

Feed and Speed Selection - Bi-Metal Page 1

Material	Machinability Group No.	Blade Speed FPM	Sq. In. Per Min.	Blade Speed M/M	Sq. CM Per Min.
Carbon Steels					
1008-1035	1	320	15	98	97
1040-1064	1	230	8	70	52
1065-1095	1	190	6	58	39
1513-1536	1	330	16	101	103
1541-1572	1	330	8	101	52
1108-1132	1	330	16	101	103
1137-1151	1	260	9	79	58
1212-1213	1	340	16	104	103
Carbon Alloy Steels					
1320-1345	1	210	8	64	52
3115-3150	2	235	8	72	52
3310-3315	2	210	5	64	32
4017-4042	1	275	7	84	45
4130-4150	2	250	7	76	45
4317-4340	2	225	6	69	39
4608-4621	2	220	6	67	39
4812-4820	2	190	4	58	26
5045-5135	2	240	8	73	52
5140-5160	2	230	6	70	39
50100-52100	2	165	5	50	32
6117-6152	2	220	6	67	39
8615-8645	2	220	7	67	45
8647-8660	2	190	4	58	26
8715-8750	2	230	6	70	39
9255-9262	2	190	4	58	26
9310-9317	2	165	3	50	19
9437-9850	2	210	5	64	32
Tool Steels					
A2, A3, A8, A9	2	190	4	58	26
A4-A6	2	160	4	49	26
A7, A10	2	80	4	24	26
D2, D5	2	100	3	30	19
D3, D4	2	85	3	26	19
D7	2	75	1.5	23	10
O1, O2	2	200	6	61	39
O6, O7	2	190	7	58	45
H10-H14	2	190	5	58	32
H21-H42	2	155	4	47	26
L2, L6	2	185	6	56	39
L7, S1	2	190	5	58	32
M1	2	140	4	43	26
M2, M3	2	110	3	34	19
M4, M10, M15, M41-M47	2	85	2	26	13
M6, M7	2	120	4	37	26
M30-M36	2	100	2	30	13
T1, T2	2	120	3	37	19
T4, T5	2	100	2	30	13
T6	2	90	2	27	13
T8	2	75	2	23	13
T15	2	75	1.5	23	10
S2-S7	2	140	3	43	19
W1-W5	2	200	6	61	39
Stainless Steels					
201, 202, 301, 302, 304, 304L, 304N, 305	3	115	4	35	26
303, 303F, 303SE	3	125	4	38	26
308, 309, 309S, 310, 330, WF11	3	85	2	26	13
314, 316, 316L, 316F, 316N, 317	3	75	2	23	13
321, 347, 348, 384, 403, 405	3	115	4	35	26

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Material	Machinability Group No.	Blade Speed FPM	Sq. In. Per Min.	Blade Speed M/M	Sq. CM Per Min.
410, 414, 420, 420F, 431	3	140	4	43	26
416, 430F, 430FSE, 430SE	3	170	7	52	45
416SE	3	190	7	58	45
430, 446	3	85	4	26	26
434, 436	3	115	3	35	19
440A, B, C	3	110	4	34	26
440F, 443	3	130	4	40	26
442	3	95	4	29	26
17-4-PH, 17-7-PH	3	75	4	23	26
Nickel Based Alloys					
Monel	3	80	4	24	26
K Monel	3	80	2	24	13
KR Monel	3	85	3	26	19
R Monel	3	90	4	27	26
Aged Monel	3	60	1.5	18	10
Inconel	3	90	3	27	19
Inconel X	3	80	1	24	6
Hastelloy A	3	100	2	30	13
Hastelloy B, C	3	90	1.5	27	10
Hastelloy X	3	70	1	21	6
Metals with Titanium as major alloying element	3	90	1	27	6
Miscellaneous					
Aluminum Bronze-Soft	1	340	15	10	98
Aluminum Bronze-Hard	2	210	6	64	39
Manganese Bronze-Soft	1	340	15	104	97
Manganese Bronze-Hard	2	210	6	64	39
Phosphor Bronze-Soft	1	340	10	104	65
Phosphor Bronze-Hard	2	200	5	61	32
Silicon Bronze-Soft	1	340	110	104	710
Silicon Bronze-Hard	2	200	5	61	32
Beryllium Bronze-Soft	1	285	8	87	52
Beryllium Bronze-Hard	2	145	3	44	19
Cast Iron-Class 20	2	180	3	55	19
Cast Iron-Class 40	2	130	2.5	40	16
Cast Iron-Class 60	2	110	2	34	13
Structurals Steel-ASA 36	1	330	15	101	97

