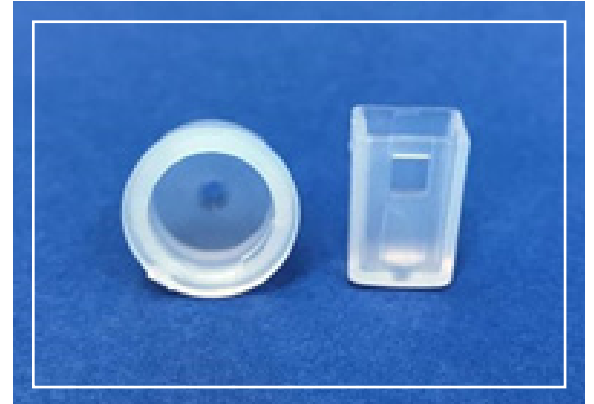




High Volume Production of Consumable Parts

Stratasys, located in Eden Prairie, Minnesota is a worldwide leader in the development of 3D printers for rapid prototyping and 3D production systems for direct digital manufacturing. The innovative equipment that Stratasys manufactures allows engineers and technologists to develop new products and concepts in a fraction of the time previously experienced. And Stratasys' 3D production systems are providing manufacturers with solutions when it comes to producing tools, jigs, fixtures and even production parts. One of the critical components of a plastic 3D printer is the extrusion tip. This is the critical component that directs the molten plastic to the part as it is being constructed during the printing process. To protect this somewhat fragile component a Tip Shield is installed over it. The Tip Shield must be constructed of a material that is heat resistant and has release properties that allow plastics to cleanly break away from its surface. Engineers at Stratasys initially selected PTFE as the Tip Shield material. However since PTFE could not be molded into the exact shape that was required, the parts were produced by CNC machining operations. Since Tip Shields are regularly replaced due to wear and damage, a more cost effective solution was eventually sought. Engineers at Stratasys contacted Savillex in the hope of finding an injection molded solution.



Engineers at Savillex reviewed the requirements of the Tip Shields with Stratasys and reached the conclusion that a molded PFA part might be a viable option. Subsequent testing by Stratasys confirmed that PFA in fact would be a suitable material for the application. The current design however was not suitable for a PFA injection molded part. Wall sections had to be thickened and fillets added. Savillex engineers worked with Stratasys to optimize the design for PFA molding. Once the design was finalized several processing scenarios were analyzed to meet the targeted costs. It was determined by tool designers at Savillex that a stand-alone, four-cavity tool would be required.

Another consideration in the tool design was that one of the part features critical to function had a very tight tolerance of +/- .001 inches. Due to the very high shrink factor with PFA, molding tolerances such as this are not easily predictable. That aspect of the tool was kept 'tool safe' until molded parts could be analyzed. The tool was then adjusted and the molding process locked down. The result of the entire process was that Savillex used its expertise in PFA molding to provide Stratasys with a high volume of fully functional Tip Shields that met their cost reduction targets.