



High-Performance Progressive Helix End Mills

A broad range of high-performance Progressive Helix End Mills

Benefits: Accupro's solid carbide, Progressive Helix End Mills are precision engineered to vastly outperform standard end mills. Designed with a changing helix from tip to shank, they reduce chatter and vibration, resulting in outstanding surface finishes.

Accupro offers an unparalleled assortment of end mill sizes and types

Offered in sizes from 1/8" to 1" and in 2 to 5 flutes for both square and corner radii configurations. The tools are available in the following coatings for all your milling needs: nACRo® (Aluminum Chromium Silicon Nanocomposite) and AlTiN (Aluminum Titanium Nitride).

Features

- Progressive helix (the helix changes from the tip to the shank) and unequal flute spacing at various points along the cutting length of the tool reduce chatter, resulting in a cleaner cut and a better finish
- Designed for aggressive machining of steel and difficult-to-cut materials, such as Inconels, titanium, cast iron and high-temperature alloys
- Allows for higher spindle speed and increased feed rates by up to 50%, resulting in heavier chip loads and larger chip loads per tooth, while extending tool life compared to standard carbide end mills
- End mills are also available with a corner radius, designed both to create a radius or a rounded corner at the bottom and side of a cut and to strengthen the corner of the cutting end allowing for longer tool life
- Eccentric relief on the cutting edge provides enhanced edge strength and smoother cutting action

Surface Treatment

nACRo (Aluminum Chromium Silicon Nanocomposite)

- Great for use in tough, difficult-to-cut materials in product machining of high-nickel and high-temperature alloys
- Extremely heat- and scratch-resistant

AlTiN (Aluminum Titanium Nitride)

- Used in aggressive machining of aircraft/aerospace materials, stainless steels, high-alloy carbon steels, nickel-based high-temperature alloys and titanium alloys



4-Flute Square



5-Flute Corner Radius

Additional Progressive Helix End Mill offerings

For more information, go to mscdirect.com/accupro or call 800.521.9520.



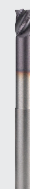
2-Flute*



3-Flute*



Ball Nose



Extended Reach



Chip Breaker

* Non-ferrous and ZrN only

Exclusively Distributed By





High-Performance Progressive Helix End Mills

4- and 5-Flute Progressive Helix End Mills

AlTiN Corner Radius

Mill Dia. (In.)	Shank Dia. (In.)	LOC (In.)	Corner Radius (In.)	OAL (In.)	4-Fl. Order #	5-Fl. Order #
1/4	1/4	3/4	0.010	2-1/2	76005669	43163146
1/4	1/4	3/4	0.015	2-1/2	76005677	43163153
1/4	1/4	3/4	0.020	2-1/2	76005685	43163161
1/4	1/4	3/4	0.030	2-1/2	76005693	43163179
1/4	1/4	3/4	0.060	2-1/2	76005701	43163187
3/8	3/8	1	0.010	2-1/2	—	43163195
3/8	3/8	1	0.015	2-1/2	76005768	43163203
3/8	3/8	1	0.020	2-1/2	—	43163211
3/8	3/8	1	0.030	2-1/2	76005776	43163229
3/8	3/8	1	0.040	2-1/2	—	43163237
3/8	3/8	1	0.045	2-1/2	76005784	43163245
3/8	3/8	1	0.060	2-1/2	76005792	—
1/2	1/2	1-1/4	0.010	3	76005818	43163252
1/2	1/2	1-1/4	0.015	3	76005826	43163260
1/2	1/2	1-1/4	0.020	3	76005834	43163278
1/2	1/2	1-1/4	0.030	3	76005842	43163286
1/2	1/2	1-1/4	0.060	3	76005859	43163310
1/2	1/2	1-1/4	0.090	3	76005867	—
1/2	1/2	1-1/4	0.120	3	76005875	—
3/4	3/4	1-5/8	0.020	4	76005917	43163351
3/4	3/4	1-5/8	0.030	4	76005925	43163369
3/4	3/4	1-5/8	0.060	4	76005933	—
3/4	3/4	1-5/8	0.090	4	—	43163377
3/4	3/4	1-5/8	0.120	4	76005941	43163385

