

# Formulas for Milling Operations

## Variable

Speed (Surface Feet per Minute)

Feed (Inches per Minute)

Feed per Tooth

Feed per Revolution

Depth of Cut

Width of Cut

Tool Diameter

# of Teeth in Cutter

Metal Removal Rate (Cubic Inches per Minute)

## Abbreviation

SFM

IPM

FPT

FPR

DOC

WOC

D

Z

MRR

## To Calculate

**Speed** (RPM) . . . . .

$$\frac{\text{SFM} \times 3.82}{D}$$

**Feed** (Inches per Minute) . . . . .

$$\text{RPM} \times \text{FPT} \times Z$$

**SFM** (Surface Feet per Minute) . . . . .

$$\frac{\text{RPM} \times D}{3.82}$$

**IPT** (Inches per Tooth) . . . . .

$$\frac{(\text{IPM} / \text{RPM})}{Z}$$

**MRR** (Cubic Inches per Minute) . . . . .

$$\text{IPM} \times \text{WOC} \times \text{DOC}$$

**HP** (Horsepower Consumption) . . . . .

$$\text{MRR} \times \text{mf}$$

mf - steel = 1  
mf - gray iron = .65  
mf - aluminum = .3  
\* - 1.5% from total  
for every degree  
positive