Freeform Injection Molding Wilson/DeMarini Baseball Bat

Wilson DEMARINI

Baseball Bat

THE CHALLENGE

Slow production development of mold tool.

THE SOLUTION

Increased product development by 88% with 3D printed tooling.

The part is a handle in a baseball bat. The material is a Wilson/DeMarini proprietary composite.

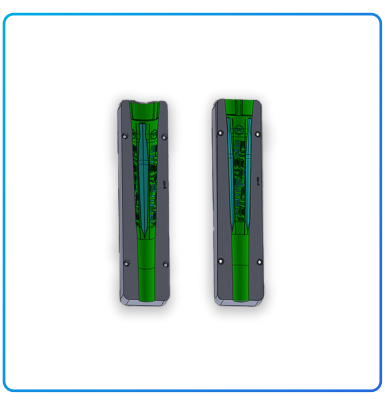
Part design

Part Design

The handle was designed specifically for a Wilson Sporting Goods/DeMarini baseball bat. The challenges often surround the combination of strength, light-weighting and customized design.

30 minutes

Mold Design



After the design is completed, the digital design (STEP file) in converted into a mold design which is done by inverting the part into a cavity, in a block of material, and then adding the inlet gate(s) and initial venting.

The 2-part initial design allows for quick visual Quality Assurance.

60 minutes

Printed Tooling

The molds were printed at a 76.5µm resolution to ensure good mold quality while optimizing the build for fast production.

5 minutes

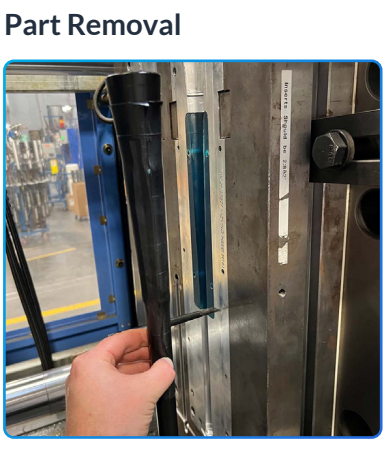
Freeform Injection Molding (FIM)

The parts were molded on a 418-ton injection molding machine at Wilson Sporting Goods. However, the molds work hand-in-hand with any installed base molding unit.

An aluminum mold frame was used to hold the assembled FIM mold, cycle time per part was around 5 minutes, and 1 minute cooling time was needed after each shot.

5 minutes

Part Removal



In this specific case the split mold allowed for manual demolding, meaning no part of the mold to had get dissolved, as the part could be pulled off.

Total time to 1st injection molded part:

100 minutes

Observations

- The mold design is an easy process; similar to building a mold box around the design, and then make it a cavity.
- The Wilson Sporting Goods/DeMarini proprietary composite materials filled the molds nicely in the first test rounds.
- Standard material data was used for molding, settings, pressure, temperatures, and more.
- Early hands-on testing for verification of assembly and performance using first-out-of-tool parts is valuable for most team members.

  This includes materials, design, process, and regulatory compliance.

  Should you need, the Freeform Injection Molding process enables further same day iterations.

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