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Square Inch Area of Solid Rounds							
Diameter	Area	Diameter	Area	Diameter	Area	Diameter	Area
3/8"	0.11	5"	19.63	9-3/4"	74.5	17"	226.86
1/2"	0.2	5-1/8"	20.63	9-7/8"	76.59	17-1/4"	233.58
9/16"	0.25	5-1/4"	21.64	10"	78.53	17-1/2"	240.4
5/8"	0.31	5-3/8"	22.69	10-1/8"	80.52	17-3/4"	247.32
3/4"	0.44	5-1/2"	23.75	10-1/4"	82.5	18"	254.36
7/8"	0.6	5-5/8"	24.85	10-3/8"	84.54	18-1/4"	261.45
1"	0.79	5-3/4"	25.96	10-1/2"	86.6	18-1/2"	268.66
1-1/8"	0.99	5-7/8"	27.11	10-5/8"	88.66	18-3/4"	275.97
1-1/4"	1.22	6"	28.27	10-3/4"	91	19"	283.43
1-3/8"	1.49	6-1/8"	29.47	10-7/8"	92.89	19-1/4"	290.88
1-1/2"	1.76	6-1/4"	30.7	11"	95	19-1/2"	298.49
1-5/8"	2.07	6-3/8"	31.92	11-1/8"	97.21	19-3/4"	306.19
1-3/4"	2.4	6-1/2"	33.18	11-1/4"	99.5	20"	314
1-7/8"	2.76	6-5/8"	34.47	11-3/8"	101.62	20-1/4"	321.89
2"	3.14	6-3/4"	35.8	11-1/2"	104	20-1/2"	330.09
2-1/8"	3.55	6-7/8"	37.12	11-5/8"	106.14	20-3/4"	337.98
2-1/4"	3.97	7"	38.48	11-3/4"	108.4	21"	346.18
2-3/8"	4.43	7-1/8"	39.87	11-7/8"	110.75	21-1/4"	354.47
2-1/2"	4.9	7-1/4"	41.3	12"	113	21-1/2"	362.86
2-5/8"	5.41	7-3/8"	42.72	12-1/4"	117.78	21-3/4"	371.35
2-3/4"	5.93	7-1/2"	44.17	12-1/2"	122.75	22"	379.94
2-7/8"	6.49	7-5/8"	45.66	12-3/4"	127.7	22-1/4"	358.62
3"	7.06	7-3/4"	47.2	13"	132	22-1/2"	397.4
3-1/8"	7.67	7-7/8"	48.71	13-1/4"	137.81	22-3/4"	406.25
3-1/4"	8.25	8"	50.26	13-1/2"	143.06	23"	415.26
3-3/8"	8.95	8-1/8"	51.85	13-3/4"	148.41	23-1/4"	424.35
3-1/2"	9.62	8-1/4"	53.5	14"	153.86	23-1/2"	433.51
3-5/8"	10.32	8-3/8"	55.09	14-1/4"	159.4	23-3/4"	442.78
3-3/4"	11.04	8-1/2"	56.74	14-1/2"	165.04	24"	452.16
3-7/8"	11.79	8-5/8"	58.43	14-3/4"	70.78	24-1/4"	461.62
4"	12.56	8-3/4"	60	15"	176.62	24-1/2"	471.19
4-1/8"	13.36	8-7/8"	61.86	15-1/4"	182.55	24-3/4"	460.85
4-1/4"	14.18	9"	63.61	15-1/2"	188.59		
4-3/8"	15.03	9-1/8"	65.4	15-3/4"	194.72		
4-1/2"	15.9	9-1/4"	67.1	16"	200.96		
4-5/8"	16.8	9-3/8"	69.03	16-1/4"	207.28		
4-3/4"	17.72	9-1/2"	71	16-1/2"	213.71		
4-7/8"	18.67	9-5/8"	72.76	16-3/4"	220.23		

