

# FEEDS AND SPEEDS DATA SHEET

## CALCULATING RPM OF CUTTER OR SPINDLE SPEED

$$\frac{CS*12}{\pi*D} \quad \text{or the shortcut version} \quad \frac{CS*3.82}{D}$$

CS = Cutting Speed (feet per minute, SFM or FPM means the same thing)

D = Tool Diameter on Mill (Part Diameter on the Lathe)

Your CS is determined by your material you're working with along with the type and material of the cutter you're using. Many times, this data is found on the tooling packaging or is listed in the manufacturers data for the cutter or insert. If you do not have this, then you can either refer to various generic tooling apps like "FS Wizard" or even look up basic data in the Machinery's Handbook. The D-value is self-explanatory. If you're working on a lathe, the diameter of the stock is used. If working on the mill, the diameter will be the cutter diameter.

## FEED RATES FOR THREADING

$$\text{IPM (Mill thread feed rate):} \quad \frac{RPM}{TPI}$$

TPI = Threads per Inch

RPM = Revolutions per Minute

$$\text{IPR (Lathe thread feed rate):} \quad \frac{1}{TPI}$$

TPI = Threads per Inch

FEED RATE FOR CUTTING/TURNING (IN IPM FOR MILLING)

$$F_m = f_t \times n_t \times N$$

$F_m$  = Feed rate in inches per minute

$f_t$  = feed in inches per tooth

$n_t$  = number of cutting teeth on the tool (Can be number of inserts or number of flutes)

$N$  = Spindle speed (CS x 4 / D)

IPM to IPR:  $\frac{IPM}{RPM} = IPR$

Your  $F_t$  or your “feed per tooth” can also be referred to as “chip thickness”. These all refer to the same thing. Its how thick the chip will be while being cut. What this really equates to is tool pressure. The thicker the chip the more pressure goes into your tool. Smaller tools require smaller chip thicknesses.

A starting point can be found either in the manufacturers data for the cutter you are using or if nothing else based off of tables in the Machinery’s Handbook.

$N_t$  refers to the number of teeth on your cutter. This can be the number of carbides on the cutter or the number of flutes. Most drill bits have 2 flutes; therefore, they have 2 teeth for the calculation.