



Speeds & Feeds

Product Table: Miniature End Mills - Tapered - Square
Characteristics: 1.79° Angle per Side, 3x Length of Cut
Series: 9122xx

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: ≤ 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																	
Castino (2xx, 5xx, 7xx, 8xx)	750	Roughing	.00018	.00037	.00057	1 x Dia	.14 x Dia	.00065	.00082	.00097	.00131	.00196	.00262	1 x Dia	.35 x Dia		
Wrought (1xxx, 2xxx, 3xxx, 5xxx, 6xxx, 7xxx, 8xxx)	1000	Finishing	.00023	.00047	.00072	.08 x Dia	3 x Dia	.00082	.00103	.00123	.00165	.00247	.00331	.15 x Dia	3 x Dia		
Castings - 3%-5% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	750	Slotting	.00016	.00034	.00051	1 x Dia	.14 x Dia	.00058	.00074	.00088	.00118	.00176	.00236	1 x Dia	.35 x Dia		
Castings - 5%-8% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	700	Roughing	.00016	.00034	.00051	.13 x Dia	3 x Dia	.00058	.00074	.00088	.00118	.00176	.00236	.25 x Dia	3 x Dia		
Castings - 8%-12% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	650	Roughing	.00016	.00034	.00051	.13 x Dia	3 x Dia	.00058	.00074	.00088	.00118	.00176	.00236	.25 x Dia	3 x Dia		
Castings - 12%-16% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	475	Finishing	.00021	.00042	.00064	.08 x Dia	3 x Dia	.00074	.00093	.00111	.00149	.00223	.00298	.15 x Dia	3 x Dia		
Wrought - 5%-8% Si (4xxx)	1000	Finishing	.00021	.00042	.00064	.08 x Dia	3 x Dia	.00074	.00093	.00111	.00149	.00223	.00298	.15 x Dia	3 x Dia		
Wrought - 8%-12% Si (4xxx)	800	Slotting	.00018	.00037	.00057	1 x Dia	.14 x Dia	.00065	.00082	.00097	.00131	.00196	.00262	1 x Dia	.35 x Dia		
MAGNESIUM ALLOYS	1500	Roughing	.00018	.00037	.00057	.13 x Dia	3 x Dia	.00065	.00082	.00097	.00131	.00196	.00262	.25 x Dia	3 x Dia		
ZINC ALLOYS	800	Finishing	.00023	.00047	.00072	.08 x Dia	3 x Dia	.00082	.00103	.00123	.00165	.00247	.00331	.15 x Dia	3 x Dia		
COPPER ALLOYS																	
High Coppers - 90%+ (C1xxxx)	225	Slotting	.00014	.00030	.00045	1 x Dia	.14 x Dia	.00052	.00065	.00078	.00105	.00157	.00209	1 x Dia	.35 x Dia		
Brass (Copper Zinc alloys, C2xxxx, C3xxxx, C4xxxx, C6400-C6900)	500	Roughing	.00014	.00030	.00045	.13 x Dia	3 x Dia	.00052	.00065	.00078	.00105	.00157	.00209	.25 x Dia	3 x Dia		
Phosphor Bronzes (Copper 1 in alloys, C5xxxx)	225	Slotting	.00014	.00030	.00045	1 x Dia	.14 x Dia	.00052	.00065	.00078	.00105	.00157	.00209	1 x Dia	.35 x Dia		
Aluminum Bronzes (Copper Aluminum alloys, C6060-C64200)	500	Roughing	.00014	.00030	.00045	.13 x Dia	3 x Dia	.00052	.00065	.00078	.00105	.00157	.00209	.25 x Dia	3 x Dia		
Silicon Bronzes (Copper Silicon alloys, C64700-C66100)	500	Roughing	.00014	.00030	.00045	.13 x Dia	3 x Dia	.00052	.00065	.00078	.00105	.00157	.00209	.25 x Dia	3 x Dia		
Copper Nickels, Nickel Silvers (Copper Nickel alloys, C7xxxx)	225	Slotting	.00014	.00030	.00045	1 x Dia	.14 x Dia	.00052	.00065	.00078	.00105	.00157	.00209	1 x Dia	.35 x Dia		
Cast Copper Alloys (C8300-C86200, C86400-C87900, C92200-C95800, C97300-C97800, C99400-C99700)	550	Finishing	.00018	.00038	.00057	.08 x Dia	3 x Dia	.00066	.00083	.00098	.00132	.00198	.00265	.15 x Dia	3 x Dia		

