

MATERIAL	Hardness: ≤ 28 Rc (≤ 271 HBn)									
	SFM	Chip Load (IPR - Inches Per Revolution) By Drill Diameter								
		0.015	0.031	0.047	0.062	0.078	0.093	0.125	0.187	0.250
<b>ALUMINUM ALLOYS</b>										
Casting (2xx, 5xx, 7xx, 8xx)	450									
Wrought (1xxx, 2xxx, 3xxx, 5xxx, 6xxx, 7xxx, 8xxx)	600	.00045	.00093	.00141	.00186	.00234	.00279	.00375	.00561	.00750
Casting - 3%-5% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	450									
Casting - 5%-8% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	420									
Casting - 8%-12% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	390	.00041	.00084	.00127	.00167	.00211	.00251	.00338	.00505	.00675
Casting - 12%-16% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	350									
Wrought - 5%-8% Si (4xxx)	600									
Wrought - 8%-12% Si (4xxx)	480									
<b>MAGNESIUM ALLOYS</b>	900	.00045	.00093	.00141	.00186	.00234	.00279	.00375	.00561	.00750
<b>ZINC ALLOYS</b>	480									
<b>COPPER ALLOYS</b>										
High Coppers - 90%+ (C1xxx)	170									
Brass (Copper Zinc alloys, C2xxx, C3xxx, C4xxx, C66400-C69800)	375									
Phosphor Bronzes (Copper Tin alloys, C5xxx)	170									
Aluminum Bronzes (Copper Aluminum alloys, C60600-C64200)	375	.00036	.00074	.00113	.00149	.00187	.00223	.00300	.00449	.00600
Silicon Bronzes (Copper Silicon alloys, C64700-C66100)	375									
Copper Nickels, Nickel Silvers (Copper Nickel alloys, C7xxx)	170									
Cast Copper Alloys (C83300-C86200, C86400-C87900, C92200-C95800, C97300-C97800, C99400-C99700)	400									



Speeds & Feeds

**Product Table:** Miniature Drills  
**Series:** 200xx, 201xx, 202xx, 203xx, 204xx, 8100xx, 8101xx, 8102xx

**Product Notes:**

- Pecking cycles are recommended to avoid chip packing and breakage.
  - For Non-Ferrous materials, the initial peck depth should be 3-5x Diameter with each subsequent peck at 2-3x Diameter.
  - For steels at 29-37 Rc, the initial peck depth should be 2-3x Diameter with each subsequent peck should be 1-2x Diameter.
  - For steels at 38-45 Rc, the initial peck depth should be 1-2x Diameter with each subsequent peck should be .5-1x Diameter.

Tools with a diameter < .010" are extremely fragile and require special precautions to avoid immediate failure. To help determine a customized setup for your unique application, please contact our Technical Specialists.

**General notes:**

All posted speed and feed parameters are suggested starting values that may be increased given optimal setup conditions. Chip loads reflect uncoated cutters and may be increased 10%-20% if coated.

If you require additional information, Harvey Tool has a team of technical experts available to assist you through even the most challenging applications. Please contact us at **800-645-5609** or **tech@harveytool.com**.

WARNING: Cutting tools may shatter under improper use. Government regulations require use of safety glasses and other appropriate safety equipment in the vicinity of use.

MATERIAL	Hardness: 29-37 Rc (279-344 HBn)									
	SFM	Chip Load (IPR - Inches Per Revolution) By Drill Diameter								
		0.015	0.031	0.047	0.062	0.078	0.093	0.125	0.187	0.250
<b>CARBON STEELS</b>										
Free-Machining/Low Carbon steels, 10xx-1029 & all 10Lxx, 11xx - 1139 & all 11Lxx, 12xx - 1215 & all 12Lxx	240	.00039	.00081	.00123	.00163	.00205	.00244	.00328	.00491	.00656
1030 - 1095, 1140 - 1151, 13xx, 15xx, 2xx, 3xx, 4xx & 4xLxx, 5xx & 5xLxx, 50xxx & 50Lxx, 51xx & 51Lxx, 52xxx & 52Lxx, 6xx, 8xx, 9xx	150	.00036	.00074	.00113	.00149	.00187	.00223	.00300	.00449	.00600
<b>STAINLESS STEELS</b>										
203 EZ, 303 (all types), 416, 416Se, 416 Plus X, 420F, 420FSe, 430F, 430FSe, 440F, 440FSe	180	.00039	.00081	.00123	.00163	.00205	.00244	.00328	.00491	.00656
201, 202, 203, 205, 301, 302, 304, 304L, 308, 309, 310, 314, 316, 316L, 317, 321, 329, 330, 347, 348, 385, 403, 405, 409, 410, 413, 420, 429, 430, 434, 436, 442, 446, 501, 502	150	.00036	.00074	.00113	.00149	.00187	.00223	.00300	.00449	.00600
414, 431, 440A, 440B, 440C, 13-8, 15-5, 15-7, 17-4, 17-7	125	.00023	.00047	.00071	.00093	.00117	.00140	.00188	.00281	.00375
<b>TOOL STEELS</b>										
A, L, O, P, W series	125	.00036	.00074	.00113	.00149	.00187	.00223	.00300	.00449	.00600
D, H, M, T, S series	90	.00023	.00047	.00071	.00093	.00117	.00140	.00188	.00281	.00375
<b>TITANIUM ALLOYS</b>	100	.00023	.00047	.00071	.00093	.00117	.00140	.00188	.00281	.00375
<b>HIGH TEMP ALLOYS</b>										
Inconel, Hastelloy, Waspalloy, Monel, Nimonic, Haynes, Discoloy, Incoloy	70	.00023	.00047	.00071	.00093	.00117	.00140	.00188	.00281	.00375

MATERIAL	Hardness: 38-45 Rc (353-421 HBn)									
	SFM	Chip Load (IPR - Inches Per Revolution) By Drill Diameter								
		0.015	0.031	0.047	0.062	0.078	0.093	0.125	0.187	0.250
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
100	.00025	.00052	.00079	.00104	.00131	.00156	.00210	.00314	.00420	
90	.00016	.00033	.00049	.00065	.00082	.00098	.00131	.00196	.00263	
100	.00025	.00052	.00079	.00104	.00131	.00156	.00210	.00314	.00420	
75	.00016	.00033	.00049	.00065	.00082	.00098	.00131	.00196	.00263	
75	.00016	.00033	.00049	.00065	.00082	.00098	.00131	.00196	.00263	
50	.00016	.00033	.00049	.00065	.00082	.00098	.00131	.00196	.00263	