

MATERIAL	SFM	Hardness: ≤ 28 Rc (≤ 271 HBn)														
		Chip Load (IPT) By Cutter Dia			Depth of Cut		Chip Load (IPT) By Cutter Dia					Depth of Cut				
		.015	.031	.047	Radial	Axial	.062	.078	.093	.125	.187	.250	Radial	Axial		
ALUMINUM ALLOYS																
Casting (2xx, 5xx, 7xx, 8xx)	750	Slotting	.00020	.00042	.00063	1 x Dia	.14 x Dia	.00073	.00092	.00109	.00147	.00220	.00293	1 x Dia	.35 x Dia	
		Roughing	.00020	.00042	.00063	.13 x Dia	3 x Dia	.00073	.00092	.00109	.00147	.00220	.00293	.25 x Dia	3 x Dia	
Wrought (1xxx, 2xxx, 3xxx, 5xxx, 6xxx, 7xxx, 8xxx)	1000	Finishing	.00026	.00053	.00080	.08 x Dia	3 x Dia	.00092	.00116	.00138	.00185	.00277	.00371	.15 x Dia	3 x Dia	
Casting - 3%-5% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	750	Slotting	.00018	.00038	.00057	1 x Dia	.14 x Dia	.00066	.00082	.00098	.00132	.00198	.00264	1 x Dia	.35 x Dia	
Casting - 5%-8% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	700															
Casting - 8%-12% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	650	Roughing	.00018	.00038	.00057	.13 x Dia	3 x Dia	.00066	.00082	.00098	.00132	.00198	.00264	.25 x Dia	3 x Dia	
Casting - 12%-16% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	475															
Wrought - 5%-8% Si (4xxx)	1000	Finishing	.00023	.00048	.00072	.08 x Dia	3 x Dia	.00083	.00104	.00124	.00167	.00250	.00334	.15 x Dia	3 x Dia	
Wrought - 8%-12% Si (4xxx)	800															
MAGNESIUM ALLOYS																
	1500	Slotting	.00020	.00042	.00063	1 x Dia	.14 x Dia	.00073	.00092	.00109	.00147	.00220	.00293	1 x Dia	.35 x Dia	
		Roughing	.00020	.00042	.00063	.13 x Dia	3 x Dia	.00073	.00092	.00109	.00147	.00220	.00293	.25 x Dia	3 x Dia	
ZINC ALLOYS																
	800	Finishing	.00026	.00053	.00080	.08 x Dia	3 x Dia	.00092	.00116	.00138	.00185	.00277	.00371	.15 x Dia	3 x Dia	
COPPER ALLOYS																
High Coppers - 90%+ (C1xxx)	225	Slotting	.00016	.00033	.00051	1 x Dia	.14 x Dia	.00058	.00073	.00087	.00117	.00176	.00235	1 x Dia	.35 x Dia	
Brass (Copper Zinc alloys, C2xxx, C3xxx, C4xxx, C6400-C69800)	500															
Phosphor Bronzes (Copper Tin alloys, C5xxx)	225															
Aluminum Bronzes (Copper Aluminum alloys, C6000-C64200)	500	Roughing	.00016	.00033	.00051	.13 x Dia	3 x Dia	.00058	.00073	.00087	.00117	.00176	.00235	.25 x Dia	3 x Dia	
Silicon Bronzes (Copper Silicon alloys, C64700-C66100)	500															
Copper Nickels, Nickel Silvers (Copper Nickel alloys, C7xxx)	225															
Cast Copper Alloys (C83300-C86200, C86400-C87900, C92200-C95800, C97300-C97800, C99400-C99700)	550	Finishing	.00020	.00042	.00064	.08 x Dia	3 x Dia	.00074	.00093	.00110	.00148	.00222	.00297	.15 x Dia	3 x Dia	



Speeds & Feeds

Product Table: Miniature End Mills - Tapered - Square
Characteristics: 11°-15° Angle per Side, 3x Length of Cut
Series: 7994xx

Product Notes:

Use the end diameter of the tool to select the correct Chip Load (IPT)

