



Speeds & Feeds

**Product Table:** Chamfer Cutters - Cobalt - Pointed  
**Characteristics:** 4 Flutes  
**Series:** 180xx, 181xx

**Product notes:**

Due to a varying diameter, an Effective Cutter Diameter is needed for Chip Load selection and RPM calculation:  
 Effective Cutter Diameter = (Major Diameter + Minor Diameter)/2.  
 Or consider the actual diameter along the angle that is engaged with the workpiece.

Depth of Cut is shown as number of Passes with each pass resulting in a descending stepover

Chip Loads are given 3 ways:

- Traditional Edge Break of .010"-.015"
- Full Chamfer engagement for cutters with angles GREATER than or equal to 25° per side (50° included)
- Full Chamfer engagement for cutters with angles LESS than 25° per side (50° included)

Chip Loads within table pertain to machining on one side of workpiece.

For machining on two sides, reduce Chip Loads to 60%-80% depending on contact length and finish  
 For vertical plunging, reduce Chip Loads to 40%-50% depending on finish

**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. For ferrous materials with hardness ≤ 28 Rc, chip loads can be increased 10%-20%.

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.

MATERIAL	SFM	Hardness: ≤ 28 Rc (≤ 271 HBn)											Depth of Cut Passes		
		Chip Load (IPT) By Effective Cutter Diameter													
		0.015	0.031	0.047	0.062	0.078	0.093	0.125	0.187	0.250	0.312	0.375		0.500	
<b>ALUMINUM ALLOYS</b>		Edge Break	.00018	.00037	.00056	.00074	.00094	.00112	.00150	.00224	.00300	.00374	.00450	.00600	1
Casting (2xx, 5xx, 7xx, 8xx)	300	Full Chamfer (≥ 25°)	.00015	.00031	.00047	.00062	.00078	.00093	.00125	.00187	.00250	.00312	.00375	.00500	2
Wrought (1xxx, 2xxx, 3xxx, 5xxx, 6xxx, 7xxx, 8xxx)	400	Full Chamfer (< 25°)	.00011	.00023	.00035	.00047	.00059	.00070	.00094	.00140	.00188	.00234	.00281	.00375	3
Casting - 3%-5% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	300	Edge Break	.00016	.00033	.00051	.00067	.00084	.00100	.00135	.00202	.00270	.00337	.00405	.00540	1
Casting - 5%-8% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	280	Full Chamfer (≥ 25°)	.00014	.00028	.00042	.00056	.00070	.00084	.00113	.00168	.00225	.00281	.00338	.00450	2
Casting - 8%-12% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	260	Full Chamfer (< 25°)	.00010	.00021	.00032	.00042	.00053	.00063	.00084	.00126	.00169	.00211	.00253	.00338	3
Casting - 12%-16% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	190	Edge Break	.00018	.00037	.00056	.00074	.00094	.00112	.00150	.00224	.00300	.00374	.00450	.00600	1
Wrought - 5%-8% Si (4xxx)	400	Full Chamfer (< 25°)	.00010	.00021	.00032	.00042	.00053	.00063	.00084	.00126	.00169	.00211	.00253	.00338	3
Wrought - 8%-12% Si (4xxx)	320	Edge Break	.00018	.00037	.00056	.00074	.00094	.00112	.00150	.00224	.00300	.00374	.00450	.00600	1
<b>MAGNESIUM ALLOYS</b>	600	Full Chamfer (≥ 25°)	.00015	.00031	.00047	.00062	.00078	.00093	.00125	.00187	.00250	.00312	.00375	.00500	2
<b>ZINC ALLOYS</b>	320	Full Chamfer (< 25°)	.00011	.00023	.00035	.00047	.00059	.00070	.00094	.00140	.00188	.00234	.00281	.00375	3
<b>COPPER ALLOYS</b>		Edge Break	.00014	.00030	.00045	.00060	.00075	.00089	.00120	.00180	.00240	.00300	.00360	.00480	1
High Copper (≥ 30% - C1xxx)	90	Full Chamfer (≥ 25°)	.00012	.00025	.00038	.00050	.00062	.00074	.00100	.00150	.00200	.00250	.00300	.00400	2
Brass (Copper-Zinc alloys, C2xxx, C3xxx, C4xxx, C6400-C69800)	200	Full Chamfer (< 25°)	.00009	.00019	.00028	.00037	.00047	.00056	.00075	.00112	.00150	.00187	.00225	.00300	3
Phosphor Bronzes (Copper-Tin alloys, C5xxx)	90	Edge Break	.00014	.00030	.00045	.00060	.00075	.00089	.00120	.00180	.00240	.00300	.00360	.00480	1
Aluminum Bronzes (Copper-Aluminum alloys, C60800-C64200)	200	Full Chamfer (≥ 25°)	.00012	.00025	.00038	.00050	.00062	.00074	.00100	.00150	.00200	.00250	.00300	.00400	2
Silicon Bronzes (Copper-Silicon alloys, C64700-C66100)	200	Full Chamfer (< 25°)	.00009	.00019	.00028	.00037	.00047	.00056	.00075	.00112	.00150	.00187	.00225	.00300	3
Copper-Nickel, Nickel-Silvers (Copper-Nickel alloys, C7xxx)	90	Edge Break	.00014	.00030	.00045	.00060	.00075	.00089	.00120	.00180	.00240	.00300	.00360	.00480	1
Cast Copper Alloys (C83300-C86200, C86400-C87900, C92200-C95800, C97300-C97800, C99400-C99700)	220	Full Chamfer (< 25°)	.00009	.00019	.00028	.00037	.00047	.00056	.00075	.00112	.00150	.00187	.00225	.00300	3

