



Product Table: Miniature End Mills - Corner Radius - Long Reach, Stub Flute
Characteristics: 12x Reach Multiple
Series: 394xx, 395xx, 419xx, 420xx, 426xx, 431xx, 432xx, 8726xx

MATERIAL	SFM	Hardness: ≤ 28 Rc (≤ 271 HBn)															
		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	750	Slotting	.00010	.00021	.00032	1 x Dia	.06 x Dia	.00037	.00046	.00055	.00074	.00111	.00149	.00223	.00297	1 x Dia	.15 x Dia
		Roughing	.00013	.00026	.00040	23 x Dia	.25 x Dia	.00046	.00058	.00069	.00093	.00139	.00186	.00278	.00371	45 x Dia	.25 x Dia
Wrought (1xxx, 2xxx, 3xxx, 5xxx, 6xxx, 7xxx, 8xxx)	1000	Finishing	.00024	.00050	.00076	.05 x Dia	1.5 x Dia	.00087	.00110	.00131	.00176	.00263	.00352	.00528	.00704	10 x Dia	1.5 x Dia
		Slotting	.00009	.00019	.00029	1 x Dia	.06 x Dia	.00033	.00042	.00050	.00067	.00100	.00134	.00200	.00267	1 x Dia	.15 x Dia
Casting - 3%-5% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	750	Slotting	.00009	.00019	.00029	1 x Dia	.06 x Dia	.00033	.00042	.00050	.00067	.00100	.00134	.00200	.00267	1 x Dia	.15 x Dia
		Roughing	.00012	.00024	.00036	23 x Dia	.25 x Dia	.00041	.00052	.00062	.00084	.00125	.00167	.00251	.00334	45 x Dia	.25 x Dia
Casting - 5%-8% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	700	Slotting	.00009	.00019	.00029	1 x Dia	.06 x Dia	.00033	.00042	.00050	.00067	.00100	.00134	.00200	.00267	1 x Dia	.15 x Dia
		Roughing	.00012	.00024	.00036	23 x Dia	.25 x Dia	.00041	.00052	.00062	.00084	.00125	.00167	.00251	.00334	45 x Dia	.25 x Dia
Casting - 8%-12% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	650	Slotting	.00009	.00019	.00029	1 x Dia	.06 x Dia	.00033	.00042	.00050	.00067	.00100	.00134	.00200	.00267	1 x Dia	.15 x Dia
		Roughing	.00012	.00024	.00036	23 x Dia	.25 x Dia	.00041	.00052	.00062	.00084	.00125	.00167	.00251	.00334	45 x Dia	.25 x Dia
Casting - 12%-16% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	475	Slotting	.00009	.00019	.00029	1 x Dia	.06 x Dia	.00033	.00042	.00050	.00067	.00100	.00134	.00200	.00267	1 x Dia	.15 x Dia
		Roughing	.00012	.00024	.00036	23 x Dia	.25 x Dia	.00041	.00052	.00062	.00084	.00125	.00167	.00251	.00334	45 x Dia	.25 x Dia
Wrought - 5%-8% Si (4xxx)	1000	Finishing	.00022	.00045	.00068	.05 x Dia	1.5 x Dia	.00079	.00099	.00118	.00158	.00237	.00317	.00475	.00634	10 x Dia	1.5 x Dia
		Slotting	.00010	.00021	.00032	1 x Dia	.06 x Dia	.00037	.00046	.00055	.00074	.00111	.00149	.00223	.00297	1 x Dia	.15 x Dia
Wrought - 8%-12% Si (4xxx)	800	Finishing	.00022	.00045	.00068	.05 x Dia	1.5 x Dia	.00079	.00099	.00118	.00158	.00237	.00317	.00475	.00634	10 x Dia	1.5 x Dia
		Slotting	.00010	.00021	.00032	1 x Dia	.06 x Dia	.00037	.00046	.00055	.00074	.00111	.00149	.00223	.00297	1 x Dia	.15 x Dia
MAGNESIUM ALLOYS	1500	Slotting	.00010	.00021	.00032	1 x Dia	.06 x Dia	.00037	.00046	.00055	.00074	.00111	.00149	.00223	.00297	1 x Dia	.15 x Dia