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	Roughing	.00006	.00013	.00019	1 x Dia	.14 x Dia	.00022	.00028	.00033	.00045	.00067	.00090	1 x Dia	.35 x Dia		
1030 - 1095, 1140 - 1151, 13xx, 15xx, 20xx, 30xx, 40xx & 4xLxx, 50xx & 5xLxx, 50xx & 50Lxx, 51xx & 51Lxx, 52xx & 52Lxx, 60xx, 80xx, 90xx	200	Slotting	.00006	.00012	.00018	1 x Dia	.14 x Dia	.00020	.00026	.00031	.00041	.00062	.00082	1 x Dia	.35 x Dia		
203 EZ, 303 (all types), 416, 416Se, 416 Plus X, 420F, 420FSe, 430F, 430FSe, 440F, 440FSe	450	Roughing	.00006	.00012	.00018	.13 x Dia	3 x Dia	.00020	.00025	.00030	.00040	.00061	.00081	.25 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	.00012	.00018	1 x Dia	.14 x Dia	.00020	.00026	.00031	.00041	.00062	.00082	1 x Dia	.35 x Dia		
414, 431, 440A, 440B, 440C, 13-8, 15-5, 15-7, 17-4, 17-7	150	Roughing	.00003	.00007	.00010	.13 x Dia	3 x Dia	.00011	.00014	.00017	.00023	.00035	.00046	.25 x Dia	3 x Dia		
TOOL STEELS																	
A, L, O, P, W series	200	Slotting	.00006	.00012	.00018	1 x Dia	.14 x Dia	.00020	.00026	.00031	.00041	.00062	.00082	1 x Dia	.35 x Dia		
D, H, M, T, S series	150	Roughing	.00003	.00007	.00010	.13 x Dia	3 x Dia	.00011	.00014	.00017	.00023	.00035	.00046	.25 x Dia	3 x Dia		
TITANIUM ALLOYS																	
Inconel, Hastelloy, Waspalloy, Monel, Nimonic, Haynes, Incoloy	70	Slotting	.00004	.00007	.00011	1 x Dia	.14 x Dia	.00013	.00016	.00019	.00026	.00038	.00051	1 x Dia	.35 x Dia		
		Roughing	.00003	.00007	.00010	.13 x Dia	3 x Dia	.00011	.00014	.00017	.00023	.00035	.00046	.25 x Dia	3 x Dia		
		Finishing	.00004	.00008	.00013	.08 x Dia	3 x Dia	.00015	.00018	.00022	.00030	.00044	.00059	.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	.00003	.00006	.00009	1 x Dia	.14 x Dia	.00010	.00013	.00015	.00021	.00031	.00041	1 x Dia	.35 x Dia		
		Roughing	.00003	.00005	.00008	.13 x Dia	3 x Dia	.00009	.00012	.00014	.00019	.00028	.00037	.25 x Dia	3 x Dia		
		Finishing	.00003	.00007	.00010	.08 x Dia	3 x Dia	.00012	.00015	.00018	.00024	.00036	.00048	.15 x Dia	3 x Dia		
		Slotting	.00002	.00004	.00006	1 x Dia	.14 x Dia	.00006	.00008	.00010	.00013	.00019	.00026	1 x Dia	.35 x Dia		
		Roughing	.00002	.00003	.00005	.13 x Dia	3 x Dia	.00006	.00007	.00009	.00012	.00017	.00023	.25 x Dia	3 x Dia		
		Finishing	.00002	.00004	.00006	.08 x Dia	3 x Dia	.00007	.00009	.00011	.00015	.00022	.00030	.15 x Dia	3 x Dia		
		Slotting	.00003	.00006	.00009	1 x Dia	.14 x Dia	.00010	.00013	.00015	.00021	.00031	.00041	1 x Dia	.35 x Dia		
		Roughing	.00003	.00005	.00008	.13 x Dia	3 x Dia	.00009	.00012	.00014	.00019	.00028	.00037	.25 x Dia	3 x Dia		
		Finishing	.00003	.00007	.00010	.08 x Dia	3 x Dia	.00012	.00015	.00018	.00024	.00036	.00048	.15 x Dia	3 x Dia		
		Slotting	.00002	.00004	.00006	1 x Dia	.14 x Dia	.00006	.00008	.00010	.00013	.00019	.00026	1 x Dia	.35 x Dia		
		Roughing	.00002	.00003	.00005	.13 x Dia	3 x Dia	.00006	.00007	.00009	.00012	.00017	.00023	.25 x Dia	3 x Dia		
		Finishing	.00002	.00004	.00006	.08 x Dia	3 x Dia	.00007	.00009	.00011	.00015	.00022	.00030	.15 x Dia	3 x Dia		
		Slotting	.00002	.00004	.00006	1 x Dia	.14 x Dia	.00006	.00008	.00010	.00013	.00019	.00026	1 x Dia	.35 x Dia		
		Roughing	.00002	.00003	.00005	.13 x Dia	3 x Dia	.00006	.00007	.00009	.00012	.00017	.00023	.25 x Dia	3 x Dia		
		Finishing	.00002	.00004	.00006	.08 x Dia	3 x Dia	.00007	.00009	.00011	.00015	.00022	.00030	.15 x Dia	3 x Dia		
		Slotting	.00002	.00004	.00006	1 x Dia	.14 x Dia	.00006	.00008	.00010	.00013	.00019	.00026	1 x Dia	.35 x Dia		
		Roughing	.00002	.00003	.00005	.13 x Dia	3 x Dia	.00006	.00007	.00009	.00012	.00017	.00023	.25 x Dia	3 x Dia		
		Finishing	.00002	.00004	.00006	.08 x Dia	3 x Dia	.00007	.00009	.00011	.00015	.00022	.00030	.15 x Dia	3 x Dia		