CASE STUDY

A 2019 Grand Prize Award Winner in the Hand Tools/Recreation category for metal injection molded components

Ski Boot Binding

Process:
Metal Injection Molding

Material:
MIM-6505

End Use and Function
This award-winning component is used for right- and left-handed ski boot bindings. Manufacturing this component is a challenge due to the thick cross section throughout the length containing a varying contour that includes holes at one end. The component is also required to possess corrosion resistance properties because it is constantly exposed to a wet environment (snow).

Fabrication
Previously a casted component that involved multiple secondary operations to achieve dimensionality, the metal injection molding (MIM) process is a superior metal-forming process for manufacturing this product. The parts are made from MIM-6505 that is zinc-blue passivated for corrosion resistance. The tool design includes two slides from each side to make the twin-hole profile and a slide that functions extremely near the gate. Reaming and sizing are used to remove distortions from the sintering operation and to achieve the tight tolerance on the holes (4.1 +0.05 mm [0.16 + 0.002 inch] and 5.05 +0.05 mm [0.20 + 0.002 inch]).

Results
Produced at a high volume (100k annually), this component is produced with reliable part-to-part uniformity and consistency. Using MIM resulted in little to no waste vs. casting and machining, and MIM is also significantly more cost effective than casting.