



**MILLING RECOMMENDATIONS - GP MINIATURE ENDMILLS**

**PROFILING** 

*Surface Feet Per Minute (SFM)*  
*Radial Depth of Cut (RDOC)*

*Inches Per Tooth (IPT)*

Workpiece Material Group	Hardness	SFM	Inches Per Tooth (IPT)										
			0.015	0.031	0.047	Cutting Diameter		0.125	0.187	0.250			
<b>Steels</b>	Free Machining & Low Carbon: 10XX, 11XX, 12XX, 12LXX, ASTM A27, ASTM A36	P ≤ 28 Rc	400										
	Medium/High Carbon Steels, Alloy Steels & Easy to Machine Tool: 13XX, 41XX, 43XX, 51XX, 86XX, 93XX	P 28-38 Rc	300	0.00007	0.00015	0.00023	0.00027	0.00034	0.00040	0.00054	0.00081	0.00100	
<b>Tool &amp; Die Steels</b>	A2, H13, L6, P20, S7	P 28-44 Rc	200										
<b>Stainless Steel</b>	Easy to Machine, 430F, 301, 303, 410, 416 Annealed, 420F, 430, 430F	M ≤ 28 Rc	400										
	Moderately Difficult to Machine, Nitronic 50, Nitronic 60, 301, 303, 304, 304L Incoloy 27-7MO, 316, 316L, 321, 347	M ≤ 28 Rc	200	0.00007	0.00015	0.00023	0.00027	0.00034	0.00040	0.00054	0.00081	0.00100	
	Difficult to Machine, 302B, 304B, 309, 310, 316, 316B, 316L, 316Ti, 317, 317L, 321, PH13-8Mo, Nitronics	M > 28 Rc	150										
<b>Super Alloys</b>	High Temp, Nimonic, Inconel, Monel, Hastelloy	S ≤ 42 Rc	70	0.00004	0.00008	0.00015	0.00023	0.00027	0.00034	0.00040	0.00054	0.00080	
	Titanium: Ti 3Al-2.5V, Ti 6Al-4V, Ti 10V-2Fe-3Al	S ≤ 42 Rc	150										
<b>Hardened Materials</b>		H 45-55 Rc	100	0.00010	0.00030	0.00050	0.00140	0.00180	0.00210	0.00300	0.00360	0.00420	
<b>Cast-Iron</b>	Gray: SAE J431, ASTM A48	K 160-200 HB	400										
	Ductile & Malleable, ASTM A536, ASTM 897, ASTM A47, ASTM A220, ASTM A602	K 200-250 HB	250	0.00007	0.00015	0.00023	0.00027	0.00034	0.00040	0.00054	0.00081	0.00100	
<b>Non-Ferrous</b>	Aluminum, Brass, Bronze, Copper, Plastics, Graphite	N	100	0.00004	0.00008	0.00015	0.00023	0.00027	0.00034	0.00040	0.00054	0.00080	

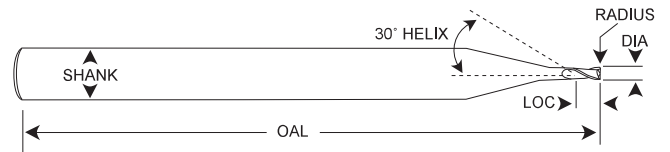
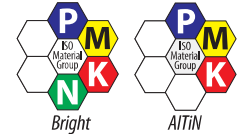
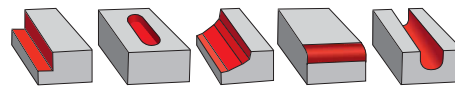
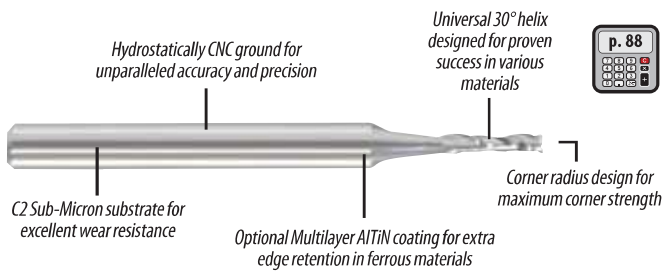
**SLOTTING** 