AlTiN Square End

Mill Dia. (In.)	Shank Dia. (In.)	LOC (In.)	OAL (In.)	4-Fl. with 45° Chamfer Order #	4-Fl. without Chamfer Order #	5-Fl. without Chamfer Order #
1/8	1/8	1/4	1-1/2	84328061	65848335	84327550
1/4	1/4	3/4	2-1/2	04490520	65848442	04490702
3/8	3/8	1	2-1/2	04490546	65848467	04490736
3/8	3/8	1-1/2	4	84328012	65848293	04612313
1/2	1/2	5/8	2-1/2	04490645	65848392	04612412
1/2	1/2	1-1/4	3	04490561	65848483	04490751
1/2	1/2	2	4	84328038	65848319	04612339
5/8	5/8	1-5/8	3-1/2	04490579	65848491	04490769
3/4	3/4	1-5/8	4	04490587	65848509	04490777
3/4	3/4	2-1/4	5	84328053	—	04612354
1	1	3-1/4	6	84327964	—	04490785

nACRo Square End

Mill Dia. (In.)	Shank Dia. (In.)	LOC (In.)	OAL (In.)	4-Fl. with 45° Chamfer Order #	4-Fl. without Chamfer Order #	5-Fl. without Chamfer Order #
1/8	1/8	1/4	1-1/2	62896824	62761010	62761374
1/4	1/4	3/4	2-1/2	55171342	55171300	55171391
3/8	3/8	1	2-1/2	55171532	55171490	55171433
3/8	3/8	1-1/2	4	62896923	62761044	62761192
1/2	1/2	5/8	2-1/2	62896881	62761457	62761283
1/2	1/2	1-1/4	3	55171540	55171367	55171235
1/2	1/2	2	4	62896873	62761440	62761200
5/8	5/8	1-5/8	3-1/2	55171375	55171292	55171466
3/4	3/4	1-5/8	4	55171482	55171359	55171276
3/4	3/4	2-1/4	5	62896733	62761168	62761234
1	1	3-1/4	6	62896717	62761382	62761218

Speed and Feed Technical Information for 300 Stainless and High-Temperature Alloys

