ISO Code	Work Material	Type of Cut	Axial DOC	Radial DOC	Number of Flutes	Speed (SFM)	Feed (Inch per Tooth) 1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
N	Aluminum Alloys 2024, 6061, 7075	Slotting	1 x D	1 x D	2	800	.0015	.0023	.0030	.0038	.0045	.0060	.0075	.0090	.0120
		Peripheral - Rough	1 x D	.75 x D	2	1000	.0019	.0028	.0038	.0047	.0056	.0075	.0094	.0113	.0150
		Peripheral - Finish	1.5 x D	.01 x D	2	1200	.0024	.0035	.0047	.0059	.0071	.0094	.0118	.0141	.0188
	High Silicon Aluminum A380, A390	Slotting	.75 x D	1 x D	2	500	.0013	.0020	.0026	.0033	.0039	.0052	.0065	.0078	.0104
		Peripheral - Rough	1 x D	.5 x D	2	700	.0016	.0024	.0033	.0041	.0049	.0065	.0081	.0098	.0130
		Peripheral - Finish	1.5 x D	.01 x D	2	900	.0020	.0031	.0041	.0051	.0061	.0082	.0102	.0122	.0163
	Magnesium Alloys	Slotting	1 x D	1 x D	2	800	.0015	.0023	.0030	.0038	.0045	.0060	.0075	.0090	.0120
		Peripheral - Rough	1 x D	.75 x D	2	1000	.0019	.0028	.0038	.0047	.0056	.0075	.0094	.0113	.0150
		Peripheral - Finish	1.5 x D	.01 x D	2	1200	.0024	.0035	.0047	.0059	.0071	.0094	.0118	.0141	.0188
	Copper Alloys Brass, Bronze	Slotting	.75 x D	1 x D	2	500	.0013	.0020	.0026	.0033	.0039	.0052	.0065	.0078	.0104
		Peripheral - Rough	1 x D	.75 x D	2	575	.0016	.0024	.0033	.0041	.0049	.0065	.0081	.0098	.0130
		Peripheral - Finish	1.5 x D	.01 x D	2	650	.0020	.0031	.0041	.0051	.0061	.0082	.0102	.0122	.0163
	Composites Plastics, Fiberglass	Slotting	1 x D	1 x D	2	500	.0013	.0020	.0026	.0033	.0039	.0052	.0065	.0078	.0104
		Peripheral - Rough	1 x D	.75 x D	2	700	.0016	.0024	.0033	.0041	.0049	.0065	.0081	.0098	.0130
		Peripheral - Finish	1.5 x D	.01 x D	2	900	.0020	.0031	.0041	.0051	.0061	.0082	.0102	.0122	.0163
	Aluminum Alloys 2024, 6061, 7075	Slotting	.75 x D	1 x D	3	800	.0013	.0020	.0026	.0033	.0039	.0052	.0065	.0078	.0104
		Peripheral - Rough	1 x D	.75 x D	3	1000	.0016	.0024	.0033	.0041	.0049	.0065	.0081	.0098	.0130
		Peripheral - Finish	1.5 x D	.01 x D	3	1200	.0020	.0031	.0041	.0051	.0061	.0082	.0102	.0122	.0163
	High Silicon Aluminum A380, A390	Slotting	.5 x D	1 x D	3	500	.0011	.0017	.0022	.0028	.0033	.0044	.0055	.0066	.0088
		Peripheral - Rough	1 x D	.5 x D	3	700	.0014	.0021	.0028	.0034	.0041	.0055	.0069	.0083	.0110
		Peripheral - Finish	1.5 x D	.01 x D	3	900	.0017	.0026	.0035	.0043	.0052	.0069	.0086	.0104	.0138
	Magnesium Alloys	Slotting	.75 x D	1 x D	3	800	.0013	.0020	.0026	.0033	.0039	.0052	.0065	.0078	.0104
		Peripheral - Rough	1 x D	.75 x D	3	1000	.0016	.0024	.0033	.0041	.0049	.0065	.0081	.0098	.0130
		Peripheral - Finish	1.5 x D	.01 x D	3	1200	.0020	.0031	.0041	.0051	.0061	.0082	.0102	.0122	.0163
	Copper Alloys Brass, Bronze	Slotting	.75 x D	1 x D	3	500	.0011	.0017	.0022	.0028	.0033	.0044	.0055	.0066	.0088
		Peripheral - Rough	1 x D	.75 x D	3	575	.0014	.0021	.0028	.0034	.0041	.0055	.0069	.0083	.0110
		Peripheral - Finish	1.5 x D	.01 x D	3	650	.0017	.0026	.0035	.0043	.0052	.0069	.0086	.0104	.0138
	Composites Plastics, Fiberglass	Slotting	1 x D	1 x D	3	500	.0011	.0017	.0022	.0028	.0033	.0044	.0055	.0066	.0088
		Peripheral - Rough	1 x D	.75 x D	3	700	.0014	.0021	.0028	.0034	.0041	.0055	.0069	.0083	.0110
		Peripheral - Finish	1.5 x D	.01 x D	3	900	.0017	.0026	.0035	.0043	.0052	.0069	.0086	.0104	.0138

