



| Series | Hardness | Finish | Ae x DC | Ap x DC | Vc (sfm) | DC • in | | | | | | | |
|---|--|--------|---------|------------|------------|---------|--------|--------|--------|--------|--------|--------|--------|
| | | | | | | 1/8 | 1/4 | 3/8 | 1/2 | 5/8 | 3/4 | 1 | |
| P | CARBON STEELS 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536 ≤ 275 Bhn or ≤ 28 HRc | | ≤ 0.02 | ≤ 2 | 480 | RPM | 14669 | 7334 | 4890 | 3667 | 2934 | 2445 | 1834 |
| | | | | | (384-576) | Fz | 0.0004 | 0.0010 | 0.0019 | 0.0025 | 0.0032 | 0.0033 | 0.0035 |
| | | | | | Feed (ipm) | 23.5 | 29.3 | 37.2 | 36.7 | 37.6 | 32.3 | 25.7 | |
| | ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100 ≤ 375 Bhn or ≤ 40 HRc | | ≤ 0.02 | ≤ 2 | 275 | RPM | 8404 | 4202 | 2801 | 2101 | 1681 | 1401 | 1051 |
| | | | | | (220-330) | Fz | 0.0003 | 0.0007 | 0.0014 | 0.0018 | 0.0023 | 0.0024 | 0.0026 |
| | | | | | Feed (ipm) | 10.1 | 11.8 | 15.7 | 15.1 | 15.5 | 13.4 | 10.9 | |
| TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2 ≤ 375 Bhn or ≤ 40 HRc | | ≤ 0.02 | ≤ 2 | 230 | RPM | 7029 | 3514 | 2343 | 1757 | 1406 | 1171 | 879 | |
| | | | | (184-276) | Fz | 0.0002 | 0.0006 | 0.0012 | 0.0016 | 0.0020 | 0.0021 | 0.0022 | |
| | | | | Feed (ipm) | 5.6 | 8.4 | 11.2 | 11.2 | 11.2 | 9.8 | 7.7 | | |
| M | STAINLESS STEELS (FREE MACHINING) 303, 416, 420F, 430F, 440F ≤ 275 Bhn or ≤ 28 HRc | | ≤ 0.02 | ≤ 2 | 420 | RPM | 12835 | 6418 | 4278 | 3209 | 2567 | 2139 | 1604 |
| | | | | | (336-504) | Fz | 0.0004 | 0.0010 | 0.0019 | 0.0025 | 0.0032 | 0.0033 | 0.0035 |
| | | | | | Feed (ipm) | 20.5 | 25.7 | 32.5 | 32.1 | 32.9 | 28.2 | 22.5 | |
| | STAINLESS STEELS (DIFFICULT) 304, 304L, 316, 316L ≤ 275 Bhn or ≤ 28 HRc | | ≤ 0.02 | ≤ 2 | 290 | RPM | 8862 | 4431 | 2954 | 2216 | 1772 | 1477 | 1108 |
| | | | | | (232-348) | Fz | 0.0003 | 0.0007 | 0.0014 | 0.0018 | 0.0023 | 0.0024 | 0.0026 |
| | | | | | Feed (ipm) | 10.6 | 12.4 | 16.5 | 16.0 | 16.3 | 14.2 | 11.5 | |
| STAINLESS STEELS (PH) 13-8 PH, 15-5 PH, 17-4 PH, Custom 450 ≤ 325 Bhn or ≤ 35 HRc | | ≤ 0.02 | ≤ 2 | 265 | RPM | 8098 | 4049 | 2699 | 2025 | 1620 | 1350 | 1012 | |
| | | | | (212-318) | Fz | 0.0003 | 0.0007 | 0.0014 | 0.0018 | 0.0023 | 0.0024 | 0.0026 | |
| | | | | Feed (ipm) | 9.7 | 11.3 | 15.1 | 14.6 | 14.9 | 13.0 | 10.5 | | |
