



Speeds & Feeds

Product Table: Miniature End Mills - Square - Long Reach, Stub Flute
Characteristics: 15x Reach Multiple, 4 Flutes
Series: 7351xx

Please note:

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 Dia			Depth of Cut		Chip Load (IPT) by Cutter Dia						Depth of Cut				
			0.015	0.031	0.047	Radial	Axial	0.062	0.078	0.093	0.125	0.187	0.250	0.375	0.500	Radial	Axial	
ALUMINUM ALLOYS																		
Casting (2xx, 5xx, 7xx, 8xx)		750	Slotting	.00009	.00018	.00027	1 x Dia	.06 x Dia	.00031	.00039	.00046	.00062	.00093	.00124	.00186	.00248	1 x Dia	.15 x Dia
			Roughing	.00011	.00022	.00033	.15 x Dia	.25 x Dia	.00038	.00048	.00058	.00077	.00116	.00155	.00232	.00309	.30 x Dia	.25 x Dia
Wrought (1xxx, 2xxx, 3xxx, 5xxx, 6xxx, 7xxx, 8xxx)		1000	Finishing	.00022	.00045	.00068	.04 x Dia	1.5 x Dia	.00078	.00098	.00116	.00156	.00234	.00313	.00469	.00626	.08 x Dia	1.5 x Dia
Casting - 3%-5% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)		750	Slotting	.00008	.00016	.00024	1 x Dia	.06 x Dia	.00028	.00035	.00041	.00056	.00083	.00111	.00167	.00223	1 x Dia	.15 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	.00010	.00020	.00030	.15 x Dia	.25 x Dia	.00035	.00043	.00052	.00070	.00104	.00139	.00209	.00278	.30 x Dia	.25 x Dia
Casting - 12%-16% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)		475																
Wrought - 5%-8% Si (4xxx)		1000	Finishing	.00019	.00040	.00061	.04 x Dia	1.5 x Dia	.00070	.00088	.00105	.00141	.00211	.00282	.00422	.00563	.08 x Dia	1.5 x Dia
Wrought - 8%-12% Si (4xxx)		800																
MAGNESIUM ALLOYS																		
		1500	Slotting	.00009	.00018	.00027	1 x Dia	.06 x Dia	.00031	.00039	.00046	.00062	.00093	.00124	.00186	.00248	1 x Dia	.15 x Dia
			Roughing	.00011	.00022	.00033	.15 x Dia	.25 x Dia	.00038	.00048	.00058	.00077	.00116	.00155	.00232	.00309	.30 x Dia	.25 x Dia
ZINC ALLOYS																		
		800	Finishing	.00022	.00045	.00068	.04 x Dia	1.5 x Dia	.00078	.00098	.00116	.00156	.00234	.00313	.00469	.00626	.08 x Dia	1.5 x Dia
COPPER ALLOYS																		
High Coppers - 90%+ (C1xxx)		225	Slotting	.00007	.00014	.00021	1 x Dia	.06 x Dia	.00025	.00031	.00037	.00050	.00074	.00099	.00149	.00198	1 x Dia	.15 x Dia
Brass (Copper Zinc alloys, C2xxx, C3xxx, C4xxx, C6400-C69800)		500																
Phosphor Bronzes (Copper Tin alloys, C5xxx)		225																
Aluminum Bronzes (Copper Aluminum alloys, C60600-C64200)		500	Roughing	.00009	.00018	.00027	.15 x Dia	.25 x Dia	.00031	.00039	.00046	.00062	.00093	.00124	.00186	.00248	.30 x Dia	.25 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	.00017	.00036	.00054	.04 x Dia	1.5 x Dia	.00062	.00078	.00093	.00125	.00187	.00250	.00375	.00501	.08 x Dia	1.5 x Dia

