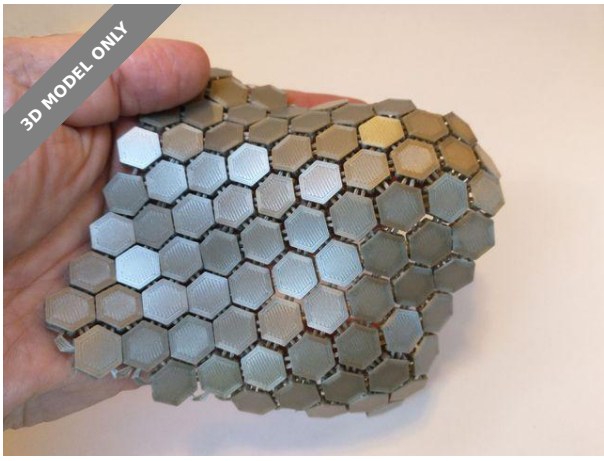


Fast Print HexMaille Fabric

LoboCNC

VIEW IN BROWSER

updated 6. 8. 2022 | published 6. 8. 2022

Summary

Fast, thin, supple, and sturdy.

Art & Design > Other Art & Designs

Tags: chainmail chainmaille

Inspired by TurboDork's NASA Fabric, I redesigned it to be thinner, less finicky, and much faster to print. Each tile is about 12mm across the flats, and only 3mm thick. The design has no long, thin vertical sections, making it much sturdier that a lot of other maille designs.

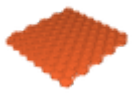
Most 3D printed maille fabrics use identical interlocking pieces. This design, however, uses hexagonal tiles and separate interlocking rings. The rings are printed right on top of the tiles (kind of like removable supports). They have minimal contact with the tiles below, so they are very easy to break free. I've included an 8x10 grid of tiles as well as a single tile and ring for inspection.

Update: The original version prints with the tile surface against the bed, which gives a nicer, more uniform finish. I've also added a version where the tile prints as the top surface. The main advantage is that rings free up much more easily (just wiggle the fabric) due to the reduced contact area with the surface below.

Printing
The layer height needs to be exactly 0.2mm for the clearances to work out correctly. If using PrusaSlicer, you should set the line width for perimeters to 0.45mm for most efficient printing. I used PLA with the 0.2mm layer thickness “speed” profile, but I was able to bump up the all the perimeter speeds 60mm/s. With those settings, the 8x10 grid printed in 2h 22m.

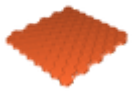
Post Printing
The process of loosening up the fabric is very tactilly satisfying, kind of like popping bubble wrap. To break everything free, you just pinch adjacent tiles with each hand and give them a little wiggle relative to each other. You'll hear little snapping noises as the rings break free. Looking at the back side of the fabric as you do this is a big help. But like popping the last bubble in your bubble wrap, finding each and every connection to break is a little challenging.

Model files



hexmail-bottomsurface-8x10.stl

hexmail-1x.stl



hexmail-topsurface-8x10.stl

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