

# DO-IT-YOURSELF PERSONAL PROTECTIVE EQUIPMENT GUIDE

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# THE MASK

*CDC is advising under certain conditions to use a homemade mask: "in settings where facemasks are not available, homemade masks are a last resort...Homemade masks should ideally be used in combination with a face shield that covers the entire front (that extends to the chin or below) and sides of the face."*

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/face-masks.html>

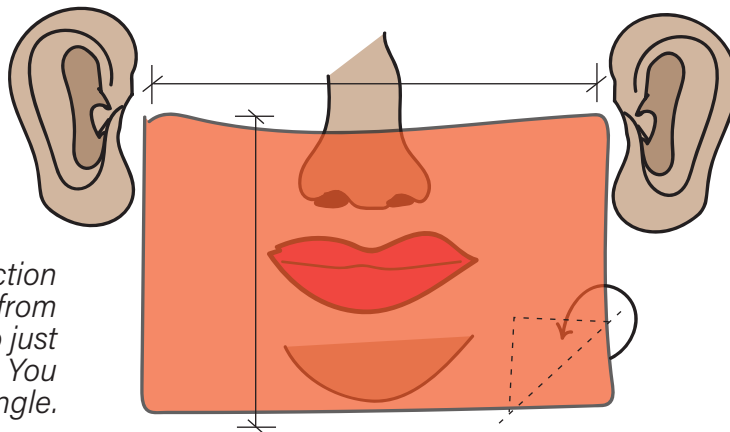
*Disclaimer: N95s block at least 95 percent of very small (0.3 micron) test particles... DIY mask of cotton t-shirts cannot guarantee that amount of accuracy.*

## RESOURCES

- Cotton t-shirts higher grade (vacuum bags are too hard to breathe from)
  - 9" x 15" fabric outer layer
  - 9" x 15" fabric lining layer
  - Note: 3 regular or large size masks of either design, can be made from 1/4 yard (9") of 45" wide fabric
- Scissors
- 3.5" piece of soft wire or even a paper clip
- 22" of elastic cord, string or rubber bands
- Sewing needle
- Rubber band
- Paper clips or safety pins
  - approx. 22" of elastic cord (depends on head size) or rubber bands and paperclips or safety pins

### STEP 1

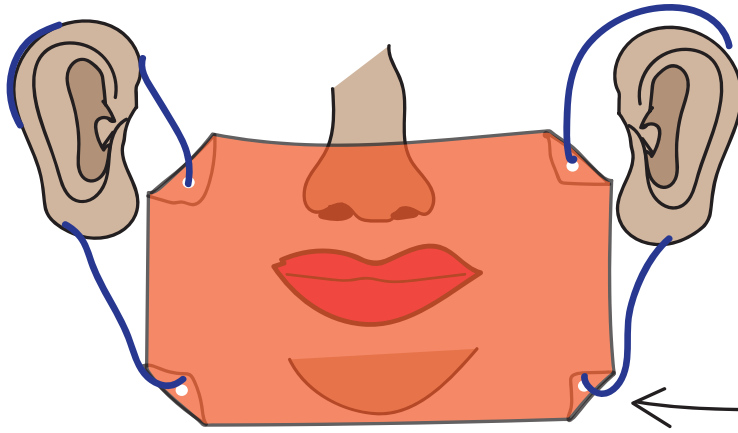
*Cut t-shirt or other tightly woven fabric (two layers even better!) from ALMOST ear to ear.*



*Cut the other direction wide enough to go from mid bridge of nose to just under your chin. You should have a rectangle.*

*TIP: Fold over corners to reduce gaps that would let in unfiltered air! This can also prevent bunching up near the ears*

## STEP 2

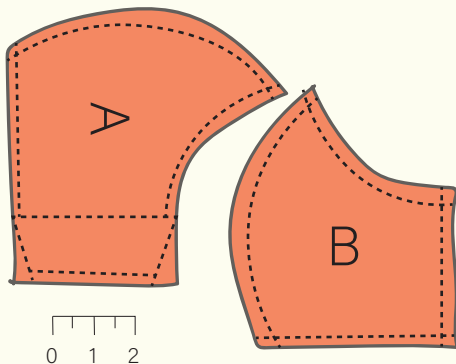
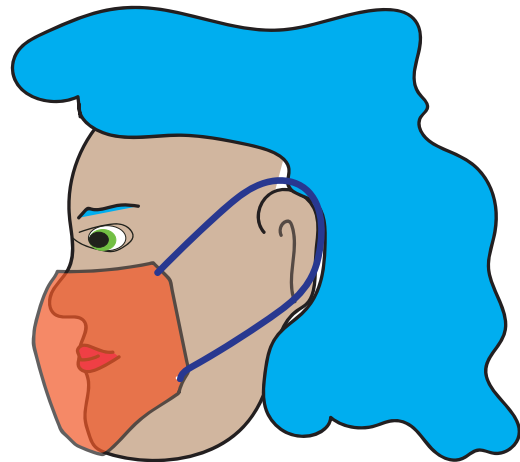


Using a needle or sharp object poke holes at the four corners and make a loop of string, or even better some elastic if you have it to make ear loops.