MATERIAL		Hardness: 29-37 Rc (279-344 HBn)																
		SFM	Chip Load (IPT) by Dia			Depth of Cut		Chip Load (IPT) by Cutter Dia						Depth of Cut				
			0.015	0.031	0.047	Radial	Axial	0.062	0.078	0.093	0.125	0.187	0.250	0.375	0.500	Radial	Axial	
CARBON STEELS																		
Free-Machining/Low Carbon steels, 10xx - 1029 & all 10Lxx, 11xx - 1139 & all 11Lxx, 12xx - 1215 & all 12Lxx		600	Slotting	.00003	.00006	.00009	1 x Dia	.06 x Dia	.00011	.00013	.00016	.00021	.00032	.00043	.00064	.00085	1 x Dia	.15 x Dia
			Roughing	.00003	.00007	.00010	.15 x Dia	.25 x Dia	.00012	.00015	.00018	.00024	.00036	.00048	.00072	.00096	.30 x Dia	.25 x Dia
			Finishing	.00007	.00014	.00021	.04 x Dia	1.5 x Dia	.00024	.00031	.00036	.00049	.00073	.00098	.00147	.00196	.08 x Dia	1.5 x Dia
1030 - 1095, 1140 - 1151, 13xx, 15xx, 2xxx, 3xxx, 4xxx & 4xLxx, 5xxx & 5xLxx, 50xxx & 50Lxx, 51xxx & 51Lxx, 52xxx & 52Lxx, 6xxx, 8xxx, 9xxx		200	Slotting	.00003	.00006	.00008	1 x Dia	.06 x Dia	.00010	.00012	.00014	.00019	.00029	.00039	.00058	.00078	1 x Dia	.15 x Dia
			Roughing	.00003	.00006	.00009	.15 x Dia	.25 x Dia	.00011	.00014	.00016	.00022	.00033	.00044	.00066	.00087	.30 x Dia	.25 x Dia
			Finishing	.00006	.00013	.00019	.04 x Dia	1.5 x Dia	.00022	.00028	.00033	.00045	.00067	.00089	.00134	.00179	.08 x Dia	1.5 x Dia
STAINLESS STEELS																		
203 EZ, 303 (all types), 416, 416Se, 416 Plus X, 420F, 420FSe, 430F, 430FSe, 440F, 440FSe		450	Slotting	.00003	.00006	.00009	1 x Dia	.06 x Dia	.00011	.00013	.00016	.00021	.00032	.00043	.00064	.00085	1 x Dia	.15 x Dia
			Roughing	.00003	.00007	.00010	.15 x Dia	.25 x Dia	.00012	.00015	.00018	.00024	.00036	.00048	.00072	.00096	.30 x Dia	.25 x Dia
			Finishing	.00007	.00014	.00021	.04 x Dia	1.5 x Dia	.00024	.00031	.00036	.00049	.00073	.00098	.00147	.00196	.08 x Dia	1.5 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	.00003	.00006	.00008	1 x Dia	.06 x Dia	.00010	.00012	.00014	.00019	.00029	.00039	.00058	.00078	1 x Dia	.15 x Dia
			Roughing	.00003	.00006	.00009	.15 x Dia	.25 x Dia	.00011	.00014	.00016	.00022	.00033	.00044	.00066	.00087	.30 x Dia	.25 x Dia
			Finishing	.00006	.00013	.00019	.04 x Dia	1.5 x Dia	.00022	.00028	.00033	.00045	.00067	.00089	.00134	.00179	.08 x Dia	1.5 x Dia
414, 431, 440A, 440B, 440C, 13-8, 15-5, 15-7, 17-4, 17-7		150	Slotting	.00002	.00003	.00005	1 x Dia	.06 x Dia	.00006	.00008	.00009	.00012	.00018	.00024	.00036	.00049	1 x Dia	.15 x Dia
			Roughing	.00002	.00004	.00006	.15 x Dia	.25 x Dia	.00007	.00009	.00010	.00014	.00020	.00027	.00041	.00055	.30 x Dia	.25 x Dia
			Finishing	.00004	.00008	.00012	.04 x Dia	1.5 x Dia	.00014	.00017	.00021	.00028	.00042	.00056	.00084	.00112	.08 x Dia	1.5 x Dia
