HARVEY TOOL

Speeds & Feeds

Product Table: Miniature End Mills - Square - Long Flute
Characteristics: 12x Length of Cut, 4 Flutes
Items: 35010, 35012, 35016, 8180, 8181

MATERIAL	SFM	Chip Load (IPT) by Dia 0.015	0.031	0.047	Depth of Cut Radial	Axial	Chip Load (IPT) by Cutter Dia 0.062	0.078	0.093	0.125	0.187	0.250	Depth of Cut Radial	Axial
Hardness: ≤ 28 Rc (≤ 271 HBn)														
ALUMINUM ALLOYS														
Casting (2xx, 5xx, 7xx, 8xx)	750	Finishing	.00004	.00007	.00011	.03 x Dia	12 x Dia	.00013	.00016	.00019	.00026	.00039	.00052	.06 x Dia	12 x Dia
Wrought (1xxx, 2xxx, 3xxx, 5xxx, 6xxx, 7xxx, 8xxx)	1000													
Casting - 3%-5% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	750	Finishing	.00003	.00007	.00010	.03 x Dia	12 x Dia	.00012	.00015	.00017	.00023	.00035	.00047	.06 x Dia	12 x Dia
Casting - 5%-8% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	700													
Casting - 8%-12% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	650													
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	.00004	.00007	.00011	.03 x Dia	12 x Dia	.00013	.00016	.00019	.00026	.00039	.00052	.06 x Dia	12 x Dia
ZINC ALLOYS	800													
COPPER ALLOYS														
High Coppers - 90%+ (C1xxxx)	225	Finishing	.00003	.00006	.00009	.03 x Dia	12 x Dia	.00010	.00013	.00016	.00021	.00031	.00042	.06 x Dia	12 x Dia
Brass (Copper Zinc alloys, C2xxxx, C3xxxx, C4xxxx, C66400-C69800)	500													
Phosphor Bronzes (Copper Tin alloys, C5xxxx)	225													
Aluminum Bronzes (Copper Aluminum alloys, C60600-C64200)	500													
Silicon Bronzes (Copper Silicon alloys, C64700-C66100)	500													
Copper Nickels, Nickel Silvers (Copper Nickel alloys, C7xxxx)	225													
Cast Copper Alloys (C83300-C86200, C86400-C87900, C92200-C95800, C97300-C97800, C99400-C99700)	550													

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	Chip Load (IPT) by Dia 0.015	0.031	0.047	Depth of Cut Radial	Axial	Chip Load (IPT) by Cutter Dia 0.062	0.078	0.093	0.125	0.187	0.250	Depth of Cut Radial	Axial
Hardness: 29-37 Rc (279-344 HBn)														
CARBON STEELS														
Free-Machining/Low Carbon steels, 10xx - 1029 & all 10Lxx, 11xx - 1139 & all 11Lxx, 12xx - 1215 & all 12Lxx	600	Finishing	.00001	.00002	.00004	.03 x Dia	12 x Dia	.00004	.00005	.00006	.00008	.00012	.00016	.06 x Dia	12 x Dia
1030 - 1095, 1140 - 1151, 13xx, 15xx, 2xxx, 3xxx, 4xxx & 4xLxx, 5xxx & 5xLxx, 50xxx & 50Lxxx, 51xxx & 51Lxxx, 52xxx & 52Lxxx, 6xxx, 8xxx, 9xxx	200	Finishing	.00001	.00002	.00003	.03 x Dia	12 x Dia	.00004	.00005	.00006	.00007	.00011	.00015	.06 x Dia	12 x Dia
STAINLESS STEELS														
203 EZ, 303 (all types), 416, 416Se, 416 Plus X, 420F, 420FSe, 430F, 430FSe, 440F, 440FSe	450	Finishing	.00001	.00002	.00004	.03 x Dia	12 x Dia	.00004	.00005	.00006	.00008	.00012	.00016	.06 x Dia	12 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	Finishing	.00001	.00002	.00003	.03 x Dia	12 x Dia	.00004	.00005	.00006	.00007	.00011	.00015	.06 x Dia	12 x Dia
414, 431, 440A, 440B, 440C, 13-8, 15-5, 15-7, 17-4, 17-7	150	Finishing	.00001	.00001	.00002	.03 x Dia	12 x Dia	.00002	.00003	.00003	.00005	.00007	.00009	.06 x Dia	12 x Dia
TOOL STEELS														
A, L, O, P, W series	200	Finishing	.00001	.00002	.00003	.03 x Dia	12 x Dia	.00004	.00005	.00006	.00007	.00011	.00015	.06 x Dia	12 x Dia
D, H, M, T, S series	150	Finishing	.00001	.00001	.00002	.03 x Dia	12 x Dia	.00002	.00003	.00003	.00005	.00007	.00009	.06 x Dia	12 x Dia
TITANIUM ALLOYS	150	Finishing	.00001	.00001	.00002	.03 x Dia	12 x Dia	.00002	.00003	.00003	.00005	.00007	.00009	.06 x Dia	12 x Dia
HIGH TEMP ALLOYS														
Inconel, Hastelloy, Waspalloy, Monel, Nimonic, Haynes, Discoloy, Incoloy	70	Finishing	.00001	.00001	.00002	.03 x Dia	12 x Dia	.00002	.00003	.00003	.00005	.00007	.00009	.06 x Dia	12 x Dia

SFM	Chip Load (IPT) by Dia 0.015	0.031	0.047	Depth of Cut Radial	Axial	Chip Load (IPT) by Cutter Dia 0.062	0.078	0.093	0.125	0.187	0.250	Depth of Cut Radial	Axial
Hardness: 38-45 Rc (353-421 HBn)													
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-
100	Finishing	.00001	.00001	.00002	.03 x Dia	12 x Dia	.00002	.00002	.00003	.00004	.00006	.00008	.06 x Dia	12 x Dia
90	Finishing	.00000	.00001	.00001	.03 x Dia	12 x Dia	.00001	.00001	.00002	.00002	.00004	.00005	.06 x Dia	12 x Dia
100	Finishing	.00001	.00001	.00002	.03 x Dia	12 x Dia	.00002	.00002	.00003	.00004	.00006	.00008	.06 x Dia	12 x Dia
90	Finishing	.00000	.00001	.00001	.03 x Dia	12 x Dia	.00001	.00001	.00002	.00002	.00004	.00005	.06 x Dia	12 x Dia
75	Finishing	.00000	.00001	.00001	.03 x Dia	12 x Dia	.00001	.00001	.00002	.00002	.00004	.00005	.06 x Dia	12 x Dia
50	Finishing	.00000	.00001	.00001	.03 x Dia	12 x Dia	.00001	.00001	.00002	.00002	.00004	.00005	.06 x Dia	12 x Dia