

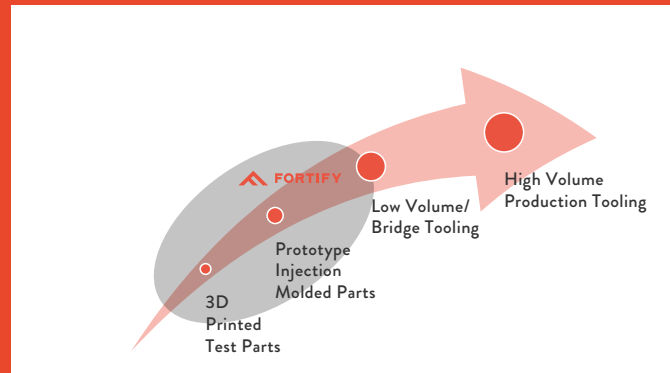
3D PRINTED INJECTION MOLD TOOLS

PUSHING THE BOUNDARIES OF 3D PRINTED TOOLS

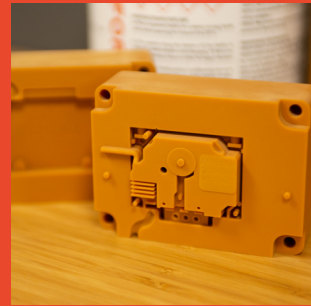
Machined aluminum or steel mold tools are required for volume production jobs but are costly and slow to produce. 3D printed tools have been promoted to address this problem for years but historically they have not been robust enough to perform on most customer applications.

FORTIFY DIGITAL TOOLING

Introducing Fortify Digital Tooling, a 3D print material system you can rely on to reach your prototyping and low volume goals. This solution for low volume injection mold tooling is available for trials now from Fortify. The material system is based on Loctite resin reinforced through Fortify's proprietary DCM (Digital Composite Manufacturing) process.



Fortify's 3D printed tools are an ideal fit for low quantity prototype molds.



A 3D printed tool printed Fortify's FLUX ONE printer, can include complex features such as fins, ribs, textures, and more.

MOLDED MATERIALS

Key material properties of Fortify's digital tooling are **2-3X Higher** than prior generation of materials, allowing Fortify's tools to perform in a variety of conditions.

Fortify is expanding the limits of what materials can be molded on 3D printed tools. From commodity resins, to engineering grade plastics, Fortify's tools are built to withstand some of the most challenging materials when best practices are followed.

	MATERIAL	NUMBER OF SHOTS
EASY MATERIALS	Polypropylene TPU TPR PVC Acetal ABS	100 - 1,000+ shots
MORE CHALLENGING MATERIALS	Nylons PC/ABS Polycarbonate	50 - 100+ shots
MOST CHALLENGING MATERIALS	GF Nylons PBT Ultem	20 - 50 + shots

SAMPLE APPLICATIONS

Benchmark testing shows Fortify 3D tools have **10-100x** improvement in tool life over other 3D printed mold tools. This means more shots in higher performance materials, and more complex geometries. Surface finish, detail resolution and accuracy are all improved.

Other benefits include:

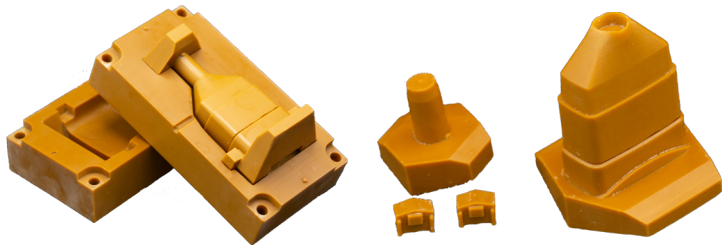
- 3D printed mold inserts can be ready for molding in less than 2 days
- Iterate quickly with your actual end-use materials
- Print complex patterns directly at no extra cost (no need for EDM)
- Side pulls, ejector pins, and even undercuts can be implemented

3D printed mold tools performance of different 3D printing technology

All 3D printers printed an identical tool geometry and molded parts with polypropylene

	FORTIFY	SLA 1	Material Jetting	SLA 2
Feature Failures	0	14	16	4
Shots to First Failure	50*	0	2	37
Tolerances (thou)	5	15	10	6
Cycle Time (s)	160	200	300	240
Mass Variability (g)	0.16	0.22	0.38	0.33

*Tool ran for 50 shots with no feature failures



Fortify's 3D printed tools can be designed with side pulls, ejector pins, undercuts, slides.

Fortify Digital Tooling
Resin Powered by



ONBOARDING PROGRAM

Join Fortify for a 2-day intensive hands on session at Fortify's Injection Molding lab in our Boston headquarters. Fortify applications engineers will walk you through the design, print, and molding process for your selected part design. This program is structured to transfer Fortify knowledge and help your team understand all the factors that drive success with 3D printed mold tooling.

