








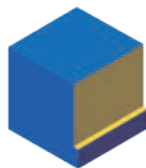


# Speed & Feed Recommendations

| 66CR, 66<br>Fractional   | HARDNESS<br>BRINELL | CUT<br>Type | SPEED<br>sfm | FEED (inch/flute) |        |        |        |        |        |        |
|--|---------------------|-------------|--------------|-------------------|--------|--------|--------|--------|--------|--------|
|  |                     |             |              | 3/16              | 1/4    | 3/8    | 1/2    | 5/8    | 3/4    | 1      |
|  CARBON STEEL<br>1018, 1040, 1080, 1090,<br>10L50, 1140, 1212, 12L15,<br>1525, 1536 | ≤ 175               | Profile     | 570          | 0.0006            | 0.0009 | 0.0016 | 0.0022 | 0.0024 | 0.0026 | 0.0030 |
|  |                     | Light       | 720          | 0.0008            | 0.0012 | 0.0022 | 0.0030 | 0.0033 | 0.0036 | 0.0042 |
|  | > 175<br>≤ 275      | Profile     | 495          | 0.0006            | 0.0009 | 0.0016 | 0.0022 | 0.0024 | 0.0026 | 0.0030 |
|  |                     | Light       | 630          | 0.0008            | 0.0012 | 0.0022 | 0.0030 | 0.0033 | 0.0036 | 0.0042 |
|  ALLOY STEEL<br>4140, 4150, 4320, 5120,<br>5150, 8630, 86L20, 50100                 | ≤ 275               | Profile     | 415          | 0.0004            | 0.0007 | 0.0013 | 0.0017 | 0.0019 | 0.0020 | 0.0023 |
|  |                     | Light       | 530          | 0.0006            | 0.0009 | 0.0017 | 0.0023 | 0.0026 | 0.0028 | 0.0032 |
|  | > 275<br>≤ 375      | Profile     | 285          | 0.0004            | 0.0007 | 0.0013 | 0.0017 | 0.0019 | 0.0020 | 0.0023 |
|  |                     | Light       | 360          | 0.0006            | 0.0009 | 0.0017 | 0.0023 | 0.0026 | 0.0028 | 0.0032 |
|  TOOL STEEL<br>A2, D2, H13, L2, M2,<br>P20, S7, T15, W2                             | ≤ 250               | Profile     | 370          | 0.0004            | 0.0006 | 0.0011 | 0.0015 | 0.0017 | 0.0018 | 0.0021 |
|  |                     | Light       | 470          | 0.0005            | 0.0008 | 0.0015 | 0.0021 | 0.0023 | 0.0025 | 0.0029 |
|  | > 250<br>≤ 375      | Profile     | 230          | 0.0003            | 0.0005 | 0.0009 | 0.0012 | 0.0013 | 0.0014 | 0.0016 |
|  |                     | Light       | 290          | 0.0004            | 0.0006 | 0.0012 | 0.0016 | 0.0018 | 0.0019 | 0.0022 |
|  CAST IRON<br>Gray, Malleable, Ductile  | ≤ 220               | Profile     | 555          | 0.0006            | 0.0009 | 0.0016 | 0.0022 | 0.0024 | 0.0026 | 0.0030 |
|  |                     | Light       | 705          | 0.0008            | 0.0012 | 0.0022 | 0.0030 | 0.0033 | 0.0036 | 0.0042 |
|  | > 220<br>≤ 260      | Profile     | 415          | 0.0006            | 0.0009 | 0.0016 | 0.0022 | 0.0024 | 0.0026 | 0.0030 |
|  |                     | Light       | 525          | 0.0008            | 0.0012 | 0.0022 | 0.0030 | 0.0033 | 0.0036 | 0.0042 |
|  STAINLESS (free machining)<br>303, 416, 420F, 430F, 440F                           | ≤ 275               | Profile     | 430          | 0.0004            | 0.0007 | 0.0013 | 0.0017 | 0.0019 | 0.0020 | 0.0023 |
|  |                     | Light       | 560          | 0.0006            | 0.0009 | 0.0017 | 0.0023 | 0.0026 | 0.0028 | 0.0032 |
|  STAINLESS (difficult)<br>304, 304L, 316, 316L                                      | ≤ 275               | Profile     | 305          | 0.0004            | 0.0005 | 0.0010 | 0.0013 | 0.0015 | 0.0016 | 0.0019 |
|  |                     | Light       | 385          | 0.0005            | 0.0007 | 0.0014 | 0.0018 | 0.0020 | 0.0022 | 0.0026 |
|  STAINLESS (PH)<br>17-4PH, 15-5PH, Custom<br>450, 16-6PH, PH13-8Mo                  | ≤ 325               | Profile     | 280          | 0.0004            | 0.0005 | 0.0010 | 0.0013 | 0.0015 | 0.0016 | 0.0019 |
|  |                     | Light       | 355          | 0.0005            | 0.0007 | 0.0014 | 0.0018 | 0.0020 | 0.0022 | 0.0026 |
|  TITANIUM<br>Ti5Al-5V-5Mo,<br>Ti6Al4V, Ti-7Al4Mo                                  | ≤ 350               | Profile     | 305          | 0.0004            | 0.0006 | 0.0011 | 0.0015 | 0.0017 | 0.0018 | 0.0021 |
|  |                     | Light       | 390          | 0.0005            | 0.0008 | 0.0015 | 0.0021 | 0.0023 | 0.0025 | 0.0029 |
|  HIGH TEMPERATURE ALLOY<br>A-286, Hastelloy, Incoloy,<br>Inconel, Rene, Waspalloy | ≤ 300               | Profile     | 85           | 0.0004            | 0.0005 | 0.0010 | 0.0013 | 0.0015 | 0.0016 | 0.0019 |
|  |                     | Light       | 105          | 0.0005            | 0.0007 | 0.0014 | 0.0018 | 0.0020 | 0.0022 | 0.0026 |

| CUT TYPE  |  |
|---|--|
| PROFILE   | LIGHT*   |
| Rw = .1 x D <sub>1</sub><br>Ad = D <sub>1</sub> | Rw = .05 x D <sub>1</sub><br>Ad = D <sub>1</sub> |



$$\text{rpm} = \text{sfm} \times 3.82 / D_1$$

$$\text{ipm} = (\text{inch/flute}) \times \text{no. of flutes} \times \text{rpm}$$

- maximum recommended depths shown
- reduce speed and feed for materials harder than listed
- \* finish cuts typically require reduced feed and cutting depths of .02 x D<sub>1</sub> maximum
- refer to the SGS Tool Wizard for more complete technical information (available at )