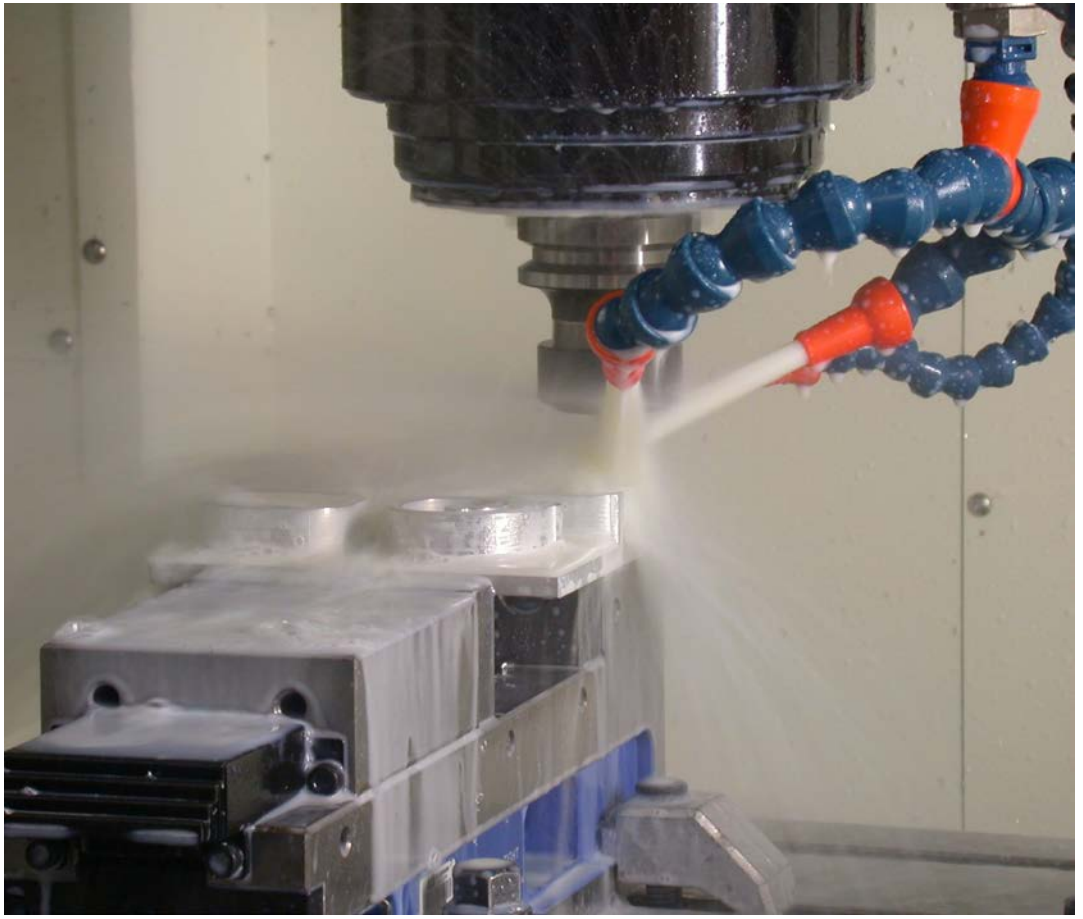
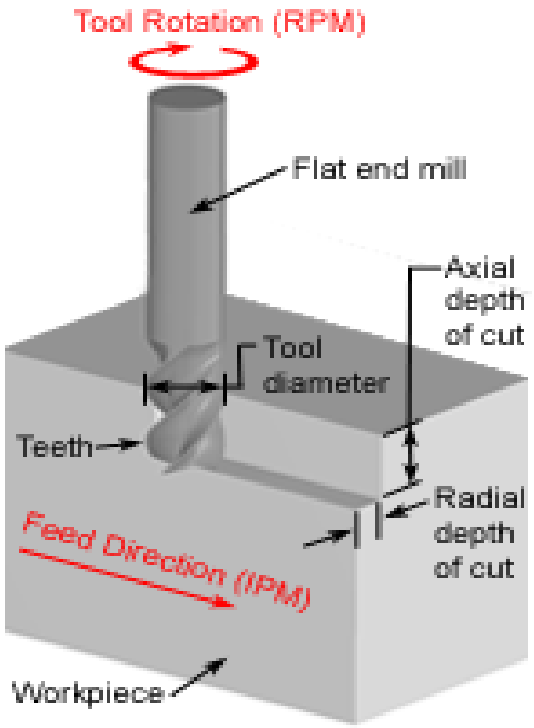
Cutting speeds

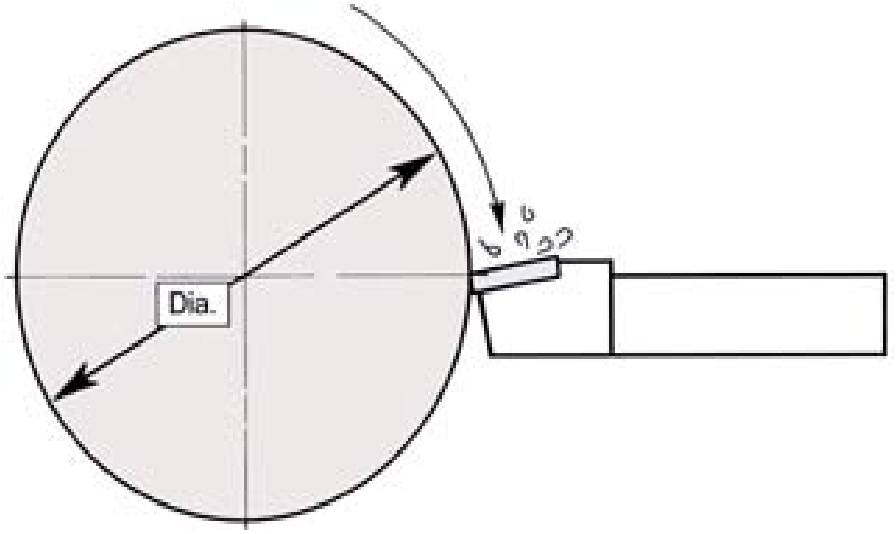


Tool speed v. Work speed

- Milling



- Turning



Surface feet per minute

- The speed that the tool or the work moves at the point of cut.
- SPINDLE SPEED IS NOT THE CUTTING SPEED!
- Spindle RPM = SFM/ Dia. X 3.82 x tooling correction factor

