

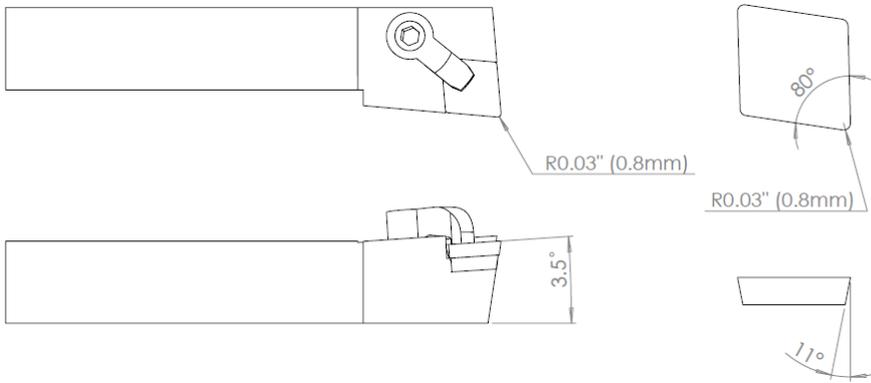
Innovative Tooling Materials for Thermoforming

HYTAC materials are generally easy to work with. Following the guidelines listed below will improve surface quality of the finished plug and ensure consistency in plug performance.

Cutter type and geometry is critical to producing a smooth, consistent surface when turning any syntactic foam.

Cutter Type and Geometry

- Positive edge geometry.
- Carbide non-coated insert.
- Sharp cutters are required. Dull cutters will result in poor surface quality. Use of separate cutter for finishing is recommended.
- Positive rake geometry.



Recommended Tooling

Holder: Catalog #CCLPR124B or #CCLPL124B

Insert: Catalog #CPG422 Grade K313

Machine settings

Cutting Speeds (SFM): 400-1500 ft/min (122 - 457 m/min)

For RPM, use the following formula:

Imperial $RPM = (3.82 \times SFM) / \text{diameter}$

Metric $RPM = (1000 \times SFM) / (3.12 \times \text{diameter})$

Cutting speed is in feet/min or m/min

Diameter is inches or millimeters

Roughing:

- Feed Rate*: 0.007 – 0.014 in/rev (0.18 – 0.36 mm/rev)

- Radial Depth of Cut: 0.070 – 0.100" (1.8 – 2.5 mm)

Finishing:

- Feed Rate*: 0.0025 – 0.007 in/rev (0.06 – 0.18 mm/rev)

- Radial Depth of Cut: 0.030 – 0.050" (0.8 – 1.3mm)

**Experiment with settings above to achieve best surface finish based on your plug design and HYTAC material selection.*

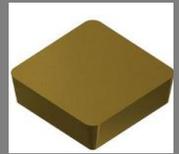
KEY SUCCESS FACTORS

Do not use liquid cooling!
Use none, or air coolant.

If chatter or pick-out of material is observed, try reducing RPM.

Too low a feed rate will lead to premature wear of tool and poor surface finish.

Solid cutters are preferred to screw on cutters due to the larger radius required for cutting HYTAC.



Safety:

For HYTAC-W, WF or WFT:
Enclose chip space, dust extraction, safety goggles, dust mask, protective gloves

For HYTAC-XTL, B1X, FLX, FLXT or C1R: Safety Goggles