COOL BREEZE - VARIABLE HELIX END MILLS
Speed and Feed Data

Material	SFM	Chip Load per Tooth			
		1/8"	1/4"	1/2"	1"
Aluminum Alloys	1200	.0010	.0020	.0040	.0080
Carbon Steel	300-600	.0010	.0015	.0030	.0060
Cast Iron	350-550	.0010	.0015	.0030	.0060
Copper Alloys	500-900	.0010	.0020	.0030	.0060
Steel - Annealed	350-500	.0010	.0020	.0030	.0050
Steel - Rc 18-24	150-500	.0004	.0008	.0015	.0045
Steel - Rc 25-37	125-200	.0003	.0005	.0010	.0030
Stainless Steel - Free Machining	250-400	.0005	.0010	.0020	.0030
Stainless Steel - Other	150-300	.0005	.0010	.0020	.0030
Inconel/Monel	60-100	.0005	.0010	.0015	.0030
Titanium	175-300	.0005	.0008	.0015	.0030

All speeds and feeds are suggested starting points. They may be increased or decreased depending on machine condition, depth of cut, finish required, coolant, etc.

ROUGHING END MILLS
Speed and Feed Data

Material	SFM	Chip Load per Tooth			
		1/8"	1/4"	1/2"	1"
Aluminum Alloys	125-250	.0010	.0020	.0025	.0030
Magnesium	125-250	.0010	.0020	.0025	.0030
Copper	75-100	.0008	.0015	.0030	.0060
Brass	85-110	.0008	.0015	.0030	.0060
Bronze	75-100	.0008	.0015	.0030	.0060
Cast Iron	100-125	.0008	.0015	.0025	.0050
Cast Steel	75-100	.0008	.0015	.0025	.0050
Malleable Iron	80-120	.0008	.0015	.0025	.0050
Stainless Steel					
Free Machining	75-90	.0005	.0007	.0012	.0020
Other	50-75	.0005	.0007	.0012	.0020
Steel					
Annealed	100-125	.0010	.0020	.0040	.0060
Rc 18-24	75-100	.0070	.0012	.0030	.0050
Rc 25-37	40-75	.0005	.0010	.0020	.0040
Titanium					
Up to Rc 30	40-75	.0005	.0012	.0025	.0050
Rc 30+	20-25	.0005	.0010	.0020	.0035
High Temp Alloys					
Austenitic	12-20	*	.0007	.0015	.0030
Ferritic	50-75	.0004	.0007	.0020	.0050
Nickel Base	20-25	.0004	.0007	.0015	.0030
Cobalt Base	8-15	*	.0007	.0015	.0030

LIST OF SYMBOLS

F = NUMBER OF FLUTES
D = DIAMETER OF CUTTER
R.P.M. = REVOLUTIONS PER MINUTE
S.F.M. = SURFACE FEET PER MINUTE
I.P.M. = FEED RATE: INCHES PER MINUTE
I.P.R. = FEED RATE: INCHES PER REVOLUTION

MACHINING FORMULAS

$$S.F.M. = 0.262 \times D \times R.P.M.$$

$$R.P.M. = \frac{3.82 \times S.F.M.}{D}$$

$$I.P.R. = \frac{I.P.M.}{R.P.M.} \quad \text{or} \quad CHIP\ LOAD \times F$$

$$I.P.M. = R.P.M. \times I.P.R.$$

$$CHIP\ LOAD = \frac{I.P.M.}{R.P.M. \times F} \quad \text{or} \quad \frac{I.P.R.}{F}$$