Type of Cut	Stainless Steel — Austenitic Moderately Difficult to Cut 304, 304L, 316, 321, Invar, Kovar	Depth of Cut (vs. Dia. of Tool)	300 Stainless (Austenitic Moderately Difficult to Cut 304, 304L, 316, 321, Invar, Kovar)							High-Temperature Alloys (Cobalt, Nickel and Iron Base Haynes, Hastelloy, Inconel, Waspaloy, Nimonic, Astroloy)						
			SFM Speed	End Mill Diameter Chip Load Per Tooth						SFM Speed	End Mill Diameter Chip Load Per Tooth					
				1/4"	3/8"	1/2"	5/8"	3/4"	1"		1/4"	3/8"	1/2"	5/8"	3/4"	1"
Shallow Slotting	< 32	< 50% of Dia.	280-300	0.0014	0.0022	0.0030	0.0038	0.0046	0.0062	100-140	0.0011	0.0018	0.0025	0.0031	0.0037	0.0050
	> 32		240-260	0.0011	0.0018	0.0025	0.0031	0.0037	0.0050	60-100	0.0009	0.0014	0.0020	0.0025	0.0030	0.0040
	> 42		140-180	0.0009	0.0014	0.0020	0.0025	0.0030	0.0040	40-80	0.0008	0.0012	0.0017	0.0021	0.0025	0.0034
Deep Slotting	< 32	75-100% of Dia.	250-300	0.0011	0.0018	0.0025	0.0031	0.0037	0.0050	100-140	0.0009	0.0014	0.0020	0.0025	0.0030	0.0040
	> 32		200-240	0.0009	0.0014	0.0020	0.0025	0.0030	0.0040	60-100	0.0007	0.0011	0.0016	0.0020	0.0024	0.0032
	> 42		140-180	0.0008	0.0012	0.0017	0.0021	0.0025	0.0034	40-80	0.0005	0.0009	0.0012	0.0015	0.0018	0.0024
Medium Radial 1.0 x Dia. Depth	< 32	30% x Dia. Radial	280-300	0.0014	0.0021	0.0030	0.0037	0.0045	0.0060	120-160	0.0011	0.0018	0.0025	0.0031	0.0037	0.0050
	> 32		240-260	0.0011	0.0018	0.0025	0.0031	0.0037	0.0050	100-120	0.0009	0.0014	0.0020	0.0025	0.0030	0.0040
	> 42		140-180	0.0009	0.0014	0.0020	0.0025	0.0030	0.0040	60-100	0.0008	0.0012	0.0017	0.0021	0.0025	0.0034
Heavy Radial 1.0 x Dia. Depth	< 32	50% x Dia. Radial	280-300	0.0011	0.0018	0.0025	0.0031	0.0037	0.0060	100-140	0.0009	0.0014	0.0020	0.0025	0.0030	0.0040
	> 32		240-260	0.0009	0.0014	0.0020	0.0025	0.0030	0.0050	60-100	0.0007	0.0011	0.0016	0.0020	0.0024	0.0032
	> 42		140-180	0.0008	0.0012	0.0017	0.0021	0.0025	0.0034	40-80	0.0005	0.0009	0.0012	0.0015	0.0018	0.0024
Medium Radial 2.0 x Dia. Depth	< 32	30% x Dia. Radial	250-300	0.0011	0.0018	0.0025	0.0031	0.0037	0.0050	120-160	0.0011	0.0018	0.0025	0.0031	0.0037	0.0050
	> 32		200-240	0.0007	0.0011	0.0015	0.0018	0.0022	0.0030	100-120	0.0007	0.0011	0.0015	0.0018	0.0022	0.0030
	> 42		140-180	0.0008	0.0012	0.0017	0.0021	0.0025	0.0034	60-100	0.0008	0.0012	0.0017	0.0021	0.0025	0.0034
Heavy Radial 2.0 x Dia. Depth	< 32	50% x Dia. Radial	250-275	0.0009	0.0014	0.0020	0.0025	0.0030	0.0040	100-140	0.0009	0.0014	0.0020	0.0025	0.0030	0.0040
	> 32		220-240	0.0007	0.0011	0.0015	0.0018	0.0022	0.0030	60-100	0.0007	0.0011	0.0016	0.0020	0.0024	0.0032
	> 42		140-180	0.0008	0.0012	0.0017	0.0021	0.0025	0.0034	40-80	0.0005	0.0009	0.0012	0.0015	0.0018	0.0024
Finishing Medium Radial	< 32	< 25% of Dia.	280-300	0.0011	0.0018	0.0025	0.0031	0.0037	0.0050	120-160	0.0011	0.0018	0.0025	0.0031	0.0037	0.0050
	> 32		240-260	0.0007	0.0011	0.0015	0.0018	0.0022	0.0030	100-120	0.0007	0.0011	0.0015	0.0018	0.0022	0.0030
	> 42		140-180	0.0008	0.0012	0.0017	0.0021	0.0025	0.0034	60-100	0.0008	0.0012	0.0017	0.0021	0.0025	0.0034
Finishing Light Radial	< 32	< 10% of Dia.	300-320	0.0014	0.0021	0.0030	0.0037	0.0045	0.0060	140-180	0.0014	0.0021	0.0030	0.0037	0.0045	0.0060
	> 32		240-260	0.0011	0.0018	0.0025	0.0031	0.0037	0.0050	120-140	0.0011	0.0018	0.0025	0.0031	0.0037	0.0050
	> 42		140-180	0.0009	0.0014	0.0020	0.0025	0.0030	0.0040	80-120	0.0009	0.0014	0.0020	0.0025	0.0030	0.0040
Finishing	< 32	< .010 Radial Depth	300-320	0.0023	0.0036	0.0050	0.0061	0.0074	0.0100	160-200	0.0018	0.0029	0.0040	0.0049	0.0059	0.0080
	> 32		240-260	0.0020	0.0032	0.0045	0.0055	0.0067	0.0090	140-160	0.0016	0.0025	0.0035	0.0043	0.0052	0.0070
	> 42		140-180	0.0018	0.0029	0.0040	0.0049	0.0059	0.0080	100-140	0.0014	0.0021	0.0030	0.0037	0.0045	0.0060

Formulas: RPM = (SFM x 3.82)/tool diameter IPM = number of flutes x RPM x chip load per tooth

The chart is a starting point based on a coated tool. Reduce rates by up to 50% if using an uncoated tool. Increase speed 30% for nACRo.

Important Disclaimer: The Accupro speed and feed rates are suggested by the manufacturer as general guidelines. Machine type, horsepower, spindle speed limitations, and toolholding and workholding devices all may impact a cutting tool's ability to perform properly. MSC is not responsible for tool failure, part damage or injury that may be caused as a result of the previously mentioned factors.

Accupro End Mills are also available in the following material applications:
Carbon Steel, Alloy Steels, Tool Steels, 300 Stainless, Precipitation SS, Cast Iron, Aluminum, Titanium

Satisfaction guaranteed, call 800.521.9520
or visit mscdirect.com/accupro