#MasksForDocs New England Printing Guide

INTRO

We are a subgroup of Masks for Docs (see https://masksfordocs.com/ and join us on slack at https://join.slack.com/t/masksfordocs/shared_invite/zt-e8439lwg-tY7rXI1ZwP7TO1jqseVP2A - we're the #zlocal-us-ma-boston group). We have one goal: get protective equipment in the hands of those who need it as quickly as possible. Right now we are primarily making 3D printed face shields. Some of us are producing entire shields, others are producing the 3D printed parts and sending them to the Makery in Brookline (info below) to have the front masks and bands added, some are doing both.

Material Considerations

Preferred

PETG	Preferred due to its ability to withstand a wide variety of sterilization methods, including heat, sodium hypochlorite (bleach), isopropanol, ethanol, and UV

Acceptable

PLA	Degraded by hypochlorite, heat, and UV.
Nylon	Safe, strong, and easily sterilized, but difficult to print. Black nylon is preferred because it is more resistant to degradation by UV sterilization.
PETT (T-Glase)	Similar properties to PETG and is acceptable.
Polycarbonate (PC)	Difficult to print, but acceptable.

Unacceptable

| ABS	Not considered to be safe for prolonged skin contact, and assemblers will not accept parts printed in ABS.

Red-colored materials	Hospitals don't want red because it's too hard to see any blood that may be on it

Carbon fiber, wood, or glow in the dark filaments are not acceptable and should not be used.

Other materials should not be printed without consulting with #zlocal-us-ma on Slack.

PRINTER REQUIREMENTS

All parts can be printed on a machine with a 200mm x 200mm bed. Larger machines can print multiple sets of parts at a time; a Prusa i3 Mk2(s) or Mk3(s) can print two complete sets of parts for the NIH shield at once with careful arrangement on the build plate as shown below.
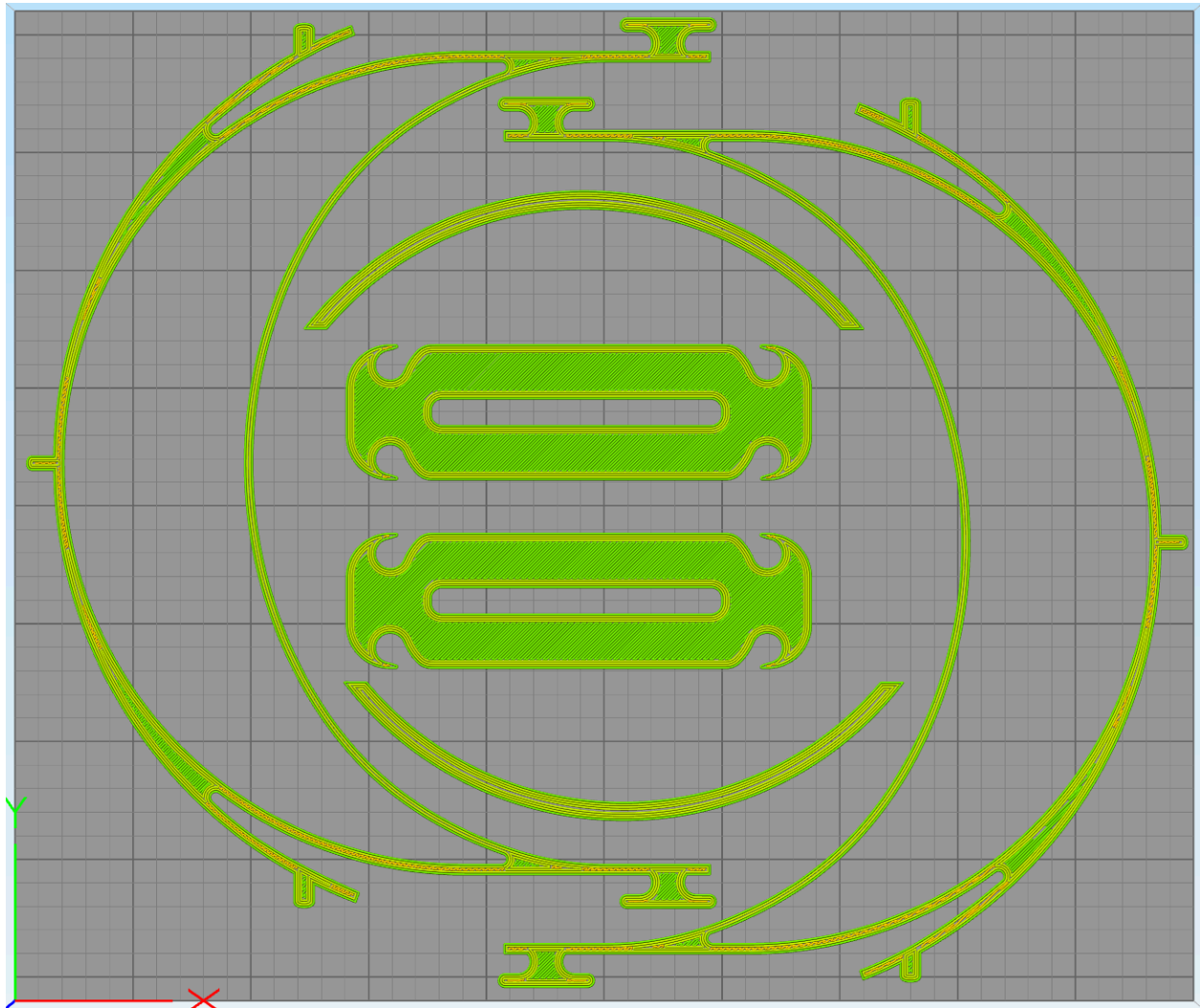
PETG requires a heated bed that can maintain 70 degrees celsius, and a hotend that can maintain 245 degrees celsius. It sticks well to PEI (Ultem) and BuildTak. Glass print beds should be coated with hairspray, glue stick, or Kapton tape. If you are having trouble getting PETG to stick to a PEI print bed, try wiping it down with acetone.

