HARVEY TOOL

Speeds & Feeds

Product Table: Chamfer Cutters - Pointed & Flat End - Helical Flutes
Characteristics: 3 Flutes
Series: 7653xx, 8313xx, 8446xx, 8634xx, 8972xx, 9165xx

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 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

Hardness: ≤ 28 Rc (≤ 271 HBn)

MATERIAL	SFM	Chip Load (IPT) By Effective Cutter Diameter													Depth of Cut
			0.062	0.078	0.093	0.125	0.187	0.250	0.312	0.375	0.500	0.625	0.750	1.000	Passes
ALUMINUM ALLOYS															
Casting (2xx, 5xx, 7xx, 8xx)	750	Edge Break	.00096	.00121	.00144	.00194	.00290	.00388	.00484	.00582	.00776	.00970	.01164	.01553	1
		Full Chamfer (≥ 25°)	.00080	.00101	.00120	.00162	.00242	.00323	.00404	.00485	.00647	.00809	.00970	.01294	2
Wrought (1xxx, 2xxx, 3xxx, 5xxx, 6xxx, 7xxx, 8xxx)	1000	Full Chamfer (< 25°)	.00060	.00076	.00090	.00121	.00181	.00243	.00303	.00364	.00485	.00606	.00728	.00970	3
Casting - 3%-5% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	750	Edge Break	.00087	.00109	.00130	.00175	.00261	.00349	.00436	.00524	.00699	.00873	.01048	.01397	1
Casting - 5%-8% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	700														
Casting - 8%-12% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	650	Full Chamfer (≥ 25°)	.00072	.00091	.00108	.00146	.00218	.00291	.00363	.00437	.00582	.00728	.00873	.01164	2
Casting - 12%-16% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	475														
Wrought - 5%-8% Si (4xxx)	1000	Full Chamfer (< 25°)	.00054	.00068	.00081	.00109	.00163	.00218	.00272	.00327	.00437	.00546	.00655	.00873	3
Wrought - 8%-12% Si (4xxx)	800														
MAGNESIUM ALLOYS	1500	Edge Break	.00096	.00121	.00144	.00194	.00290	.00388	.00484	.00582	.00776	.00970	.01164	.01553	1
		Full Chamfer (≥ 25°)	.00080	.00101	.00120	.00162	.00242	.00323	.00404	.00485	.00647	.00809	.00970	.01294	2
ZINC ALLOYS	800	Full Chamfer (< 25°)	.00060	.00076	.00090	.00121	.00181	.00243	.00303	.00364	.00485	.00606	.00728	.00970	3
COPPER ALLOYS															
High Coppers - 90%+ (C1xxxx)	225	Edge Break	.00077	.00097	.00116	.00155	.00232	.00311	.00388	.00466	.00621	.00776	.00932	.01242	1
Brass (Copper Zinc alloys, C2xxxx, C3xxxx, C4xxxx, C66400-C69800)	500														
Phosphor Bronzes (Copper Tin alloys, C5xxxx)	225														
Aluminum Bronzes (Copper Aluminum alloys, C60600-C64200)	500	Full Chamfer (≥ 25°)	.00064	.00081	.00096	.00129	.00194	.00259	.00323	.00388	.00518	.00647	.00776	.01035	2
Silicon Bronzes (Copper Silicon alloys, C64700-C66100)	500														
Copper Nickels, Nickel Silvers (Copper Nickel alloys, C7xxxx)	225														
Cast Copper Alloys (C83300-C86200, C86400-C87900, C92200-C95800, C97300-C97800, C99400-C99700)	550	Full Chamfer (< 25°)	.00048	.00061	.00072	.00097	.00145	.00194	.00242	.00291	.00388	.00485	.00582	.00776	3

Hardness: 29-37 Rc (279-344 HBn)

