

Cutting Data

| | | | Ae | | | | | | | | | | |
|------------------------------|----------------|------------|---------------|-------|-------|-------|-------|--------|-------|--------|-------|--------|-------|
| | | | 0,20 | 0,45 | 0,25 | 0,55 | 0,30 | 0,60 | 0,35 | 0,65 | 0,40 | 0,70 | |
| | | | | | | | | | | | | | |
| Metric | Hardness (HRc) | Vc (m/min) | Diameter | Tip-6 | 6 | Tip-8 | 8 | Tip-10 | 10 | Tip-12 | 12 | Tip-16 | 16 |
| P Alloy Steels | ≤28 | 194 | RPM | 14408 | 10292 | 10806 | 7719 | 8645 | 6175 | 7204 | 5146 | 5403 | 3859 |
| | | (155-232) | Fz | 0,019 | 0,030 | 0,025 | 0,040 | 0,031 | 0,050 | 0,038 | 0,060 | 0,057 | 0,080 |
| | | | Feed (mm/min) | 1621 | 1853 | 1621 | 1853 | 1621 | 1853 | 2161 | 1853 | 2470 | 1853 |
| | ≤40 | 110 | RPM | 8170 | 5836 | 6127 | 4377 | 4902 | 3501 | 4085 | 2918 | 3064 | 2188 |
| | | (88-132) | Fz | 0,013 | 0,020 | 0,019 | 0,030 | 0,025 | 0,040 | 0,031 | 0,050 | 0,044 | 0,070 |
| | | | Feed (mm/min) | 613 | 700 | 689 | 788 | 735 | 840 | 766 | 875 | 804 | 919 |
| P Hardened Steels | ≤35 | 93 | RPM | 6907 | 4934 | 5180 | 3700 | 4144 | 2960 | 3454 | 2467 | 2590 | 1850 |
| | | (69-118) | Fz | 0,019 | 0,030 | 0,025 | 0,040 | 0,080 | 0,050 | 0,038 | 0,060 | 0,050 | 0,080 |
| | | | Feed (mm/min) | 777 | 888 | 777 | 888 | 1989 | 888 | 1036 | 888 | 1036 | 888 |
| | ≤45 | 64 | RPM | 4753 | 3395 | 3565 | 2546 | 2852 | 2037 | 2377 | 1698 | 1782 | 1273 |
| | | (51-77) | Fz | 0,013 | 0,020 | 0,019 | 0,030 | 0,025 | 0,040 | 0,031 | 0,050 | 0,038 | 0,060 |
| | | | Feed (mm/min) | 356 | 407 | 401 | 458 | 428 | 489 | 446 | 509 | 401 | 458 |
| M Stainless Steels | ≤28 | 117 | RPM | 8690 | 6207 | 6517 | 4655 | 5214 | 3724 | 4345 | 3103 | 3259 | 2328 |
| | | (94-141) | Fz | 0,019 | 0,030 | 0,025 | 0,040 | 0,031 | 0,050 | 0,038 | 0,060 | 0,044 | 0,070 |
| | | | Feed (mm/min) | 978 | 1117 | 978 | 1117 | 978 | 1117 | 978 | 1117 | 855 | 978 |
| | ≤35 | 108 | RPM | 8021 | 5729 | 6016 | 4297 | 4813 | 3438 | 4011 | 2865 | 3008 | 2149 |
| | | (87-130) | Fz | 0,013 | 0,020 | 0,019 | 0,030 | 0,025 | 0,040 | 0,031 | 0,050 | 0,038 | 0,060 |
| | | | Feed (mm/min) | 602 | 688 | 677 | 773 | 722 | 825 | 752 | 859 | 677 | 773 |

NOTE:

- $rpm = (Vc \times 1000 / DC \times 3.142)$
- $Feed = Fz \times \text{No. of flutes} \times rpm$
- Adjust speed and feed cutting
- Adjust rates according to cutting area of tool being used
- Avoid using tip of the tool where possible due to reduced chip space
- Be aware of max cut Ae, especially on the lower portion of the tool
- Medical applications:
 - Titanium can be cut dry while keeping cut size to a minimum and providing good chip evacuation (air blast)
 - For cobalt chrome applications, a surface speed of 45m/min is a guide (can also be cut dry as per titanium)
- Refer to the SGS Tool Wizard® for complete technical information (www.kyocera-sgstool.com)



