



**Mikron Carbide Drill Speed & Feed Chart**

How To Use Chart

- 1.) Select Material Group
- 2.) Select Drill
- 3.) Read SFM & F Values
- 4.) Use Feed Chart to Convert to IPR then multiply IPR x RPM for IPM
- 5.) Calculate Speeds & Feeds Using Formulas Below



Feed Chart / Rev.																		
F	Diameters																	
	.006" inch	0.15mm mm	.012" inch	0.30mm mm	.020" inch	0.50mm mm	.030" inch	0.75mm mm	.039" inch	1.0mm mm	.078" inch	2.0mm mm	.118" inch	3.0mm mm	.157" inch	4.0mm mm	.236" inch	6.0mm mm
20	.00002	0.0005	.000035	0.0009	.000035	0.0009	.000065	0.00165	.000065	0.00165	.00013	0.0033	.00015	0.004	.002	0.05	.003	0.076
19	.00015	0.0038	.0003	0.007	.0005	0.012	.001	0.025	.005	0.025	.0015	0.038	.002	0.05	.003	0.076	.004	0.101
18	.0003	0.007	.0004	0.010	.0005	0.012	.001	0.025	.003	0.076	.01	0.254	.012	0.304	.015	0.381	.018	0.457
17	.00025	0.006	.00025	0.006	.0005	0.012	.001	0.025	.002	0.050	.004	0.101	.004	0.101	.005	0.127	.005	0.129
16	.0008	0.020	.0015	0.038	.0025	0.063	.003	0.076	.004	0.100	.005	0.127	.007	0.178	.009	0.228	.011	0.279
15	.00025	0.006	.0005	0.012	.001	0.025	.0015	0.038	.002	0.050	.004	0.101	.005	0.127	0.008	0.203	.010	0.254
14	.0005	0.012	.001	0.025	.0015	0.038	.002	0.050	.003	0.076	.006	0.152	.009	0.228	.011	0.279	.013	0.330
13	.0008	0.020	.001	0.025	.002	0.050	.003	0.076	.004	0.101	.006	0.152	.008	0.203	.009	0.228	.010	0.254
12	.0005	0.012	.001	0.025	.002	0.050	.003	0.076	.004	0.101	.006	0.152	.007	0.178	.009	0.228	.010	0.254
11	.0005	0.012	.001	0.025	.002	0.050	.0025	0.063	.004	0.101	.005	0.127	.007	0.178	.009	0.228	.010	0.254
10	.00015	0.003	.0003	0.007	.0005	0.012	.0008	0.020	.0015	0.038	.003	0.076	.004	0.101	.006	0.152	.008	0.203
9	.0002	0.005	.0005	0.012	.001	0.025	.0016	0.040	.002	0.050	.004	0.101	.005	0.127	.006	0.152	.008	0.203
8	.0005	0.012	.001	0.025	.002	0.050	.004	0.101	.005	0.127	.006	0.152	.007	0.178	.008	0.203	.010	0.254
7	.0001	0.025	.0002	0.005	.0003	0.007	.0005	0.012	.0006	0.015	.0008	0.020	.001	0.025	.0015	0.038	.002	0.050
6	.00005	0.001	.0001	0.002	.0001	0.002	.00015	0.004	.00015	0.004	.0003	0.007	.0005	0.012	.0007	0.017	.001	0.025
5	.0004	0.010	.0007	0.017	.0012	0.032	.0032	0.081	.0032	0.081	.006	0.152	.006	0.152	.008	0.203	.010	0.250
4	.0003	0.007	.0005	0.012	.001	0.025	.0015	0.004	.002	0.050	.003	0.076	.005	0.127	.0055	0.139	.006	0.152
3	.0001	0.0025	.0002	0.005	.0004	0.010	.0008	0.020	.001	0.025	.002	0.050	.003	0.076	.0035	0.089	.004	0.101
2	.00015	0.003	.0002	0.005	.00025	0.006	.0005	0.012	.0005	0.012	.0006	0.015	.0008	0.020	.0012	0.030	.0016	0.040
1	.00025	0.006	.0005	0.012	.001	0.025	.002	0.050	.002	0.050	.004	0.101	.006	0.152	.008	0.203	.012	0.304

**Example #1:**

Hole Size: Ø2.0mm (.080"), 10xD  
 Material: Aluminum 6061-T6  
 Tool Selection: CD.100200.A  
 Speed: 700 SFM @ F15 (213 m/min)  
 Feed Rate: .004 ipr (0.050 mm/rev.)  
 RPM: 34,000  
 Spindle RPM: 12,000 max.  
 Solution: 12,000 rpm x .004 ipr = 48 IPM (12.2 m/min.)

