400-030-Z5
3/4	.045	1-1/2	3/4	4	00420-200-045	00420-200-045-Z5	00420-400-045	00420-400-045-Z5
3/4	.060	1-1/2	3/4	4	00420-200-060	00420-200-060-Z5	00420-400-060	00420-400-060-Z5
3/4	.090	1-1/2	3/4	4	00420-200-090	00420-200-090-Z5	00420-400-090	00420-400-090-Z5
3/4	.125	1-1/2	3/4	4	00420-200-125	00420-200-125-Z5	00420-400-125	00420-400-125-Z5
1	.015	1-1/2	1	4	00440-200-015	00440-200-015-Z5	00440-400-015	00440-400-015-Z5
1	.020	1-1/2	1	4	00440-200-020	00440-200-020-Z5	00440-400-020	00440-400-020-Z5
1	.030	1-1/2	1	4	00440-200-030	00440-200-030-Z5	00440-400-030	00440-400-030-Z5
1	.045	1-1/2	1	4	00440-200-045	00440-200-045-Z5	00440-400-045	00440-400-045-Z5
1	.060	1-1/2	1	4	00440-200-060	00440-200-060-Z5	00440-400-060	00440-400-060-Z5
1	.090	1-1/2	1	4	00440-200-090	00440-200-090-Z5	00440-400-090	00440-400-090-Z5
1	.125	1-1/2	1	4	00440-200-125	00440-200-125-Z5	00440-400-125	00440-400-125-Z5

Stronger Corners / Radius Parts—Extremely Versatile in Various Materials

- Center Cutting, 30 Degree Helix – RHC/RHS
- Premium Sub-Micron Carbide
- ALTiN Coating: Wear Resistance, Extended Tool Life, and Faster Speeds & Feeds

Tolerances: Cutting Dia: +.000/-0.002
 Shank Dia: -.0001/-0.0004
 Radius: +.001/-0.001

CONSISTENT RESULTS GUARANTEED  MADE IN USA

Extra Length / Square End

2 / 4 FLUTE / SOLID CARBIDE

				2 FLUTE SQUARE		4 FLUTE SQUARE	
Flute	Flute	Shank	Overall	Uncoated	ALTiN Coated	Uncoated	ALTiN Coated
Dia.	Lgth.	Dia.	Lgth.	EDP#	EDP#	EDP#	EDP#
1/8	5/8	1/8	2	11100-200	11100-200-Z5	11100-400	11100-400-Z5
1/8	1	1/8	3	11120-200	11120-200-Z5	11120-400	11120-400-Z5
3/16	1	3/16	3	11130-200	11130-200-Z5	11130-400	11130-400-Z5
3/16	1-1/8	3/16	3	11140-200	11140-200-Z5	11140-400	11140-400-Z5
3/16	1	3/16	4	11150-200	11150-200-Z5	11150-400	11150-400-Z5
1/4	1	1/4	3	11160-200	11160-200-Z5	11160-400	11160-400-Z5
1/4	1	1/4	4	11170-200	11170-200-Z5	11170-400	11170-400-Z5
1/4	1-1/2	1/4	4	11180-200	11180-200-Z5	11180-400	11180-400-Z5
1/4	1-1/2	1/4	6	11190-200	11190-200-Z5	11190-400	11190-400-Z5
5/16	1	5/16	3	11200-200	11200-200-Z5	11200-400	11200-400-Z5
5/16	1	5/16	4	11210-200	11210-200-Z5	11210-400	11210-400-Z5
5/16	1-5/8	5/16	4	11220-200	11220-200-Z5	11220-400	11220-400-Z5
5/16	1-1/2	5/16	6	11230-200	11230-200-Z5	11230-400	11230-400-Z5
3/8	1	3/8	3	11240-200	11240-200-Z5	11240-400	11240-400-Z5
3/8	1	3/8	4	11250-200	11250-200-Z5	11250-400	11250-400-Z5
3/8	2	3/8	4	11260-200	11260-200-Z5	11260-400	11260-400-Z5
3/8	1-1/2	3/8	6	11270-200	11270-200-Z5	11270-400	11270-400-Z5
3/8	3	3/8	6	11280-200	11280-200-Z5	11280-400	11280-400-Z5
7/16	1	7/16	4	11290-200	11290-200-Z5	11290-400	11290-400-Z5
7/16	2	7/16	4	11300-200	11300-200-Z5	11300-400	11300-400-Z5
7/16	1-1/2	7/16	6	11310-200	11310-200-Z5	11310-400	11310-400-Z5
7/16	3	7/16	6	11320-200	11320-200-Z5	11320-400	11320-400-Z5
1/2	1	1/2	4	11330-200	11330-200-Z5	11330-400	11330-400-Z5
1/2	2	1/2	4	11340-200	11340-200-Z5	11340-400	11340-400-Z5
1/2	1-1/2	1/2	6	11350-200	11350-200-Z5	11350-400	11350-400-Z5
1/2	3	1/2	6	11360-200	11360-200-Z5	11360-400	11360-400-Z5
9/16	2	9/16	6	11370-200	11370-200-Z5	11370-400	11370-400-Z5
9/16	3	9/16	6	11380-200	11380-200-Z5	11380-400	11380-400-Z5
5/8	2	5/8	6	11390-200	11390-200-Z5	11390-400	11390-400-Z5
5/8	3	5/8	6	11400-200	11400-200-Z5	11400-400	11400-400-Z5
3/4	2	3/4	6	11410-200	11410-200-Z5	11410-400	11410-400-Z5
3/4	3	3/4	6	11420-200	11420-200-Z5	11420-400	11420-400-Z5
1	2	1	6	11430-200	11430-200-Z5	11430-400	11430-400-Z5
1	3	1	6	11440-200	11440-200-Z5	11440-400	11440-400-Z5



