

“Everyone Gets a Mask!” Team Project

Instructions for Mask Makers

(Sewers and Assistants)

Last updated: April 14, 2020

Note: The on-line version of this document at www.webility.md/masks has active hyperlinks for web access. Other project resource files are also there. Send comments to masks@webility.md.

Background and Overview

Thank you for being willing to spend your time making high quality homemade cloth masks as part of a local “Everyone Gets a Mask!” Team Project. You have a very important role on the team that is undertaking this very important and timely effort!

As you are aware, the COVID-19 pandemic has become a national crisis and the next few weeks are expected to be the worst. The CDC now recommends that all of us wear fabric face masks when we go outside – to keep one another from getting sick. (www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/cloth-face-cover.html) “I protect you; you protect me.”

Around the country, millions of people are looking for protective face masks right now.

Your community is very lucky that you have volunteered to help your Everyone Gets a Mask! team meet this urgent need rapidly and efficiently.



The masks you make cannot possibly be as effective as a commercially manufactured and FDA-approved surgical mask or N-95 respirator mask, but they will filter out between 50% and 90% of virus-laden respiratory droplets, depending on size, from the wearer's inhaled or exhaled air, and 50% or more of the very tiny virus-laden aerosolized particles. That will have to be good enough until the manufacturers catch up. As soon as commercially manufactured and FDA-approved masks are widely available, this project will end. But we do not know when that point will be reached.

Please remember: The goal is to move fast and make a lot of (high quality) homemade cloth masks right away. This project will provide a stopgap solution for a short-term need (we all hope). The well-made, well-fitted, and high quality homemade cloth masks you make will block a whole lot of respiratory droplets -- which is much better than having no protection at all!

Before You Start – Remember SAFETY is Top Priority

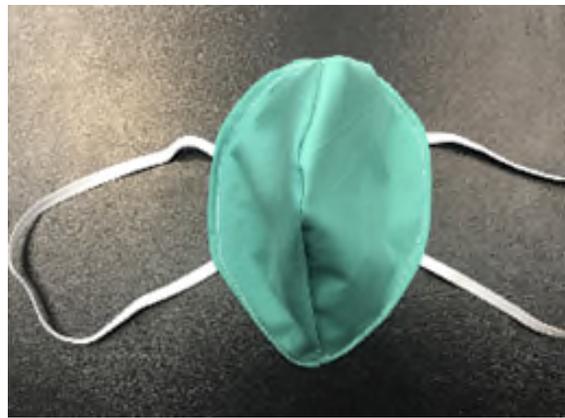
The reason why this project is necessary is that we are all at risk. None of us are immune to COVID-19 unless we are sure we've had it already. So give top priority to protecting yourself and protecting others from you – just in case you're infected and don't know it!

Set an example for the rest of your community. Stay at home as much as possible – although making, picking up, and delivering protective masks certainly qualifies as an essential activity. Incorporate all of recommended protective measures -- social distancing, hand washing, respiratory etiquette (covering sneezes and coughs with tissue or elbow, etc.), surface disinfecting, and mask wearing -- into your project activities.

Use “no contact” methods for delivery of materials and pick up of finished masks; just leave things on the porch, for example. When taking a delivery, throw away or disinfect packaging materials and wash your hands afterwards. The coronavirus does not survive long on fabric and soft goods, so you can safely use newly arrived materials the next day. Avoid face to face meetings as much as possible. If group assembly line operations are necessary to achieve your production goals, conduct them in very large rooms using a spacious lay-out that preserves the 6' space between people.

Mask Types and Fabrics

Three different items are available for you to make: two different designs of cloth masks for the general public, and a fabric cover for N95 respirators that are worn by healthcare workers. One of the two cloth masks is a rectangular pleated design, and the other curved and form-fitted. See photos below:



The rectangular design is much easier to cut and sew than the form-fitted mask, but the form-fitted mask conforms better to some wearers' faces and is less susceptible to air leakage and inadvertent exposure to particles in the air. The cutting and sewing involved is not very complex (and the rectangular mask is downright simple!), but you do need to follow the instructions provided. Links to detailed patterns and sewing instructions appear further down in this document.

All designs can be made with (a) long ties, fabric strings that wearers fasten behind their heads or (b) shorter ear loops that can be made of elastic or fabric and hook behind the wearers' ears.



LEFT: Rectangular Mask with short elastic ear loops
RIGHT: Rectangular Mask with long fabric ties



You will be making one or more of these mask designs based on the demand for specific kinds from users in your area.

