

MILLING RECOMMENDATIONS - GENERAL PURPOSE ENDMILLS

PROFILING			Surface Feet Per Minute (SFM)					Inches Per Tooth (IPT)						*CHIP THINNING Adjustments		
			Radial Depth of Cut (RDOC)													
			SFM based on RDOC					IPT *(BASELINE)								
Workpiece Material Group		Hardness	Cutting Diameter Engaged					Cutting Diameter						RDOC	Increase IPT	
			5%	10%	20%	30%	50%	5/16	3/8	1/2	5/8	3/4	1			
Steels	Free Machining & Low Carbon: 10XX, 11XX, 12XX 12LXX, ASTM A27 ASTM A36		≤ 28 Rc	1050	700	385	375	350	0.0027	0.0032	0.0045	0.0054	0.0063	0.0090		
	Medium Carbon, High Carbon Steels, Alloy Steels & Easy to Machine Tool: 13XX, 41XX, 43XX 51XX, 86XX, 93XX		28 - 38 Rc	630	420	320	250	210								
Tool & Die Steels	A2, H13, L6, P20, S7		28 - 44 Rc	525	350	300	275	250	0.0027	0.0032	0.0045	0.0054	0.0063	0.0090	50%	None
Stainless Steel	Easy to Machine, 430F, 301, 303, 410, 416 Annealed, 420F, 430, 430F		≤ 28 Rc	650	600	550	500	450	0.0027	0.0032	0.0045	0.0054	0.0063	0.0090	30%	1.1 x
	Moderately Difficult to Machine, Nitronic 50, Nitronic 60, 301, 303 304, 304L Incoloy 27-7MO, 316 316L, 321, 347		≤ 28 Rc	525	400	350	300	250							25%	1.2 x
	Difficult to Machine, 302B, 304B, 309, 310, 316, 316B, 316L, 316Ti, 317, 317L, 321, PH13-8Mo, Nitronics		> 28 Rc	525	400	350	300	250							20%	1.3 x
Super Alloys	High Temp, Nimonics, Inconel, Monel, Hastelloy		≤ 42 Rc	265	200	175	150	100	0.0014	0.0016	0.0023	0.0027	0.0032	0.0045	15%	1.4 x
	Titanium: Ti 3Al-2.5V, Ti 6Al-4V Ti 10V-2Fe-3Al		≤ 42 Rc	230	200	175	150	125							10%	1.8 x
Hardened Materials			45-55 Rc	250	240	230	210	200	0.0018	0.0021	0.0030	0.0036	0.0042	0.0060	7%	2.0 x
			55-65 Rc	200	180	160	150	100	0.0013	0.0014	0.0021	0.0024	0.0029	0.0041	5%	2.3 x
Cast-Iron	Gray: SAE J431, ASTM A48		≤ 240 HB	425	400	375	350	300	0.0027	0.0032	0.0045	0.0054	0.0063	0.0090	3%	3.0 x
	Ductile & Malleable: ASTM A536, ASTM 897, ASTM A47, ASTM A220 ASTM A602		> 240 HB	320	300	250	225	200							2%	3.5 x
Non-Ferrous	Aluminum, Brass, Bronze, Copper, Plastics, Graphite			1000	960	920	880	840	0.0027	0.0032	0.0045	0.0054	0.0063	0.0090	1%	5.0 x

SLOTTING		Hardness	Surface Feet Per Minute (SFM) Radial Depth of Cut (RDOC)			Inches Per Tooth (IPT)					
			SFM			IPT *(BASELINE)					
			Cutting Diameter Engaged			Cutting Diameter					
Workpiece Material Group			25%	50%	100%	5/16	3/8	1/2	5/8	3/4	1
Steels	Free Machining & Low Carbon: 10XX, 11XX, 12XX, 12LXX, ASTM A27, ASTM A36	≤ 28 Rc	385	370	350	0.0016	0.0019	0.0025	0.0031	0.0038	0.0050
	Medium Carbon, High Carbon Steels, Alloy Steels & Easy to Machine Tool: 13XX, 41XX, 43XX, 51XX, 86XX, 93XX	28 - 38 Rc	245	230	2210						
Tool & Die Steels	A2, H13, L6, P20, S7	28 - 44 Rc	210	195	175	0.0016	0.0019	0.0025	0.0031	0.0038	0.0050
Stainless Steel	Easy to Machine, 430F, 301, 303, 410, 416 Annealed, 420F, 430, 430F	≤ 28 Rc	385	370	350	0.0016	0.0019	0.0025	0.0031	0.0038	0.0050
	Moderately Difficult to Machine, Nitronic 50, Nitronic 60, 301, 303 304, 304L Incoloy 27-7MO, 316 316L, 321, 347	≤ 28 Rc	245	210	175						
	Difficult to Machine, 302B, 304B, 309, 310, 316, 316B, 316L, 316Ti, 317, 317L, 321, PH13-8Mo, Nitronics	> 28 Rc	210	195	175						
Super Alloys	High Temp, Nimonic, Inconel, Monel, Hastelloy	≤ 42 Rc	125	105	90	0.0008	0.0010	0.0013	0.0016	0.0017	0.0026
	Titanium: Ti 3Al-2.5V, Ti 6Al-4V Ti 10V-2Fe-3Al	≤ 42 Rc	100	90	80						
Hardened Materials	34-45 Rc		245	230	210	0.0016	0.0019	0.0025	0.0031	0.0038	0.0050
	45-55 Rc		175	160	140	0.0008	0.0010	0.0013	0.0016	0.0020	0.0025
	55-65 Rc		150	125	100	0.0004	0.0005	0.0008	0.0008	0.0010	0.0012
Cast-Iron	Gray: SAE J431, ASTM A48	≤ 240 HB	450	400	350	0.0016	0.0019	0.0025	0.0031	0.0038	0.0050
	Ductile & Malleable: ASTM A536, ASTM 897, ASTM A47, ASTM A220 ASTM A602	> 240 HB	300	250	225						
Non-Ferrous	Aluminum, Brass, Bronze, Copper, Plastics, Graphite		750	600	450	0.0016	0.0019	0.0025	0.0031	0.0038	0.0050

