

Taig Micro Mill Tool Tips

This page contains information that can be helpful for drilling and milling.

You will find useful formulas for calculating speeds, feeds and metal removal rates.

There is a picture diagram showing the spindle speeds for the Taig Micro Mill and suggested speed and feed rates.

A chart with information on cutting speeds for the **Super Tech** version of the Taig Micro Mill. This chart contains speed rate values for the cut rate, cut slew and cut ramp. These values are intended as safe speeds to start with.

Useful Formulas

Cutting Speed: $SFM = D \times 0.26 \times RPM$

Feed per Tooth: $IPT = IPM \div Z \div RPM$

Spindle Speed: $RPM = SFM \times 3.82 \div D$

Table Feed: $IPM = IPT \times Z \times RPM$

Inch (Feed) per Revolution: $IPR (FR) = IPM \div RPM$

Metal Removal cubic in/min: $MR = IPM \times RDC \times ADC$

Legend

D: Diameter of Tool.

Z: Number of Flutes.

FR: Feed per Revolution.

IPM: Table Feed.

IPR: Inch per Revolution.

IPT: Feed per Tooth.

SFM: Cutting Speed.

RPM: Spindle Speed.

ADC: Axial depth-of-cut (Length).

HP: Actual Horsepower available at running RPM.

PC: Power constants for HP (HP/CI-MR).

RDC: Radial depth-of-cut (Width).

MR: Metal Removal Rate (Cubic inches per minute).

Taig Micro Mill Spindle Speeds

Suggested Speeds for Drilling & Milling
High Speed Steel Drills & Tools

Material	DRILLING Average Drill Speed (sfm)	MILLING Average Tool Speed (sfm)
Magnesium	300	300
Aluminum	250	250
Brass & Bronze	200	150
Copper	70	100
Cast Iron (soft)	120	80
Cast Iron (hard)	80	50
Mild Steel	110	90
Cast Steel	50	80
Alloy Steels (hard)	60	40
Tool Steel	60	50
Stainless Steel	30	60
Titanium	30	50
High Magnesium Steel	15	30

Suggested Feeds for Drilling

Drill Diameter (inches)	Drill Feed (ipr)
< 1/8	0.001-0.002
1/8-1/4	0.002-0.004
1/4-1/2	0.004-0.007
1/2-1	0.007-0.015
>1	0.015-0.025

Suggested Feeds for Milling Tool Feed (inch/tooth)

Material	Face Mills	Side Mills	End Mills
Magnesium	0.005-0.020	0.004-0.010	0.005-0.010
Aluminum	0.005-0.020	0.004-0.010	0.005-0.010

Brass & Bronze	0.004-0.020	0.004-0.010	0.005-0.010
Copper	0.004-0.010	0.004-0.007	0.004-0.008
Cast Iron (soft)	0.004-0.016	0.004-0.009	0.004-0.008
Cast Iron (hard)	0.004-0.010	0.002-0.006	0.002-0.006
Mild Steel	0.004-0.010	0.002-0.007	0.002-0.010
Alloy Steel (hard)	0.004-0.010	0.002-0.007	0.002-0.010
Tool Steel	0.004-0.008	0.002-0.006	0.002-0.006
Stainless Steel	0.004-0.008	0.002-0.006	0.002-0.006
Titanium	0.004-0.008	0.002-0.006	0.002-0.006
High Magnesium Steel	0.004-0.008	0.002-0.006	0.002-0.006

Suggested Cutting Speeds

The cut speed value is the speed the tool starts cutting, at the beginning of each cut, at the end of each cut and at each change in direction.

The slew speed is the maximum speed the tool will ramp up to during a cut, which will be the maximum speed the tool will move while cutting.

The ramp is the speed of acceleration the tool moves while cutting to reach the slew speed. The ramp is also the speed of deceleration when the tool is approaching the end of a cut or when a change in direction is detected, it ramps down to the cut rate.

The cut, ramp and slew speed values are dependent on the cutting bit, material and spindle speed.

Information for more cutting materials will be added shortly.

Materials	Cut Rate	Cut Slew	Cut Ramp
Acrylic/Plastic	0.1	0.2	0.005
Corion	0.2 - 0.4	0.4 - 0.8	0.005
Aluminum	0.05	0.1	0.001

Home Page at <http://www.super-tech.com>

<http://www.super-tech.com/root/grp.asp?p1=micromill-tooltips>

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