










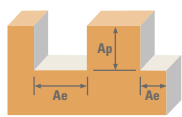


Series	Hardness	Ae x DC	Ap x DC	Vc (sfm)	DC • in									
					3/16	1/4	3/8	1/2	5/8	3/4	1			
<b>P</b>	<b>CARBON STEELS</b> 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 275 Bhn or ≤ 28 HRc	Profile 	≤ 0.05	≤ 1	635	RPM	12937	9703	6469	4851	3881	3234	2426
						(508-762)	Fz	0.0008	0.0012	0.0022	0.0030	0.0037	0.0038	0.0042
						Feed (ipm)	72.4	81.5	99.6	131.0	129.2	135.2	112.1	
		Finish 	≤ 0.02	≤ 2	762	RPM	15524	11643	7762	5822	4657	3881	2911	
					(610-914)	Fz	0.0006	0.0010	0.0018	0.0024	0.0030	0.0030	0.0034	
					Feed (ipm)	69.5	78.2	95.6	125.7	124.1	129.8	107.6		
	<b>ALLOY STEELS</b> 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 375 Bhn or ≤ 40 HRc	Profile 	≤ 0.05	≤ 1	360	RPM	7334	5501	3667	2750	2200	1834	1375
						(288-432)	Fz	0.0006	0.0009	0.0017	0.0023	0.0029	0.0030	0.0032
						Feed (ipm)	30.8	34.7	43.6	56.9	57.4	60.5	48.4	
		Finish 	≤ 0.02	≤ 2	432	RPM	8801	6601	4401	3300	2640	2200	1650	
					(346-518)	Fz	0.0005	0.0007	0.0014	0.0018	0.0023	0.0024	0.0026	
					Feed (ipm)	29.6	33.3	41.9	54.7	55.1	58.1	46.5		
<b>M</b>	<b>STAINLESS STEELS (FREE MACHINING)</b> 303, 416, 420F, 430F, 440F	≤ 275 Bhn or ≤ 28 HRc	Profile 	≤ 0.05	≤ 1	560	RPM	11409	8557	5705	4278	3423	2852	2139
						(448-672)	Fz	0.0006	0.0009	0.0017	0.0023	0.0029	0.0030	0.0032
						Feed (ipm)	47.9	53.9	67.9	88.6	89.3	94.1	75.3	
		Finish 	≤ 0.02	≤ 2	448	RPM	9127	6845	4564	3423	2738	2282	1711	
					(358-538)	Fz	0.0005	0.0007	0.0014	0.0018	0.0023	0.0024	0.0026	
					Feed (ipm)	30.7	34.5	43.4	56.7	57.2	60.2	48.2		
	<b>STAINLESS STEELS (DIFFICULT)</b> 304, 304L, 316, 316L	≤ 275 Bhn or ≤ 28 HRc	Profile 	≤ 0.05	≤ 1	385	RPM	7844	5883	3922	2941	2353	1961	1471
						(308-462)	Fz	0.0005	0.0007	0.0014	0.0018	0.0023	0.0024	0.0026
						Feed (ipm)	27.5	28.8	38.4	47.7	48.7	51.8	42.1	
		Finish 	≤ 0.02	≤ 2	462	RPM	9412	7059	4706	3530	2824	2353	1765	
					(370-554)	Fz	0.0004	0.0006	0.0011	0.0014	0.0018	0.0019	0.0021	
					Feed (ipm)	26.4	27.7	36.9	45.7	46.8	49.7	40.4		
<b>STAINLESS STEELS (PH)</b> 13-8 PH, 15-5 PH, 17-4 PH, Custom 450	≤ 325 Bhn or ≤ 35 HRc	Profile 	≤ 0.05	≤ 1	355	RPM	7233	5424	3616	2712	2170	1808	1356	
					(284-426)	Fz	0.0005	0.0007	0.0014	0.0018	0.0023	0.0024	0.0026	
					Feed (ipm)	25.3	26.6	35.4	43.9	44.9	47.7	38.8		
	Finish 	≤ 0.02	≤ 2	426	RPM	8679	6509	4340	3255	2604	2170	1627		
				(341-511)	Fz	0.0004	0.0006	0.0011	0.0014	0.0018	0.0019	0.0021		
				Feed (ipm)	24.3	25.5	34.0	42.2	43.1	45.8	37.2			
<b>K</b>	<b>CAST IRONS (LOW &amp; MEDIUM ALLOY)</b> Gray, Malleable, Ductile	≤ 220 Bhn or ≤ 19 HRc	Profile 	≤ 0.05	≤ 1	705	RPM	14363	10772	7182	5386	4309	3591	2693
						(564-846)	Fz	0.0008	0.0012	0.0022	0.0030	0.0037	0.0038	0.0042
						Feed (ipm)	80.4	90.5	110.6	145.4	143.5	150.1	124.4	
		Finish 	≤ 0.02	≤ 2	846	RPM	17236	12927	8618	6463	5171	4309	3232	
					(677-1015)	Fz	0.0006	0.0010	0.0018	0.0024	0.0030	0.0030	0.0034	
					Feed (ipm)	77.2	86.9	106.2	139.6	137.7	144.1	119.4		