**TIP:** an easy elastic ear loop - Take a RUBBER BAND and TWO SMALL PAPER CLIPS - use the paper clips to 'hook' the holes in the fabric on a side and connect the two paperclips with the rubber band. Put the WHOLE rubber band behind your ear. This will keep mask nice and tight!

## STEP 3

Wear by putting loop so it goes over and under your ears on both sides - should fit SNUG to your face and not have gaps.



Instructables  
Sewing Pattern

Regular size face mask  
with filter pocket pattern

# THE FACE SHIELD

Use the face shield in combination with your mask for extra protection

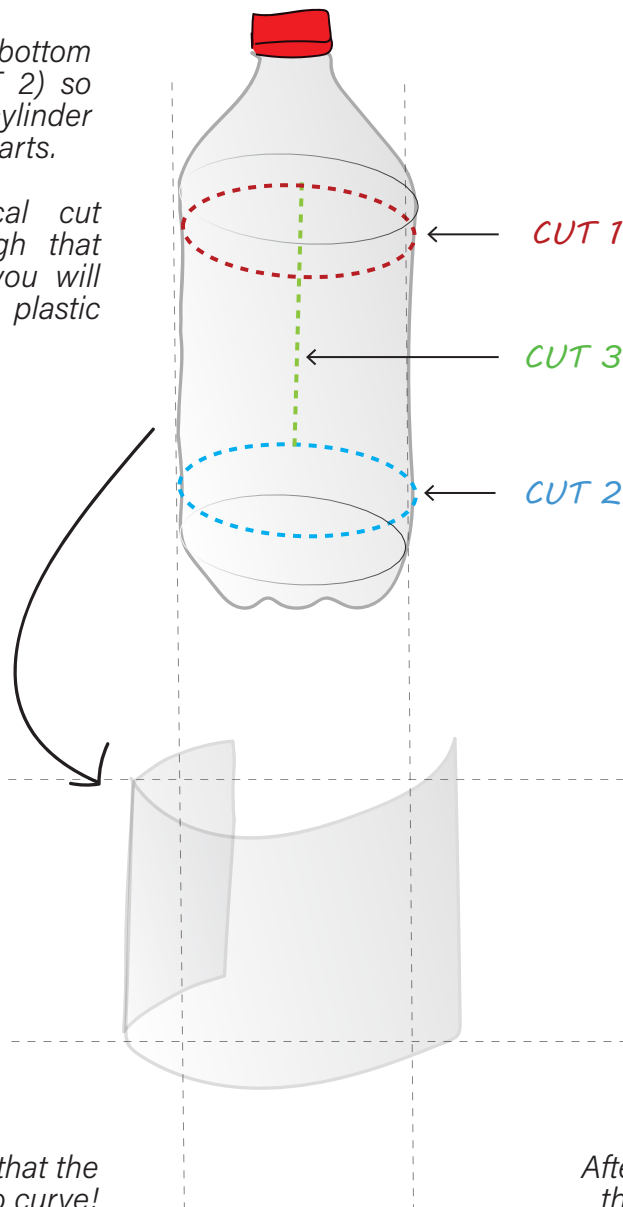
## RESOURCES

- 2 or 3 liter soda/water bottle (CLEAR PLASTIC)
- Scissors
- Duct Tape
- Ball cap or hat with a brim

### STEP 1

Cut the top and bottom off (CUT 1, CUT 2) so that you have a cylinder with no sloped parts.

Make a vertical cut (CUT 3) through that cylinder. Now you will have a curved plastic rectangle.



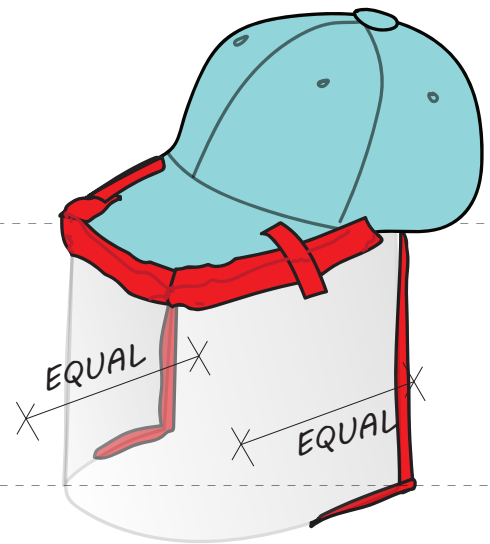
It is OK if that the plastic wants to curve!

### STEP 2

Take a ballcap or any hat with a brim, and duct tape your plastic rectangle to the brim.