2 Flute



4 Flute

Extended Reach/Deep Pocket Milling

- Center Cutting, 30 Degree Helix, RHC/RHS
- Premium Sub-Micron Carbide
- ALTiN Coating: Wear Resistance, Extended Tool Life, and Faster Speeds & Feeds

Tolerances: Cutting Dia: +.000/-0.002
Shank Dia: -.0001/-0.0004

Extra Length / Ball End

2 / 4 FLUTE / SOLID CARBIDE

				2 FLUTE BALL		4 FLUTE BALL	
Flute	Flute	Shank	Overall	Uncoated	AlTiN Coated	Uncoated	AlTiN Coated
Dia.	Lgth.	Dia.	Lgth.	EDP#	EDP#	EDP#	EDP#
1/8	5/8	1/8	2	12100-200	12100-200-Z5	12100-400	12100-400-Z5
1/8	1	1/8	3	12120-200	12120-200-Z5	12120-400	12120-400-Z5
3/16	1	3/16	3	12130-200	12130-200-Z5	12130-400	12130-400-Z5
3/16	1-1/8	3/16	3	12140-200	12140-200-Z5	12140-400	12140-400-Z5
3/16	1	3/16	4	12150-200	12150-200-Z5	12150-400	12150-400-Z5
1/4	1	1/4	3	12160-200	12160-200-Z5	12160-400	12160-400-Z5
1/4	1	1/4	4	12170-200	12170-200-Z5	12170-400	12170-400-Z5
1/4	1-1/2	1/4	4	12180-200	12180-200-Z5	12180-400	12180-400-Z5
1/4	1-1/2	1/4	6	12190-200	12190-200-Z5	12190-400	12190-400-Z5
5/16	1	5/16	3	12200-200	12200-200-Z5	12200-400	12200-400-Z5
5/16	1	5/16	4	12210-200	12210-200-Z5	12210-400	12210-400-Z5
5/16	1-5/8	5/16	4	12220-200	12220-200-Z5	12220-400	12220-400-Z5
5/16	1-1/2	5/16	6	12230-200	12230-200-Z5	12230-400	12230-400-Z5
3/8	1	3/8	3	12240-200	12240-200-Z5	12240-400	12240-400-Z5
3/8	1	3/8	4	12250-200	12250-200-Z5	12250-400	12250-400-Z5
3/8	2	3/8	4	12260-200	12260-200-Z5	12260-400	12260-400-Z5
3/8	1-1/2	3/8	6	12270-200	12270-200-Z5	12270-400	12270-400-Z5
3/8	3	3/8	6	12280-200	12280-200-Z5	12280-400	12280-400-Z5
7/16	1	7/16	4	12290-200	12290-200-Z5	12290-400	12290-400-Z5
7/16	2	7/16	4	12300-200	12300-200-Z5	12300-400	12300-400-Z5
7/16	1-1/2	7/16	6	12310-200	12310-200-Z5	12310-400	12310-400-Z5
7/16	3	7/16	6	12320-200	12320-200-Z5	12320-400	12320-400-Z5
1/2	1	1/2	4	12330-200	12330-200-Z5	12330-400	12330-400-Z5
1/2	2	1/2	4	12340-200	12340-200-Z5	12340-400	12340-400-Z5
