ISO Code	Tool Dia	Type of Cut	Axial Max	Radial Max	Speed (SFM)	RPM	IPT	IPM
H 51 HRC–63 HRC	1/8	Roughing	.125	.025	65	1986	.00035	4
		Finishing	.1875	.0015	100	3056	.0004	7
	3/16	Roughing	.1875	.0375	65	1324	.0005	4
		Finishing	.28125	.002	100	2037	.0005	6
	1/4	Roughing	.250	.05	65	993	.0007	4
		Finishing	.375	.003	100	1528	.0007	6
	5/16	Roughing	.3125	.0625	65	795	.0009	4
		Finishing	.46875	.004	100	1222	.0009	6
	3/8	Roughing	.375	.075	65	662	.0011	4
		Finishing	.563	.005	100	1019	.0011	6
	1/2	Roughing	.5	.100	65	497	.0015	4
		Finishing	.375	.007	100	764	.0015	6
	5/8	Roughing	.625	.125	65	397	.0019	4
		Finishing	.938	.010	100	611	.0019	7
	3/4	Roughing	.750	.150	65	331	.0024	4
		Finishing	1.125	.012	100	509	.0024	7
	1	Roughing	1.000	.200	65	248	.003	4
		Finishing	1.500	.015	100	382	.003	6
K H 43 HRC–50 HRC	1/8	Roughing	.125	.031	200	6112	.0003	11
		Finishing	.1875	.0015	275	8404	.0003	15
	3/16	Roughing	.1875	.047	200	4075	.0005	12
		Finishing	.28125	.002	275	5603	.0005	16
	1/4	Roughing	.250	.063	200	3056	.0007	12
		Finishing	.375	.003	275	4202	.0007	17
	5/16	Roughing	.3125	.078	200	2445	.0009	13
		Finishing	.46875	.004	275	3362	.0009	18
	3/8	Roughing	.375	.094	200	2037	.0011	13
		Finishing	.563	.005	275	2801	.0011	18
	1/2	Roughing	.5	.125	200	1528	.0015	13
		Finishing	.375	.007	275	2101	.0015	18
	5/8	Roughing	.625	.156	200	1222	.0018	13
		Finishing	.938	.010	275	1681	.0018	18
	3/4	Roughing	.750	.188	200	1019	.0022	13
		Finishing	1.125	.012	275	1401	.0022	18
	1	Roughing	1.000	.250	200	764	.0030	13
		Finishing	1.500	.015	275	1051	.0030	18
P M 36 HRC–42 HRC	1/8	Roughing	.125	.044	250	7640	.0004	91
		Finishing	.1875	.002	325	9932	.0004	34
	3/16	Roughing	.1875	.065625	250	5093	.0005	79
		Finishing	.28125	.004	325	6621	.0006	36
	1/4	Roughing	.250	.0875	250	3820	.0007	110
		Finishing	.375	.005	325	4966	.0009	45
	5/16	Roughing	.3125	.109	250	3056	.0009	110
		Finishing	.46875	.007	325	3973	.0011	47
	3/8	Roughing	.375	.132	250	2547	.0011	110
		Finishing	.563	.01	325	3311	.0013	45
	1/2	Roughing	.5	.175	250	1910	.0015	110
		Finishing	.375	.012	325	2483	.0018	45
	5/8	Roughing	.625	.21875	250	1528	.0019	110
		Finishing	.938	.015	325	1986	.0022	45
	3/4	Roughing	.750	.2625	250	1273	.0024	110
		Finishing	1.125	.015	325	1655	.0027	45
	1	Roughing	1.000	.350	250	955	.003	110
		Finishing	1.500	.015	325	1242	.0036	45

D = Tool Diameter

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

Common Machining Formulas

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

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

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

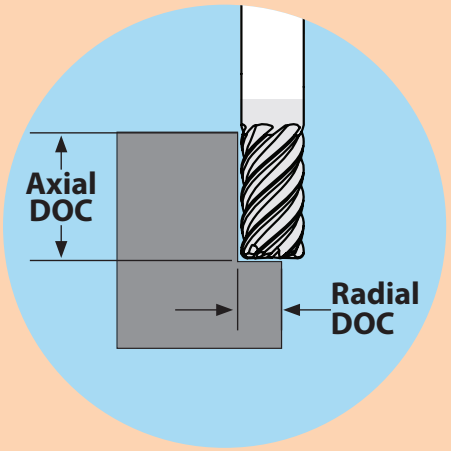
$$MRR = RDOC \times ADOC \times IPM$$

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

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

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

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



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