ZINC ALLOYS	800	Roughing	.00013	.00026	.00040	23 x Dia	.25 x Dia	.00046	.00058	.00069	.00093	.00139	.00186	.00278	.00371	45 x Dia	.25 x Dia
		Finishing	.00024	.00050	.00076	.05 x Dia	1.5 x Dia	.00087	.00110	.00131	.00176	.00263	.00352	.00528	.00704	10 x Dia	1.5 x Dia
COPPER ALLOYS	225	Slotting	.00008	.00017	.00026	1 x Dia	.06 x Dia	.00029	.00037	.00044	.00059	.00089	.00119	.00178	.00238	1 x Dia	.15 x Dia
		Roughing	.00010	.00021	.00032	23 x Dia	.25 x Dia	.00037	.00046	.00055	.00074	.00111	.00149	.00223	.00297	45 x Dia	.25 x Dia
High Coppers - 90%+ (C1xxx)	500	Slotting	.00008	.00017	.00026	1 x Dia	.06 x Dia	.00029	.00037	.00044	.00059	.00089	.00119	.00178	.00238	1 x Dia	.15 x Dia
		Roughing	.00010	.00021	.00032	23 x Dia	.25 x Dia	.00037	.00046	.00055	.00074	.00111	.00149	.00223	.00297	45 x Dia	.25 x Dia
Brass (Copper Zinc alloys, C2xxx, C3xxx, C4xxx, C66400-C69800)	225	Slotting	.00008	.00017	.00026	1 x Dia	.06 x Dia	.00029	.00037	.00044	.00059	.00089	.00119	.00178	.00238	1 x Dia	.15 x Dia
		Roughing	.00010	.00021	.00032	23 x Dia	.25 x Dia	.00037	.00046	.00055	.00074	.00111	.00149	.00223	.00297	45 x Dia	.25 x Dia
Phosphor Bronzes (Copper Tin alloys, C5xxx)	500	Slotting	.00008	.00017	.00026	1 x Dia	.06 x Dia	.00029	.00037	.00044	.00059	.00089	.00119	.00178	.00238	1 x Dia	.15 x Dia
		Roughing	.00010	.00021	.00032	23 x Dia	.25 x Dia	.00037	.00046	.00055	.00074	.00111	.00149	.00223	.00297	45 x Dia	.25 x Dia
Aluminum Bronzes (Copper Aluminum alloys, C60600-C64200)	500	Slotting	.00008	.00017	.00026	1 x Dia	.06 x Dia	.00029	.00037	.00044	.00059	.00089	.00119	.00178	.00238	1 x Dia	.15 x Dia
		Roughing	.00010	.00021	.00032	23 x Dia	.25 x Dia	.00037	.00046	.00055	.00074	.00111	.00149	.00223	.00297	45 x Dia	.25 x Dia
Silicon Bronzes (Copper Silicon alloys, C64700-C66100)	500	Slotting	.00008	.00017	.00026	1 x Dia	.06 x Dia	.00029	.00037	.00044	.00059	.00089	.00119	.00178	.00238	1 x Dia	.15 x Dia
		Roughing	.00010	.00021	.00032	23 x Dia	.25 x Dia	.00037	.00046	.00055	.00074	.00111	.00149	.00223	.00297	45 x Dia	.25 x Dia
Copper Nicksels, Nickel Silvers (Copper Nickel alloys, C7xxx)	225	Slotting	.00008	.00017	.00026	1 x Dia	.06 x Dia	.00029	.00037	.00044	.00059	.00089	.00119	.00178	.00238	1 x Dia	.15 x Dia
		Roughing	.00010	.00021	.00032	23 x Dia	.25 x Dia	.00037	.00046	.00055	.00074	.00111	.00149	.00223	.00297	45 x Dia	.25 x Dia
Cast Copper Alloys (C83300-C86200, C86400-C87900, C92200-C95800, C97300-C97800, C99400-C99700)	550	Slotting	.00008	.00017	.00026	1 x Dia	.06 x Dia	.00029	.00037	.00044	.00059	.00089	.00119	.00178	.00238	1 x Dia	.15 x Dia
		Roughing	.00010	.00021	.00032	23 x Dia	.25 x Dia	.00037	.00046	.00055	.00074	.00111	.00149	.00223	.00297	45 x Dia	.25 x Dia

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	SFM	Hardness: 29-37 Rc (279-344 HBn)															
		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	600	Slotting	.00004	.00007	.00011	1 x Dia	.06 x Dia	.00013	.00016	.00019	.00026	.00038	.00051	.00077	.00102	1 x Dia	.15 x Dia