Alternatively, you can use scotch tape, painters tape or masking tape

MAKE SURE that the plastic is equally distributed on either side of the hat.



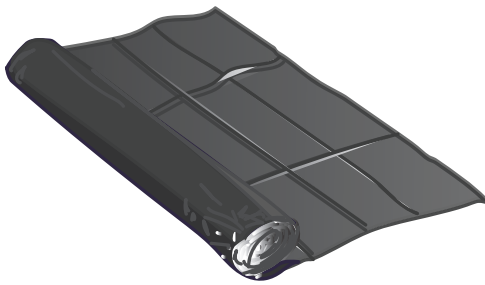
After you've mounted the cut bottle rectangle on the hat, trim the bottom corners as necessary and tape the side edges of the plastic to protect your face and ears from the sharp plastic edge

# THE SUIT

## RESOURCES

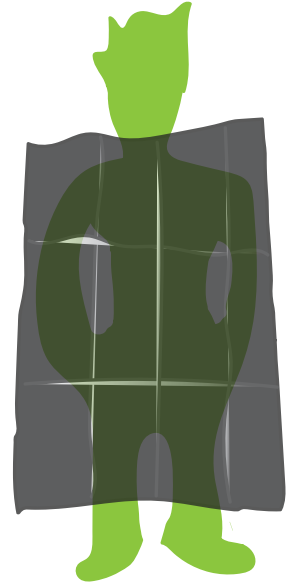
- Heavy mil construction trash bags (2)
- Duct Tape
- Scissors or pocketknife
- Sharpie

*There are two portions of the suit, the body and the sleeves.*



### SUIT Stage 1

*Hold the flat bag to the body and mark with a sharpie. If you have a friend, it makes it easier.*



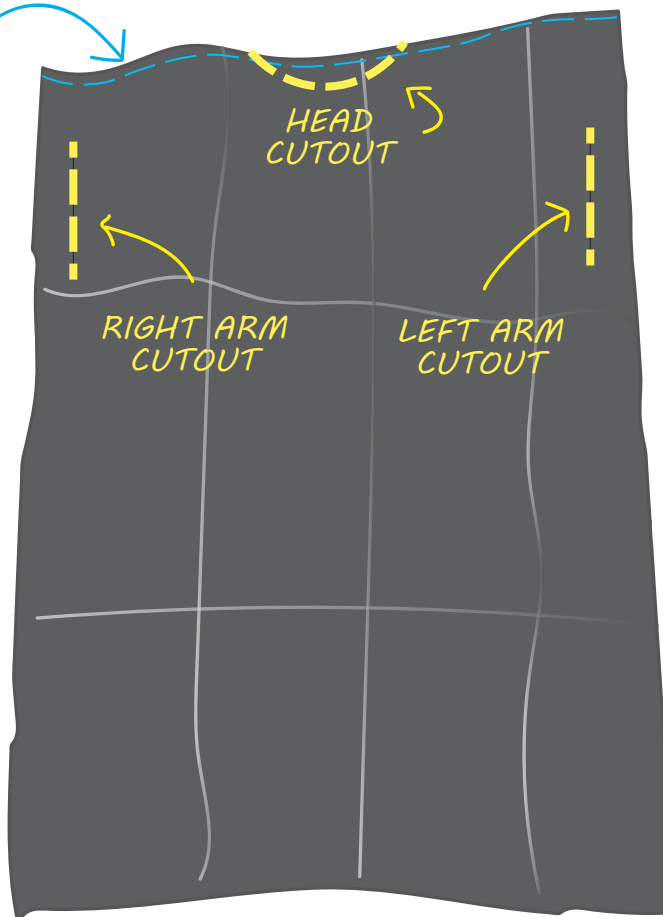
*ARMS: do not cut directly on the seams for this will make it easier to tear*

