General Solid Carbide Milling Guide

Fractional

Type	Rc Hardness	MILLING SFM (Vc)					CHIPLOAD PER FLUTE (Fz)				
		2 flute stub / std.	2 flute extra length	3 & 4 flute stub / std.	3 & 4 flute extra length	Diamond Coated	1/32" - 1/8"	1/8" - 1/4"	1/4" - 1/2"	1/2" - 1"	1" - 1-1/4"
COBALT BASE ALLOYS											
Powdered Metal, Stellite, Hs-21, Haynes 25/188, X-40, L-605	< 35	-	-	175 - 225	150 - 200	-	.0005" - .0010"	.0008" - .0020"	.0010" - .0030"	.0020" - .0040"	.0030" - .0050"
	> 35	-	-	125 - 175	100 - 150	-	.0003" - .0005"	.0005" - .0015"	.0010" - .0020"	.0010" - .0030"	.0020" - .0040"
NICKEL BASE ALLOYS											
Invar, Kovar, Inconel-625/718, Waspaloy, Rene, Hastelloy, A286	< 35	-	-	125 - 175	100 - 150	-	.0005" - .0010"	.0008" - .0020"	.0010" - .0030"	.0020" - .0040"	.0030" - .0050"
	> 35	-	-	70 - 115	70 - 100	-	.0003" - .0005"	.0005" - .0015"	.0010" - .0020"	.0010" - .0030"	.0020" - .0040"
IRON BASE ALLOYS											
Incoloy 800-802, Multimet N-155, Timkin 16-25-6, Carpenter 22-b3	< 35	-	-	175 - 225	150 - 200	-	.0005" - .0010"	.0008" - .0020"	.0010" - .0030"	.0020" - .0040"	.0030" - .0050"
	> 35	-	-	125 - 175	100 - 150	-	.0003" - .0005"	.0005" - .0015"	.0010" - .0020"	.0010" - .0030"	.0020" - .0040"
MONEL											
Monel - 65% Nickel		175 - 300	125 - 175	175 - 300	125 - 175	-	.0007" - .0015"	.0010" - .0025"	.0015" - .0040"	.0030" - .0050"	.0040" - .0060"
TITANIUM ALLOYS											
Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-2SN-4Zr-2Mo-Si		200 - 300	125 - 250	200 - 300	125 - 250	-	.0007" - .0015"	.0010" - .0025"	.0015" - .0040"	.0030" - .0050"	.0040" - .0060"
5553 / Beta Titanium		-	-	125 - 225	100 - 200	-	.0005" - .0010"	.0008" - .0020"	.0010" - .0030"	.0020" - .0040"	.0030" - .0050"
STAINLESS STEELS											
13/8, 15/5, 17-4, pH Types	< 35	-	-	150 - 250	100 - 150	-	.0005" - .0010"	.0008" - .0020"	.0010" - .0030"	.0020" - .0040"	.0030" - .0050"
	> 35	-	-	125 - 175	80 - 150	-	.0003" - .0005"	.0005" - .0015"	.0010" - .0020"	.0010" - .0030"	.0020" - .0040"
Inox, 200 Series, 300 Series	< 35	-	-	200 - 250	125 - 175	-	.0005" - .0010"	.0008" - .0020"	.0010" - .0030"	.0020" - .0040"	.0030" - .0050"
	> 35	-	-	150 - 200	100 - 150	-	.0003" - .0005"	.0005" - .0015"	.0010" - .0020"	.0010" - .0030"	.0020" - .0040"
304L, 316L, Nitronic 50, Inox	< 35	-	-	90 - 125	80 - 120	-	.0005" - .0008"	.0008" - .0015"	.0010" - .0020"	.0020" - .0040"	.0030" - .0050"
	> 35	-	-	75 - 110	60 - 90	-	.0003" - .0005"	.0005" - .0010"	.0010" - .0015"	.0010" - .0030"	.0020" - .0040"
400 Series	< 35	-	-	150 - 250	100 - 150	-	.0005" - .0010"	.0008" - .0020"	.0010" - .0030"	.0020" - .0040"	.0030" - .0050"
	> 35	-	-	125 - 175	80 - 150	-	.0003" - .0005"	.0005" - .0015"	.0010" - .0020"	.0010" - .0030"	.0020" - .0040"
HIGH STRENGTH TOOL STEELS											
