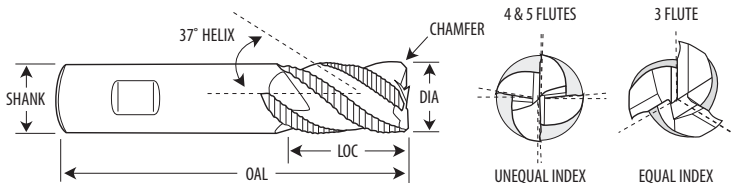
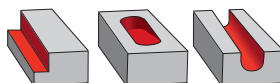
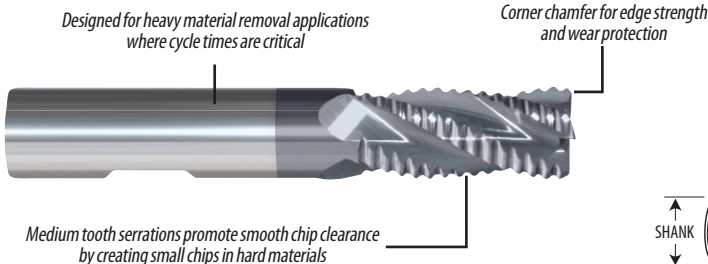


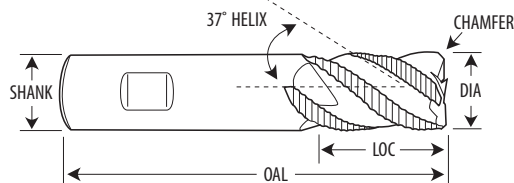
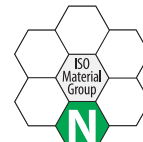
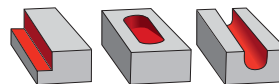
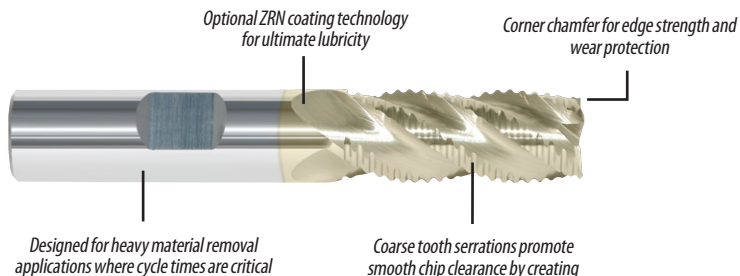
# AGGRESSOR<sup>M</sup>



DIA TOLERANCE: +0.000 / -0.002" SHANK TOLERANCE: +0.0000 / -0.0004"

DIA	DEC IN	FLUTES	LOC	SHANK	OAL	LENGTH	CHAMFER	BRIGHT	ALTiCrN
3/16	0.1875	3	5/8	3/16	2	Regular	.020	256-187625	256-187628
1/4	0.2500	4	3/4	1/4	2-1/2	Regular	.020	256-250750	256-250753
5/16	0.3125	4	3/4	5/16	2-1/2	Regular	.020	256-312812	256-312815
3/8	0.3750	4	7/8	3/8	2-1/2	Regular	.020	256-375875	256-375878
7/16	0.4375	4	1	7/16	2-3/4	Regular	.025	256-437100	256-437103
1/2	0.5000	4	1-1/4	1/2	3	Regular	.025	256-500100	256-500103
5/8	0.6250	4	1-1/4	5/8	3-1/2	Regular	.025	256-625114	256-625117
3/4	0.7500	4	1-5/8	3/4	4	Regular	.025	256-750112	256-750115
1	1.0000	5	1-3/4	1	4	Regular	.025	256-100112	256-100115

# AGGRESSOR<sup>C</sup>



DIA TOLERANCE: +0.000 / -0.002" SHANK TOLERANCE: +0.0000 / -0.0004"

DIA	DEC IN	FLUTES	LOC	SHANK	OAL	LENGTH	CHAMFER	BRIGHT	ZRN
3/16	0.1875	3	3/4	3/16	2	Regular	0.020	255-050187	255-050187D
1/4	0.2500	3	3/4	1/4	2-1/2	Regular	0.020	255-050250	255-050250D
5/16	0.3125	3	7/8	5/16	2-1/2	Regular	0.020	255-050312	255-050312D
3/8	0.3750	3	1	3/8	2-1/2	Regular	0.020	255-050375	255-050375D
1/2	0.5000	3	1-1/4	1/2	3	Regular	0.025	255-050500	255-050500D
5/8	0.6250	3	1-1/4	5/8	3-1/2	Regular	0.025	255-050625	255-050625D
3/4	0.7500	3	1-5/8	3/4	4	Regular	0.025	255-050750	255-050750D
1	1.0000	3	1-3/4	1	4	Regular	0.025	255-051000	255-051000D