continued on next page

# FRACTIONAL Multi-Carb



Series 66, 66CR Fractional	Hardness	Ae x DC	Ap x DC	Vc (sfm)	DC • in									
					3/16	1/4	3/8	1/2	5/8	3/4	1			
<b>K</b>  <b>CAST IRONS (HIGH ALLOY) Gray, Malleable, Ductile</b>	≤ 260 Bhn or ≤ 26 HRc	Profile 	≤ 0.05	≤ 1	540	RPM	11002	8251	5501	4126	3300	2750	2063	
					(432-648)	Fz	0.0006	0.0009	0.0017	0.0023	0.0029	0.0030	0.0032	
					648	Feed (ipm)	46.2	52.0	65.5	85.4	86.1	90.8	72.6	
		Finish 	≤ 0.02	≤ 2	(518-778)	RPM	13202	9901	6601	4951	3961	3300	2475	
					Fz	0.0005	0.0007	0.0014	0.0018	0.0023	0.0024	0.0026		
					648	Feed (ipm)	44.4	49.9	62.8	82.0	82.7	87.1	69.7	
	<b>S</b>  <b>SUPER ALLOYS (NICKEL, COBALT, IRON BASE) Inconel 601, 617, 625, Incoloy, Monel 400</b>	≤ 300 Bhn or ≤ 32 HRc	Profile 	≤ 0.05	≤ 1	105	RPM	2139	1604	1070	802	642	535	401
						(84-126)	Fz	0.0005	0.0007	0.0014	0.0018	0.0023	0.0024	0.0026
						126	Feed (ipm)	7.5	7.9	10.5	13.0	13.3	14.1	11.5
			Finish 	≤ 0.02	≤ 2	(101-151)	RPM	2567	1925	1284	963	770	642	481
						Fz	0.0004	0.0006	0.0011	0.0014	0.0018	0.0019	0.0021	
						126	Feed (ipm)	7.2	7.5	10.1	12.5	12.8	13.6	11.0
≤ 400 Bhn or ≤ 43 HRc		Profile 	≤ 0.05	≤ 1	85	RPM	1732	1299	866	649	520	433	325	
					(68-102)	Fz	0.0003	0.0005	0.0009	0.0011	0.0014	0.0015	0.0016	
					102	Feed (ipm)	3.6	4.5	5.5	6.4	6.5	7.1	5.7	
		Finish 	≤ 0.02	≤ 2	(82-122)	RPM	2078	1559	1039	779	623	520	390	
					Fz	0.0002	0.0004	0.0007	0.0009	0.0011	0.0012	0.0013		
					102	Feed (ipm)	3.5	4.4	5.2	6.2	6.3	6.9	5.5	
<b>TITANIUM ALLOYS Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si</b>	≤ 350 Bhn or ≤ 38 HRc	Profile 	≤ 0.05	≤ 1	390	RPM	7946	5959	3973	2980	2384	1986	1490	
					(312-468)	Fz	0.0005	0.0008	0.0015	0.0021	0.0026	0.0027	0.0029	
					468	Feed (ipm)	27.8	33.4	41.7	56.3	55.8	59.0	47.5	
		Finish 	≤ 0.02	≤ 2	(374-562)	RPM	9535	7151	4767	3576	2860	2384	1788	
					Fz	0.0004	0.0006	0.0012	0.0017	0.0021	0.0022	0.0023		
					468	Feed (ipm)	26.7	32.0	40.0	54.1	53.5	56.6	45.6	
	≤ 440 Bhn or ≤ 47 HRc	Profile 	≤ 0.05	≤ 1	140	RPM	2852	2139	1426	1070	856	713	535	
					(112-168)	Fz	0.0005	0.0008	0.0015	0.0021	0.0026	0.0027	0.0029	
					168	Feed (ipm)	10.0	12.0	15.0	20.2	20.0	21.2	17.1	
		Finish 	≤ 0.02	≤ 2	(134-202)	RPM	3423	2567	1711	1284	1027	856	642	
					Fz	0.0004	0.0006	0.0012	0.0017	0.0021	0.0022	0.0023		
					168	Feed (ipm)	9.6	11.5	14.4	19.4	19.2	20.3	16.4	
<b>H</b>  <b>TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2</b>	≤ 375 Bhn or ≤ 40 HRc	Profile 	≤ 0.05	≤ 1	290	RPM	5908	4431	2954	2216	1772	1477	1108	
					(232-348)	Fz	0.0004	0.0006	0.0012	0.0016	0.0020	0.0021	0.0022	
					348	Feed (ipm)	16.5	18.6	24.8	31.9	31.9	34.1	26.8	
		Finish 	≤ 0.02	≤ 2	(278-418)	RPM	7090	5317	3545	2659	2127	1772	1329	
					Fz	0.0003	0.0005	0.0010	0.0013	0.0016	0.0017	0.0018		
					348	Feed (ipm)	15.9	17.9	23.8	30.6	30.6	32.8	25.7	

Bhn (Brinell)      HRc (Rockwell C)

rpm = Vc x 3.82 / DC

ipm = Fz x number of flutes x rpm

reduce speed and feed for materials harder than listed

feed rates listed have chip thinning adjustments included where applicable

refer to the SGS Tool Wizard® for complete technical information (www.kyocera-sgstool.com)