Speed chart

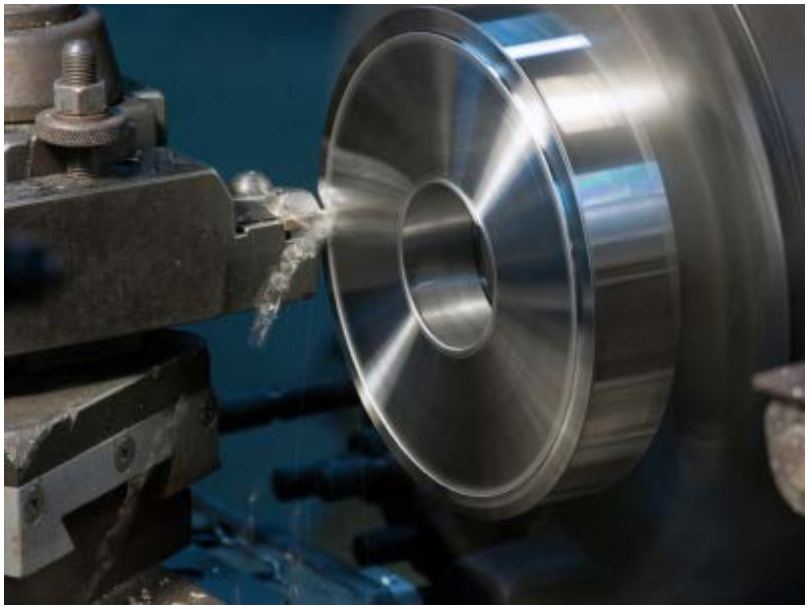
Cutting speed recommendations Material type		Surface feet per min (SFM)
Steel (structural)		**40–60**
Mild steel		**90-125**
Cast iron		**60–80**
Alloy steels		**50–120**
Carbon steels C1008-C1095		**70–130**
Free cutting steels		**115–230**
Stainless steels (300 & 400 series)		**75–130**
Copper/ Bronze		**70–150**
Leaded steel 12L14		**275-325**
Aluminum		**250–350**
Brass		**300-750**

One hour tool life, HSS, dry cut, medium feed rate, non interrupted cut, no mill scale. For coated carbide cutters with coolant, speeds may be increased by 100-200% - dependent on situation.

Example

Turn 2.000 OD 303 SS

- Experience says 120 SFM is a good choice based on our machines and tooling



- Stainless steel is generally “difficult” to machine. Tends to seize and gall.
- Requires tool with strong cutting edge

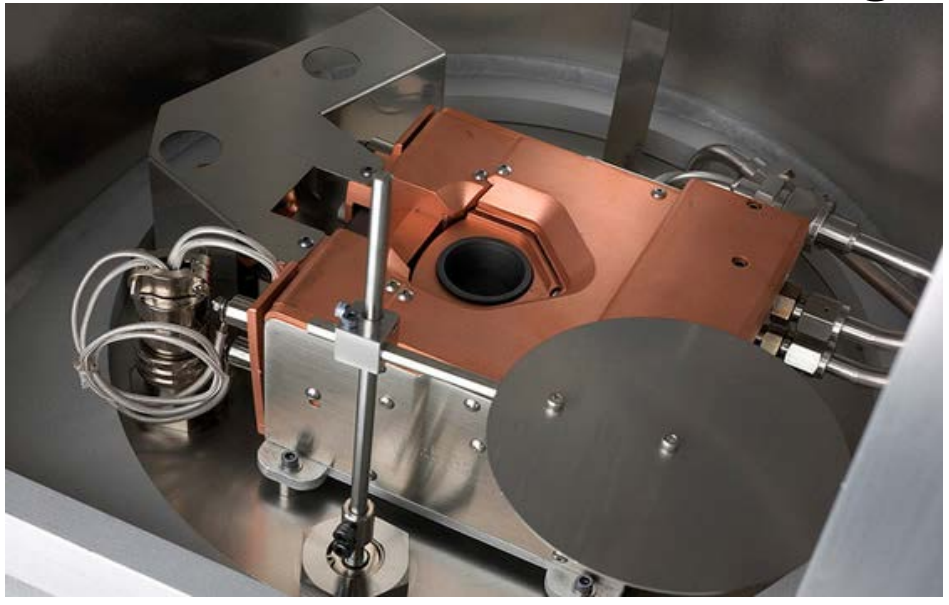
Calculated speed:

- Lathe spindle RPM

RPM = SFM/ Dia. X 3.82 x tooling correction factor.

RPM = 120 / 2.000 x 3.82 x 2 (b/c Carbide with Titanium nitride coating) = 458 RPM

- Mill Copper with .875 HSS EM
- Experience says 135 SFM is a good choice based on our machines and tooling



- Copper is ductile, being easily “pushed” by a cutting tool. High shear tooling required.
- Uncoated tools have sharper edgeds than coated tools

Calculated speed

- Mill spindle RPM

RPM = SFM/ Dia. X 3.82 x tooling correction factor.

RPM = 135/.875 x 3.82 = 589 RPM