SEAM

HEAD  
CUTOUT

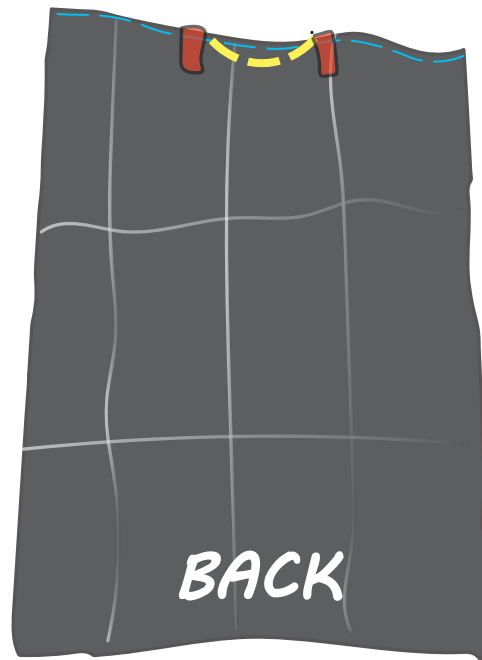
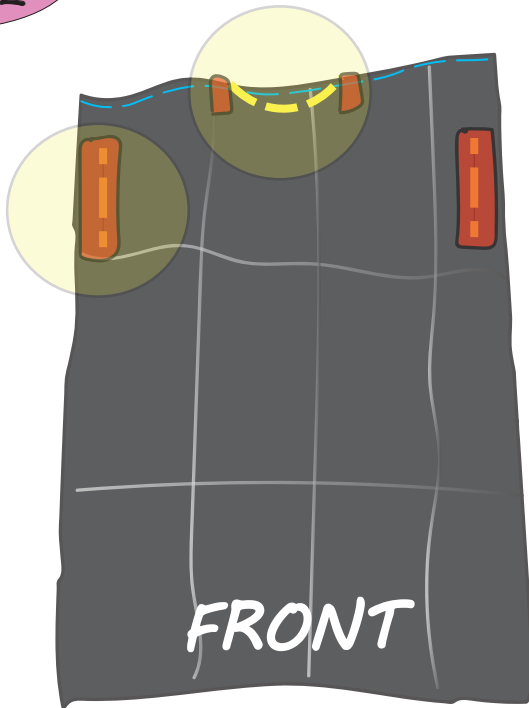
RIGHT ARM  
CUTOUT

LEFT ARM  
CUTOUT



## SUIT Stage 2

Use duct tape to reinforce areas that will be cut inside and out for both arms. Use the natural seam as reinforcement. Also reinforce around the neck.

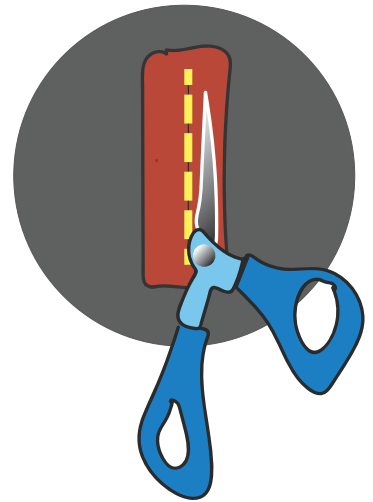
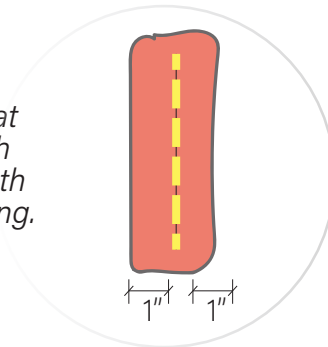


## ARMS

Use a strip of tape that leaves at least an inch extra from cuts on both sides to prevent tearing. Then make arm cuts.

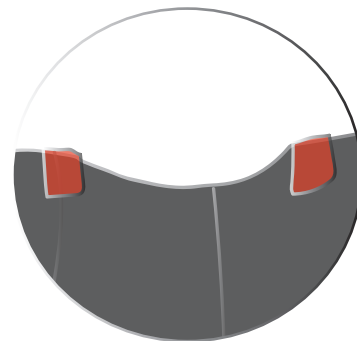
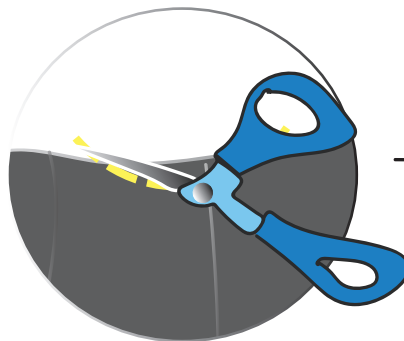
### DONT'S

- cutting directly on the seams will make plastic tear more easily



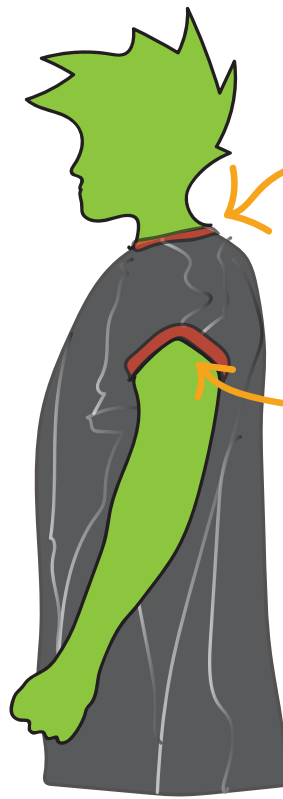
## HEAD

Cut a very shallow "U" like pattern for the neck. Then reinforce inside and out with duct tape on edges.