*Surface Feet Per Minute (SFM)*  
*Radial Depth of Cut (RDOC)*

*Inches Per Tooth (IPT)*

Workpiece Material Group	Hardness	SFM	Inches Per Tooth (IPT)										
			0.015	0.031	0.047	Cutting Diameter		0.125	0.187	0.250			
<b>Steels</b>	Free Machining & Low Carbon: 10XX, 11XX, 12XX, 12LXX, ASTM A27, ASTM A36	P ≤ 28 Rc	400					0.0003	0.0004	0.0005	0.0007	0.0010	
	Medium/High Carbon Steels, Alloy Steels & Easy to Machine Tool: 13XX, 41XX, 43XX, 51XX, 86XX, 93XX	P 28-38 Rc	300	0.0001	0.0001	0.0002	0.0002	0.0003	0.0003	0.0004	0.0007	0.0009	
<b>Tool &amp; Die Steels</b>	A2, H13, L6, P20, S7	P 28-44 Rc	200					0.0002	0.0003	0.0004	0.0006	0.0008	
<b>Stainless Steel</b>	Easy to Machine, 430F, 301, 303, 410, 416 Annealed, 420F, 430, 430F	M ≤ 28 Rc	400			0.0002	0.0002	0.0003	0.0004	0.0005	0.0007	0.0010	
	Moderately Difficult to Machine, Nitronic 50, Nitronic 60, 301, 303, 304, 304L Incoloy 27-7MO, 316, 316L, 321, 347	M ≤ 28 Rc	200	0.0001	0.0001	0.0002	0.0002	0.0003	0.0003	0.0004	0.0007	0.0009	
	Difficult to Machine, 302B, 304B, 309, 310, 316, 316B, 316L, 316Ti, 317, 317L, 321, PH13-8Mo, Nitronics	M > 28 Rc	150			0.0001	0.0001	0.0002	0.0002	0.0003	0.0004	0.0005	
<b>Super Alloys</b>	High Temp, Nimonic, Inconel, Monel, Hastelloy	S ≤ 42 Rc	70	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0003	0.0004	0.0005	
	Titanium: Ti 3Al-2.5V, Ti 6Al-4V, Ti 10V-2Fe-3Al	S ≤ 42 Rc	150										
<b>Hardened Materials</b>		H 35-45 Rc	100	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0003	0.0004	
<b>Cast-Iron</b>	Gray: SAE J431, ASTM A48	K 160-200 HB	400						0.0004	0.0005	0.0007	0.0010	
	Ductile & Malleable, ASTM A536, ASTM 897, ASTM A47, ASTM A220, ASTM A602	K 200-250 HB	250	0.0001	0.0001	0.0002	0.0002	0.0003	0.0003	0.0004	0.0007	0.0009	
<b>Non-Ferrous</b>	Aluminum, Brass, Bronze, Copper, Plastics, Graphite	N	750	0.0002	0.0003	0.0005	0.0006	0.0007	0.0008	0.0011	0.0017	0.0022	

## 2 FLUTE CORNER RADIUS



ALL SHANK DIAMETERS = 0.125"      ALL OAL = 1.500"  
 DIA TOLERANCE: ±0.0005"      LOC TOLERANCE: +0.0000 / +0.0120"      SHANK TOLERANCE: +0.0000/-0.0003"