**Example #2:**

Hole Size: Ø1.5mm (.060"), 15xD  
 Material: 316 Stainless Steel  
 Tool Selection: CD.150150.CS  
 Speed: 110 SFM @ F3 (34 m/min)  
 Feed Rate: .0015 ipr (0.038 mm/rev.)  
 RPM: 7000  
 Spindle RPM: 7,000 - 8,000 max.  
 Solution: 7,000 rpm x .0015 ipr = 10.51 IPM (266.7 mm/min.)

**Example #3:**

Hole Size: Ø3.0mm (.120"), 10xD  
 Material: Inconel 718  
 Tool Selection: CD.100300.CS  
 Speed: 30 SFM @ F2 (9.15 m/min)  
 Feed Rate: .0008 ipr (0.020 mm/rev.)  
 RPM: 960  
 Spindle RPM: 7,000 - 8,000 max.  
 Solution: 970 rpm x .0008 ipr = 7.76 IPM (197 mm/min.)

**Example #4:**

Hole Size: Ø1.75mm (.069"), 6xD  
 Material: Cast Iron  
 Tool Selection: CD.070175.S  
 Speed: 210 SFM @ F1 (64 m/min)  
 Feed Rate: .0035 ipr (0.089 mm/rev.)  
 RPM: 11,640  
 Spindle RPM: 10,000 max.  
 Solution: 10,000 rpm x .0035 ipr = 35 IPM (889 mm/min.)

**Glossary**

F = Feed Value from Sheet 1  
 SFM = Surface Feet per Minute  
 RPM = Revolutions per Minute  
 IPR = Inches per Revolution  
 d = Tool Diameter  
 n = Spindle revolution per minute  
 IPM = Inches per Minute  
 m/mm = Meter per Minute  
 mm/Rev = Millimeter per Revolution  
 V = Cutting Speed  
 s = Feed Rate

**Conversions**

1 mm = .03937" (.040")  
 1" = 25.4mm  
 1 SFM = 0.305 m/min  
 1 m/min = 3.28 SFM

**Coolant Pressure Recommendations**

Ø	.039" 1.0mm	.078" 2.0mm	.118" 3.0mm	.157" 4.0mm
Recommended Filtration	.0008" 0.02mm			
Oil Hole Ø	.006" 0.15mm	.012" 0.30mm	.020" 0.50mm	.024" 0.60mm
Oil Viscosity @40C/100F	10-12	10-12	10-12	10-12
Recommended Minimum Pressures	1000 - 1700 psi (70-120 Bar)	870 - 1450 psi (60-100 Bar)	730 - 1300 psi (50-90 Bar)	600 - 1200 psi (40-80 Bar)

1 Bar = 14.5 psi

**Note:**

These pressures are to be respected as minimums for optimum performance. It is to be understood that the more, the better, in most cases, with well toleranced holding capabilities. (i.e. min. concentricities of .0002" should be used as a gauge for set-ups) The above pertains to using straight oils. Changes may be assumed for water solubles, but it is to be understood that the tool life potentials and performance levels will be reduced.

**Hardness Conversion Chart**

Tensile Strength PSI	Newtons	Hardness	
		Brinnell	Rockwell "C"
126,000	865	257	26
130,000	900	266	27
132,000	930	276	29
136,000	965	285	30
142,000	995	295	31
144,000	1000	302	32
150,000	1060	314	33
153,000	1080	321	34
162,000	1130	341	36
171,000	1200	363	38
182,000	1280	375	40
195,000	1350	401	42
205,000	1440	415	44
217,000	1530	444	46
230,000	1620	469	48
243,000	1710	495	50

This chart provides approximate relation between Brinnell, Rockwell, and Tensile Strength

**Formulas**

<b>US units</b>	<b>Metric Units</b>
$V = (d \times \pi \times n) \div 12$	$V = (d \times \pi \times n) \div 1000$
$n = (12 \times V) \div (d \times \pi)$	$n = (1000 \times V) \div (d \times \pi)$
<b>Speeds V</b>	
SFM = Dia. x 0.261 x RPM	m/min = Dia. x 0.00314 x RPM
<b>RPM n</b>	
RPM = 3.82 x SFM ÷ Dia.	n = 318 x m/min ÷ Dia.
<b>Feed s</b>	
IPM = IPR x RPM	mm/min = mm/rev x RPM
IPR = IPM ÷ RPM	mm/rev = mm/min ÷ RPM