MODELS TO PRINT

All of our "official" STL files can be downloaded here:

http://www.grittyboys.com/us-ma-stl-2020040801.zip

We ask that you use ONLY these models. In particular, the variants designed for "stacked" printing should not be used; they produce parts that do not meet our quality standards. We will update this document if that changes.

As of 4/7 if you are printing items to send to the Makery for final assembly and distribution please print only the NIH/DtM 3-hole, "DtM-v3A-Smoother_Faster_Remix.stl". They have an abundance of other parts, and can most readily add shields to this version.

If your printer is too small to print headbands, please print Ear Savers. Do not shrink parts to fit your printer; they must be printed at 100% scale.

SLICER SETTINGS

NOTE: Not all slicers use the same terminology for these settings.

For printers with a 0.4mm nozzle:

All parts should be printed with 0.25mm layers, 4 top/bottom shells, 4 perimeters, no infill. Perimeters should be printed outside to inside.

The NIH / DtM "Smoother Faster Remix" headband prints best with the extrusion width set to "Auto" in your slicer.

For printers with a 0.6mm nozzle:

All parts should be printed with 0.25mm layers, 4 top/bottom shells, 2 perimeters, no infill. Perimeters should be printed outside to inside.

On Prusa Mk3 printers, a print speed of 100mm/sec produces adequate part quality and surface finish. On Prusa Mk2 and most lower-end printers, printing speed will be limited by the performance of the hotend. If your printer can't maintain the set nozzle temperature when printing the visor portion of the NIH / DtM model, that means that you need to slow down your print speed. The Mk2 can print at approximately 65-70mm/s out of the box, and 100mm/s if the heater block is insulated with an E3D silicone sock.

PRINT HANDLING

It is not necessary to maintain sterile conditions when handling prints, but please wash your hands immediately before you remove parts from the print bed. Place parts in a plastic bag and seal it, or in a cardboard box with the lid closed.

PACKAGING

Please include the following information:
- Your name, so that we can contact you if there are problems
- Your email address, so that we can contact you if there are problems
- The type of material (PETG, PLA, etc) used, so that we can provide cleaning instructions
- The quantity and type of each part

If possible - please print off and use the cover sheet that appears at the end of this document to label your donation and put only one kind of material per box or bag.

PICKUP AND DROPOFF

Please add your name to the Mass Masks spreadsheet record at:
https://docs.google.com/spreadsheets/d/1byrnnKtKFBPN__nHwUp0bGNCyAPPx9tXMOMb2TxXY9c/edit#gid=0. Susan Kistler will coordinate pickups for those who need a pickup.

Dropoff process:
1. Box your prints up with everything that you put in one box being made of the SAME type of filament (PLA, PET)
2. Fill out and attach a cover sheet to each box (use the one on the last page if possible)
3. Drive to the Makery at 40 Aspinwall Ave in Brookline between 10-12 on Tuesday or Friday*
4. Leave your dropped off prints on the loading dock
5. Return to your car and text Maddie Jacks at 617-335-9621
   *If you can't drop off in this timeframe, no problem! contact sjkonthego@gmail.com and we'll arrange another time or a pickup for you

Note: The Makery needs only the 3D printed parts for masks. It does not need you to add the elastic bands or the front plastic face shields.

DONATION COVER SHEET

Please complete one for each box donated and attach with tape to the outside of the box.
Please do not mix different materials within a box.
We will only use your contact info if there is a problem with your donated parts.

Your Name:

Your Email:

Type of Material:

PETG	____
PLA	____
Other (Write Below)	____

Contains Latex?   ____Yes   ____No

CONTENTS OF BOX: Quantity of each part

NIH headband (3-hole)   QTY ____

NIH headband (4-hole)   QTY ____

Prusa RC3 headband   QTY ____

Prusa bottom support   QTY ____

Prusa top add-on   QTY ____

Ear saver   QTY ____