D = Tool Diameter

≈ Approximately Equals
≤ Less Than or Equal To
≥ Greater Than or Equal To
× Multiply
< Less Than
> Greater Than
= Equals

Common Machining Formulas

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

$$SFM = RPM \times D \times .262$$

$$IPM = RPM \times IPT \times Z$$

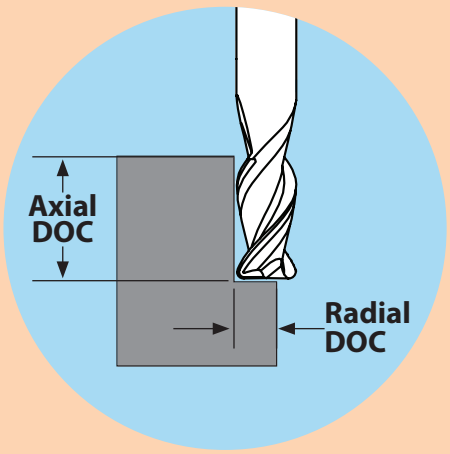
$$MRR = RDOC \times ADOC \times IPM$$

$$RPM = \frac{M/min \times 318.3}{D}$$

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

$$MMPM = RPM \times MMPT \times Z$$

$$MRR = RDOC \times ADOC \times MMPM$$



ISO Code	Work Material	Type of Cut	Axial DOC	Radial DOC	Number of Flutes	Speed (M/Min)	Feed (MM per Tooth) 3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0	20.0
N	Aluminum Alloys 2024, 6061, 7075	Slotting	1 x D	1 x D	2	244	.0360	.0480	.0600	.0720	.0960	.1195	.1440	.1915	.2405
		Peripheral - Rough	1 x D	.75 x D	2	305	.0450	.0600	.0750	.0900	.1200	.1494	.1800	.2394	.3006
		Peripheral - Finish	1.5 x D	.01 x D	2	365	.0565	.0754	.0942	.1131	.1508	.1877	.2261	.3007	.3776
	High Silicon Aluminum A380, A390	Slotting	.75 x D	1 x D	2	153	.0312	.0416	.0520	.0624	.0832	.1036	.1248	.1660	.2084
		Peripheral - Rough	1 x D	.5 x D	2	213	.0390	.0520	.0650	.0780	.1040	.1295	.1560	.2075	.2605
		Peripheral - Finish	1.5 x D	.01 x D	2	274	.0490	.0653	.0817	.0980	.1307	.1627	.1960	.2606	.3273
	Magnesium Alloys	Slotting	1 x D	1 x D	2	244	.0360	.0480	.0600	.0720	.0960	.1195	.1440	.1915	.2405
		Peripheral - Rough	1 x D	.75 x D	2	305	.0450	.0600	.0750	.0900	.1200	.1494	.1800	.2394	.3006
		Peripheral - Finish	1.5 x D	.01 x D	2	365	.0565	.0754	.0942	.1131	.1508	.1877	.2261	.3007	.3776
	Copper Alloys Brass, Bronze	Slotting	.75 x D	1 x D	2	153	.0312	.0416	.0520	.0624	.0832	.1036	.1248	.1660	.2084
		Peripheral - Rough	1 x D	.75 x D	2	175	.0390	.0520	.0650	.0780	.1040	.1295	.1560	.2075	.2605
		Peripheral - Finish	1.5 x D	.01 x D	2	198	.0490	.0653	.0817	.0980	.1307	.1627	.1960	.2606	.3273
	Composites Plastics, Fiberglass	Slotting	1 x D	1 x D	2	153	.0312	.0416	.0520	.0624	.0832	.1036	.1248	.1660	.2084
		Peripheral - Rough	1 x D	.75 x D	2	213	.0390	.0520	.0650	.0780	.1040	.1295	.1560	.2075	.2605
		Peripheral - Finish	1.5 x D	.01 x D	2	274	.0490	.0653	.0817	.0980	.1307	.1627	.1960	.2606	.3273