DIA	LOC	Length	Corner Radius	Bright	AITiN
0.010	0.015	Stub	.002	250-6201002	250-6201002B
	0.030	Regular	.002	250-5201002	250-5201002B
0.015	0.023	Stub	.002	250-6201502	250-6201502B
	0.045	Regular	.002	250-5201502	250-5201502B
0.020	0.030	Stub	.005	250-6202005	250-6202005B
	0.060	Regular	.005	250-5202005	250-5202005B
0.025	0.038	Stub	.005	250-6202505	250-6202505B
	0.075	Regular	.005	250-5202505	250-5202505B
0.030	0.045	Stub	.005	250-6203005	250-6203005B
		Regular	.010	250-6203010	250-6203010B
	0.090	Regular	.005	250-5203005	250-5203005B
			.010	250-5203010	250-5203010B

2 FLUTE - RADIUS CONTINUED

ALL SHANK DIAMETERS = 0.125"

ALL OAL = 1.500"

DIA	LOC	Length	Corner Radius	Bright	AITiN
0.031	0.047	Stub	.005	250-6203105	250-6203105B
			.010	250-6203110	250-6203110B
	0.093	Regular	.005	250-5203105	250-5203105B
.010			250-5203110	250-5203110B	
0.035	0.053	Stub	.005	250-6203505	250-6203505B
			.010	250-6203510	250-6203510B
	0.105	Regular	.005	250-5203505	250-5203505B
.010			250-5203510	250-5203510B	
0.040	0.060	Stub	.005	250-6204005	250-6204005B
			.010	250-6204010	250-6204010B
	0.120	Regular	.005	250-5204005	250-5204005B
.010			250-5204010	250-5204010B	
0.045	0.068	Stub	.005	250-6204505	250-6204505B
			.010	250-6204510	250-6204510B
	0.135	Regular	.015	250-6204515	250-6204515B
.005			250-5204505	250-5204505B	
0.047	0.071	Stub	.010	250-5204510	250-5204510B
			.015	250-5204515	250-5204515B
	0.141	Regular	.005	250-6204705	250-6204705B
.010			250-6204710	250-6204710B	
0.050	0.075	Stub	.015	250-6204715	250-6204715B
			.005	250-5204705	250-5204705B
	0.150	Regular	.010	250-5204710	250-5204710B
.015			250-5204715	250-5204715B	
0.055	0.083	Stub	.005	250-6205005	250-6205005B
			.010	250-6205010	250-6205010B
	0.165	Regular	.015	250-6205015	250-6205015B
.005			250-5205005	250-5205005B	
0.060	0.090	Stub	.010	250-5205010	250-5205010B
			.015	250-5205015	250-5205015B
	0.180	Regular	.005	250-6205505	250-6205505B
.010			250-6205510	250-6205510B	
0.062	0.093	Stub	.015	250-6205515	250-6205515B
			.005	250-6206005	250-6206005B
	0.186	Regular	.010	250-6206010	250-6206010B
.015			250-6206015	250-6206015B	
0.065	0.098	Stub	.005	250-5206005	250-5206005B
			.010	250-5206010	250-5206010B
	0.195	Regular	.015	250-5206015	250-5206015B
.005			250-6206205	250-6206205B	
0.070	0.105	Stub	.010	250-6206210	250-6206210B
			.015	250-6206215	250-6206215B
	0.210	Regular	.005	250-6206205	250-6206205B
.010			250-5206210	250-5206210B	
0.075	0.113	Stub	.015	250-5206215	250-5206215B
			.005	250-6206505	250-6206505B
	0.225	Regular	.010	250-6206510	250-6206510B
.015			250-6206515	250-6206515B	
0.070	0.105	Stub	.005	250-6206505	250-6206505B
			.010	250-6206510	250-6206510B
	0.210	Regular	.015	250-6206515	250-6206515B
.005			250-6207005	250-6207005B	
0.075	0.113	Stub	.010	250-5207005	250-5207005B
			.015	250-5207010	250-5207010B
	0.225	Regular	.005	250-5207010	250-5207010B
.010			250-5207015	250-5207015B	
0.075	0.113	Stub	.005	250-6207505	250-6207505B
			.010	250-6207510	250-6207510B
	0.225	Regular	.015	250-6207515	250-6207515B
.005			250-5207505	250-5207505B	
0.075	0.113	Stub	.010	250-5207510	250-5207510B
			.015	250-5207515	250-5207515B
	0.225	Regular	.005	250-6207505	250-6207505B
.010			250-6207510	250-6207510B	
0.075	0.113	Stub	.015	250-6207515	250-6207515B
			.005	250-5207505	250-5207505B
	0.225	Regular	.010	250-5207510	250-5207510B
.015			250-5207515	250-5207515B	

