

E16 Application Guide (Inch) • Speed & Feed

ISO Classification	Work Material	Type of Cut	Axial DOC	Radial DOC	Number of Flutes	Speed (SFM)	Feed (Inches Per Tooth)			
							1/4	3/8	1/2	3/4
K	Cast Iron - Gray	Peripheral - Rough	1.25 x D	.25 x D	6	300	.0014	.0020	.0027	.0041
		Finish	1.5 x D	.01 x D	6	350	.0014	.0021	.0028	.0042
	Cast Iron - Ductile	Peripheral - Rough	1.25 x D	.25 x D	6	325	.0013	.0019	.0025	.0038
		Finish	1.5 x D	.01 x D	6	350	.0014	.0020	.0027	.0041
P	Low Carbon Steel 1018, 12L14, 8620	Peripheral - Rough	1.25 x D	.25 x D	6	300	.0015	.0022	.0029	.0044
		Finish	1.5 x D	.01 x D	6	375	.0016	.0023	.0031	.0047
	Medium Carbon Steels 4140, 4340	Peripheral - Rough	1.0 x D	.30 x D	6	325	.0011	.0017	.0022	.0033
		Finish	1.5 x D	.01 x D	6	400	.0014	.0021	.0028	.0042
	Tool & Die Steels < 48 HRC A2, D2, H13, P20	Peripheral - Rough	1.0 x D	.30 x D	6	225	.0008	.0011	.0015	.0023
		Finish	1.5 x D	.01 x D	6	300	.0007	.0010	.0013	.0020
H	Hardened Steels 49 to 57 HRC	Peripheral - Rough	1.0 x D	.25 x D	6	175	.0006	.0009	.0012	.0018
		Finish	1.25 x D	.01 x D	6	250	.0008	.0011	.0015	.0023
	Hardened Steels 58 to 62 HRC	Peripheral - Rough	1.0 x D	.20 x D	6	65	.0006	.0009	.0012	.0018
		Finish	1.25 x D	.01 x D	6	90	.0008	.0011	.0015	.0023
M	Austenitic Stainless Steels 303, 304, 316	Peripheral - Rough	1.25 x D	.25 x D	6	275	.0011	.0016	.0021	.0032
		Finish	1.5 x D	.01 x D	6	300	.0012	.0017	.0023	.0035
	Martensitic Stainless Steel 416, 410, 440C	Peripheral - Rough	1.25 x D	.25 x D	6	300	.0012	.0017	.0023	.0035
		Finish	1.5 x D	.01 x D	6	350	.0013	.0019	.0025	.0038
	Precipitation Hardening Stainless Steels 17-4 PH, 15-5 PH, 13-8 PH	Peripheral - Rough	1.25 x D	.25 x D	6	250	.0010	.0015	.0020	.0030
		Finish	1.5 x D	.01 x D	6	300	.0013	.0019	.0025	.0038
S	Titanium Alloys	Peripheral - Rough	1.0 x D	.20 x D	6	250	.0006	.0009	.0012	.0018
		Finish	1.25 x D	.01 x D	6	275	.0009	.0014	.0018	.0027
	High Temperature Alloys Inconel, Haynes, Stellite	Peripheral - Rough	1.0 x D	.20 x D	6	80	.0007	.0010	.0013	.0020
		Finish	1.25 x D	.01 x D	6	85	.0008	.0011	.0015	.0023

D = Tool diameter

Common Machining Formulas

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

$$\text{SFM} = \text{RPM} \times D \times .262$$

$$\text{IPM} = \text{RPM} \times \text{IPT} \times Z$$

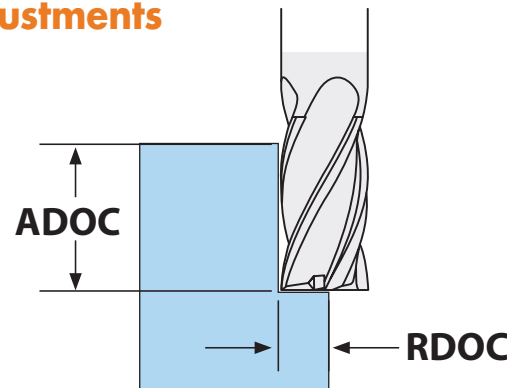
$$\text{MRR} = \text{RDOC} \times \text{ADOC} \times \text{IPM}$$

D Tool Cutting Diameter
R Tool Radius
Z Number of Flutes
RPM Revolutions per Minute
SFM Surface Feet per Minute
IPM Inches per Minute
MRR Metal Removal Rate
RDOC Radial Depth of Cut
ADOC Axial Depth of Cut

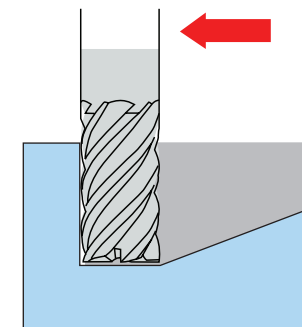
Radial Chip Thinning Adjustment

$$\text{IPT}_{\text{adj}} = \frac{\text{IPT} \times (D/2)}{\sqrt{(D \times \text{RDOC}) - \text{RDOC}^2}}$$

Adjustments



1. Apply chip thinning adjustment when $\text{RDOC} < D$



2. Ramp entry into work piece

- Ramp at 1.5° – 2.5° angle
- Reduce chipload by 20% of recommended slotting rate