## DRILLING SPEEDS & FEEDS

Carbide Tipped

Speeds & feeds are starting recommendations only. Factors such as machine, fixture and tooling rigidity, horsepower available, coolant application and others will affect the performance significantly.

Please read machine operators instructions and use all safety shields and glasses before performing these operations. Use these charts for carbide tipped drills.

### GENERAL PURPOSE DRILLING

<table>
<thead>
<tr>
<th>CLASS OF MATERIALS</th>
<th>MATERIAL</th>
<th>BRINELL</th>
<th>SPEED IN SFPM</th>
<th>HOLE DIAMETER YOU ARE DRILLING IN INCHES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>RPM=SFPM*3.82/DRILL DIAMETER</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SFPM=DRILL DIAMETER*RPM/3.82</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Drill Diameter = Diameter of the drill in inches</td>
<td></td>
</tr>
</tbody>
</table>

### COOLANT FED DRILLING

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<td>SFPM=DRILL DIAMETER*RPM/3.82</td>
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<td></td>
<td>Drill Diameter = Diameter of the drill in inches</td>
<td></td>
</tr>
</tbody>
</table>

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**Notes:**

- SFPM: Surface Feet Per Minute
- RPM: Rotations Per Minute

**Formulas:**

- \[ \text{RPM} = \frac{\text{SFPM} \times 3.82}{\text{Diameter}} \]
- \[ \text{SFPM} = \frac{\text{Diameter} \times \text{RPM}}{3.82} \]

**Material Classifications:**

- **Non-Ferrous (Soft):**
  - Aluminum Alloy - Wrought
  - Magnesium Alloy
  - Lead Alloy
  - Non-Metal and Plastic
  - Zinc Alloy - Die Cast

- **Non-Ferrous (Hard):**
  - Aluminum Bronze
  - Brass Alloy - Leaded and Free Cutting
  - Copper Alloy - Tough
  - Ductile Cast Iron - Austenitic
  - Ductile Cast Iron - Ferritic
  - Gray - Ferritic
  - Malleable Cast Iron - Martensitic
  - Low and Medium Carbon Steel - Free Machining
  - Medium Strength Steels
  - Stainless Steel - 400 Series Free Machining
  - High Strength Steels
  - High Temp. Alloys
  - Stainless Steel - 300 Series Free Machining
  - Titanium Alloy

- **Cast Iron:**
  - Ductile Cast Iron - Austenitic
  - Ductile Cast Iron - Ferritic
  - Gray - Ferritic
  - Malleable Cast Iron - Martensitic
  - Low Carbon Steels
  - Medium Strength Steels
  - Stainless Steel - PH Series

- **Alloys:**
  - High Temp Alloys
  - Stainless Steel - 300 Series
  - Titanium Alloy

**Coolant Fed Drilling Tips:**

- Use coolant for better chip control and lubrication.
- Ensure proper coolant flow to the cutting area.
- Adjust feed rates for optimal performance.

**Machine Operators Instructions:**

- Read all machine operators instructions carefully.
- Use all safety shields and glasses.
- Follow company safety protocols.

**Safety Precautions:**

- Always wear appropriate safety gear.
- Keep hands and body away from moving parts.
- Keep work area clean and organized.
- Follow all local safety regulations.

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**Website:** www.rockrivertool.com

**Phone:** 1-800-345-8924

**Fax:** 1-800-867-9312

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