3D Print Link's Hylian Shield

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https://learn.adafruit.com/3d-print-links-hylian-shield

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Overview

In this project, we're 3D printing Link's Hylian Shield from The Legend of Zelda. This is over 450mm long and prints in just 2 parts. Now you can build the shield to go along with Link's wooden sword.

Parts, Tool & Supplies

If you don't have access to a 3D printer, you can send the files to a service or check with your local hackerspace/library.

- 3D Printer
- Filament (http://adafruit.it/2080)
- Flush cutters
- Blue Tape (http://adafruit.it/2416)
3D Printing

3D Printed Parts

All you need are these 2 parts:

- ShieldTop.stl
- ShieldBtm.stl

These parts were optimized to print on a Type A Machine series 1. Minimum build volume is 305mm cubed. These parts can however be separated by modifying the CAD files.

Download CAD files

Slicer Settings

You can use the settings below as a reference. The parts are oriented in the center of the bed and ready to print "as is".

Custom support material is required for the handle overhangs.
Removing support material

The support material is easily removable by hand. You'll want to smooth out the handle using sand paper or a filing tool. Use flush cutter to remove any excess material from the edges with over hang.
Modify Design

The parts were modeled in Autodesk 123D Design and available to modify. The file includes the original solids and sketches.

Materials

These parts have been printed in PLA but should print without any problems in other materials like bamboo and metal filaments.

Materials that require a heated bed, will require an enclosure to prevent the large parts from wrapping.

Assembly

Wooden Skinny Sticks

We'll use 5 3/4 x 1/4in. wooden sticks to hold both parts together. These sticks will be inserted in the slots located on the bottom of the parts.
Cleaning Slots

There might be loose bits of plastic blocking the slots, use a pair of cutters to remove any excess material. You can carefully insert a stick into the slots to loosen up the tolerances if you find it too tight.

Don't use too much force when insert the sticks, they could break and get stuck inside the slots!

Measure Wooden Sticks

Carefully insert each stick into the slots and measure the depth with a pencil or marker. Your tolerances will differ depending on print settings, so it's a good idea to measure each slot for changes. With the sticks marked, cut them down to size using cutters.
Insert Wooden Sticks

You only need use sticks for every other slot. The extra slots are included in the design just in case you break a stick inside one of the slots.

Join parts

Line up the second half of the shield. Insert the sticks into the slots and push the two pieces together, one side at a time.
Close Seams

The parts tend to warp when printing, so you'll need to close up the gaps in between the two pieces. Use a material, such as air-dry-clay, Sugru or hand-moldable plastic to fill in the seams.

Filling gaps

Use filler material to close open areas in the surface of the parts. Press the material into the gaps to shape it into small flat pieces and work them into the seams.
Remove excess filler

Use a spatula or a flat piece of plastic to remove excess filler from the edges of the seams.

Drying

This air-dry-clay™ requires 48 hours to fully dry. Keep in a warm dry area to help speed up curing time.
Masking details

To add color to the outer frame, we'll use masking tape to cover the inner artwork. Use a hobby knife to cut the masking tape to cover the details with curves.

Applying Masking tape

Use large pieces for large surfaces, don't worry about getting the details in the center. Cover up most of the inner details with multiple layers of tape.
Metallic colors

Chrome and blue metallic spray paint gives these parts a car paint job finish. The gray pigment in the PLA acts as a primer, so you can apply chrome spray paint without any primer.

Spray Painting

Apply at least two coats of spray paint to the outer details, making sure to get all the edges.

Spray paint in a well ventilated area. Use a protective respirator mask to avoid breathing in any messy chemicals.
Remove masking tape

Let the parts dry for an hour before removing the masking tape. You can use tweezers to help remove tape from the details.
Masking Tape Pt II

To start the next color, apply masking tape over the outer frame. The Hylian Crest and the Tri-force graphics will be printed in Ninjaflex, so we didn’t need to mask these out.

Spray Paint Pt II

Use the blue metallic spray paint for the inner details.

Outer Shield Details

After another hour of drying, you can remove the masking tape revealing the final paint job.
Attach Final Details

To make the Hylian Crest and the Tri-force stand out, you can paint these on or use Ninjaflex filament to print these details in different colors. You can tack or glue the details on.

So there you have it, now you can build the shield to go along with Link’s wooden sword. Be sure to take this, it’s dangerous out there!