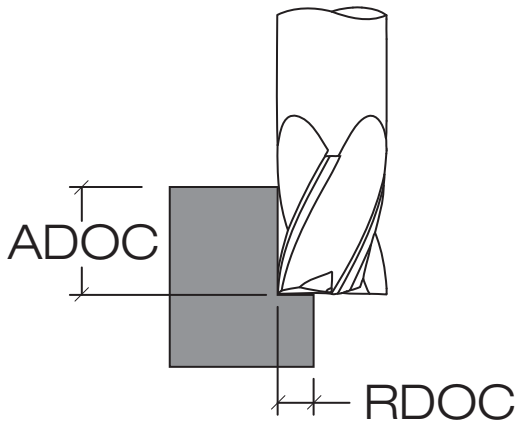


Common Milling Calculations



KEY

D	Tool Cutting Diameter
Z	Number of Flutes
RPM	Revolutions per Minute
SFM	Surface Feet per Minute
IPM	Inches per Minute
IPR	Inches per Revolution
IPT	Inches per Tooth
IPT_{adj}	Inches per Tooth (adjusted)
CT	Chip Thickness
RDOC	Radial Depth of Cut
ADOC	Axial Depth of Cut
MRR	Metal Removal Rate
r_i	Part Radius (inside arc)
r_o	Part Radius (outside arc)

Revolutions Per Minute	RPM =	$\frac{SFM \times 3.82}{D}$
Surface Feet Per Minute	SFM =	$RPM \times D \times .262$
Inches Per Minute	IPM =	$RPM \times IPT \times Z$
Inches Per Revolution	IPR =	$\frac{IPM}{RPM}$
Inches Per Tooth	IPT =	$\frac{IPR}{Z}$
Inches Per Tooth (Chip Thinning Adjustment)*	$IPT_{adj} =$	$\frac{CT \times D}{2 \times \sqrt{(D \times RDOC) - RDOC^2}}$
Chip Thickness*	CT =	$\frac{2 \times IPT \times \sqrt{(D \times RDOC) - RDOC^2}}{D}$
Metal Removal Rate (cu. in./min.)	MRR =	$RDOC \times ADOC \times IPM$
Feed Rate Adjustment - Outside Arc	$F_o =$	$\frac{IPM \times (r_o + R)}{r_o}$
Feed Rate Adjustment - Inside Arc	$F_i =$	$\frac{IPM \times (r_i + R)}{r_i}$
Ball Nose "Effective Diameter"	$D_{eff} =$	$2 \times \sqrt{ADOC \times (D - ADOC)}$
Ball Nose Velocity Adjustment	$V_{adj} =$	$\frac{SFM \times 3.82}{D_{eff}}$

*See figure 1 and figure 3 on page 104