

| MATERIAL   | Hardness: ≤ 28 Rc (≤ 271 HBn) |                                    |        |        |        |        |        |        |        |        |        |        |        |        | Depth of Cut |            |  |
|--|-------------------------------|------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------------|------------|--|
|  | SFM                           | Chip Load (IPT) By Cutter Diameter |        |        |        |        |        |        |        |        |        |        |        | Radial | Axial        |            |  |
|  |                               | 0.062                              | 0.078  | 0.093  | 0.125  | 0.187  | 0.250  | 0.312  | 0.375  | 0.438  | 0.500  | 0.625  | 0.750  |        |              | 1.000      |  |
| <b>ALUMINUM ALLOYS</b>   |                               |                                    |        |        |        |        |        |        |        |        |        |        |        |        |              |            |  |
| Casting (2xx, 5xx, 7xx, 8xx)   | 750                           | .00038                             | .00047 | .00056 | .00076 | .00113 | .00151 | .00189 | .00227 | .00265 | .00303 | .00378 | .00454 | .00605 | .12 x Dia    | Full Width |  |
| Wrought (1xxx, 2xxx, 3xxx, 5xxx, 6xxx, 7xxx, 8xxx)   | 1000                          |                                    |        |        |        |        |        |        |        |        |        |        |        |        |              |            |  |
| Casting - 3%-5% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)  | 750                           |                                    |        |        |        |        |        |        |        |        |        |        |        |        |              |            |  |
| Casting - 5%-8% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)  | 700                           |                                    |        |        |        |        |        |        |        |        |        |        |        |        |              |            |  |
| Casting - 8%-12% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)   | 650                           | .00034                             | .00042 | .00051 | .00068 | .00102 | .00136 | .00170 | .00204 | .00238 | .00272 | .00340 | .00408 | .00545 | .12 x Dia    | Full Width |  |
| Casting - 12%-16% Si (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)  | 475                           |                                    |        |        |        |        |        |        |        |        |        |        |        |        |              |            |  |
| Wrought - 5%-8% Si (4xxx)  | 1000                          |                                    |        |        |        |        |        |        |        |        |        |        |        |        |              |            |  |
| Wrought - 8%-12% Si (4xxx)   | 800                           |                                    |        |        |        |        |        |        |        |        |        |        |        |        |              |            |  |
| <b>MAGNESIUM ALLOYS</b>  | 1500                          | .00038                             | .00047 | .00056 | .00076 | .00113 | .00151 | .00189 | .00227 | .00265 | .00303 | .00378 | .00454 | .00605 | .12 x Dia    | Full Width |  |
| <b>ZINC ALLOYS</b>   | 800                           |                                    |        |        |        |        |        |        |        |        |        |        |        |        |              |            |  |
| <b>COPPER ALLOYS</b>   |                               |                                    |        |        |        |        |        |        |        |        |        |        |        |        |              |            |  |
| High Copper alloys - 90%+ (C1xxx)  | 225                           |                                    |        |        |        |        |        |        |        |        |        |        |        |        |              |            |  |
| Brass (Copper-Zinc alloys, C2xxx, C3xxx, C4xxx, C66400-C69800)                                 | 500                           |                                    |        |        |        |        |        |        |        |        |        |        |        |        |              |            |  |
| Phosphor Bronzes (Copper-Tin alloys, C5xxx)  | 225                           |                                    |        |        |        |        |        |        |        |        |        |        |        |        |              |            |  |
| Aluminum Bronzes (Copper-Aluminum alloys, C65000-C64200)                                       | 500                           | .00030                             | .00038 | .00045 | .00061 | .00091 | .00121 | .00151 | .00182 | .00212 | .00242 | .00303 | .00363 | .00484 | .12 x Dia    | Full Width |  |
| Silicon Bronzes (Copper-Silicon alloys, C64700-C65100)   | 500                           |                                    |        |        |        |        |        |        |        |        |        |        |        |        |              |            |  |
| Copper-Nickels, Nickel-Silvers (Copper-Nickel alloys, C7xxx)                                   | 225                           |                                    |        |        |        |        |        |        |        |        |        |        |        |        |              |            |  |
| Cast Copper Alloys (C83300-C86200, C86400-C87900, C92200-C95800, C97300-C97800, C99400-C99700) | 550                           |                                    |        |        |        |        |        |        |        |        |        |        |        |        |              |            |  |



Speeds & Feeds

**Product Table:** Keyseat Cutters - Staggered Tooth - Corner Radius  
**Characteristics:** 6 Flutes  
**Series:** 436xx, 438xx, 444xx, 445xx, 9435xx, 9517xx

**Product notes:**

Chip Loads (IPT) within table pertain to applications where the cutter is engaged on one side only and the cutter width is less than .5x diameter.  
If the cutter is engaged on both sides, reduce chiploads to 50-60% of posted values.  
If the cutter width > .5x diameter, reduce radial step over to 80% of posted values.