MATERIAL	SFM	Hardness: 29-37 Rc (279-344 HBn)											Depth of Cut Passes		
		Chip Load (IPT) By Effective Cutter Diameter													
		0.015	0.031	0.047	0.062	0.078	0.093	0.125	0.187	0.250	0.312	0.375		0.500	
<b>CARBON STEELS</b>		Edge Break	.00007	.00014	.00021	.00028	.00035	.00042	.00057	.00085	.00113	.00142	.00170	.00227	1
Free-Machining/Low Carbon steels, 10xx - 1029 & all 10Lxx, 11xx - 1139 & all 11Lxx, 12xx - 1215 & all 12Lxx	240	Full Chamfer (≥ 25°)	.00006	.00012	.00018	.00023	.00029	.00035	.00047	.00071	.00095	.00118	.00142	.00189	3
		Full Chamfer (< 25°)	.00004	.00009	.00013	.00018	.00022	.00026	.00035	.00053	.00071	.00088	.00106	.00142	4
1030 - 1095, 1140 - 1151, 13xx, 15xx, 20xx, 30xx, 40xx & 4xLxx, 50xx & 5xLxx, 50xxx & 50Lxxx, 51xxx & 51Lxxx, 52xxx & 52Lxxx, 60xx, 80xx, 90xx	80	Edge Break	.00006	.00013	.00019	.00026	.00032	.00039	.00052	.00078	.00104	.00129	.00156	.00207	1
		Full Chamfer (≥ 25°)	.00005	.00011	.00016	.00021	.00027	.00032	.00043	.00065	.00086	.00108	.00130	.00173	3
		Full Chamfer (< 25°)	.00004	.00008	.00012	.00016	.00020	.00024	.00032	.00048	.00065	.00081	.00097	.00130	4
<b>STAINLESS STEELS</b>		Edge Break	.00007	.00014	.00021	.00028	.00035	.00042	.00057	.00085	.00113	.00142	.00170	.00227	1
203 EZ, 303 (all types), 416, 416Se, 416 Plus X, 420F, 420FSe, 430F, 430FSe, 440F, 440FSe	180	Full Chamfer (≥ 25°)	.00006	.00012	.00018	.00023	.00029	.00035	.00047	.00071	.00095	.00118	.00142	.00189	3
		Full Chamfer (< 25°)	.00004	.00009	.00013	.00018	.00022	.00026	.00035	.00053	.00071	.00088	.00106	.00142	4
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	80	Edge Break	.00006	.00013	.00019	.00026	.00032	.00039	.00052	.00078	.00104	.00129	.00156	.00207	1
		Full Chamfer (≥ 25°)	.00005	.00011	.00016	.00021	.00027	.00032	.00043	.00065	.00086	.00108	.00130	.00173	3
		Full Chamfer (< 25°)	.00004	.00008	.00012	.00016	.00020	.00024	.00032	.00048	.00065	.00081	.00097	.00130	4
414, 431, 440A, 440B, 440C, 13-8, 15-5, 15-7, 17-4, 17-7	60	Edge Break	.00004	.00008	.00012	.00016	.00020	.00024	.00032	.00048	.00065	.00081	.00097	.00130	1
		Full Chamfer (≥ 25°)	.00003	.00007	.00010	.00013	.00017	.00020	.00027	.00040	.00054	.00067	.00081	.00108	3
		Full Chamfer (< 25°)	.00002	.00005	.00008	.00010	.00013	.00015	.00020	.00030	.00041	.00051	.00061	.00081	4
<b>TOOL STEELS</b>		Edge Break	.00006	.00013	.00019	.00026	.00032	.00039	.00052	.00078	.00104	.00129	.00156	.00207	1
A, L, O, P, W series	80	Full Chamfer (≥ 25°)	.00005	.00011	.00016	.00021	.00027	.00032	.00043	.00065	.00086	.00108	.00130	.00173	3
		Full Chamfer (< 25°)	.00004	.00008	.00012	.00016	.00020	.00024	.00032	.00048	.00065	.00081	.00097	.00130	4
D, H, M, T, S series	60	Edge Break	.00004	.00008	.00012	.00016	.00020	.00024	.00032	.00048	.00065	.00081	.00097	.00130	1
		Full Chamfer (≥ 25°)	.00003	.00007	.00010	.00013	.00017	.00020	.00027	.00040	.00054	.00067	.00081	.00108	3
		Full Chamfer (< 25°)	.00002	.00005	.00008	.00010	.00013	.00015	.00020	.00030	.00041	.00051	.00061	.00081	4
<b>TITANIUM ALLOYS</b>		Edge Break	.00004	.00008	.00012	.00016	.00020	.00024	.00032	.00048	.00065	.00081	.00097	.00130	1
	60	Full Chamfer (≥ 25°)	.00003	.00007	.00010	.00013	.00017	.00020	.00027	.00040	.00054	.00067	.00081	.00108	3
		Full Chamfer (< 25°)	.00002	.00005	.00008	.00010	.00013	.00015	.00020	.00030	.00041	.00051	.00061	.00081	4
<b>HIGH TEMP ALLOYS</b>		Edge Break	.00004	.00008	.00012	.00016	.00020	.00024	.00032	.00048	.00065	.00081	.00097	.00130	1
Inconel, Hastelloy, Waspalloy, Monel, Nimonic, Haynes, Discolloy, Incoloy	30	Full Chamfer (≥ 25°)	.00003	.00007	.00010	.00013	.00017	.00020	.00027	.00040	.00054	.00067	.00081	.00108	3
		Full Chamfer (< 25°)	.00002	.00005	.00008	.00010	.00013	.00015	.00020	.00030	.00041	.00051	.00061	.00081	4