| K | CAST IRONS (LOW & MEDIUM ALLOY) Gray, Malleable, Ductile ≤ 220 Bhn or ≤ 19 HRc | | ≤ 0.02 | ≤ 2 | 605 | RPM | 18489 | 9244 | 6163 | 4622 | 3698 | 3081 | 2311 |
| | | | | | (484-726) | Fz | 0.0006 | 0.0015 | 0.0028 | 0.0037 | 0.0046 | 0.0047 | 0.0051 |
| | | | | | Feed (ipm) | 44.4 | 55.5 | 69.0 | 68.4 | 68.0 | 57.9 | 47.1 | |
| | CAST IRONS (HIGH ALLOY) Gray, Malleable, Ductile ≤ 260 Bhn or ≤ 26 HRc | | ≤ 0.02 | ≤ 2 | 465 | RPM | 14210 | 7105 | 4737 | 3553 | 2842 | 2368 | 1776 |
| | | | | | (372-558) | Fz | 0.0004 | 0.0011 | 0.0021 | 0.0028 | 0.0034 | 0.0036 | 0.0039 |
| | | | | | Feed (ipm) | 22.7 | 31.3 | 39.8 | 39.8 | 38.7 | 34.1 | 27.7 | |
| S | HIGH TEMP ALLOYS (NICKEL, COBALT, IRON BASE) Inconel 601, 617, 625, Incoloy, Monel 400 ≤ 300 Bhn or ≤ 32 HRc | | ≤ 0.02 | ≤ 2 | 80 | RPM | 2445 | 1222 | 815 | 611 | 489 | 407 | 306 |
| | | | | | (64-96) | Fz | 0.0003 | 0.0007 | 0.0014 | 0.0018 | 0.0023 | 0.0024 | 0.0026 |
| | | | | | Feed (ipm) | 2.9 | 3.4 | 4.6 | 4.4 | 4.5 | 3.9 | 3.2 | |
| | HIGH TEMP ALLOYS (NICKEL, COBALT, IRON BASE) Inconel 718, X-750, Incoloy, Waspaloy, Hastelloy, Rene ≤ 400 Bhn or ≤ 43 HRc | | ≤ 0.02 | ≤ 2 | 65 | RPM | 1986 | 993 | 662 | 497 | 397 | 331 | 248 |
| | | | | | (52-78) | Fz | 0.0002 | 0.0006 | 0.0010 | 0.0014 | 0.0017 | 0.0018 | 0.0019 |
| | | | | | Feed (ipm) | 1.6 | 2.4 | 2.6 | 2.8 | 2.7 | 2.4 | 1.9 | |
| TITANIUM ALLOYS Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si ≤ 350 Bhn or ≤ 38 HRc | | ≤ 0.02 | ≤ 2 | 300 | RPM | 9168 | 4584 | 3056 | 2292 | 1834 | 1528 | 1146 | |
| | | | | (240-360) | Fz | 0.0004 | 0.0011 | 0.0021 | 0.0028 | 0.0034 | 0.0036 | 0.0039 | |
| | | | | Feed (ipm) | 14.7 | 20.2 | 25.7 | 25.7 | 24.9 | 22.0 | 17.9 | | |
| TITANIUM ALLOYS (DIFFICULT) Ti10V2Fe3Al, Ti5Al5V5Mo3Cr, Ti7Al4Mo, Ti3Al8V6Cr4Zr4Mo, Ti6Al6V6Sn, Ti15V3 Cr3Sn3Al ≤ 420 Bhn or ≤ 45 HRc | | ≤ 0.02 | ≤ 2 | 105 | RPM | 3209 | 1604 | 1070 | 802 | 642 | 535 | 401 | |
| | | | | (84-126) | Fz | 0.0004 | 0.0011 | 0.0021 | 0.0028 | 0.0034 | 0.0036 | 0.0039 | |
| | | | | Feed (ipm) | 5.1 | 7.1 | 9.0 | 9.0 | 8.7 | 7.7 | 6.3 | | |

Bhn (Brinell) HRc (Rockwell C)
 rpm = Vc x 3.82 / DC
 ipm = Fz x 4 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-sgtool.com)