**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 up to 15% 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: 29-37 Rc (279-344 HBn) |                                    |        |        |        |        |        |        |        |        |        |        |        |        | Depth of Cut |            |
|---|----------------------------------|------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------------|------------|
|   | SFM                              | Chip Load (IPT) By Cutter Diameter |        |        |        |        |        |        |        |        |        |        |        | Radial | Axial        |            |
|   |                                  | 0.062                              | 0.078  | 0.093  | 0.125  | 0.187  | 0.250  | 0.312  | 0.375  | 0.438  | 0.500  | 0.625  | 0.750  |        |              | 1.000      |
| <b>CARBON STEELS</b>  |                                  |                                    |        |        |        |        |        |        |        |        |        |        |        |        |              |            |
| Free-Machining/Low Carbon steels, 10xx - 1029 & all 10Lxx, 11xx - 1139 & all 11Lxx, 12xx - 1215 & all 12Lxx   | 600                              | .00014                             | .00017 | .00021 | .00028 | .00041 | .00055 | .00069 | .00083 | .00097 | .00110 | .00138 | .00166 | .00221 | .08 x Dia    | Full Width |
| 1030 - 1095, 1140 - 1151, 13xx, 15xx, 20xx, 30xx, 40xx & 41Lxx, 50xx & 51Lxx, 50xx & 50Lxx, 51xx & 51Lxx, 52xx & 52Lxx, 60xx, 80xx, 90xx  | 200                              | .00013                             | .00016 | .00019 | .00025 | .00038 | .00050 | .00063 | .00076 | .00088 | .00101 | .00126 | .00151 | .00202 | .08 x Dia    | Full Width |
| <b>STAINLESS STEELS</b>   |                                  |                                    |        |        |        |        |        |        |        |        |        |        |        |        |              |            |
| 203 EZ, 303 (all types), 416, 416Se, 416 Plus X, 420F, 420FSe, 430F, 430FSe, 440F, 440FSe   | 450                              | .00014                             | .00017 | .00021 | .00028 | .00041 | .00055 | .00069 | .00083 | .00097 | .00110 | .00138 | .00166 | .00221 | .08 x Dia    | Full Width |
| 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                              | .00013                             | .00016 | .00019 | .00025 | .00038 | .00050 | .00063 | .00076 | .00088 | .00101 | .00126 | .00151 | .00202 | .08 x Dia    | Full Width |
| 414, 431, 440A, 440B, 440C, 13-8, 15-5, 15-7, 17-4, 17-7  | 150                              | .00008                             | .00010 | .00012 | .00016 | .00024 | .00032 | .00039 | .00047 | .00055 | .00063 | .00079 | .00095 | .00126 | .08 x Dia    | Full Width |
| <b>TOOL STEELS</b>  |                                  |                                    |        |        |        |        |        |        |        |        |        |        |        |        |              |            |
| A, L, O, P, W series  | 200                              | .00013                             | .00016 | .00019 | .00025 | .00038 | .00050 | .00063 | .00076 | .00088 | .00101 | .00126 | .00151 | .00202 | .08 x Dia    | Full Width |
| D, H, M, T, S series  | 150                              | .00008                             | .00010 | .00012 | .00016 | .00024 | .00032 | .00039 | .00047 | .00055 | .00063 | .00079 | .00095 | .00126 | .08 x Dia    | Full Width |
| <b>TITANIUM ALLOYS</b>  | 150                              | .00008                             | .00010 | .00012 | .00016 | .00024 | .00032 | .00039 | .00047 | .00055 | .00063 | .00079 | .00095 | .00126 | .08 x Dia    | Full Width |
| <b>HIGH TEMP ALLOYS</b>   | 70                               | .00008                             | .00010 | .00012 | .00016 | .00024 | .00032 | .00039 | .00047 | .00055 | .00063 | .00079 | .00095 | .00126 | .08 x Dia    | Full Width |
| Inconel, Hastelloy, Waspalloy, Monel, Nimonic, Haynes, Discoloy, Incoloy  |                                  |                                    |        |        |        |        |        |        |        |        |        |        |        |        |              |            |

| MATERIAL | Hardness: 38-45 Rc (353-421 HBn) |                                    |        |        |        |        |        |        |        |        |        |        |        |        | Depth of Cut |            |
|----------|----------------------------------|------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------------|------------|
|          | SFM                              | Chip Load (IPT) By Cutter Diameter |        |        |        |        |        |        |        |        |        |        |        | Radial | Axial        |            |
|          |                                  | 0.062                              | 0.078  | 0.093  | 0.125  | 0.187  | 0.250  | 0.312  | 0.375  | 0.438  | 0.500  | 0.625  | 0.750  |        |              | 1.000      |
|          |                                  |                                    |        |        |        |        |        |        |        |        |        |        |        |        |              |            |
|          |                                  |                                    |        |        |        |        |        |        |        |        |        |        |        |        |              |            |
|          |                                  |                                    |        |        |        |        |        |        |        |        |        |        |        |        |              |            |
|          | 100                              | .00011                             | .00014 | .00017 | .00022 | .00033 | .00045 | .00056 | .00067 | .00078 | .00089 | .00111 | .00134 | .00178 | .06 x Dia    | Full Width |
|          | 90                               | .00007                             | .00009 | .00010 | .00014 | .00021 | .00028 | .00035 | .00042 | .00049 | .00056 | .00070 | .00084 | .00111 | .06 x Dia    | Full Width |
|          | 100                              | .00011                             | .00014 | .00017 | .00022 | .00033 | .00045 | .00056 | .00067 | .00078 | .00089 | .00111 | .00134 | .00178 | .06 x Dia    | Full Width |
|          | 90                               | .00007                             | .00009 | .00010 | .00014 | .00021 | .00028 | .00035 | .00042 | .00049 | .00056 | .00070 | .00084 | .00111 | .06 x Dia    | Full Width |
|          | 75                               | .00007                             | .00009 | .00010 | .00014 | .00021 | .00028 | .00035 | .00042 | .00049 | .00056 | .00070 | .00084 | .00111 | .06 x Dia    | Full Width |
|          | 50                               | .00007                             | .00009 | .00010 | .00014 | .00021 | .00028 | .00035 | .00042 | .00049 | .00056 | .00070 | .00084 | .00111 | .06 x Dia    | Full Width |