

SPEEDS, FEEDS AND LUBRICANTS

Tapping speeds are determined by many factors. The main ones are:-

- a) Thread pitch
- b) Material being tapped
- c) Hole depth
- d) Hole type, through or blind
- e) Depth of thread
- f) Lubricant quality and flow rate

Tapping speeds can be calculated using:- $RPM = \frac{\text{Feed speed (SFM)}}{0.26 \times \text{Tap OD}}$

Recommended SFM are given later.

Tapping speeds should be decreased if :-

- a) Lubricant is poor, or flow is restricted
- b) Bottom lead or Spiral flute taps are used
- c) Thread depth (%) increases.
- d) Thread pitch is coarse
- e) Cutting taper threads (50% normal speed)
- f) Cutting Acme or Trapezoidal threads (40% normal speed)

Tapping speeds can be increased if:-

- a) Thread depth decreases
- b) Thread pitch is fine
- c) Coolant flow and quality is good
- d) Spiral point taps are used

RECOMMENDED FEED SPEEDS AND LUBRICANTS

Speeds given are for machine tapping using HSS taps, and are given in feet per minute

MATERIAL	FEED SPEED (SFM)	LUBRICANT
Aluminium	70-90	Soluble oil
Aluminium alloy	50-70	Soluble, light base or lard oil
Brass	60-100	Light base oil
Bronze	30-40	Light base oil
Copper	60-80	Light base oil
Gun metal	50-60	Soluble, light base or lard oil
Grey cast iron	30-60	Dry or soluble oil
Alloy cast iron	15-30	Sulphur based oil
Malleable iron	20-40	Soluble or sulphur based oil
Magnesium alloy	50-70	Soluble oil or paraffin with lard oil
Nimonic alloy	10-12	Very high pressure cutting oil
Plastics	50-70	Dry, freeze spray, liquid soap
Mild steel	30-50	Sulphur based oil
Carbon steel to 4%	20-40	Sulphur based oil
Carbon steel to 7%	20-30	Sulphur based oil
Carbon steel 7%+	15-25	Sulphur based oil
Steel alloys to 60T	15-25	Sulphur based oil
Steel alloys 60T+	10-15	Sulphur based oil
Stainless steels	10-20	Sulphur based oil
Tool steels	15-25	Sulphur based oil

With so many variables affecting tapping speeds there may need to be some experimentation to find the ideal. A good rule is to start at the slowest speed and work up.