	Aluminum Alloys 2024, 6061, 7075	Slotting	.75 x D	1 x D	3	244	.0312	.0416	.0520	.0624	.0832	.1036	.1248	.1660	.2084
		Peripheral - Rough	1 x D	.75 x D	3	305	.0390	.0520	.0650	.0780	.1040	.1295	.1560	.2075	.2605
		Peripheral - Finish	1.5 x D	.01 x D	3	365	.0490	.0653	.0817	.0980	.1307	.1627	.1960	.2606	.3273
	High Silicon Aluminum A380, A390	Slotting	.5 x D	1 x D	3	153	.0264	.0352	.0440	.0528	.0704	.0876	.1056	.1404	.1763
		Peripheral - Rough	1 x D	.5 x D	3	213	.0330	.0440	.0550	.0660	.0880	.1096	.1320	.1755	.2204
		Peripheral - Finish	1.5 x D	.01 x D	3	274	.0415	.0553	.0691	.0829	.1106	.1376	.1658	.2205	.2769
	Magnesium Alloys	Slotting	.75 x D	1 x D	3	244	.0312	.0416	.0520	.0624	.0832	.1036	.1248	.1660	.2084
		Peripheral - Rough	1 x D	.75 x D	3	305	.0390	.0520	.0650	.0780	.1040	.1295	.1560	.2075	.2605
		Peripheral - Finish	1.5 x D	.01 x D	3	365	.0490	.0653	.0817	.0980	.1307	.1627	.1960	.2606	.3273
	Copper Alloys Brass, Bronze	Slotting	.75 x D	1 x D	3	153	.0264	.0352	.0440	.0528	.0704	.0876	.1056	.1404	.1763
		Peripheral - Rough	1 x D	.75 x D	3	175	.0330	.0440	.0550	.0660	.0880	.1096	.1320	.1755	.2204
		Peripheral - Finish	1.5 x D	.01 x D	3	198	.0415	.0553	.0691	.0829	.1106	.1376	.1658	.2205	.2769
	Composites Plastics, Fiberglass	Slotting	1 x D	1 x D	3	153	.0264	.0352	.0440	.0528	.0704	.0876	.1056	.1404	.1763
		Peripheral - Rough	1 x D	.75 x D	3	213	.0330	.0440	.0550	.0660	.0880	.1096	.1320	.1755	.2204
		Peripheral - Finish	1.5 x D	.01 x D	3	274	.0415	.0553	.0691	.0829	.1106	.1376	.1658	.2205	.2769

D = Tool Diameter

D Tool Diameter
Z Number of Flutes
RPM Revolutions per Minute
SFM Surface Feet per Minute
M/min Surface Meters per Minute
IPM Inches per Minute
MMPM Millimeters per Minute
IPT Inch per Tooth
MMPT Millimeters per Tooth
MRR Metal Removal Rate
RDOC Radial Depth of Cut
ADOC Axial Depth of Cut

Technical Resources

Information on tips and adjustments for the following milling operations can be found in our Technical Resources section beginning on page 125.

- HEM slotting
- Face milling
- Helical entry ramping
- Straight line ramping
- Long tool projection adjustments
- Ball nose milling adjustments
- Other helpful tips and calculations