HOW TO 3D PRINT AND ASSEMBLE A PPE FACE SHIELD

MakerBot is collaborating with organizations such as Columbia University in New York City to 3D print and distribute protective face shields to hospitals. Due to the highly-contagious nature of COVID-19, these face shields are in high demand all over the world, and numerous agencies, institutions, maker spaces, and companies are pitching in to help. We've created a basic guide that outlines how to 3D print and assemble face shields. We recommend finding a local group to work with to help with your initiative.

WHAT YOU NEED TO GET STARTED:
- FDM 3D Printer (such as MakerBot Replicator+, METHOD, etc.)
- PLA or comparable 3D printing filament
- Medical Gloves
- Face Mask
- Bleach (or alternative disinfectant*)
- Liquid Measuring Beaker/Cup
- Bucket or Container for Water
- Container [Box, Ziplock bags] to store and transport

WHAT YOU NEED FOR ASSEMBLY:
- 3D Printed Face Visor
- A4 sheet of PVC
- Elastic or Rubber Band
- Glue
- Scissors or Box Cutters

*https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/cleaning-disinfection.html

Before you get started, prepare a bucket of disinfectant solution diluted with water to sterilize the finished print. An example of such a solution from the CDC website can be made by mixing water and 5 tablespoons (1/3rd cup) bleach per gallon of water into a bucket (alternate options can be found in the link*). Wear gloves and wipe down the build plate and any other tools that will come in contact with the visor using disinfectant wipes.

STEP 1: Download and Print the Files

PRINT SETTINGS
The MakerBot software team has created custom pre-sliced print files that optimize mask printing speed. If that doesn't work for you, the next best option is to download the STL and use Balanced Print Mode.

Download Folder with Optimized Pre-Sliced Print Files and STL

STEP 2: Assemble the Components

**Make sure to wear gloves and a protective mouth cover before you initiate the next steps.**
Click here for the video instruction

Take the 3D printed part and dip it into the prior mixed solution. Let the remaining liquid drip off and set to the side.
Take either an elastic- or rubber band and tie it to the end of either side of the visor.

Prepare the print and the liquid glue. Add some glue to the inside of the rim of the 3D printed part. Take the foam material and gently press the foam material onto the inside of the 3D printed part.
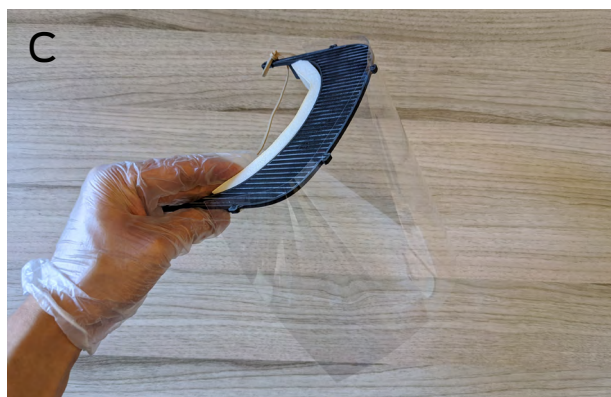
Take a marker and mark the points on the PVC where you need to punch a hole to attach the PVC to the hooks of the 3D printed visor.
Next, take a hole puncher or a pair of sharp scissors and puncture the PVC at the marked points. Attach the PVC to the 3D printed part.

Now you have a fully assembled face shield. Put the finished assembled face visor into a clean ziplock bag and properly place it in a storage box.

STEP 3: Distribute

There are many ways to get the face visors to the place they are needed most. Contact your local agency, check if there is a pick up service or find an organized drop-off location.

Visor design by Madiha Choksi, based on a design provided by [Budmen Industries](#)

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