

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