3 FLUTE - SINGLE END SQUARE

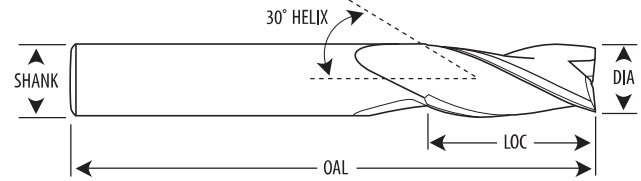
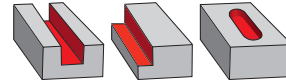
C2 Sub-Micron substrate for excellent wear resistance

Universal 30° helix designed for proven success in various materials

Square end design aids in additional surface finish quality

Multiple coating options for specific machining needs

Three flutes balance the benefits of maximum material removal and tool strength



DIAMETER TOLERANCE: +0.000 / -0.002"

SHANK TOLERANCE: +0.0000 / -0.0005"

DIA	Dec In	LOC	Shank	OAL	Length	Bright	TiN	TiCN	AlTiN
1/32	0.0313	1/8	1/8	1-1/2	Regular	205-001001	205-001002	205-001003	205-001004
3/64	0.0469	1/8	1/8	1-1/2	Regular	205-001020	205-001021	205-001022	205-001023
1/16	0.0625	1/4	1/8	1-1/2	Regular	205-001030	205-001031	205-001032	205-001033
5/64	0.0781	1/4	1/8	1-1/2	Regular	205-001040	205-001041	205-001042	205-001043
3/32	0.0938	3/8	1/8	1-1/2	Regular	205-001050	205-001051	205-001052	205-001053
7/64	0.1094	3/8	1/8	1-1/2	Regular	205-001060	205-001061	205-001062	205-001063
1/8	0.1250	1/2	1/8	1-1/2	Regular	205-001070	205-001071	205-001072	205-001073
5/32	0.1563	9/16	3/16	2	Regular	205-001090	205-001091	205-001092	205-001093
3/16	0.1875	5/8	3/16	2	Regular	205-001110	205-001111	205-001112	205-001113
7/32	0.2188	5/8	1/4	2-1/2	Regular	205-001130	205-001131	205-001132	205-001133
1/4	0.2500	3/4	1/4	2-1/2	Regular	205-001140	205-001143	205-021140	205-031140
9/32	0.2813	3/4	5/16	2-1/2	Regular	205-001150	205-001151	205-001152	205-001153
5/16	0.3125	13/16	5/16	2-1/2	Regular	205-001160	205-001161	205-001162	205-001163
3/8	0.3750	1	3/8	2-1/2	Regular	205-001180	205-001184	205-001185	205-001186
25/64	0.3906	1	7/16	2-3/4	Regular	205-001188	—	—	—
7/16	0.4375	1	7/16	2-3/4	Regular	205-001200	205-001201	205-001202	205-001203
1/2	0.5000	1	1/2	3	Regular	205-001210	205-001214	205-001215	205-001216
9/16	0.5625	1-1/4	9/16	3-1/2	Regular	205-001220	—	—	205-001223
5/8	0.6250	1-1/4	5/8	3-1/2	Regular	205-001230	205-001231	205-001232	205-001233
3/4	0.7500	1-1/2	3/4	4	Regular	205-001250	205-001251	205-001252	205-001253
1	1.0000	1-1/2	1	4	Regular	205-001270	205-001271	205-001272	205-001273