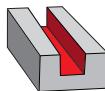
MILLING RECOMMENDATIONS



PROFILING

Workpiece Material Group	Hardness	Surface Feet Per Minute (SFM) Radial Depth of Cut (RDOC)					Inches Per Tooth (IPT)					*CHIP THINNING Adjustments		
		SFM based on RDOC					IPT* (BASELINE)							
		Cutting Diameter Engaged					Cutting Diameter							
Steels	Free Machining & Low Carbon: 10XX, 11XX, 12XX, 12LXX, ASTM A27, ASTM A36	≤ 28 Rc	1485	1485	1155	1000	825	0.0033	0.0047	0.0066	0.0078	0.0090	RDOC	Increase IPT
	Medium Carbon, High Carbon Steels, Alloy Steels & Easy to Machine Tool: 13XX, 41XX, 43XX, 51XX, 86XX, 93XX	28 - 38 Rc	890	890	825	750	660	0.0033	0.0047	0.0066	0.0078	0.0090		
Tool & Die Steels	A2, H13, L6, P20, S7	28 - 44 Rc	750	750	660	560	430	0.0033	0.0047	0.0066	0.0078	0.0090	30%	1.1 x
Stainless Steel	Easy to Machine, 430F, 301, 303, 410, 416 Annealed, 420F, 430, 430F	≤ 28 Rc	500	500	430	400	350	0.0033	0.0047	0.0066	0.0078	0.0090	25%	1.2 x
	Moderately Difficult to Machine, Nitronic 50, Nitronic 60, 301, 303, 304, 304L Incoloy 27-7MO, 316 316L, 321, 347	≤ 28 Rc	430	430	400	370	330	0.0025	0.0033	0.0049	0.0059	0.0066	20%	1.3 x
Super Alloys	Difficult to Machine, 302B, 304B, 309, 310, 316, 316B, 316L, 316Ti, 317, 317L, 321, PH13-8Mo, Nitronics	> 28 Rc	430	430	400	360	330	0.0025	0.0033	0.0049	0.0059	0.0066	15%	1.4 x
	High Temp, Nimonic, Inconel, Monel, Hastelloy	≤ 42 Rc	165	165	130	115	100	0.0008	0.0011	0.0017	0.0019	0.0023	10%	1.8 x
Hardened Materials	Titanium: Ti 3Al-2.5V, Ti 6Al-4V Ti 10V-2Fe-3Al	≤ 42 Rc	400	400	370	300	250	0.0008	0.0011	0.0017	0.0019	0.0023	7%	2.0 x
	35 - 45 Rc	450	450	410	300	165	0.0029	0.0039	0.0059	0.0070	0.0078	5%	2.3 x	
Cast-Iron	Gray: SAE J431, ASTM A48	≤ 240 HB	1180	1180	1120	800	630	0.0033	0.0047	0.0066	0.0078	0.0090	3%	3.0 x
	Ductile & Malleable: ASTM A536, ASTM 897, ASTM A47, ASTM A220 ASTM A602	> 240 HB	530	530	500	460	430	0.0033	0.0047	0.0066	0.0078	0.0090	2%	3.5 x
												1%	5.0 x	

†1/4" AND SMALLER DIAMETERS: Use caution when Profiling more than 50% or Slotting more than 25%



SLOTTING

Workpiece Material Group	Hardness	Surface Feet Per Minute (SFM) Radial Depth of Cut (RDOC)			Inches Per Tooth (IPT)					
		SFM			IPT* (BASELINE)					
		Cutting Diameter Engaged			Cutting Diameter					
Steels	Free Machining & Low Carbon: 10XX, 11XX, 12XX, 12LXX, ASTM A27, ASTM A36	≤ 28 Rc	800	700	500	5/16	3/8	1/2	5/8	3/4
	Medium Carbon, High Carbon Steels, Alloy Steels & Easy to Machine Tool: 13XX, 41XX, 43XX, 51XX, 86XX, 93XX	28 - 38 Rc	650	550	450	0.0010	0.0020	0.0025	0.0030	0.0035
Tool & Die Steels	A2, H13, L6, P20, S7	28 - 44 Rc	500	450	400	0.0010	0.0020	0.0025	0.0030	0.0035
Stainless Steel	Easy to Machine, 430F, 301, 303, 410, 416 Annealed, 420F, 430, 430F	≤ 28 Rc	400	350	325	0.0010	0.0020	0.0025	0.0030	0.0035
	Moderately Difficult to Machine, Nitronic 50, Nitronic 60, 301, 303, 304, 304L Incoloy 27-7MO, 316 316L, 321, 347	≤ 28 Rc	320	275	250	0.0010	0.0020	0.0025	0.0030	0.0035
Super Alloys	Difficult to Machine, 302B, 304B, 309, 310, 316, 316B, 316L, 316Ti, 317, 317L, 321, PH13-8Mo, Nitronics	> 28 Rc	330	275	250	0.0010	0.0020	0.0025	0.0030	0.0035
	High Temp, Nimonic, Inconel, Monel, Hastelloy	≤ 42 Rc	110	100	95	0.0005	0.0010	0.0010	0.0015	0.0020
Hardened Materials	Titanium: Ti 3Al-2.5V, Ti 6Al-4V Ti 10V-2Fe-3Al	≤ 42 Rc	230	210	195	0.0008	0.0009	0.0011	0.0017	0.0019
	35 - 45 Rc	200	180	150	0.0010	0.0020	0.0025	0.0030	0.0035	
Cast-Iron	Gray: SAE J431, ASTM A48	≤ 240 HB	600	550	500	0.0010	0.0020	0.0025	0.0030	0.0035
	Ductile & Malleable: ASTM A536, ASTM 897, ASTM A47, ASTM A220 ASTM A602	> 240 HB	320	275	250	0.0010	0.0020	0.0025	0.0030	0.0035