TOOL STEELS																		
A, L, O, P, W series		200	Slotting	.00003	.00006	.00008	1 x Dia	.06 x Dia	.00010	.00012	.00014	.00019	.00029	.00039	.00058	.00078	1 x Dia	.15 x Dia
			Roughing	.00003	.00006	.00009	.15 x Dia	.25 x Dia	.00011	.00014	.00016	.00022	.00033	.00044	.00066	.00087	.30 x Dia	.25 x Dia
			Finishing	.00006	.00013	.00019	.04 x Dia	1.5 x Dia	.00022	.00028	.00033	.00045	.00067	.00089	.00134	.00179	.08 x Dia	1.5 x Dia
D, H, M, T, S series		150	Slotting	.00002	.00003	.00005	1 x Dia	.06 x Dia	.00006	.00008	.00009	.00012	.00018	.00024	.00036	.00049	1 x Dia	.15 x Dia
			Roughing	.00002	.00004	.00006	.15 x Dia	.25 x Dia	.00007	.00009	.00010	.00014	.00020	.00027	.00041	.00055	.30 x Dia	.25 x Dia
			Finishing	.00004	.00008	.00012	.04 x Dia	1.5 x Dia	.00014	.00017	.00021	.00028	.00042	.00056	.00084	.00112	.08 x Dia	1.5 x Dia
TITANIUM ALLOYS																		
		150	Slotting	.00002	.00003	.00005	1 x Dia	.06 x Dia	.00006	.00008	.00009	.00012	.00018	.00024	.00036	.00049	1 x Dia	.15 x Dia
			Roughing	.00002	.00004	.00006	.15 x Dia	.25 x Dia	.00007	.00009	.00010	.00014	.00020	.00027	.00041	.00055	.30 x Dia	.25 x Dia
			Finishing	.00004	.00008	.00012	.04 x Dia	1.5 x Dia	.00014	.00017	.00021	.00028	.00042	.00056	.00084	.00112	.08 x Dia	1.5 x Dia
HIGH TEMP ALLOYS																		
Inconel, Hastelloy, Waspalloy, Monel, Nimonic, Haynes, Discoloy, Incoloy		70	Slotting	.00002	.00003	.00005	1 x Dia	.06 x Dia	.00006	.00008	.00009	.00012	.00018	.00024	.00036	.00049	1 x Dia	.15 x Dia
			Roughing	.00002	.00004	.00006	.15 x Dia	.25 x Dia	.00007	.00009	.00010	.00014	.00020	.00027	.00041	.00055	.30 x Dia	.25 x Dia
			Finishing	.00004	.00008	.00012	.04 x Dia	1.5 x Dia	.00014	.00017	.00021	.00028	.00042	.00056	.00084	.00112	.08 x Dia	1.5 x Dia

MATERIAL		Hardness: 38-45 Rc (353-421 HBn)																
		SFM	Chip Load (IPT) by Dia			Depth of Cut		Chip Load (IPT) by Cutter Dia						Depth of Cut				
			0.015	0.031	0.047	Radial	Axial	0.062	0.078	0.093	0.125	0.187	0.250	0.375	0.500	Radial	Axial	
			Slotting	.00001	.00003	.00004	1 x Dia	.06 x Dia	.00005	.00006	.00007	.00010	.00015	.00019	.00029	.00039	1 x Dia	.15 x Dia
			Roughing	.00002	.00003	.00005	.15 x Dia	.25 x Dia	.00005	.00007	.00008	.00011	.00016	.00022	.00033	.00044	.30 x Dia	.25 x Dia
			Finishing	.00003	.00006	.00010	.04 x Dia	1.5 x Dia	.00011	.00014	.00017	.00023	.00034	.00045	.00068	.00090	.08 x Dia	1.5 x Dia
			Slotting	.00001	.00002	.00003	1 x Dia	.06 x Dia	.00003	.00004	.00005	.00006	.00009	.00012	.00018	.00024	1 x Dia	.15 x Dia
			Roughing	.00001	.00002	.00003	.15 x Dia	.25 x Dia										