MATERIAL	SFM	Chip Load (IPT) By Effective Cutter Diameter													Depth of Cut
			0.062	0.078	0.093	0.125	0.187	0.250	0.312	0.375	0.500	0.625	0.750	1.000	Passes
CARBON STEELS															
Free-Machining/Low Carbon steels, 10xx - 1029 & all 10Lxx, 11xx - 1139 & all 11Lxx, 12xx - 1215 & all 12Lxx	600	Edge Break	.00036	.00046	.00055	.00073	.00110	.00147	.00183	.00220	.00293	.00367	.00440	.00587	1
		Full Chamfer (≥ 25°)	.00030	.00038	.00045	.00061	.00091	.00122	.00153	.00183	.00245	.00306	.00367	.00489	3
		Full Chamfer (< 25°)	.00023	.00029	.00034	.00046	.00069	.00092	.00114	.00138	.00183	.00229	.00275	.00367	4
1030 - 1095, 1140 - 1151, 13xx, 15xx, 2xxx, 3xxx, 4xxx & 4xLxx, 5xxx & 5xLxx, 50xxx & 50Lxxx, 51xxx & 51Lxxx, 52xxx & 52Lxxx, 6xxx, 8xxx, 9xxx	200	Edge Break	.00033	.00042	.00050	.00067	.00100	.00134	.00167	.00201	.00268	.00335	.00402	.00537	1
		Full Chamfer (≥ 25°)	.00028	.00035	.00042	.00056	.00084	.00112	.00140	.00168	.00224	.00279	.00335	.00447	3
		Full Chamfer (< 25°)	.00021	.00026	.00031	.00042	.00063	.00084	.00105	.00126	.00168	.00210	.00252	.00335	4
STAINLESS STEELS															
203 EZ, 303 (all types), 416, 416Se, 416 Plus X, 420F, 420FSe, 430F, 430FSe, 440F, 440FSe	450	Edge Break	.00036	.00046	.00055	.00073	.00110	.00147	.00183	.00220	.00293	.00367	.00440	.00587	1
		Full Chamfer (≥ 25°)	.00030	.00038	.00045	.00061	.00091	.00122	.00153	.00183	.00245	.00306	.00367	.00489	3
		Full Chamfer (< 25°)	.00023	.00029	.00034	.00046	.00069	.00092	.00114	.00138	.00183	.00229	.00275	.00367	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	200	Edge Break	.00033	.00042	.00050	.00067	.00100	.00134	.00167	.00201	.00268	.00335	.00402	.00537	1
		Full Chamfer (≥ 25°)	.00028	.00035	.00042	.00056	.00084	.00112	.00140	.00168	.00224	.00279	.00335	.00447	3
		Full Chamfer (< 25°)	.00021	.00026	.00031	.00042	.00063	.00084	.00105	.00126	.00168	.00210	.00252	.00335	4
414, 431, 440A, 440B, 440C, 13-8, 15-5, 15-7, 17-4, 17-7	150	Edge Break	.00021	.00026	.00031	.00042	.00063	.00084	.00105	.00126	.00168	.00210	.00252	.00335	1
		Full Chamfer (≥ 25°)	.00017	.00022	.00026	.00035	.00052	.00070	.00087	.00105	.00140	.00175	.00210	.00279	3
		Full Chamfer (< 25°)	.00013	.00016	.00019	.00026	.00039	.00052	.00065	.00079	.00105	.00131	.00157	.00210	4
TOOL STEELS															
A, L, O, P, W series	200	Edge Break	.00033	.00042	.00050	.00067	.00100	.00134	.00167	.00201	.00268	.00335	.00402	.00537	1
		Full Chamfer (≥ 25°)	.00028	.00035	.00042	.00056	.00084	.00112	.00140	.00168	.00224	.00279	.00335	.00447	3
		Full Chamfer (< 25°)	.00021	.00026	.00031	.00042	.00063	.00084	.00105	.00126	.00168	.00210	.00252	.00335	4
D, H, M, T, S series	150	Edge Break	.00021	.00026	.00031	.00042	.00063	.00084	.00105	.00126	.00168	.00210	.00252	.00335	1
		Full Chamfer (≥ 25°)	.00017	.00022	.00026	.00035	.00052	.00070	.00087	.00105	.00140	.00175	.00210	.00279	3
		Full Chamfer (< 25°)	.00013	.00016	.00019	.00026	.00039	.00052	.00065	.00079	.00105	.00131	.00157	.00210	4
TITANIUM ALLOYS	150	Edge Break	.00021	.00026	.00031	.00042	.00063	.00084	.00105	.00126	.00168	.00210	.00252	.00335	1
		Full Chamfer (≥ 25°)	.00017	.00022	.00026	.00035	.00052	.00070	.00087	.00105	.00140	.00175	.00210	.00279	3
		Full Chamfer (< 25°)	.00013	.00016	.00019	.00026	.00039	.00052	.00065	.00079	.00105	.00131	.00157	.00210	4
HIGH TEMP ALLOYS															
Inconel, Hastelloy, Waspalloy, Monel, Nimonic, Haynes, Discoloy, Incoloy	70	Edge Break	.00021	.00026	.00031	.00042	.00063	.00084	.00105	.00126	.00168	.00210	.00252	.00335	1
		Full Chamfer (≥ 25°)	.00017	.00022	.00026	.00035	.00052	.00070	.00087	.00105	.00140	.00175	.00210	.00279	3
		Full Chamfer (< 25°)	.00013	.00016	.00019	.00026	.00039	.00052	.00065	.00079	.00105	.00131	.00157	.00210	4

