

### Components

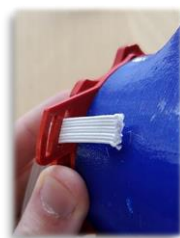
1. Filter Cap – PLA
2. Filter Material, Haylard H600 shown in these instructions
3. Locking Ring – PLA
4. MOD Ring (only Strap Ring shown) - PLA
5. Flexible Mask – TPU
6. Soft Silicone O-Ring, 3" ID,  $\frac{3}{32}$ " thickness, (McMaster-Carr Part# 1173N151)
7. Filter Screen – PLA
8. Soft Silicone Tubing,  $\frac{1}{8}$ " ID,  $\frac{1}{4}$ " OD, (McMaster-Carr Part# 5236K506)
9. Strap material of choice (note shown in exploded view)

### Assembly

- Print TPU mask and all PLA subcomponents without support material.
- Cut silicone tubing to 365mm in length. Carefully split the tubing down the middle, only cutting through one wall. Try to keep the cut as straight as possible.
- Fit the split tubing over the bead along the rim of the mask. For best results, the two ends should meet on a straighter section of the mask.
- Carefully trim the excess tubing so that the two ends push against each other. It is important not to trim too much at once to find the sweet spot for the seal. You should not have to cut more than 5mm off and a clean cut is essential.
- Once satisfied with the length, apply Gorilla Glue to the inside of the tubing and carefully re-fit it around the edge. A small bit of silicone caulk can be used to fill any gap where the ends meet.
- Fit the silicone O-ring into the groove on the Filter Screen. Ensure the O-ring seats fully.
- Insert the Filter Screen into the mask by aligning the tabs and pushing through until it stops.
- Align the tabs of the Strap Ring with the grooves in the filter screen. The recess in the ring should be facing out and the small arrow should be facing up towards the nose.
- Thread the Locking Ring onto the Filter Screen and thoroughly tighten to seal the assembly.
- Use the Filter Cap as a template for cutting the correct size filter. Place the Filter Cap on the filter material and trace the outer diameter with a sharpie or other felt-tipped pen. Cut out the filter by staying on the line or just inside of it.



- Place the filter material inside the Filter Screen until it lays flat.
- Tighten the Filter Cap onto the Filter Screen, securing the filter material in place.
- To attach strap material to the Strap Ring, first slide the material through the inner slot from the front, and then through the outer slot from the back.



- The Strap Ring (shown) is designed to work with flat elastic strap materials. Other materials (rubber bands, elastic tubing, elastic cord, etc.) can be utilized by swapping out the Strap Ring with different MOD Ring.

### Filter Change / Cleaning

- To replace the filter, simply unscrew the Filter Cap and place another precut piece of material on the Filter Screen.
- Mask should be disassembled for thorough cleaning. Please use the following EPA guidelines for Disinfectants for Use Against SARS-CoV-2:
  1. 10% chlorine bleach solution
  2. Super Sani-Cloth
  3. CaviWipes
  4. 3% Hydrogen peroxide
  5. Soap and water

**NOTE: the materials of this mask (namely PLA) has not been evaluated for sterilization in an autoclave and it is not recommended.**

### WARNING

"This device is a general purpose face mask intended for use in the community and is not suitable for use by a healthcare professional or in a healthcare facility or environment, as described in FDA Guidance Enforcement Policy for Face Masks and Respirators During the Coronavirus Disease (COVID-19) Public Health Emergency, Section V B. This device has not been tested to assess the out-gassing limits of the material or their corresponding health effects."

DO NOT USE in place of approved masks if they are still available and use at your own risk. This is a concept for emergency use only and as a last resort. It does not replace approved masks. Use as you see fit, with no guarantees.

This tutorial shows how to make a high filtration mask from blue surgical tray material called Halyard H600, though doing so is not endorsed by the company or guaranteed.