### DONT'S

- a 90 degree or a straight cut will be too easy to tear
- do not stretch the plastic- if the hole needs to be wider, cut again



neck cutout reinforced with tape

arm cutout reinforced with tape

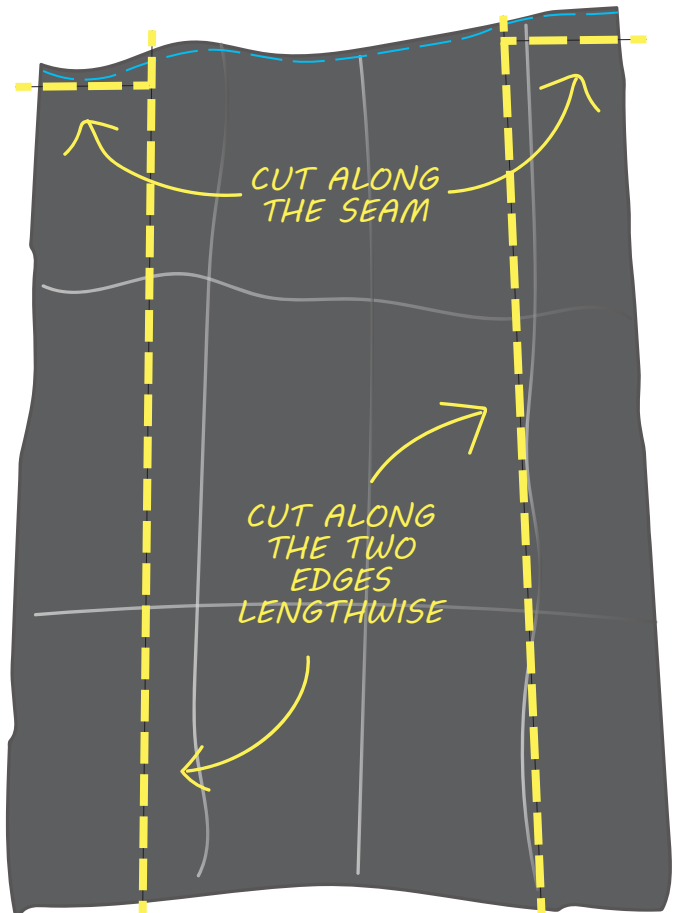
Be sure that the cutouts fit snugly around your arms and neck so that there are no holes to let air in!

## ARMS Stage 1

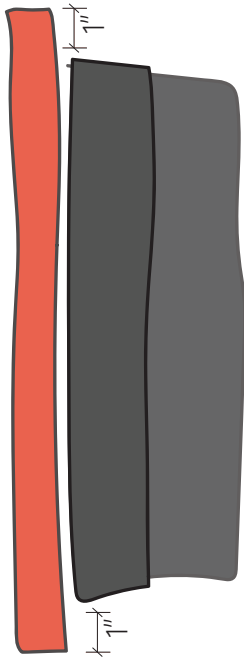
Take the second bag, and use the two edges lengthwise.

Before cutting, check to make sure you have enough material to wrap your entire arm, bicep and shoulder

After you cut the long strip, you will need to cut and remove the seam.

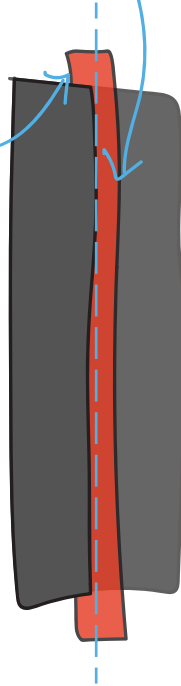


## ARMS Stage 2

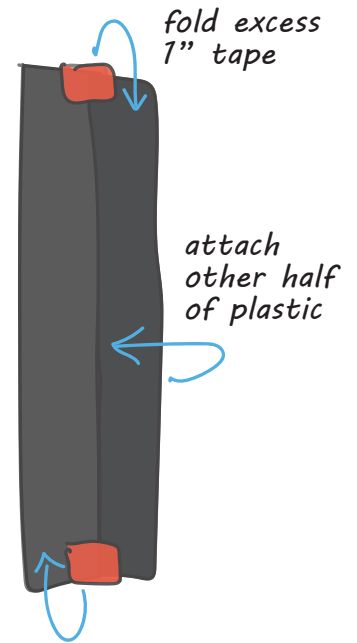


Cut a piece of duct tape to excess the plastic sleeve by 1 inch each side.

