



## Variable Helix High Performance Micrograin Solid Carbide End Mills

Chatter Free • Harmonic Shift • Exceptional Finish • Corner Radius • ALTIN Coating  
 Great for slotting, roughing, ramping and finishing;  
 For detail speed and feed rate chart see [www.shars.com](http://www.shars.com)



Material	Alloy Steel	Stainless Steel	Cast Iron	Aluminum Alloy	High Temperature Alloy
Application					

For detail information on carbide blank and manufacturing environment of the following premium USA made solid carbide end mill, please refer to page 30.

SIZE	SHANK	FLUTE LENGTH	OAL	RADIUS	ALTIN COATED	
					4 FL	Price
1/4"	1/4"	3/8"	2"	.015-.020	415-0001	\$16.53
1/4"	1/4"	3/4"	2-1/2"	.015-.020	415-0008	18.80
1/4"	1/4"	1-1/8"	3"	.015-.020	415-0015	20.23
5/16"	5/16"	1/16"	2"	.015-.020	415-0002	19.43
5/16"	5/16"	13/16"	2-1/2"	.015-.020	415-0009	21.08
5/16"	5/16"	1-1/8"	3"	.015-.020	415-0016	24.35
3/8"	3/8"	1/2"	2"	.015-.020	415-0003	24.79
3/8"	3/8"	1"	2-1/2"	.015-.020	415-0010	27.17
3/8"	3/8"	1-1/4"	3"	.015-.020	415-0017	27.52
1/2"	1/2"	5/8"	2-1/2"	.030-.035	415-0004	37.62
1/2"	1/2"	1-1/4"	3"	.030-.035	415-0011	41.97
1/2"	1/2"	2"	4"	.030-.035	415-0018	51.06
5/8*	5/8"	3/4"	3"	.030-.035	415-0005	65.31
5/8*	5/8"	1-5/8"	3-1/2"	.030-.035	415-0012	66.85
5/8*	5/8"	2-1/4"	5"	.030-.035	415-0019	86.03
3/4*	3/4"	1"	3"	.030-.035	415-0006	93.83
3/4*	3/4"	1-5/8"	4"	.030-.035	415-0013	95.83
3/4*	3/4"	2-1/4"	5"	.030-.035	415-0020	109.05
1*	1"	1-1/4"	3"	.030-.035	415-0007	154.99
1*	1"	2"	4"	.030-.035	415-0014	163.63
1*	1"	3"	6"	.030-.035	415-0021	207.98

\*WITH WELDON FLATS

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+0.000,-.002	-.0001,-.0004



CORNER RADIUS  
 STUB LENGTH - 4 FLUTE - VARIABLE HELIX  
 ALTIN COATED



CORNER RADIUS  
 REGULAR LENGTH - 4 FLUTE - VARIABLE HELIX  
 ALTIN COATED



CORNER RADIUS  
 LONG LENGTH - 4 FLUTE - VARIABLE HELIX  
 ALTIN COATED



## 6 Flute 40° Helix High Performance Micrograin Solid Carbide End Mills

Radial Relief For Strength · Stronger Core · ALTIN Coating · Square End · Corner Radius  
 Great for profiling



Material	Alloy Steel	Stainless Steel	Cast Iron	Aluminum Alloy	High Temperature Alloy
Application					

For detail information on carbide blank and manufacturing environment of the following premium USA made solid carbide end mill, please refer to page 30.

TOLERANCES	DIAMETER	SHANK	RADIUS
ALL SIZES	+0.000,-.002"	-.0001,-.0004"	+0.002,-.002"

SIZE	SHANK	FLUTE LENGTH	OAL	SQUARE END		ALTIN COATED		
				6FL	Price	6FL	RADIUS	Price
1/4"	1/4"	3/4"	2-1/2"	415-0022	\$31.57	415-0038	.020	\$35.24
1/4"	1/4"	1-1/8"	3"	415-0030	34.80	415-0046	.020	38.86
5/16"	5/16"	13/16"	2-1/2"	415-0023	37.49	415-0039	.020	41.86
5/16"	5/16"	1-1/8"	3"	415-0031	40.60	415-0047	.020	45.33
3/8"	3/8"	1"	2-1/2"	415-0024	40.40	415-0040	.040	45.12
3/8"	3/8"	1-1/4"	3"	415-0032	46.16	415-0048	.040	51.53
7/16"	7/16"	1"	2-3/4"	415-0025	49.41	415-0041	.040	55.17
7/16"	7/16"	2"	4"	415-0033	68.84	415-0049	.040	76.85
1/2"	1/2"	1-1/4"	3"	415-0026	54.03	415-0042	.040	60.31
1/2"	1/2"	2"	4"	415-0034	71.78	415-0050	.040	80.14
5/8"	5/8"	1-5/8"	3-1/2"	415-0027	90.02	415-0043	.040	96.14
5/8"	5/8"	2-1/4"	5"	415-0035	111.51	415-0051	.040	119.08
3/4"	3/4"	1-5/8"	4"	415-0028	113.01	415-0044	.040	120.68
3/4"	3/4"	2-1/4"	5"	415-0036	139.26	415-0052	.040	148.72
1"	1"	2"	4"	415-0029	173.08	415-0045	.040	184.84
1"	1"	3"	6"	415-0037	282.24	415-0053	.040	301.42



REGULAR LENGTH - 6 FLUTE - SQUARE END - 40°  
 HELIX ALTIN COATED



LONG LENGTH - 6 FLUTE - SQUARE END - 40°  
 HELIX ALTIN COATED



CORNER RADIUS  
 REGULAR LENGTH - 6 FLUTE - 40°  
 HELIX ALTIN COATED



CORNER RADIUS  
 LONG LENGTH - 6 FLUTE - 40°  
 HELIX ALTIN COATED