Hardness: 38-45 Rc (353-421 HBn)

SFM	Chip Load (IPT) By Effective Cutter Diameter														Depth of Cut
		0.062	0.078	0.093	0.125	0.187	0.250	0.312	0.375	0.500	0.625	0.750	1.000	Passes
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
100	Edge Break	.00033	.00042	.00050	.00067	.00100	.00134	.00167	.00201	.00268	.00335	.00402	.00537	1
	Full Chamfer (≥ 25°)	.00028	.00035	.00042	.00056	.00084	.00112	.00140	.00168	.00224	.00279	.00335	.00447	4
	Full Chamfer (< 25°)	.00021	.00026	.00031	.00042	.00063	.00084	.00105	.00126	.00168	.00210	.00252	.00335	5
90	Edge Break	.00021	.00026	.00031	.00042	.00063	.00084	.00105	.00126	.00168	.00210	.00252	.00335	1
	Full Chamfer (≥ 25°)	.00017	.00022	.00026	.00035	.00052	.00070	.00087	.00105	.00140	.00175	.00210	.00279	4
	Full Chamfer (< 25°)	.00013	.00016	.00019	.00026	.00039	.00052	.00065	.00079	.00105	.00131	.00157	.00210	5
100	Edge Break	.00033	.00042	.00050	.00067	.00100	.00134	.00167	.00201	.00268	.00335	.00402	.00537	1
	Full Chamfer (≥ 25°)	.00028	.00035	.00042	.00056	.00084	.00112	.00140	.00168	.00224	.00279	.00335	.00447	4
	Full Chamfer (< 25°)	.00021	.00026	.00031	.00042	.00063	.00084	.00105	.00126	.00168	.00210	.00252	.00335	5
90	Edge Break	.00021	.00026	.00031	.00042	.00063	.00084	.00105	.00126	.00168	.00210	.00252	.00335	1
	Full Chamfer (≥ 25°)	.00017	.00022	.00026	.00035	.00052	.00070	.00087	.00105	.00140	.00175	.00210	.00279	4
	Full Chamfer (< 25°)	.00013	.00016	.00019	.00026	.00039	.00052	.00065	.00079	.00105	.00131	.00157	.00210	5
75	Edge Break	.00021	.00026	.00031	.00042	.00063	.00084	.00105	.00126	.00168	.00210	.00252	.00335	1
	Full Chamfer (≥ 25°)	.00017	.00022	.00026	.00035	.00052	.00070	.00087	.00105	.00140	.00175	.00210	.00279	4
	Full Chamfer (< 25°)	.00013	.00016	.00019	.00026	.00039	.00052	.00065	.00079	.00105	.00131	.00157	.00210	5
50	Edge Break	.00021	.00026	.00031	.00042	.00063	.00084	.00105	.00126	.00168	.00210	.00252	.00335	1
	Full Chamfer (≥ 25°)	.00017	.00022	.00026	.00035	.00052	.00070	.00087	.00105	.00140	.00175	.00210	.00279	4
	Full Chamfer (< 25°)	.00013	.00016	.00019	.00026	.00039	.00052	.00065	.00079	.00105	.00131	.00157	.00210	5