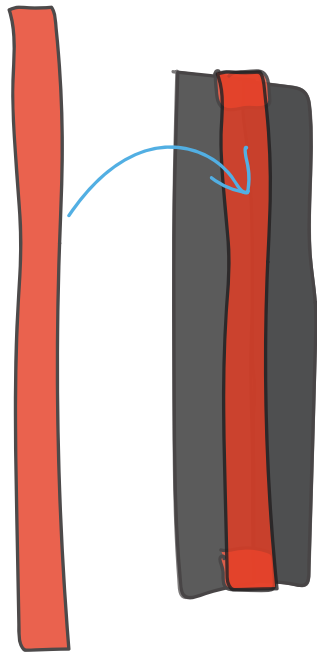
1/2 tape strip exposed  
1/2 tape strip adhered to plastic



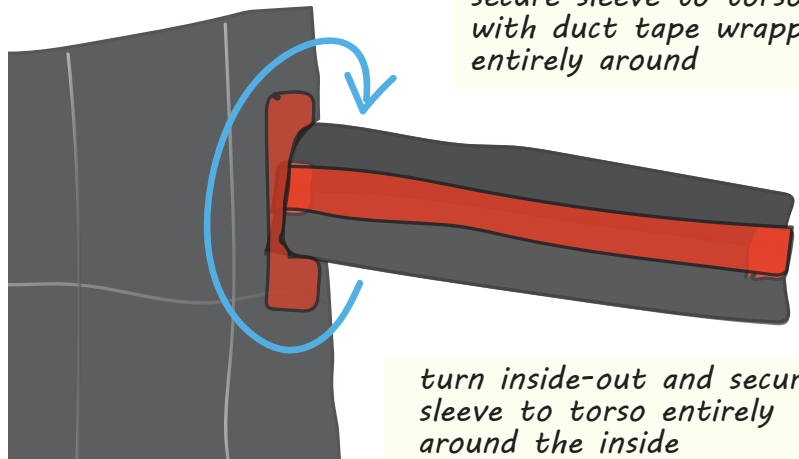
On the inside, center the tape and adhere the plastic bag halfway--leaving the other half of the duct tape strip exposed.



Attach the other half of the plastic by overlapping and adhering to the rest of the exposed tape. Wrap the 1 inch tabs of duct tape around the plastic sleeve to seal.



Take a second strip of duct tape same length as before and secure and close the outside seam.



secure sleeve to torso with duct tape wrapped entirely around

turn inside-out and secure sleeve to torso entirely around the inside

Insert sleeve into Arm/Shoulder slot from Torso PPE. **Test Fit!!**

Secure and reinforce the front and back of the sleeve with duct tape. Make sure its 100% sealed.

Fold bag inside out. Secure sleeve with duct tape. **Test fit again!!**



Repeat for the other arm. Have a partner assist with taping after PPE is worn!

*Don't be shy  
with duct tape!*

*Trim sleeve length after  
assembling to determine  
proper length for your arms!*



## THE PONCHO - suit alternative

### RESOURCES

- Heavy mil construction trash bags (2)
- Duct Tape
- Scissors or pocketknife



#### FIRST BAG

1. Find the flat crease
2. Cut the right seam for the head
3. Duct tape the edging around the cut

#### SECOND BAG

4. Cut the long way
5. Tape seam with duct tape (now have 2 tubes)
6. Cut the factory seal
7. Duct tape to keep tight around sleeves.

#### EXTRA!

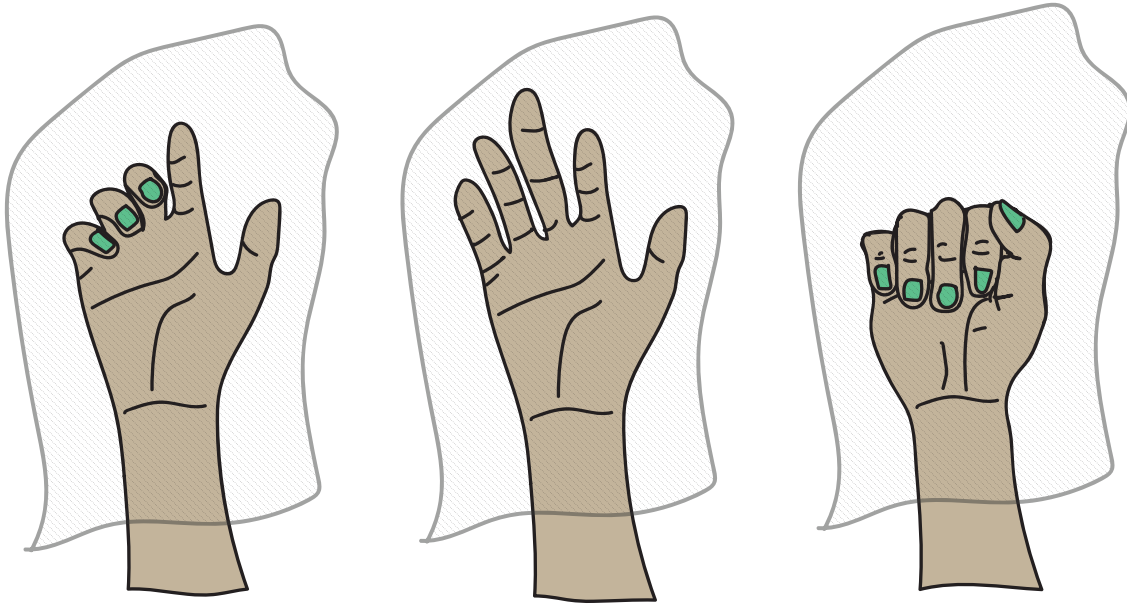
- If pants, split bag (like sleeves, 2 tubes)
- Put legs on first
- Turn one bag into skirt