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: 29-37 Rc (279-344 HBn)													
		Chip Load (IPT) By Cutter Dia			Depth of Cut		Chip Load (IPT) By Cutter Dia					Depth of Cut			
		.015	.031	.047	Radial	Axial	.062	.078	.093	.125	.187	.250	Radial	Axial	
CARBON STEELS															
Free-Machining/Low Carbon steels, 10xx - 1029 & all 10Lxx, 11xx - 1139 & all 11Lxx, 12xx - 1215 & all 12Lxx	600	Slotting	.00007	.00014	.00022	1 x Dia	.14 x Dia	.00025	.00031	.00038	.00050	.00075	.00101	1 x Dia	.35 x Dia
		Roughing	.00006	.00013	.00020	.13 x Dia	3 x Dia	.00023	.00028	.00034	.00045	.00068	.00091	.25 x Dia	3 x Dia
		Finishing	.00008	.00017	.00025	.08 x Dia	3 x Dia	.00029	.00036	.00043	.00058	.00087	.00116	.15 x Dia	3 x Dia
1030 - 1095, 1140 - 1151, 13xx, 15xx, 20xx, 30xx, 40xx & 4xLxx, 50xx & 5xLxx, 50xxx & 50Lxxx, 51xxx & 51Lxxx, 52xxx & 52Lxxx, 60xx, 80xx, 90xx	200	Slotting	.00006	.00013	.00020	1 x Dia	.14 x Dia	.00023	.00029	.00034	.00046	.00069	.00092	1 x Dia	.35 x Dia
		Roughing	.00006	.00012	.00018	.13 x Dia	3 x Dia	.00021	.00026	.00031	.00041	.00062	.00083	.25 x Dia	3 x Dia
		Finishing	.00007	.00015	.00023	.08 x Dia	3 x Dia	.00026	.00033	.00039	.00053	.00079	.00106	.15 x Dia	3 x Dia
STAINLESS STEELS															
203 EZ, 303 (all types), 416, 416Se, 416 Plus X, 420F, 420FSe, 430F, 430FSe, 440F, 440FSe	450	Slotting	.00007	.00014	.00022	1 x Dia	.14 x Dia	.00025	.00031	.00038	.00050	.00075	.00101	1 x Dia	.35 x Dia
		Roughing	.00006	.00013	.00020	.13 x Dia	3 x Dia	.00023	.00028	.00034	.00045	.00068	.00091	.25 x Dia	3 x Dia
		Finishing	.00008	.00017	.00025	.08 x Dia	3 x Dia	.00029	.00036	.00043	.00058	.00087	.00116	.15 x Dia	3 x Dia
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	Slotting	.00006	.00013	.00020	1 x Dia	.14 x Dia	.00023	.00029	.00034	.00046	.00069	.00092	1 x Dia	.35 x Dia
		Roughing	.00006	.00012	.00018	.13 x Dia	3 x Dia	.00021	.00026	.00031	.00041	.00062	.00083	.25 x Dia	3 x Dia
		Finishing	.00007	.00015	.00023	.08 x Dia	3 x Dia	.00026	.00033	.00039	.00053	.00079	.00106	.15 x Dia	3 x Dia
414, 431, 440A, 440B, 440C, 13-8, 15-5, 15-7, 17-4, 17-7	150	Slotting	.00004	.00008	.00012	1 x Dia	.14 x Dia	.00014	.00018	.00021	.00029	.00043	.00058	1 x Dia	.35 x Dia
		Roughing	.00004	.00007	.00011	.13 x Dia	3 x Dia	.00013	.00016	.00019	.00026	.00039	.00052	.25 x Dia	3 x Dia
		Finishing	.00005	.00009	.00014	.08 x Dia	3 x Dia	.00016	.00021	.00025	.00033	.00050	.00066	.15 x Dia	3 x Dia
TOOL STEELS															
A, L, O, P, W series	200	Slotting	.00006	.00013	.00020	1 x Dia	.14 x Dia	.00023	.00029	.00034	.00046	.00069	.00092	1 x Dia	.35 x Dia
		Roughing	.00006	.00012	.00018	.13 x Dia	3 x Dia	.00021	.00026	.00031	.00041	.00062	.00083	.25 x Dia	3 x Dia
		Finishing	.00007	.00015	.00023	.08 x Dia	3 x Dia	.00026	.00033	.00039	.00053	.00079	.00106	.15 x Dia	3 x Dia
D, H, M, T, S series	150	Slotting	.00004	.00008	.00012	1 x Dia	.14 x Dia	.00014	.00018	.00021	.00029	.00043	.00058	1 x Dia	.35 x Dia
		Roughing	.00004	.00007	.00011	.13 x Dia	3 x Dia	.00013	.00016	.00019	.00026	.00039	.00052	.25 x Dia	3 x Dia
		Finishing	.00005	.00009	.00014	.08 x Dia	3 x Dia	.00016	.00021	.00025	.00033	.00050	.00066	.15 x Dia	3 x Dia
TITANIUM ALLOYS															
	150	Slotting	.00004	.00008	.00012	1 x Dia	.14 x Dia	.00014	.00018	.00021	.00029	.00043	.00058	1 x Dia	.35 x Dia
		Roughing	.00004	.00007	.00011	.13 x Dia	3 x Dia	.00013	.00016	.00019	.00026	.00039	.00052	.25 x Dia	3 x Dia
		Finishing	.00005	.00009	.00014	.08 x Dia	3 x Dia	.00016	.00021	.00025	.00033	.00050	.00066	.15 x Dia	3 x Dia
HIGH TEMP ALLOYS															
Inconel, Hastelloy, Waspalloy, Monel, Nimonic, Haynes, Discoloy, Incoloy	70	Slotting	.00004	.00008	.00012	1 x Dia	.14 x Dia	.00014	.00018	.00021	.00029	.00043	.00058	1 x Dia	.35 x Dia
		Roughing	.00004	.00007	.00011	.13 x Dia	3 x Dia	.00013	.00016	.00019	.00026	.00039	.00052	.25 x Dia	3 x Dia
		Finishing	.00005	.00009	.00014	.08 x Dia	3 x Dia	.00016	.00021	.00025	.00033	.00050	.00066	.15 x Dia	3 x Dia