1/2	1-1/2	1/2	6	12350-200	12350-200-Z5	12350-400	12350-400-Z5
1/2	3	1/2	6	12360-200	12360-200-Z5	12360-400	12360-400-Z5
9/16	2	9/16	6	12370-200	12370-200-Z5	12370-400	12370-400-Z5
9/16	3	9/16	6	12380-200	12380-200-Z5	12380-400	12380-400-Z5
5/8	2	5/8	6	12390-200	12390-200-Z5	12390-400	12390-400-Z5
5/8	3	5/8	6	12400-200	12400-200-Z5	12400-400	12400-400-Z5
3/4	2	3/4	6	12410-200	12410-200-Z5	12410-400	12410-400-Z5
3/4	3	3/4	6	12420-200	12420-200-Z5	12420-400	12420-400-Z5
1	2	1	6	12430-200	12430-200-Z5	12430-400	12430-400-Z5
1	3	1	6	12440-200	12440-200-Z5	12440-400	12440-400-Z5



2 Flute



4 Flute

Extended Reach/Deep Pocket Milling

- Center Cutting, 30 Degree Helix, RHC/RHS
- Premium Sub-Micron Carbide
- AlTiN Coating: Wear Resistance, Extended Tool Life, and Faster Speeds & Feeds

Tolerances: Cutting Dia: +.000/-0.002
Shank Dia: -.0001/-0.0004

CONSISTENT RESULTS GUARANTEED



MADE IN USA

Stub Length

SQUARE / 2 / 4 FLUTE / SOLID CARBIDE



				2 FLUTE SQUARE		4 FLUTE SQUARE	
Flute	Flute	Shank	Overall	Uncoated	ALTiN Coated	Uncoated	ALTiN Coated
Dia.	Lgth.	Dia.	Lgth.	EDP#	EDP#	EDP#	EDP#
1/32	1/16	1/8	1-1/2	04105-200	04105-200-Z5	04105-400	04105-400-Z5
3/64	3/32	1/8	1-1/2	04110-200	04110-200-Z5	04110-400	04110-400-Z5
1/16	1/8	1/8	1-1/2	04120-200	04120-200-Z5	04120-400	04120-400-Z5
3/32	3/16	1/8	1-1/2	04130-200	04130-200-Z5	04130-400	04130-400-Z5
1/8	1/4	1/8	1-1/2	04140-200	04140-200-Z5	04140-400	04140-400-Z5
5/32	5/16	3/16	2	04150-200	04150-200-Z5	04150-400	04150-400-Z5
3/16	3/8	3/16	2	04160-200	04160-200-Z5	04160-400	04160-400-Z5
7/32	7/16	1/4	2	04170-200	04170-200-Z5	04170-400	04170-400-Z5
1/4	1/2	1/4	2	04180-200	04180-200-Z5	04180-400	04180-400-Z5
5/16	1/2	5/16	2	04190-200	04190-200-Z5	04190-400	04190-400-Z5
3/8	5/8	3/8	2	04200-200	04200-200-Z5	04200-400	04200-400-Z5
7/16	5/8	7/16	2-1/2	04210-200	04210-200-Z5	04210-400	04210-400-Z5



