

# Fractional Speed & Feed Recommendations

Series Z5, Z5CR Fractional	Hardness (Brinell)	Profile Ae x D <sub>1</sub> Ap x D <sub>1</sub>	Vc (SFM)	Diameter (D,) (inch)							
				1/8	1/4	3/8	1/2	5/8	3/4	1	
<b>P</b> CARBON STEELS 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 275	Profile ≤ 0.5    ≤ 1.5	555	RPM	16961	8480	5654	4240	3392	2827	2120
			(444-666)	Fz	0.0005	0.0012	0.0023	0.0031	0.0034	0.0037	0.0043
				Feed (IPM)	39.9	50.9	65.0	65.7	57.7	52.3	45.6
		Slot 1    ≤ 1	440	RPM	13446	6723	4482	3362	2689	2241	1681
			(352-528)	Fz	0.0005	0.0012	0.0023	0.0031	0.0034	0.0037	0.0043
				Feed (IPM)	31.6	40.3	51.5	52.1	45.7	41.5	36.1
<b>P</b> ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 375	Profile ≤ 0.5    ≤ 1.5	315	RPM	9626	4813	3209	2407	1925	1604	1203
			(252-378)	Fz	0.0004	0.0009	0.0017	0.0023	0.0026	0.0028	0.0032
				Feed (IPM)	16.8	21.7	27.3	27.7	25.0	22.5	19.3
		Slot 1    ≤ 1	250	RPM	7640	3820	2547	1910	1528	1273	955
			(200-300)	Fz	0.0004	0.0009	0.0017	0.0023	0.0026	0.0028	0.0032
				Feed (IPM)	13.4	17.2	21.6	22.0	19.9	17.8	15.3
<b>P</b> TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 375	Profile ≤ 0.5    ≤ 1.5	185	RPM	5654	2827	1885	1413	1131	942	707
			(148-222)	Fz	0.0003	0.0007	0.0014	0.0018	0.0020	0.0022	0.0025
				Feed (IPM)	7.6	9.9	13.2	12.7	11.3	10.4	8.8
		Slot 1    ≤ 1	145	RPM	4431	2216	1477	1108	886	739	554
			(116-174)	Fz	0.0003	0.0007	0.0014	0.0018	0.0020	0.0022	0.0025
				Feed (IPM)	6.0	7.8	10.3	10.0	8.9	8.1	6.9
<b>K</b> CAST IRONS (LOW & MEDIUM ALLOY) Gray, Malleable, Ductile	≤ 220	Profile ≤ 0.5    ≤ 1.5	445	RPM	13599	6800	4533	3400	2720	2267	1700
			(356-534)	Fz	0.0004	0.0011	0.0021	0.0028	0.0031	0.0034	0.0039
				Feed (IPM)	28.6	37.4	47.6	47.6	42.2	38.5	33.1
		Slot 1    ≤ 1	355	RPM	10849	5424	3616	2712	2170	1808	1356
			(284-426)	Fz	0.0004	0.0011	0.0021	0.0028	0.0031	0.0034	0.0039
				Feed (IPM)	22.8	29.8	38.0	38.0	33.6	30.7	26.4
<b>K</b> CAST IRONS (HIGH ALLOY) Gray, Malleable, Ductile	> 220 ≤ 260	Profile ≤ 0.5    ≤ 1.5	340	RPM	10390	5195	3463	2598	2078	1732	1299
			(272-408)	Fz	0.0003	0.0008	0.0016	0.0021	0.0023	0.0025	0.0029
				Feed (IPM)	15.6	21.8	27.7	27.3	23.9	21.6	18.8
		Slot 1    ≤ 1	270	RPM	8251	4126	2750	2063	1650	1375	1031
			(216-324)	Fz	0.0003	0.0008	0.0016	0.0021	0.0023	0.0025	0.0029
				Feed (IPM)	12.4	17.3	22.0	21.7	19.0	17.2	15.0
<b>M</b> STAINLESS STEELS (FREE MACHINING) 303, 416, 420F, 430F, 440F	≤ 275	Profile ≤ 0.5    ≤ 1.5	490	RPM	14974	7487	4991	3744	2995	2496	1872
			(392-588)	Fz	0.0004	0.0009	0.0017	0.0023	0.0026	0.0028	0.0032
				Feed (IPM)	26.2	33.7	42.4	43.1	38.9	34.9	29.9
		Slot 1    ≤ 1	390	RPM	11918	5959	3973	2980	2384	1986	1490
			(312-468)	Fz	0.0004	0.0009	0.0017	0.0023	0.0026	0.0028	0.0032
				Feed (IPM)	20.9	26.8	33.8	34.3	31.0	27.8	23.8
<b>M</b> STAINLESS STEELS (DIFFICULT) 304, 304L, 316, 316L	≤ 275	Profile ≤ 0.5    ≤ 1.5	340	RPM	10390	5195	3463	2598	2078	1732	1299
			(272-408)	Fz	0.0003	0.0007	0.0014	0.0018	0.0020	0.0022	0.0025
				Feed (IPM)	14.0	18.2	24.2	23.4	20.8	19.0	16.2
		Slot 1    ≤ 1	270	RPM	8251	4126	2750	2063	1650	1375	1031
			(216-324)	Fz	0.0003	0.0007	0.0014	0.0018	0.0020	0.0022	0.0025
				Feed (IPM)	11.1	14.4	19.3	18.6	16.5	15.1	12.9
<b>M</b> STAINLESS STEELS (PH) 13-8 PH, 15-5PH, 17-4 PH, CUSTOM 450	≤ 325	Profile ≤ 0.5    ≤ 1.5	310	RPM	9474	4737	3158	2368	1895	1579	1184
			(248-372)	Fz	0.0003	0.0007	0.0014	0.0018	0.0020	0.0022	0.0025
				Feed (IPM)	12.8	16.6	22.1	21.3	18.9	17.4	14.8
		Slot 1    ≤ 1	250	RPM	7640	3820	2547	1910	1528	1273	955
			(200-300)	Fz	0.0003	0.0007	0.0014	0.0018	0.0020	0.0022	0.0025
				Feed (IPM)	10.3	13.4	17.8	17.2	15.3	14.0	11.9

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