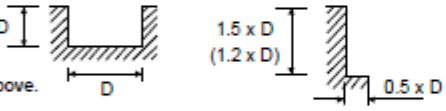
136123,136323,137123,137323,138123,138323,139123,139323, 146323, 146123 ( 4Flute, All Square End)

| MATERIAL GROUP | | HRc | | Size (mm) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 3.0 | 4.0 | 5.0 | 6.0 | 8.0 | 10.0 | 12.0 | 14.0 | 16.0 | 18.0 | 20.0 | 25.0 |
| P | 11 | < 30 | $v_c$ (m/min) | 125 | 125 | 125 | 125 | 125 | 140 | 140 | 140 | 140 | 140 | 140 | 140 |
| | 12 | | n | 13475 | 10105 | 8085 | 6735 | 5050 | 4455 | 3710 | 3180 | 2785 | 2475 | 2225 | 1780 |
| | 13 | | $f_z$ | 0.005 | 0.008 | 0.011 | 0.016 | 0.027 | 0.039 | 0.047 | 0.049 | 0.053 | 0.059 | 0.065 | 0.063 |
| | 14 | | f (mm/min) | 275 | 330 | 370 | 435 | 555 | 690 | 695 | 620 | 590 | 585 | 580 | 450 |
| M | 21 | 30-45 | $v_c$ (m/min) | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 |
| | | | n | 10185 | 7600 | 6110 | 5095 | 3820 | 3055 | 2545 | 2180 | 1910 | 1695 | 1525 | 1215 |
| | 22 | | $f_z$ | 0.005 | 0.008 | 0.013 | 0.018 | 0.028 | 0.048 | 0.056 | 0.06 | 0.063 | 0.07 | 0.077 | 0.078 |
| | | | f (mm/min) | 195 | 250 | 310 | 360 | 435 | 590 | 565 | 520 | 480 | 475 | 470 | 380 |
| | 23 | | $v_c$ (m/min) | 135 | 135 | 135 | 135 | 135 | 135 | 135 | 135 | 135 | 135 | 135 | 135 |
| | | | n | 14260 | 10750 | 8655 | 7130 | 5345 | 4275 | 3565 | 3055 | 2670 | 2375 | 2140 | 1710 |
| | | | $f_z$ | 0.004 | 0.006 | 0.009 | 0.013 | 0.022 | 0.034 | 0.04 | 0.043 | 0.045 | 0.05 | 0.055 | 0.056 |
| | | | f (mm/min) | 205 | 255 | 310 | 360 | 465 | 585 | 565 | 520 | 480 | 475 | 470 | 380 |
| K | 31 | | $v_c$ (m/min) | 125 | 125 | 125 | 125 | 125 | 140 | 140 | 140 | 140 | 140 | 140 | 140 |
| | 32 | | n | 13475 | 10105 | 8085 | 6735 | 5050 | 4455 | 3710 | 3180 | 2785 | 2475 | 2225 | 1780 |
| | 33 | | $f_z$ | 0.005 | 0.008 | 0.011 | 0.016 | 0.027 | 0.039 | 0.047 | 0.049 | 0.053 | 0.059 | 0.065 | 0.063 |
| | 34 | | f (mm/min) | 275 | 330 | 370 | 435 | 555 | 690 | 695 | 620 | 590 | 585 | 580 | 450 |
| S | 41 | | $v_c$ (m/min) | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 |
| | 42 | | n | 10185 | 7600 | 6110 | 5095 | 3820 | 3055 | 2545 | 2180 | 1910 | 1695 | 1525 | 1215 |
| | | | $f_z$ | 0.005 | 0.008 | 0.013 | 0.018 | 0.028 | 0.048 | 0.056 | 0.06 | 0.063 | 0.07 | 0.077 | 0.078 |
| | 43 | | f (mm/min) | 195 | 250 | 310 | 360 | 435 | 590 | 565 | 520 | 480 | 475 | 470 | 380 |
| | S1 | | $v_c$ (m/min) | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| | S2 | | n | 2715 | 2005 | 1630 | 1355 | 1015 | 815 | 675 | 580 | 505 | 450 | 405 | 320 |
| | | | $f_z$ | 0.005 | 0.007 | 0.012 | 0.018 | 0.031 | 0.018 | 0.056 | 0.06 | 0.064 | 0.069 | 0.077 | 0.086 |
| | S3 | | f (mm/min) | 55 | 55 | 80 | 95 | 125 | 155 | 150 | 140 | 130 | 125 | 125 | 110 |

STEEL, STAINLESS STEEL, CAST IRON

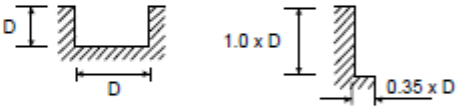
1.2 x D axial cutting depth should be applied for short length tools above ø8mm

TITANIUM




1.2 x D as above.

INCONEL




▶ The data shown is based on medial length tools. Please adjust machining conditions according to length.

$v_c$ - cutting speed (m/min)
n - RPM (rev/min)
$f_z$ - feed rate (mm/tooth)
f - feed rate (mm/rev)
z - No. of teeth
$a_p$ - axial depth of cut
$a_e$ - radial depth of cut

To calculate RPM from cutting speed: $n = \frac{v_c * 1000}{\pi * ø}$

To calculate cutting speed from RPM: $v_c = \frac{n * \pi * ø}{1000}$

All recommendations are based on ideal machining conditions. Adjustments may need to be made according to your set-up. The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points.