BALL / 2 / 4 FLUTE / SOLID CARBIDE



				2 FLUTE BALL		4 FLUTE BALL	
Flute	Flute	Shank	Overall	Uncoated	ALTiN Coated	Uncoated	ALTiN Coated
Dia.	Lgth.	Dia.	Lgth.	EDP#	EDP#	EDP#	EDP#
1/32	1/16	1/8	1-1/2	05105-200	05105-200-Z5	05105-400	05105-400-Z5
3/64	3/32	1/8	1-1/2	05110-200	05110-200-Z5	05110-400	05110-400-Z5
1/16	1/8	1/8	1-1/2	05120-200	05120-200-Z5	05120-400	05120-400-Z5
3/32	3/16	1/8	1-1/2	05130-200	05130-200-Z5	05130-400	05130-400-Z5
1/8	1/4	1/8	1-1/2	05140-200	05140-200-Z5	05140-400	05140-400-Z5
5/32	5/16	3/16	2	05150-200	05150-200-Z5	05150-400	05150-400-Z5
3/16	3/8	3/16	2	05160-200	05160-200-Z5	05160-400	05160-400-Z5
7/32	7/16	1/4	2	05170-200	05170-200-Z5	05170-400	05170-400-Z5
1/4	1/2	1/4	2	05180-200	05180-200-Z5	05180-400	05180-400-Z5
5/16	1/2	5/16	2	05190-200	05190-200-Z5	05190-400	05190-400-Z5
3/8	5/8	3/8	2	05200-200	05200-200-Z5	05200-400	05200-400-Z5
7/16	5/8	7/16	2-1/2	05210-200	05210-200-Z5	05210-400	05210-400-Z5
1/2	5/8	1/2	2-1/2	05220-200	05220-200-Z5	05220-400	05220-400-Z5



Shorter Flute Length for Rigidity

- Center Cutting, 30 Degree Helix, RHC/RHS
- Premium Sub-Micron Carbide
- ALTiN Coating: Wear Resistance, Extended Tool Life, and Faster Speeds & Feeds

Tolerances: Cutting Dia: +.000/-0.002
Shank Dia: -.0001/-0.0004

What is your worn end mill saying?

We can tell you and improve it!

