

Technical Tip #124 – **45-Degree vs 90-Degree Face Mills**

Advantages and Disadvantages of Using a 45-degree Face Mill vs. a 90-degree Face Mill

To achieve greater productivity and problem-free milling, use a lead angle cutter whenever possible. Chip thickness is affected by the lead angle. The greater the lead angle, the greater the chip-thinning effect.

Example:

<u>Lead Angle</u> <u>Thickness</u>	<u>Feed per Tooth</u>	<u>Actual Chip</u>
0	A	A
45	A	.707 x A
0	.010"	.010"
45	.010"	.707 x .010" = .0071"

Advantages

- Well-balanced axial and radial cutting forces.
- Less breakout on workpiece corner.
- Entry shock is minimized.
- Less radial forces directed into the spindle bearings.
- Higher feed rates possible.
- Reduces chatter.

Disadvantages

- Reduced maximum depth of cut due to lead angle.
- Larger body diameter can cause fixture clearance problems.
- No 90-degree corner milling.
- Can cause chipping or burring on exit side of cutter rotation.