| | | | Ae | 0,20 | 0,45 | 0,25 | 0,55 | 0,30 | 0,60 | 0,35 | 0,65 | 0,40 | 0,70 |
|-------------------------------------|----------------|------------|---------------|-------|-------|-------|-------|--------|-------|--------|-------|--------|-------|
| | | | | | | | | | | | | | |
| Metric | Hardness (HRc) | Vc (m/min) | Diameter | Tip-6 | 6 | Tip-8 | 8 | Tip-10 | 10 | Tip-12 | 12 | Tip-16 | 16 |
| S High Temperature Alloys | ≤32 | 32 | RPM | 2377 | 1698 | 1782 | 1273 | 1426 | 1019 | 1188 | 849 | 891 | 637 |
| | | (32-38) | Fz | 0,013 | 0,020 | 0,019 | 0,030 | 0,025 | 0,040 | 0,031 | 0,050 | 0,038 | 0,06 |
| | | | Feed (mm/min) | 178 | 204 | 201 | 229 | 214 | 244 | 223 | 255 | 201 | 229 |
| | ≤43 | 26 | RPM | 1931 | 1379 | 1448 | 1034 | 1159 | 828 | 966 | 690 | 724 | 517 |
| | | (21-31) | Fz | 0,006 | 0,010 | 0,013 | 0,020 | 0,019 | 0,030 | 0,025 | 0,040 | 0,031 | 0,050 |
| | | | Feed (mm/min) | 72 | 83 | 109 | 124 | 130 | 149 | 145 | 166 | 136 | 155 |
| S Titanium Alloys | ≤35 | 109 | RPM | 8095 | 5782 | 6072 | 4337 | 4857 | 3469 | 4048 | 2891 | 3036 | 2168 |
| | | (85-133) | Fz | 0,019 | 0,030 | 0,025 | 0,040 | 0,031 | 0,050 | 0,038 | 0,060 | 0,050 | 0,080 |
| | | | Feed (mm/min) | 911 | 1041 | 911 | 1041 | 911 | 1041 | 911 | 1041 | 911 | 1041 |
| | ≤45 | 53 | RPM | 3936 | 2812 | 2952 | 2109 | 2362 | 1687 | 1968 | 1406 | 1476 | 1054 |
| | | (44-61) | Fz | 0,013 | 0,020 | 0,019 | 0,030 | 0,025 | 0,040 | 0,031 | 0,050 | 0,044 | 0,070 |
| | | | Feed (mm/min) | 295 | 337 | 332 | 380 | 354 | 405 | 369 | 422 | 387 | 443 |
| | | | Ae | 0,20 | 0,45 | 0,25 | 0,55 | 0,30 | 0,60 | 0,35 | 0,65 | 0,40 | 0,70 |
| | | | | | | | | | | | | | |
| Metric | Hardness (HRc) | Vc (m/min) | Diameter | Tip-6 | 6 | Tip-8 | 8 | Tip-10 | 10 | Tip-12 | 12 | Tip-16 | 16 |
| N Aluminium | ≤7 | 610 | RPM | 37878 | 27056 | 28408 | 20292 | 22727 | 16233 | 18939 | 13528 | 14204 | 10146 |
| | | (488-732) | Fz | 0,025 | 0,040 | 0,031 | 0,050 | 0,038 | 0,060 | 0,050 | 0,080 | 0,063 | 0,100 |
| | | | Feed (mm/min) | 2841 | 3247 | 2663 | 3044 | 2557 | 2922 | 2841 | 3247 | 2663 | 3044 |
| | ≥7 | 610 | RPM | 24509 | 17507 | 18382 | 13130 | 14705 | 10504 | 12255 | 8753 | 9191 | 6565 |
| | | (488-372) | Fz | 0,019 | 0,030 | 0,025 | 0,040 | 0,031 | 0,050 | 0,038 | 0,060 | 0,050 | 0,080 |
| | | | Feed (mm/min) | 1379 | 1576 | 1379 | 1576 | 1379 | 1576 | 1379 | 1576 | 1379 | 1576 |

Ti-NAMITE®-H

This coating demonstrates a superior combination of hardness and adhesion in hard machining of molds and dies and machining high-alloy stainless steels for high temperature applications such as turbines. The smooth surface ensures optimum surface quality and decreases the temperature in the cutting zone by reducing friction.

Hardness (HV): 3800
 Oxidation Temperature: 1100°C / 2010°F
 Coefficient of Friction: 0.30
 Thickness: 1-5 Microns (based on tool diameter)

Ti-NAMITE®-B

This ceramic-based coating ensures a smooth surface and a low affinity to cold welding or edge build up, which makes it optimal for aluminium and copper applications. It has a high toughness and high hardness.

Hardness (HV): 4000
 Oxidation Temperature: 850°C / 1562°F
 Coefficient of Friction: 0.10-0.20
 Thickness: 1-2 Microns (based on tool diameter)