2 FLUTE - RADIUS CONTINUED

ALL SHANK DIAMETERS = 0.125" ALL OAL = 1.500"

DIA	LOC	Length	Corner Radius	Bright	AITiN
0.078	0.117	Stub	.005	250-6207805	250-6207805B
			.010	250-6207810	250-6207810B
			.015	250-6207815	250-6207815B
	0.234	Regular	.005	250-5207805	250-5207805B
			.010	250-5207810	250-5207810B
			.015	250-5207815	250-5207815B
0.080	0.120	Stub	.005	250-6208005	250-6208005B
			.010	250-6208010	250-6208010B
			.015	250-6208015	250-6208015B
	0.240	Regular	.005	250-5208005	250-5208005B
			.010	250-5208010	250-5208010B
			.015	250-5208015	250-5208015B
0.085	0.128	Stub	.005	250-6208505	250-6208505B
			.010	250-6208510	250-6208510B
			.015	250-6208515	250-6208515B
	0.255	Regular	.005	250-5208505	250-5208505B
			.010	250-5208510	250-5208510B
			.015	250-5208515	250-5208515B
0.090	0.135	Stub	.005	250-6209005	250-6209005B
			.010	250-6209010	250-6209010B
			.015	250-6209015	250-6209015B
	0.270	Regular	.005	250-5209005	250-5209005B
			.010	250-5209010	250-5209010B
			.015	250-5209015	250-5209015B
0.093	0.140	Stub	.005	250-6209305	250-6209305B
			.010	250-6209310	250-6209310B
			.015	250-6209315	250-6209315B
	0.279	Regular	.005	250-5209305	250-5209305B
			.010	250-5209310	250-5209310B
			.015	250-5209315	250-5209315B
0.095	0.143	Stub	.005	250-6209505	250-6209505B
			.010	250-6209510	250-6209510B
			.015	250-6209515	250-6209515B
	0.285	Regular	.005	250-5209505	250-5209505B
			.010	250-5209510	250-5209510B
			.015	250-5209515	250-5209515B
0.100	0.150	Stub	.005	250-6210005	250-6210005B
			.010	250-6210010	250-6210010B
			.015	250-6210015	250-6210015B
	0.300	Regular	.005	250-5210005	250-5210005B
			.010	250-5210010	250-5210010B
			.015	250-5210015	250-5210015B
0.105	0.158	Stub	.010	250-6210510	250-6210510B
			.015	250-6210515	250-6210515B
			.020	250-6210520	250-6210520B
	0.315	Regular	.010	250-5210510	250-5210510B
			.015	250-5210515	250-5210515B
			.020	250-5210520	250-5210520B
0.110	0.165	Stub	.010	250-6211010	250-6211010B
			.015	250-6211015	250-6211015B
			.020	250-6211020	250-6211020B
	0.330	Regular	.010	250-5211010	250-5211010B
			.015	250-5211015	250-5211015B
			.020	250-5211020	250-5211020B
0.115	0.173	Stub	.010	250-6211510	250-6211510B
			.015	250-6211515	250-6211515B
			.020	250-6211520	250-6211520B
	0.345	Regular	.010	250-5211510	250-5211510B
			.015	250-5211515	250-5211515B
			.020	250-5211520	250-5211520B
0.120	0.180	Stub	.010	250-6212010	250-6212010B
			.015	250-6212015	250-6212015B
			.020	250-6212020	250-6212020B
	0.360	Regular	.010	250-5212010	250-5212010B
			.015	250-5212015	250-5212015B
			.020	250-5212020	250-5212020B