MATERIAL	SFM	Hardness: 38-45 Rc (353-421 HBn)											Depth of Cut Passes		
		Chip Load (IPT) By Effective Cutter Diameter													
		0.015	0.031	0.047	0.062	0.078	0.093	0.125	0.187	0.250	0.312	0.375		0.500	
		Edge Break	.00006	.00013	.00019	.00026	.00032	.00039	.00052	.00078	.00104	.00129	.00156	.00207	1
		Full Chamfer (≥ 25°)	.00005	.00011	.00016	.00021	.00027	.00032	.00043	.00065	.00086	.00108	.00130	.00173	4
		Full Chamfer (< 25°)	.00004	.00008	.00012	.00016	.00020	.00024	.00032	.00048	.00065	.00081	.00097	.00130	5
	40	Edge Break	.00004	.00008	.00012	.00016	.00020	.00024	.00032	.00048	.00065	.00081	.00097	.00130	1
		Full Chamfer (≥ 25°)	.00003	.00007	.00010	.00013	.00017	.00020	.00027	.00040	.00054	.00067	.00081	.00108	4
		Full Chamfer (< 25°)	.00002	.00005	.00008	.00010	.00013	.00015	.00020	.00030	.00041	.00051	.00061	.00081	5
	35	Edge Break	.00006	.00013	.00019	.00026	.00032	.00039	.00052	.00078	.00104	.00129	.00156	.00207	1
		Full Chamfer (≥ 25°)	.00005	.00011	.00016	.00021	.00027	.00032	.00043	.00065	.00086	.00108	.00130	.00173	4
		Full Chamfer (< 25°)	.00004	.00008	.00012	.00016	.00020	.00024	.00032	.00048	.00065	.00081	.00097	.00130	5
	30	Edge Break	.00004	.00008	.00012	.00016	.00020	.00024							