

# "Once we got our hands on a NinjaFlex® sample we were blown away"

Harris Kenny, Communications Manager  
Aleph Objects, Inc., Loveland, CO

Aleph Objects, the makers of LulzBot™ 3D printers received their first NinjaFlex samples in Fall 2013. "We wanted to work with flexible filament materials so we looked around to see what was available," remarks Harris Kenny, communications manager for Aleph Objects. "Once we got our hands on a NinjaFlex sample we were blown away, it was unlike anything else we had tested at that time."



Flexystruder Tool Head

The customary LulzBot test print is an octopus because of its effectiveness to test printer calibration; however LulzBot engineers quickly found the extreme flexibility of NinjaFlex made it challenging to extrude through typical extrusion methods. Thus, LulzBot subsequently developed and introduced the Flexystruder, which is optimized to print with flexible filaments.



With a new LulzBot TAZ 3D printer, featuring the Flexystruder, Aleph Objects engineers sought to find out if NinjaFlex would maintain the same dynamic strength and flexibility it has on the spool, after it has gone through the 3D printing process. Using FreeCAD and Slic3r, they created a two-layer thick sheet, approximately five inches by five inches, taking a little over an hour to print. The two-layer sheet used approximately two percent of the standard .75 kg [3mm diameter] NinjaFlex spool, translating to a test cost of around \$1.20. The test print was successful, demonstrating both NinjaFlex strength and flexibility. In fact, it's featured in a video found at [this link](#).

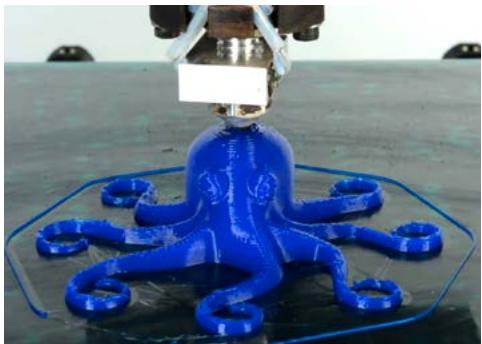
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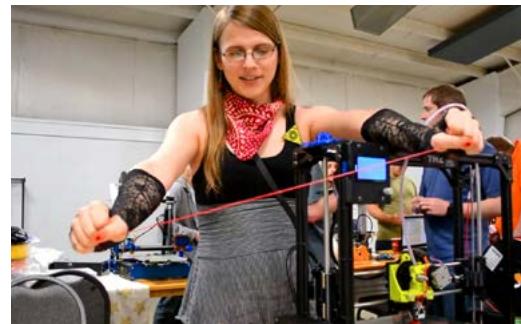
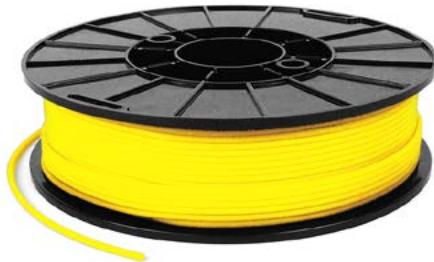


"We see this as a real success story for the value of open source hardware development," Kenny notes. "We know that in order for exciting new materials like NinjaFlex to get to market, filament developers have to know exactly how the 3D printers themselves work, from the firmware down to the bill of materials. This way modifications and tweaks can be made as needed, and new materials can get to market quickly."

Beyond flexibility and strength, LulzBot users have found NinjaFlex has a wide variety of applications. "We have seen LulzBot users print with NinjaFlex to prototype shoes, air filters, pipe fittings, tires, treads, and finger pads for prosthetic hands, to name a few," notes Kenny. "We also found it can be used to grip to glass for window and mirror decals."

Aleph Objects experts see long-term value for NinjaFlex in its ability to bond with ABS plastic (a more traditional 3D printing filament material). They believe fused parts with multiple materials open a whole new world of possibilities for 3D printing well beyond current applications.

Aleph Objects user support staff strongly recommend printing with the LulzBot Flexystruder printer tool head when using NinjaFlex filament. The company also recommends visiting their site to get started quickly with some default Slic3r configurations.



**NinjaFlex**   
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To learn more about NinjaFlex 3D printer filament,  
available in nine colors, visit [www.fennerdrives.com/3D](http://www.fennerdrives.com/3D)

To become an authorized NinjaFlex distributor, write to [ninjaflexdistributors@fennerdrives.com](mailto:ninjaflexdistributors@fennerdrives.com)

To speak with a NinjaFlex Customer Care rep, please call  
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