



**Speeds & Feeds**

**Product Table:** End Mills for Wood - Square Downcut

**Characteristics:** 3x Length of Cut

**Series:** 8091xx, 8092xx

| Material  | Janka Hardness | SFM        | Chip Load (IPT) By Cutter Diameter |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Depth of Cut |          |         |
|---|----------------|------------|------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------------|----------|---------|
|   |                |            | .015                               | .031  | .047  | .062  | .078  | .093  | .125  | .187  | .250  | .312  | .375  | .500  | .625  | .750  | 1.000 | Radial       | Axial    |         |
| <b>Softer Woods</b><br>White Pine, Sugar Pine, Western Red Cedar, Douglas Fir, Redwood      | < 1200         | 400 - 2000 | Slot - Rough                       | .0007 | .0015 | .0022 | .0029 | .0037 | .0044 | .0059 | .0088 | .0118 | .0112 | .0135 | .0180 | .0225 | .0270 | .0360        | 1 x Dia  | 1 x Dia |
|   |                | 800 - 2400 | Finishing                          | .0005 | .0010 | .0015 | .0020 | .0025 | .0030 | .0040 | .0060 | .0080 | .0084 | .0101 | .0135 | .0169 | .0203 | .0270        | .1 x Dia | 3 x Dia |
| <b>Harder Woods</b><br>Red Oak, Maple, Ash, Hickory, Black Walnut, Cherry, Beech            | > 1200         | 400 - 2000 | Slot - Rough                       | .0006 | .0013 | .0020 | .0026 | .0033 | .0039 | .0053 | .0079 | .0106 | .0101 | .0122 | .0162 | .0203 | .0243 | .0324        | 1 x Dia  | 1 x Dia |
|   |                | 800 - 2400 | Finishing                          | .0004 | .0009 | .0014 | .0018 | .0022 | .0027 | .0036 | .0054 | .0072 | .0076 | .0091 | .0122 | .0152 | .0182 | .0243        | .1 x Dia | 3 x Dia |
| <b>Engineered Woods</b><br>Medium Density Fiberboard (MDF), Particle Board, Laminated Board | Varies         | 400 - 2000 | Slot - Rough                       | .0008 | .0016 | .0024 | .0032 | .0040 | .0048 | .0065 | .0097 | .0129 | .0124 | .0149 | .0198 | .0248 | .0297 | .0396        | 1 x Dia  | 1 x Dia |
|   |                | 800 - 2400 | Finishing                          | .0005 | .0011 | .0017 | .0022 | .0027 | .0033 | .0044 | .0066 | .0088 | .0093 | .0111 | .0149 | .0186 | .0223 | .0297        | .1 x Dia | 3 x Dia |
| Phenolic Wood, Paperstone®  | Varies         | 400 - 1200 | Slot - Rough                       | .0003 | .0006 | .0009 | .0012 | .0015 | .0017 | .0024 | .0035 | .0047 | .0045 | .0054 | .0072 | .0090 | .0108 | .0144        | 1 x Dia  | 1 x Dia |
|   |                | 800 - 1600 | Finishing                          | .0002 | .0004 | .0006 | .0008 | .0010 | .0012 | .0016 | .0024 | .0032 | .0034 | .0041 | .0054 | .0068 | .0081 | .0108        | .1 x Dia | 3 x Dia |

**Product Notes:**

- Softer wood and harder wood do not mean "softwood and hardwood" as some softwood is harder and some hardwood
- Starting RPM should be between 10,000 and 20,000 RPM, the ideal cutting condition will depend on the wood and moisture content
- Increase IPT proportionally at RPMs higher than 20,000, decrease IPT proportionally for RPMs less than 10,000
- Harder engineered woods such as Phenolic Wood should be machined closer to 10,000 RPM
- When machining high density areas or "knots" speeds & feeds should be reduced

**Moisture Content:**

- Ideal moisture content for machining = 6% - 8%
- For higher moisture content woods, decrease SFM proportionally to moisture content percentage to prevent excessive heat in cut

**Engineered Woods:**

- MDF and other engineered woods are considered more abrasive than hardwoods and softwoods because of the adhesive which holds them together

**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, remain unchanged or even decreased if coated.

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.