# THE GLOVE

## RESOURCES

- Plastic bag
  - Bread bag
  - Thin sandwich bag or food storage bag
  - Grocery plastic bags (thin film plastic)
- Duct Tape

### STEP 1



*Place hand through the opening of the bag. Check your hands and fingers have enough room in the bag to move, straighten and make a fist.*

### STEP 2



*Let the air out of the bag.  
Then duct tape around wrist,  
tightening the ends of the bag.*

**REPEAT FOR  
OTHER HAND!**

# THE BOOTS

*If you have rainboots that reach your mid-calf, you are set!*

## RESOURCES

- Plastic bags with handles (in your kitchen drawer!)
- Duct Tape or Painters Tape

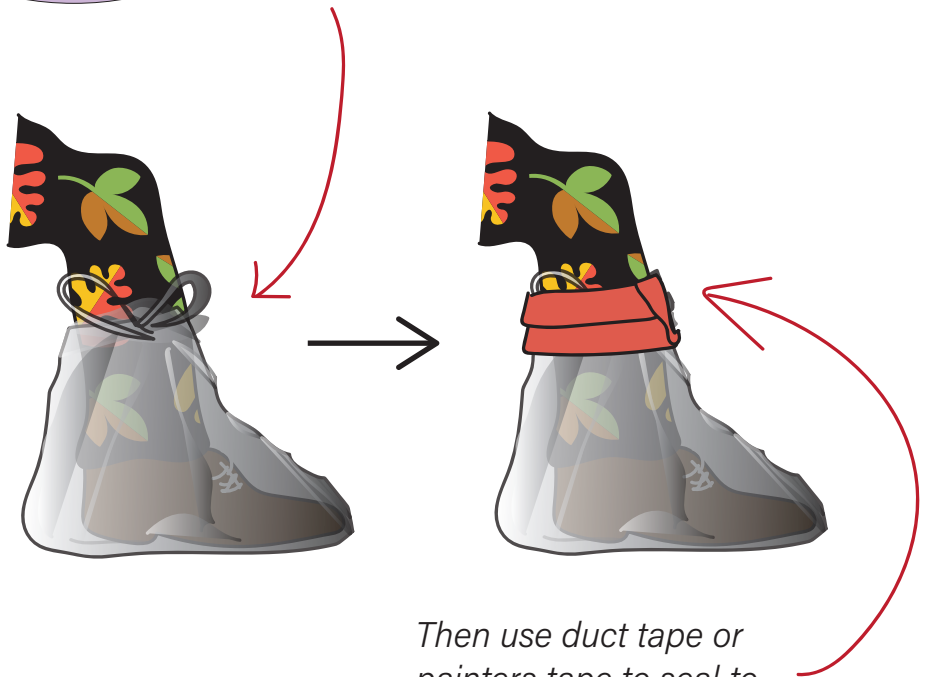
### STEP 1

*Wearing shoes, step into the plastic grocery store bag*



### STEP 2

*Use the handles to tie tightly around your pants leg.*



*Then use duct tape or painters tape to seal to PPE or coverall legs.*

## TIPS

*This also works as a 'bootie' to prevent you bringing contamination INTO a space*

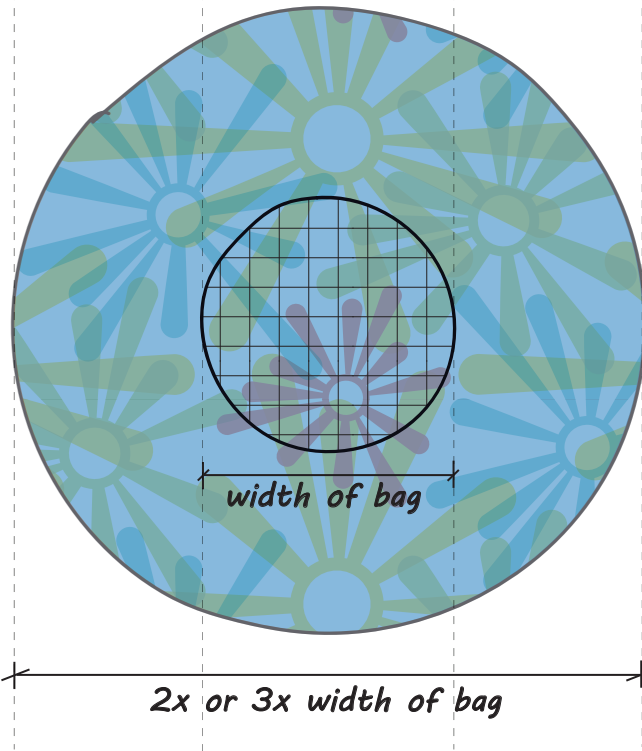
*Other things that work well are shower caps, sandwich bread bags, etc. Ziploc type bags can be too slippery however for safe traction*

