



Speeds & Feeds

Product Table: Miniature End Mills - Tapered - Square
Characteristics: 11°-15° Angle per Side, 8x Length of Cut
Series: 7993xx

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	Hardness: ≤ 28 Rc (≤ 271 HBn)														
	SFM	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	Finishing	.00010	.00020	.00030	.05 x Dia	8 x Dia	.00034	.00043	.00052	.00070	.00104	.00139	.10 x Dia	8 x Dia
Wrought (1xxx, 2xxx, 3xxx, 5xxx, 6xxx, 7xxx, 8xxx)	1000														
Casting - 3%-5% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	750	Finishing													
Casting - 5%-8% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	700														
Casting - 8%-12% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	650		.00009	.00018	.00027	.05 x Dia	8 x Dia	.00031	.00039	.00047	.00063	.00094	.00125	.10 x Dia	8 x Dia
Casting - 12%-16% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	475														
Wrought - 5%-8% Si (4xxx)	1000														
Wrought - 8%-12% Si (4xxx)	800														
MAGNESIUM ALLOYS	1500	Finishing	.00010	.00020	.00030	.05 x Dia	8 x Dia	.00034	.00043	.00052	.00070	.00104	.00139	.10 x Dia	8 x Dia
ZINC ALLOYS	800														
COPPER ALLOYS															
High Coppers - 90%+ (C1xxxx)	225	Finishing													
Brass (Copper Zinc alloys, C2xxxx, C3xxxx, C4xxxx, C6400-C69800)	500														
Phosphor Bronzes (Copper Tin alloys, C5xxxx)	225														
Aluminum Bronzes (Copper Aluminum alloys, C60600-C64200)	500		.00008	.00016	.00024	.05 x Dia	8 x Dia	.00028	.00035	.00041	.00056	.00083	.00111	.10 x Dia	8 x Dia
Silicon Bronzes (Copper Silicon alloys, C64700-C66100)	500														
Copper Nickels, Nickel Silvers (Copper Nickel alloys, C7xxxx) Cast Copper Alloys (C83300-C86200, C86400-C87900, C92200-C95800, C97300-C97800, C99400-C99700)	225														
	550														

MATERIAL	Hardness: 29-37 Rc (279-344 HBn)														
	SFM	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	Finishing	.00003	.00006	.00009	.05 x Dia	8 x Dia	.00011	.00014	.00016	.00022	.00033	.00043	.10 x Dia	8 x Dia
1030 - 1095, 1140 - 1151, 13xx, 15xx, 2xxx, 3xxx, 4xxx & 4xLxx, 5xxx & 5xLxx, 50xxx & 50Lxx, 51xxx & 51Lxx, 52xxx & 52Lxx, 6xxx, 8xxx, 9xxx	200	Finishing	.00003	.00006	.00009	.05 x Dia	8 x Dia	.00010	.00012	.00015	.00020	.00030	.00040	.10 x Dia	8 x Dia
STAINLESS STEELS															
203 EZ, 303 (all types), 416, 416Se, 416 Plus X, 420F, 420FSe, 430F, 430FSe, 440F, 440FSe	450	Finishing	.00003	.00006	.00009	.05 x Dia	8 x Dia	.00011	.00014	.00016	.00022	.00033	.00043	.10 x Dia	8 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	200	Finishing	.00003	.00006	.00009	.05 x Dia	8 x Dia	.00010	.00012	.00015	.00020	.00030	.00040	.10 x Dia	8 x Dia
414, 431, 440A, 440B, 440C, 13-8, 15-5, 15-7, 17-4, 17-7	150	Finishing	.00002	.00004	.00005	.05 x Dia	8 x Dia	.00006	.00008	.00009	.00012	.00019	.00025	.10 x Dia	8 x Dia
TOOL STEELS															
A, L, O, P, W series	200	Finishing	.00003	.00006	.00009	.05 x Dia	8 x Dia	.00010	.00012	.00015	.00020	.00030	.00040	.10 x Dia	8 x Dia
D, H, M, T, S series	150	Finishing	.00002	.00004	.00005	.05 x Dia	8 x Dia	.00006	.00008	.00009	.00012	.00019	.00025	.10 x Dia	8 x Dia
TITANIUM ALLOYS	150	Finishing	.00002	.00004	.00005	.05 x Dia	8 x Dia	.00006	.00008	.00009	.00012	.00019	.00025	.10 x Dia	8 x Dia
HIGH TEMP ALLOYS															
Inconel, Hastelloy, Waspalloy, Monel, Nimonic, Haynes, Discoloy, Incoloy	70	Finishing	.00002	.00004	.00005	.05 x Dia	8 x Dia	.00006	.00008	.00009	.00012	.00019	.00025	.10 x Dia	8 x Dia

MATERIAL	Hardness: 38-45 Rc (353-421 HBn)														
	SFM	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	
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	100	Finishing	.00001	.00003	.00004	.05 x Dia	8 x Dia	.00005	.00006	.00007	.00010	.00015	.00020	.10 x Dia	8 x Dia
	90	Finishing	.00001	.00002	.00003	.05 x Dia	8 x Dia	.00003	.00004	.00005	.00006	.00009	.00013	.10 x Dia	8 x Dia
	100	Finishing	.00001	.00003	.00004	.05 x Dia	8 x Dia	.00005	.00006	.00007	.00010	.00015	.00020	.10 x Dia	8 x Dia
	90	Finishing	.00001	.00002	.00003	.05 x Dia	8 x Dia	.00003	.00004	.00005	.00006	.00009	.00013	.10 x Dia	8 x Dia
	75	Finishing	.00001	.00002	.00003	.05 x Dia	8 x Dia	.00003	.00004	.00005	.00006	.00009	.00013	.10 x Dia	8 x Dia
	50	Finishing	.00001	.00002	.00003	.05 x Dia	8 x Dia	.00003	.00004	.00005	.00006	.00009	.00013	.10 x Dia	8 x Dia