		Roughing	.00004	.00008	.00012	23 x Dia	.25 x Dia	.00014	.00018	.00021	.00029	.00043	.00057	.00086	.00115	45 x Dia	.25 x Dia
		Finishing	.00008	.00016	.00024	.05 x Dia	1.5 x Dia	.00027	.00034	.00041	.00055	.00082	.00110	.00165	.00220	10 x Dia	1.5 x Dia
1030 - 1095, 1140 - 1151, 13xx, 15xx, 2xxx, 3xxx, 4xxx & 4Lxx, 5xxx & 5Lxx, 50xxx & 50Lxx, 51xxx & 51Lxx, 52xxx & 52Lxx, 6xxx, 8xx, 9xxx	200	Slotting	.00003	.00007	.00010	1 x Dia	.06 x Dia	.00012	.00015	.00017	.00023	.00035	.00047	.00070	.00093	1 x Dia	.15 x Dia
		Roughing	.00004	.00007	.00011	23 x Dia	.25 x Dia	.00013	.00016	.00020	.00026	.00039	.00052	.00079	.00105	45 x Dia	.25 x Dia
		Finishing	.00007	.00014	.00022	.05 x Dia	1.5 x Dia	.00025	.00031	.00037	.00050	.00075	.00101	.00151	.00201	10 x Dia	1.5 x Dia
STAINLESS STEELS	450	Slotting	.00004	.00007	.00011	1 x Dia	.06 x Dia	.00013	.00016	.00019	.00026	.00038	.00051	.00077	.00102	1 x Dia	.15 x Dia
		Roughing	.00004	.00008	.00012	23 x Dia	.25 x Dia	.00014	.00018	.00021	.00029	.00043	.00057	.00086	.00115	45 x Dia	.25 x Dia
		Finishing	.00008	.00016	.00024	.05 x Dia	1.5 x Dia	.00027	.00034	.00041	.00055	.00082	.00110	.00165	.00220	10 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	.00007	.00010	1 x Dia	.06 x Dia	.00012	.00015	.00017	.00023	.00035	.00047	.00070	.00093	1 x Dia	.15 x Dia
		Roughing	.00004	.00007	.00011	23 x Dia	.25 x Dia	.00013	.00016	.00020	.00026	.00039	.00052	.00079	.00105	45 x Dia	.25 x Dia
		Finishing	.00007	.00014	.00022	.05 x Dia	1.5 x Dia	.00025	.00031	.00037	.00050	.00075	.00101	.00151	.00201	10 x Dia	1.5 x Dia
414, 431, 440A, 440B, 440C, 13-8, 15-5, 15-7, 17-4, 17-7	150	Slotting	.00002	.00004	.00006	1 x Dia	.06 x Dia	.00007	.00009	.00011	.00015	.00022	.00029	.00044	.00058	1 x Dia	.15 x Dia
		Roughing	.00002	.00005	.00007	23 x Dia	.25 x Dia	.00008	.00010	.00012	.00016	.00025	.00033	.00049	.00066	45 x Dia	.25 x Dia
		Finishing	.00004	.00009	.00014	.05 x Dia	1.5 x Dia	.00016	.00020	.00023	.00031	.00047	.00063	.00094	.00126	10 x Dia	1.5 x Dia
TOOL STEELS	200	Slotting	.00003	.00007	.00010	1 x Dia	.06 x Dia	.00012	.00015	.00017	.00023	.00035	.00047	.00070	.00093	1 x Dia	.15 x Dia
		Roughing	.00004	.00007	.00011	23 x Dia	.25 x Dia	.00013	.00016	.00020	.00026	.00039	.00052	.00079	.00105	45 x Dia	.25 x Dia
		Finishing	.00007	.00014	.00022	.05 x Dia	1.5 x Dia	.00025	.00031	.00037	.00050	.00075	.00101	.00151	.00201	10 x Dia	1.5 x Dia
A, L, O, P, W series	150	Slotting	.00002	.00004	.00006	1 x Dia	.06 x Dia	.00007	.00009	.00011	.00015	.00022	.00029	.00044	.00058	1 x Dia	.15 x Dia
		Roughing	.00002	.00005	.00007	23 x Dia	.25 x Dia	.00008	.00010	.00012	.00016	.00025	.00033	.00049	.00066	45 x Dia	.25 x Dia
		Finishing	.00004	.00009	.00014	.05 x Dia	1.5 x Dia	.00016	.00020	.00023	.00031	.00047	.00063	.00094	.00126	10 x Dia	1.5 x Dia
D, H, M, T, S series	150	Slotting	.00002	.00004	.00006	1 x Dia	.06 x Dia	.0000									