# THE BAG

## RESOURCES

*Credit: Instructables*

- 6 MIL POLY or Plastic-Coated Tablecloth, etc. or durable waterproof bags.
- Scissors
- Rope or Cord

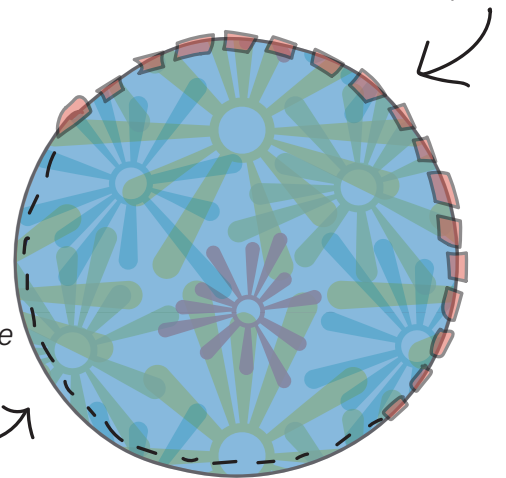


Cut circle of heavy duty fabric 2-3 times the width that will hold your DIY personal protective equipment.

**STEP 1**

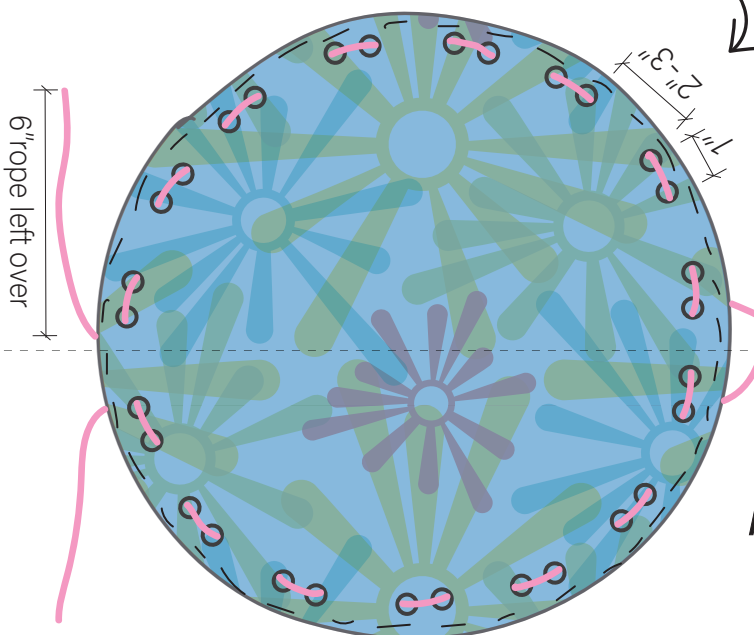
**THEN** reinforce edge with duct tape

OR sew edge over



**STEP 2**

Poke holes or install grommets every 1-2" apart - max 3" apart.



**NEXT**

Take rope or cord and go in and out of the holes so that the rope goes over and under the fabric - do this from halfway point around the circle to the other halfway point. Leave 6" or so rope extra on each side.

**pull knotted cords on both sides to tighten bag!**

**FINALLY** Knot the pairs of rope ends on either side. PULL knots further away from circle while lifting bag to tighten up.

# THE DECONTAMINATION

## RESOURCES

- 1 capful of bleach to 1 litre of water = strong disinfectant
- 1 capful of bleach to 2 litre of water = mild cleanser
- If you don't have bleach, use peroxide (DO NOT MIX WITH BLEACH)
- If you don't have peroxide, camping water purifier Iodine tabs work well also.  
In a serious pinch Listerine will also do.
- "Everclear," grain alcohol or other 90 to 100 proof liquor will work
- Isopropyl or rubbing alcohol (straight from bottle, do not dilute)
- Dry items in sunlight when possible - UV rays disinfect!
- Use spray or mister bottles - saves your disinfectant liquids and gets better coverage - mist or spray till thoroughly covered or damp for surface cleaning - fabrics soak to cleanse and then rinse with clean water
- Physical agitation of fabric or surfaces works to help dislodge virus

1. First when user is wearing – spray when wearing it.
2. Have a wash line – bleach solution first and then a rinse stage.
3. Still do bodily decontamination – don't touch face!

### SUIT DECONTAMINATION

### MASK DECONTAMINATION

Light peroxide OR bleach (DO NOT COMBINE!!!) solution to dip in, let sit for JUST a minute or so, and then rinse well in clean water and then air dry.