The type of fabric used can make the difference between a mask that provides protection and one that does not. **It is important to use fabric that meets the specifications for a high quality homemade mask!** Use the "Technical Specifications" guide at www.webility.md/masks to select the fabric (unless the project team has provided it to you). Always test whether the fabric you plan to use is actually suitable. We recommend a simple test that simply involves a lightbulb and a dark room; it is described in the Technical Specifications guide. **The wrong fabric will provide less protection to wearers and/or will be so uncomfortable the masks aren't actually used!**

Since masks may be put on and taken off more than once during a single wearing, it is very important that the user never mistake the outside-facing (contaminated side) of a mask for the side that should be facing inside. **We recommend that all masks have a plain (solid color) fabric as the inner layer of the mask, and a patterned fabric as the outer layer.** Then users will never be confused about which is which.

Getting Started – Things to Do First

Many of the recommendations we make in these Instructions for Mask Makers will make more sense if you have read the “Basic Orientation and FAQs” document. It is a simple overview of respiratory particles, the various kinds of masks, and who should wear them and when. So, step one, before you start to sew, please go find it and read it. It’s on the project website at www.webility.md/masks. All of the resource materials for this project are there. Look that site over while you are there.

Step two is to look through all the instructions in the rest of this document to get the big picture. In particular, find and read the instructions for the specific item(s) you will be making. Use the links to obtain the specific patterns and sewing instructions.

Recommendation: Make a few trial masks to start so you get the hang of it. If they are not perfect, discard them. Keep the first good mask for yourself, and then wear it while making your masks. Being a daily mask user will make you aware of the importance of the little details that make masks fit well, be comfortable for long periods, and durable as well. Also, we now know that people who feel fine and have no symptoms – possibly you! – can nonetheless be infected and can spread virus to others. So, please protect those who will wear the masks you make by wearing yours.

Before Beginning Work Each Day

If you are sick or have potentially been exposed to someone who is sick, please wait until you are recovered and out of danger before sewing masks.

WASH all fabric in hot water and dry before using. If you don’t do this, the two different layers of the mask may shrink differently when laundered and result in a misshapen mask. Don’t use fabric softener since it will leave an undesirable chemical residue.

Big Picture - Daily Mask Making Steps

Here is the big picture of the steps to go through every day that you make masks.

1. Put on your mask and wash your hands (See how to do it correctly in this video www.nytimes.com/2020/03/13/world/how-to-wash-your-hands-coronavirus.html). Make sure surfaces are clean and you have easy access to soap and water, hand sanitizer, disinfecting wipes, etc.

2. Decide whether you will be working alone or with others today. If with others, set up the workspace to follow guidelines on social distancing.
3. Decide which mask design you are going to make – and how many you intend to produce today. (This may be based on requests or orders your group has received from organizations that need them.) See mask patterns with instructions included below.
4. Decide whether you will put ear loops or long ties on the mask. In either case, you will attach them at the same four points on the facial portion.
5. Decide whether to make masks one at a time from start to finish, or use an assembly line process – in batches with several repetitions in a row of each step along the way. Set up the workspace appropriately.

6. Make sure you have all the needed supplies. Lay out your **pre-washed** fabric and other materials in your work area.
7. Make the items, following the instructions that apply.
8. When finished, write “Inside” on the plain/white inner layer of each mask with a waterproof permanent marker. There is no need to label the patterned outside layer. Also write “Nose / Top” at the top inside edge. If the mask is a pleated rectangular one, make sure to mark the top so that pleat openings **on the outside** are facing down. (This way, any liquids that land on the mask from outside will not get caught in a pleat opening but will drain off the mask.)



9. At the end of your run, inspect all the items you have made and make sure any which have problems are culled out for repair if possible, or otherwise discarded.
10. In a log book you keep for this purpose, enter what you have made, the quantity, and any relevant comments.
11. Make up a “batch sheet” to accompany the masks that includes your name, the date, the item included, how many, and any comments.
12. Put the finished batch in a plastic bag with the batch sheet and put it outside the door for the person who is scheduled to pick them up.
13. If necessary, notify the pick-up person that you are ready for a pick-up.

Making Cloth Masks - Patterns With Sewing / Assembly Instructions Included:

As stated earlier, we recommend two different cloth masks designs: a rectangular pleated design, and a curved, more fitted design. The pleated mask is easier to cut and sew, but hugs the wearer's face less tightly around the edge of the mask. In the photo below, the floral pattern is rectangular, and the geometric print is fitted with a center seam.



We have reviewed many web-based guides to cutting and sewing these masks and have selected the few below as particularly good. Look them over and pick the one(s) you prefer.

