
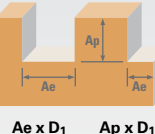














| | Series 7M, 7MB Metric | Hardness BRINELL |  |  | | Vc (m/min) | Diameter (D ₁) (mm) | | | | | | | | |
|---|--|---------------------|---|---|---------------------|---------------|------------------------------------|--------|-------|-------|-------|-------|-------|-------|-------|
| | | | | Ae x D ₁ | Ap x D ₁ | | 3 | 6 | 8 | 10 | 12 | 16 | 20 | 25 | |
| P | CARBON STEELS 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536 | ≤ 275 |  | ≤ 0.02 | ≤ 2 | 146 | RPM | 15511 | 7755 | 5816 | 4653 | 3878 | 2908 | 2327 | 1861 |
| | | | | | | (117-176) | Fz | 0.0166 | 0.043 | 0.075 | 0.093 | 0.110 | 0.125 | 0.147 | 0.160 |
| | | | | | | Feed (mm/min) | 1030 | 1334 | 1745 | 1731 | 1706 | 1454 | 1368 | 1191 | |
| P | ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100 | ≤ 375 |  | ≤ 0.02 | ≤ 2 | 84 | RPM | 8886 | 4443 | 3332 | 2666 | 2222 | 1666 | 1333 | 1066 |
| | | | | | | (67-101) | Fz | 0.0122 | 0.034 | 0.051 | 0.069 | 0.082 | 0.091 | 0.109 | 0.120 |
| | | | | | | Feed (mm/min) | 434 | 604 | 680 | 736 | 729 | 606 | 581 | 512 | |
| P | TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2 | ≤ 375 |  | ≤ 0.02 | ≤ 2 | 70 | RPM | 7432 | 3716 | 2787 | 2230 | 1858 | 1394 | 1115 | 892 |
| | | | | | | (56-84) | Fz | 0.0070 | 0.019 | 0.040 | 0.043 | 0.048 | 0.057 | 0.064 | 0.070 |
| | | | | | | Feed (mm/min) | 208 | 282 | 446 | 384 | 357 | 318 | 285 | 250 | |
| K | CAST IRONS (LOW & MEDIUM ALLOY) Gray, Malleable, Ductile | ≤ 220 |  | ≤ 0.02 | ≤ 2 | 184 | RPM | 19550 | 9775 | 7331 | 5865 | 4887 | 3666 | 2932 | 2346 |
| | | | | | | (148-221) | Fz | 0.0132 | 0.036 | 0.052 | 0.075 | 0.089 | 0.099 | 0.117 | 0.130 |
| | | | | | | Feed (mm/min) | 10322 | 1408 | 1525 | 1759 | 1740 | 1452 | 1372 | 1220 | |
| K | CAST IRONS (HIGH ALLOY) Gray, Malleable, Ductile | > 220 ≤ 260 |  | ≤ 0.02 | ≤ 2 | 142 | RPM | 15026 | 7513 | 5635 | 4508 | 3756 | 2817 | 2254 | 1803 |
| | | | | | | (113-170) | Fz | 0.0132 | 0.036 | 0.052 | 0.075 | 0.089 | 0.099 | 0.117 | 0.130 |
| | | | | | | Feed (mm/min) | 793 | 1082 | 1172 | 1352 | 1337 | 1116 | 1055 | 938 | |
| M | STAINLESS STEELS (FREE MACHINING) 303, 416, 420F, 430F 440F | ≤ 275 |  | ≤ 0.02 | ≤ 2 | 128 | RPM | 13572 | 6786 | 5089 | 4072 | 3393 | 2545 | 2036 | 1629 |
| | | | | | | (102-154) | Fz | 0.0086 | 0.024 | 0.040 | 0.048 | 0.058 | 0.065 | 0.077 | 0.087 |