MATERIAL	SFM	Hardness: 38-45 Rc (353-421 HBn)													
		Chip Load (IPT) By Cutter Dia			Depth of Cut		Chip Load (IPT) By Cutter Dia					Depth of Cut			
		.015	.031	.047	Radial	Axial	.062	.078	.093	.125	.187	.250	Radial	Axial	
		Slotting	-	-	-	-	-	-	-	-	-	-	-	-	-
		Roughing	-	-	-	-	-	-	-	-	-	-	-	-	-
		Finishing	-	-	-	-	-	-	-	-	-	-	-	-	-
		Slotting	-	-	-	-	-	-	-	-	-	-	-	-	-
		Roughing	-	-	-	-	-	-	-	-	-	-	-	-	-
		Finishing	-	-	-	-	-	-	-	-	-	-	-	-	-
		Slotting	.00003	.00007	.00010	1 x Dia	.14 x Dia	.00011	.00014	.00017	.00023	.00034	.00046	1 x Dia	.35 x Dia
		Roughing	.00003	.00006	.00009	.13 x Dia	3 x Dia	.00010	.00013	.00015	.00021	.00031	.00041	.25 x Dia	3 x Dia
		Finishing	.00004	.00008	.00012	.08 x Dia	3 x Dia	.00013	.00017	.00020	.00027	.00040	.00053	.15 x Dia	3 x Dia
		Slotting	.00002	.00004	.00006	1 x Dia	.14 x Dia	.00007	.00009	.00011	.00014	.00022	.00029	1 x Dia	.35 x Dia
		Roughing	.00002	.00004	.00006	.13 x Dia	3 x Dia	.00006	.00008	.00010	.00013	.00019	.00026	.25 x Dia	3 x Dia
		Finishing	.00002	.00005	.00007	.08 x Dia	3 x Dia	.00008	.00010	.00012	.00017	.00025	.00033	.15 x Dia	3 x Dia
		Slotting	.00003	.00007	.00010	1 x Dia	.14 x Dia	.00011	.00014	.00017	.00023	.00034	.00046	1 x Dia	.35 x Dia
		Roughing	.00003	.00006	.00009	.13 x Dia	3 x Dia	.00010	.00013	.00015	.00021	.00031	.00041	.25 x Dia	3 x Dia
		Finishing	.00004	.00008	.00012										