- 1. Rectangular mask: A Surgeon's Guide to Sewing a Surgical Mask by Dr. Streicher – Excellent video. Similar but not identical to Allina and Deaconess mask with ties**

This web site has excellent instructions, photos, and a video documenting how to make a pleated rectangular cloth mask with either elastic or sting ties. Includes fabric and pattern suggestions. These are easy to make.

www.drstreicher.com/dr-streicher-blog/2020/3/a-surgeon-sewing-a-surgical-mask

- 2. Center seam semi- fitted mask: "Olson" by Unity Point Health Avera – similar but not identical to CraftPassion, Blue Cross Face Masks**

This 7 page PDF includes patterns and detailed sewing instructions for making a fitted "Olson" mask. Medium and large sizes patterns are included.

www.avera.org/app/files/public/76443/Olson-Mask-with-Pattern.pdf

3. Another semi-fitted mask with many options and sizes: CraftPassion

With fewer pieces to cut and sew than #3 above, this very actively used site includes patterns for men, women and children, and many comments from makers. The design has a high nose piece that helps prevent fogging if the user wears glasses. A nose wire is optional. This may fit better on faces with flat profiles, smaller noses / chins.

www.craftpassion.com/face-mask-sewing-pattern

4. Rectangular and semi-fitted masks: Joann Stores

The Joann fabric stores have collected a number of videos and patterns for making both rectangular and fitted masks. Their web site refers to CraftPassion (#3 above). Joann's is also collecting masks and donating them to healthcare institutions.

www.joann.com/make-to-give-response/

Making Mask Covers for N95 Respirator Masks

These mask covers will help prolong the useful life of N95 respirators worn by healthcare workers. They prevent soiling of the mask itself, allowing it to be used longer. The covers will be waterproofed upon receipt to prevent liquids from reaching the mask. The covers can be washed repeatedly.



N95 Respirator Mask



Cover for N95 Respirator Mask

We understand many healthcare organizations are supplying volunteers with surgical sheets as the raw material for these covers, and that should be your first option for fabric. If that cannot be obtained, you should use the fabric guide for regular masks described earlier.

The organizations receiving these covers will waterproof the **outside**. If you do not have a patterned fabric that indicates which is the outside, make sure the inside is denoted by writing "INSIDE" and "TOP / NOSE" in waterproof marker on the inside. It may be good to mark that even if the outside is patterned.

General information about making these covers is here on the Phoebe Putnam Memorial Hospital website. www.phoebehealth.com/patients-and-visitors/coronavirus/mask-production A copy of their written instructions and a pattern for making these covers has been placed here: www.webility.md/masks/phoebe-mask-cover-instructions.pdf

Read this New Yorker article talking about the Phoebe Putnam Memorial Hospital's struggles with getting enough PPE and the reason they have asked the community to help them make them covers for N95 respirators: <https://www.newyorker.com/news/news-desk/what-the-coronavirus-is-doing-to-rural-georgia>

Miscellaneous Tips for Mask-Makers

- **Caution re: Ear Loops**
 - Elastic is now in short supply
 - Ear loops tend to irritate skin behind the ears
 - People are increasingly asking for ties, particularly healthcare workers and others who have to wear masks every day and for many hours at a time.

- **Malleable material for bridge of nose area**
 - Best option seems to be 12 gauge aluminum wire which has enough body to withstand long use; next best is thinner 16 or 18 gauge wire. Some designs make a pocket for a 6 inch piece of 12 gauge wire, with the ends bent back so the wire won't poke through the fabric or scratch the wearer.
 - Another option is wire ribbon. The wire in the ribbon is very thin so ribbon needs to be folded at least 4 times to give it enough staying power. Cut at least 16", so the folded piece you sew in is 4" long. Don't let a sharp end protrude!
 - Pipe cleaners and wire grocery ties are not durable enough for this use according to reports from sewers and wearers on the web.
 - Beware of breaking/bending sewing needle while sewing the wire in place. (And have extra needles on hand!)

- **Use of an "assembly line" operation for making masks**
 - Allows non-sewers to participate, very efficient, can be done alone or with others (which is faster and more fun)
 - **Safety first.** Do this only if you can set up the stations at least 6' apart in a very large and well-ventilated space. Workflow must allow you to maintain social distancing (stay 6' apart) at all times.



- Video of a small assembly line – very informal and motivating:
<https://www.facebook.com/thefabricpatch/videos/808120526348326/>
- **Website with reviews and comments on several mask patterns;** many interesting comments from mask-makers.
<https://sewing.patternreview.com/review/pattern/163655>