

## General Purpose Carbide Drills Speeds & Feeds

Material	Grades	SFM					
		Uncoated	AlTiN	1/8	1/4	3/8	1/2
				(.1250)	(.2500)	(.3750)	(.5000)
<b>P - Steels</b>							
High Strength Tool Steel	A2, D2, P20, H11, H13, S2, 01	100-175	140-210	.0004-.0015	.0010-.0020	.0010-.0025	.0015-.0030
Low Carbon	A36, 12L14, 12L15, 1005, 1018, 1020, 1108-1119, 1213-1215, 1513-1518, 4012, 5015, 9310	100-175	140-210	.0005-.0015	.0010-.0025	.0010-.0030	.0015-.0040
Medium Carbon	1040-1095, 1140-1151, 1330-1345, 1520-1572, 4023-4063, 4120-4161, 4330-4340, 4620-4640, 8620-8660, 8740-8750, 6150, 51000, 52100	125-175	175-245	.0005-.0015	.0010-.0025	.0010-.0030	.0015-.0040
<b>M - Stainless Steels</b>							
Austenitic	301-304L, 310, 316L, 321, 347	100-175	140-210	.0004-.0015	.0005-.0015	.0010-.0015	.0010-.0030
Martensitic	403, 410, 416, 420, 430, 431, 440	100-150	140-210	.0004-.0015	.0008-.0020	.0010-.0035	.0015-.0040
Precipitation Hardening	12/8, 15/5, 17/4, AM-350/355/363, PH13-8MO, PH14-8/MO	125-175	175-245	.0004-.0015	.0008-.0020	.0010-.0035	.0015-.0040
<b>K - Cast Irons</b>							
Ductile	A536, J434, 60-40-18	125-250	175-350	.0010-.0030	.0010-.0030	.0015-.0035	.0025-.0040
Gray	A48, A436, A319, Class 20, G4000	125-250	175-350	.0010-.0030	.0010-.0030	.0015-.0035	.0025-.0040
Malleable	A220, A602, J158	125-250	175-350	.0010-.0030	.0010-.0030	.0015-.0035	.0025-.0040
<b>N - Non-Ferrous</b>							
Aluminum Alloys	2014, 2024, 6061, 7075	150-300	210-420	.0010-.0020	.0015-.0040	.0020-.0045	.0030-.0060
Aluminum High Silicon	A380, A390	100-200	140-280	.0008-.0015	.0010-.0030	.0015-.0035	.0020-.0050
Brass/Bronze	Aluminum Bronze, Low Silicon Bronze	125-300	175-420	.0010-.0020	.0010-.0030	.0015-.0035	.0025-.0040
Composites	G-10, Fiberglass, Graphite, Graphite Epoxy, Plastics	150-300	210-420	.0010-.0020	.0010-.0030	.0015-.0035	.0025-.0040
Copper		150-300	210-420	.0010-.0020	.0010-.0030	.0015-.0035	.0025-.0040
Magnesium		200-500	280-700	.0010-.0020	.0010-.0030	.0015-.0035	.0025-.0040
<b>S - High Temp Alloys</b>							
Cobalt Base	Stellite, HS-21, Haynes 25/188, X40, L605	80-150	110-210	.0004-.0010	.0005-.0020	.0010-.0025	.0010-.0040
Iron Base	Incoloy 800-802, Multimet N-155, Timkin 16-25-6, Carpenter 22-b3	150-200	210-280	.0008-.0015	.0010-.0020	.0015-.0035	.0020-.0040
Nickel Base	Inconel 625/718, Inco 700, 713C, 718, Monel 400-401, 404, K401, Rene, Rene 41 & 95 Hastelloy, Waspoly, Udimet 500 & 700	100-150	140-210	.0004-.0015	.0008-.0015	.0010-.0025	.0015-.0040
Titanium	Commercially Pure, 6Al-4V, ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si, Ti-8Al-1Mo, Ti-8Al-4Mo	150-200	210-280	.0008-.0015	.0010-.0020	.0015-.0030	.0020-.0040

**NOTES:** (1) Speeds and Feeds listed are estimated and will vary by application.  
 (2) Reduce Speeds by 20-30% when exceeding 2x length to diameter.

These tools can be found on pages 284-290.