| | | | | | | Feed (mm/min) | 467 | 651 | 814 | 782 | 787 | 662 | 627 | 567 | |
| M | STAINLESS STEELS (DIFFICULT) 304, 304L, 316, 316L | ≤ 275 |  | ≤ 0.02 | ≤ 2 | 88 | RPM | 9371 | 4686 | 3514 | 2811 | 2343 | 1757 | 1406 | 1125 |
| | | | | | | (71-106) | Fz | 0.0082 | 0.022 | 0.037 | 0.045 | 0.048 | 0.060 | 0.072 | 0.078 |
| | | | | | | Feed (mm/min) | 307 | 412 | 520 | 506 | 450 | 422 | 405 | 351 | |
| M | STAINLESS STEELS (PH) 13-8 PH, 15-5PH, 17-4 PH, Custom 450 | < 325 |  | ≤ 0.02 | ≤ 2 | 81 | RPM | 8563 | 4282 | 3211 | 2569 | 2141 | 1606 | 1284 | 1028 |
| | | | | | | (65-97) | Fz | 0.0070 | 0.019 | 0.029 | 0.040 | 0.048 | 0.055 | 0.064 | 0.070 |
| | | | | | | Feed (mm/min) | 240 | 325 | 372 | 411 | 411 | 353 | 329 | 288 | |
| S | SUPER ALLOYS (NICKEL, COBALT, IRON BASE) Inconel 601, 617, 625, Incoly 800, Monel 400 | ≤ 300 |  | ≤ 0.02 | ≤ 2 | 24 | RPM | 2585 | 1293 | 969 | 776 | 646 | 485 | 388 | 310 |
| | | | | | | (20-29) | Fz | 0.0072 | 0.019 | 0.029 | 0.037 | 0.046 | 0.053 | 0.061 | 0.085 |
| | | | | | | Feed (mm/min) | 74 | 98 | 112 | 90 | 119 | 103 | 95 | 105 | |
| S | SUPER ALLOYS (NICKEL, COBALT, IRON BASE) Inconel 718, 750X, Incoly 925, Waspaloy, Hastelloy, Rene | > 300 |  | ≤ 0.02 | ≤ 2 | 20 | RPM | 2100 | 1050 | 788 | 630 | 525 | 394 | 315 | 252 |
| | | | | | | (16-24) | Fz | 0.0075 | 0.016 | 0.021 | 0.030 | 0.038 | 0.044 | 0.051 | 0.070 |
| | | | | | | Feed (mm/min) | 63 | 67 | 66 | 76 | 80 | 69 | 64 | 71 | |
| S | TITANIUM ALLOYS Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si | ≤ 350 |  | ≤ 0.02 | ≤ 2 | 91 | RPM | 9694 | 4847 | 3635 | 2908 | 2424 | 1818 | 1454 | 1163 |
| | | | | | | (73-110) | Fz | 0.0091 | 0.024 | 0.004 | 0.005 | 0.060 | 0.070 | 0.080 | 0.088 |
| | | | | | | Feed (mm/min) | 353 | 465 | 51 | 59 | 582 | 509 | 465 | 409 | |
| S | TITANIUM ALLOYS (DIFFICULT) Ti10Al2Fe3Al, Ti5Al5V5Mo3Cr, Ti7Al4Mo, Ti3Al8V6Cr4Zr4Mo, Ti6Al6V6Sn, Ti15V3 Cr3Sn3Al | > 350 ≤ 440 |  | ≤ 0.02 | ≤ 2 | 32 | RPM | 3393 | 1696 | 1272 | 1018 | 848 | 636 | 509 | 407 |
| | | | | | | (26-38) | Fz | 0.0082 | 0.019 | 0.029 | 0.037 | 0.046 | 0.053 | 0.061 | 0.085 |
| | | | | | | Feed (mm/min) | 111 | 129 | 148 | 151 | 156 | 135 | 124 | 138 | |

rpm = (1000 x m/min) / (3.14 x D₁)

mm / min = (mm / flute) x 4 x rpm

reduce speed and feed for materials harder than listed

refer to the SGS Tool Wizard for complete technical information (I)