




Blender Application Guide (metric) • Speed & Feed

ISO Classification	Work Material	Type of Cut	Axial DOC	Radial DOC	Number of Flutes	Speed (M/Min)	Feed (MM per Tooth)				
							10,0	12,0	16,0	20,0	25,0
	Titanium Alloys 6Al-4V, 6-2-4	Fillet Radius Finishing	0,125 - 0,180	.25 x D	5	76	0,0511	0,0616	0,0819	0,1022	0,1232
		Fillet Radius Finishing	Final floor depth	See below*	5	76	0,0511	0,0616	0,0819	0,1022	0,1232
	Hi-Temp Alloys Inconel, Hastelloy	Fillet Radius Finishing	0,125 - 0,180	.25 x D	5	46	0,0560	0,0675	0,0897	0,1120	0,1349
		Fillet Radius Finishing	Final floor depth	See below*	5	46	0,0560	0,0675	0,0897	0,1120	0,1349
	Austenitic Stainless Steels, FeNi Alloys 303, 304, 316, Invar, Kovar	Fillet Radius Finishing	0,125 - 0,250	.25 x D	5	91	0,0511	0,0616	0,0819	0,1022	0,1232
		Fillet Radius Finishing	Final floor depth	See below*	5	91	0,0511	0,0616	0,0819	0,1022	0,1232
	Precipitation Hardening Stainless Steels 17-4, 15-5, 13-8	Fillet Radius Finishing	0,125 - 0,250	.25 x D	5	91	0,0536	0,0645	0,0858	0,1071	0,1290
		Fillet Radius Finishing	Final floor depth	See below*	5	91	0,0536	0,0645	0,0858	0,1071	0,1290
	Martensitic & Ferritic Stainless Steels 410, 416, 440	Fillet Radius Finishing	0,125 - 0,400	.25 x D	5	91	0,0560	0,0675	0,0897	0,1120	0,1349
		Fillet Radius Finishing	Final floor depth	See below*	5	91	0,0560	0,0675	0,0897	0,1120	0,1349
	Tool and Die Steels A2, D2, O1, S7, P20, H13	Fillet Radius Finishing	0,125 - 0,400	.25 x D	5	91	0,0536	0,0645	0,0858	0,1071	0,1290
		Fillet Radius Finishing	Final floor depth	See below*	5	91	0,0536	0,0645	0,0858	0,1071	0,1290

D = Tool diameter

Tool Tips:

- * Radial cut guide for finishing fillet radii: **First pass** = Max radial cut of .25 x mill diameter, leaving 0,25mm on wall; **Second pass** = Remove the final 0,25mm of material; **Third pass (if needed)** = Run a "spring" pass to ensure finish and fillet dimensional accuracy.
- Reduce speed and feed rates by 20% when your tool has an overall length greater than 10x the diameter.
- Rough the part to +0,25mm above and adjacent to the fillet radius.
- Maintain a total indicator runout (TIR) <0,015mm for maximum tool life and a superior surface finish.
- Using a tool radius smaller than the fillet radius will require extra passes.

Common Machining Formulas

D Tool Cutting Diameter
R Tool Radius
Z Number of Flutes
RPM Revolutions per Minute
M/MIN Meters per Minute
MM/Min Millimeters per Minute
MRR Metal Removal Rate
RDOC Radial Depth of Cut
ADOC Axial Depth of Cut

$$RPM = \frac{M/MIN \times 318.057}{D}$$

$$M/MIN = RPM \times D \times .00314$$

$$MM/MIN = RPM \times MMPT \times Z$$

$$MRR = RDOC \times ADOC \times MM/MIN$$