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Square Inch Area of Structurals									
CHANNELS			L BEAMS			H BEAMS			
Size	Wt. per foot	Area	Size	Wt. per foot	Area	Size	Wt. per foot	Area	
3" X 1-1/2"	6	1.75	3" X 2-3/8"	7.5	2.17	4" x 4"	13	3.81	
	5	1.46		6.5	1.88		5" x 5"	18.9	5.36
	4.1	1.19		5.7	1.64		6" x 4"	16	4.58
4" X 1-5/8"	7.25	2.12	4" X 2-5/8"	10.5	3.05	6" x 6"	8.5	2.42	
	6.25	1.82		9.5	2.76		25	7.22	
	5.4	1.56		8.5	2.46		20	5.83	
5" X 1-3/4"	11.5	3.36	5" X 3"	14.75	4.29	8" x 4"	15	4.4	
	9	2.63		12.25	3.56		8" x 5-1/4"	21	6.18
	6.7	1.95		10	2.87		17	5	
6" X 2"	13	3.81	6" X 3-3/8"	17.25	5.02	8" x 6-1/2"	27	7.93	
	10.5	3.07		14.75	4.29		24	7.06	
	8.2	2.39		12.5	3.61		8" x 8"	67	19.7
7" X 2"	14.75	4.32	7" X 3-5/8"	20	5.83	10" x 5-3/4"	48	14.11	
	12.25	3.58		17.5	5.09		35	10.3	
	9.8	2.09		15.3	4.43		31	9.12	
8" X 2-1/4"	18.75	5.49	8" X 4"	25.5	7.43	10" x 8"	29	8.53	
	13.75	4.02		23	6.71		21	6.19	
	11.5	3.36		20.5	5.97		45	13.24	
9" X 2-1/2"	20	5.86	10" X 4-5/8"	40	11.69	10" x 10"	33	9.71	
	15	4.39		35	10.22		136	40.03	
	13.4	3.89		30	8.75		112	32.92	
10" X 2-5/8"	30	8.8	12" X 5"	35	10.22	12" x 6-1/2"	89	26.19	
	25	7.33		25.4	7.38		72	21.18	
	20	5.86		31.8	9.26		60	17.66	
12" X 5-1/4"	15.3	4.47	12" X 5-1/4"	35	10.2	12 x 10"	49	14.4	
				55	16.04		36	10.59	
				50	14.57		25	7.39	
15" X 5-1/2"	15.3	4.47	15" X 5-1/2"	45	13.1	12" x 12"	64	18.83	
				40.8	11.84		53	15.59	
				55	16.06		190	55.86	
15" X 6"	15.3	4.47	15" X 6"	50	14.59	14" x 6-3/4"	161	47.38	
				45	13.12		133	39.11	
				42.9	12.49		106	31.19	
18" X 6"	15.3	4.47	18" X 6"	75	21.85	30	92	27.06	
				70	20.38		79	23.22	
				65	18.91		65	19.11	
18" X 6"	15.3	4.47	18" X 6"	60.8	17.68	30	42	12.34	
				70	20.46		30	8.81	
				65	18.98				
18" X 6"	15.3	4.47	18" X 6"	60	17.5				
				54.7	15.94				



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