



**Speeds & Feeds**

**Product Table:** Miniature High Performance Drills - Deep Hole Coolant Through  
**Characteristics:** 20x Length of Flute  
**Series:** CXZxxxx-C3

**Product Notes:**

For best results, the following steps are recommended:

- For hole depths of 12x Diameter or greater, drill a pilot hole up to 1.5x D in depth using a drill with 3x LOF or shorter.
- Insert primary drill at low speed (~500 RPM) and start coolant flow.
- Increase speed and feed to recommended parameters.
- Under optimal conditions, it is possible to feed to full hole depth without pecking. In some cases, it is recommended to use 1-4 pecks to get to full hole depth.
- After reaching desired hole depth, reduce speed (~500 RPM) before retracting the drill.

In order to achieve the best results, cutting oil is recommended. As an alternative, it is possible to use emulsions with EP additives. Use a fine mesh prefilter (=5µm) on spindle through coolant to prevent a blockage of the coolant hole. A minimum coolant pressure of 600-800 PSI is recommended.

MATERIAL	SFM	Hardness: 29-37 Rc (279-344 HBn)								
		Chip Load (IPR - Inches Per Revolution) By Cutter Diameter								
		0.015	0.031	0.047	0.062	0.078	0.093	0.125	0.167	0.250
<b>CARBON STEELS</b>										
Free-Machining/Low Carbon steels, 10xx - 1029 & all 10Lxx, 11xx - 1139 & all 11Lxx, 12xx - 1215 & all 12Lxx	240	.00041	.00085	.00128	.00169	.00213	.00254	.00341	.00511	.00683
1030 - 1095, 1140 - 1151, 13xx, 15xx, 20xx, 30xx, 40xx & 4xLxx, 50xx & 5xLxx, 50Lxx & 50Lxx, 51xx & 51Lxx, 52xx & 52Lxx, 60xx, 80xx, 90xx	150	.00037	.00077	.00117	.00155	.00195	.00232	.00312	.00467	.00624
<b>STAINLESS STEELS</b>										
203 EZ, 303 (all types), 416, 416Se, 416 Plus X, 420F, 420FSe, 430F, 430FSe, 440F, 440FSe	180	.00041	.00085	.00128	.00169	.00213	.00254	.00341	.00511	.00683
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	.00037	.00077	.00117	.00155	.00195	.00232	.00312	.00467	.00624
414, 431, 440A, 440B, 440C, 13-8, 15-5, 15-7, 17-4, 17-7	125	.00023	.00048	.00073	.00097	.00122	.00145	.00195	.00292	.00390
<b>TOOL STEELS</b>										
A, L, O, P, W series	125	.00037	.00077	.00117	.00155	.00195	.00232	.00312	.00467	.00624
D, H, M, T, S series	90	.00023	.00048	.00073	.00097	.00122	.00145	.00195	.00292	.00390
<b>TITANIUM ALLOYS</b>										
Inconel, Hastelloy, Waspalloy, Monel, Nimonic, Haynes, Discoloy, Incoloy	100	.00023	.00048	.00073	.00097	.00122	.00145	.00195	.00292	.00390
<b>HIGH TEMP ALLOYS</b>										
Inconel, Hastelloy, Waspalloy, Monel, Nimonic, Haynes, Discoloy, Incoloy	70	.00023	.00048	.00073	.00097	.00122	.00145	.00195	.00292	.00390

MATERIAL	SFM	Hardness: 38-45 Rc (353-421 HBn)								
		Chip Load (IPR - Inches Per Revolution) By Cutter Diameter								
		0.015	0.031	0.047	0.062	0.078	0.093	0.125	0.167	0.250
<b>CARBON STEELS</b>										
Free-Machining/Low Carbon steels, 10xx - 1029 & all 10Lxx, 11xx - 1139 & all 11Lxx, 12xx - 1215 & all 12Lxx	240	-	-	-	-	-	-	-	-	-
1030 - 1095, 1140 - 1151, 13xx, 15xx, 20xx, 30xx, 40xx & 4xLxx, 50xx & 5xLxx, 50Lxx & 50Lxx, 51xx & 51Lxx, 52xx & 52Lxx, 60xx, 80xx, 90xx	150	-	-	-	-	-	-	-	-	-
<b>STAINLESS STEELS</b>										
203 EZ, 303 (all types), 416, 416Se, 416 Plus X, 420F, 420FSe, 430F, 430FSe, 440F, 440FSe	180	-	-	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-
414, 431, 440A, 440B, 440C, 13-8, 15-5, 15-7, 17-4, 17-7	125	-	-	-	-	-	-	-	-	-
<b>TOOL STEELS</b>										
A, L, O, P, W series	125	-	-	-	-	-	-	-	-	-
D, H, M, T, S series	90	.00019	.00039	.00059	.00077	.00097	.00116	.00156	.00233	.00312
<b>TITANIUM ALLOYS</b>										
Inconel, Hastelloy, Waspalloy, Monel, Nimonic, Haynes, Discoloy, Incoloy	100	.00030	.00062	.00094	.00124	.00156	.00186	.00250	.00373	.00499
<b>HIGH TEMP ALLOYS</b>										
Inconel, Hastelloy, Waspalloy, Monel, Nimonic, Haynes, Discoloy, Incoloy	70	.00019	.00039	.00059	.00077	.00097	.00116	.00156	.00233	.00312

**Please note:**

All posted speed and feed parameters are suggested starting values that may be increased given optimal setup conditions.

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 **Harveytech@harveyperformance.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.