Important information

Disclaimers

This document explains how we 3D printed and assembled this face mask. We are not recommending or endorsing anything; we're just letting you know how we made it.

This mask itself is not a filter. There is a place in the mask where a filter can be inserted.

By downloading this file you agree to our **terms and conditions**.

This face mask has not been tested, approved or proven to slow or prevent the spread of COVID-19 and is not intended for medical use. We are providing this information for informational purposes only without warranty of any kind. ALL WARRANTIES OF ANY KIND, WHETHER EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT, ARE HEREBY DISCLAIMED.

Your safety is your responsibility. If you choose to print and/or use this mask, you are doing so at YOUR OWN RISK.

How we printed this mask

We printed this mask in FDM, the most accessible 3D printing technology.

Materials

We printed the mask in PLA, which is easy to print and biocompatible.

Note: PLA is biodegradable and not UV stable. This material will disintegrate if left in direct sunlight. This material should not be soaked in water for long periods of time, but cleaning with water or rubbing alcohol shouldn't damage it. PLA is also porous, so you might consider sealing the mask if porosity or permeability is a concern.

Estimated print time: ~8 hours/mask
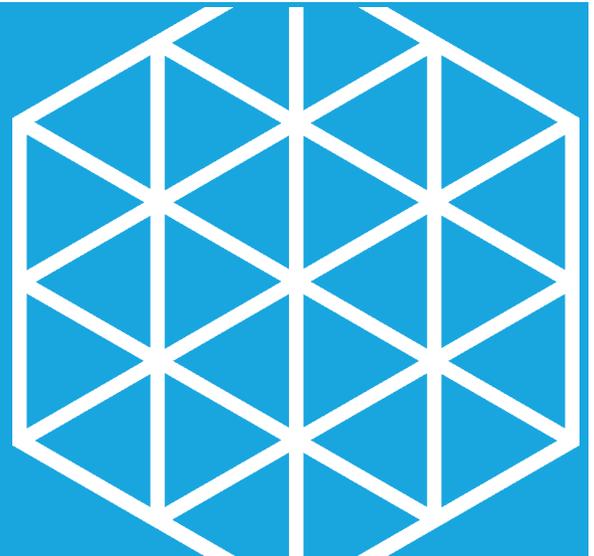
Recommended print settings

Layer Height: 0.15 mm
Min Infill: 10%
> *Note* — Sparser infill results in a lighter mask for higher comfort, but may tradeoff with durability

Perimeter Thickness: 2 path widths
Temperature: Highest possible without sacrificing quality (varies by material)

Additional components

Filters

Our designs do not include filters and will need an at-home solution.

Flexible lining

In order to create a better seal between the mask and the face and make it more comfortable, we added EPDM rubber as a flexible lining on the inside. **Here is a video** showing how we did this step.

Head straps

We used regular 8.5 x 1/8 inch rubber bands as head straps. We cut them to size and tied one between the top two attachment points and another between the bottom two.

Filter insertion

— We cut our filter to a 56mm round and centered it over the grid on the inside of the mask.
— Then we inserted the retainment plate as shown in the diagram on the right, and twisted to lock into place.

Sizing

We made two sizes of masks. To determine the size, measure your face from the mid-point between your eyebrows to your chin. If it's greater than 5", we suggest the large mask. If smaller than 5", try the medium mask.

Testing the seal

To test the seal between the mask and the face, we followed the guidelines in the resources below.

— **Respiratory fit testing instructions from OSHA**
— **3M overview of the fit testing process**

Cleaning

The mask should be cleaned regularly. We clean using Lysol wipes. Make sure you're aware of the chemical reactivity of the material you use when choosing a cleaning solution.

Questions? Feedback?

This is an open source design. We would love to see any improvements you make to the mask. Tag @fastradius on Twitter or Instagram. Email us at **covid19@fastradius.com** with any questions.