4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, O1	< 30	-	-	150 - 225	125 - 175	-	.0005" - .0010"	.0008" - .0020"	.0010" - .0030"	.0020" - .0040"	.0030" - .0050"
	30 - 38	-	-	90 - 125	80 - 120	-	.0003" - .0005"	.0005" - .0015"	.0010" - .0020"	.0010" - .0030"	.0020" - .0040"
	> 38	-	-	60 - 90	50 - 80	-	.0002" - .0004"	.0003" - .0007"	.0008" - .0015"	.0010" - .0025"	.0015" - .0035"
MEDIUM ALLOY TOOL STEELS											
200, 250, 300, 8620	< 35	-	-	175 - 250	150 - 200	-	.0007" - .0015"	.0010" - .0025"	.0015" - .0040"	.0030" - .0050"	.0040" - .0060"
	> 35	-	-	100 - 175	100 - 150	-	.0005" - .0010"	.0008" - .0020"	.0010" - .0030"	.0020" - .0040"	.0030" - .0050"
CARBON STEELS											
A36, 12L14, 1000's, 1100's, 1300's	< 35	-	-	175 - 250	150 - 200	-	.0007" - .0015"	.0010" - .0025"	.0015" - .0040"	.0030" - .0050"	.0040" - .0060"
	> 35	-	-	100 - 175	100 - 150	-	.0005" - .0010"	.0008" - .0020"	.0010" - .0030"	.0020" - .0040"	.0030" - .0050"
CAST MATERIAL											
Steel		225 - 325	175 - 250	250 - 350	175 - 250	-	.0010" - .0020"	.0015" - .0040"	.0020" - .0060"	.0030" - .0100"	.0050" - .0100"
Ductile Iron		200 - 300	125 - 200	200 - 300	125 - 200	-	.0005" - .0015"	.0010" - .0030"	.0015" - .0040"	.0020" - .0060"	.0030" - .0080"
Gray Iron		225 - 325	175 - 250	250 - 350	175 - 250	-	.0010" - .0020"	.0015" - .0040"	.0020" - .0060"	.0030" - .0100"	.0050" - .0100"
Aluminum		250 - 350	250 - 350	250 - 350	250 - 350	-	.0010" - .0020"	.0015" - .0040"	.0020" - .0060"	.0030" - .0100"	.0050" - .0100"
ALUMINUM											
Aircraft Grade (6061, 7075)	Standard Speed	300 - 500	300 - 500	300 - 500	300 - 500	-	.0010" - .0020"	.0015" - .0040"	.0020" - .0060"	.0030" - .0100"	.0050" - .0150"
	High Speed	*(SEE HIGH SPEED ALUMINUM CHART - PAGE 272)*									
MAGNESIUM											
		300 - 500	300 - 500	300 - 500	300 - 500	-	.0010" - .0020"	.0015" - .0040"	.0020" - .0060"	.0030" - .0100"	.0050" - .0100"
COPPER											
Copper Alloys		300 - 400	250 - 350	300 - 450	250 - 350	-	.0007" - .0015"	.0010" - .0025"	.0015" - .0035"	.0020" - .0080"	.0040" - .0100"
BRASS, BRONZE											
Brass, Aluminum/Bronze, Low Silicon Bronze		300 - 400	200 - 300	275 - 375	200 - 300	-	.0007" - .0015"	.0010" - .0025"	.0015" - .0035"	.0020" - .0080"	.0040" - .0100"
COMPOSITE MATERIAL											
Glass Epoxy, Fiberglass, Plastics		200 - 400	200 - 400	200 - 400	200 - 400	200 - 500	.0010" - .0020"	.0015" - .0040"	.0020" - .0060"	.0030" - .0100"	.0050" - .0100"
Graphite, G10		*(SEE GRAPHITE CHART - PAGE 293)*				300 - 1000	.0010" - .0020"	.0015" - .0040"	.0020" - .0060"	.0030" - .0100"	.0050" - .0100"

When plunging into a solid, drop feed by approximately 50%.
20% of diameter for basic engagement parameters.

NOTE - ABOVE ARE STARTING PARAMETERS ONLY. HIGHER RESULTS MAY BE ACHIEVED WITH OPTIMUM CONDITIONS.