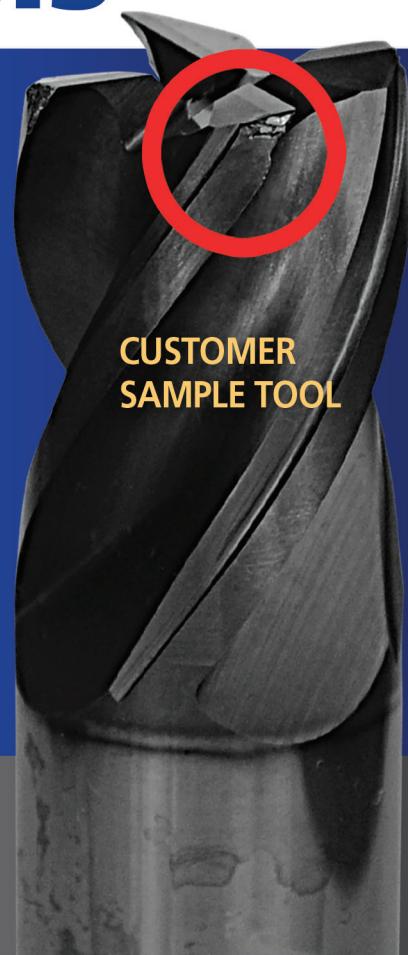
Wear Analysis™

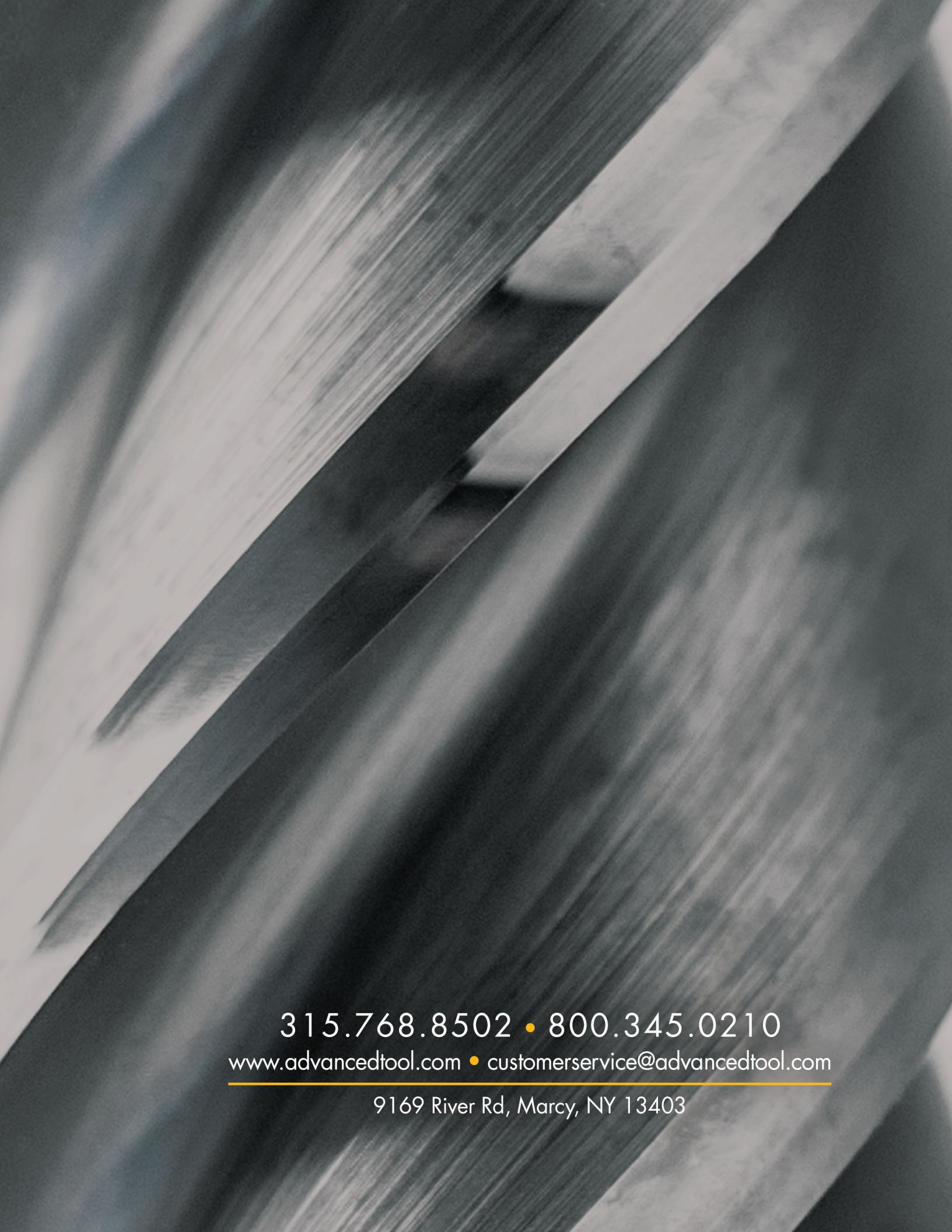
WEAR ANALYSIS™ FINDINGS FROM SAMPLE CORNER FAILURE DUE TO:

- Incorrect rake angle
- Helix angle too high for the material
- Clearance angle incorrect
- Coating degradation from excessive heat

RECOMMENDATIONS:

- Reduce helix angle
- Apply correct clearance and rake angles
- Proper coating selection
for material being machined





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