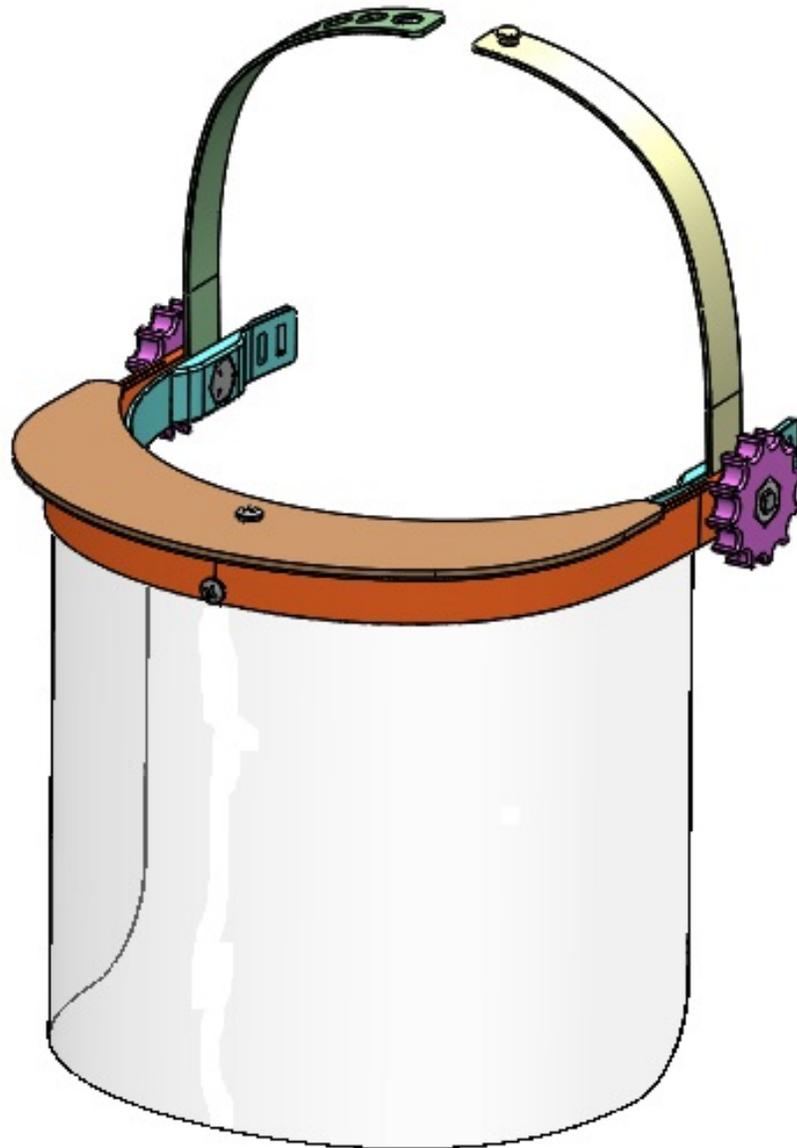


# 3D Printed Face Shield

*By Peter Smith, Principal Design Engineer, Gilero*



This face shield design is based on an open source design by HanochH on Thingiverse. Changes were to make the design more robust.

This design uses a number of 3D printed parts. The prototype was printed in PETG on a Fusion3.

It also uses the following:

- One (1) 12" x 7" sheet of PET clear film, 0.010 – 0.020" thick (or a cut up 2L soda bottle)
- Two (2) 1/4-20 x 5/8" long Hex Head Screws (with 7/16" across the flats of the hex head)
- Two (2) 1/4-20 Hex Nuts (with 7/16" across the flats)
- Two (2) #6 x 1/2" long button head sheet metal screws
- Ten inches of 1/4" braided elastic or similar

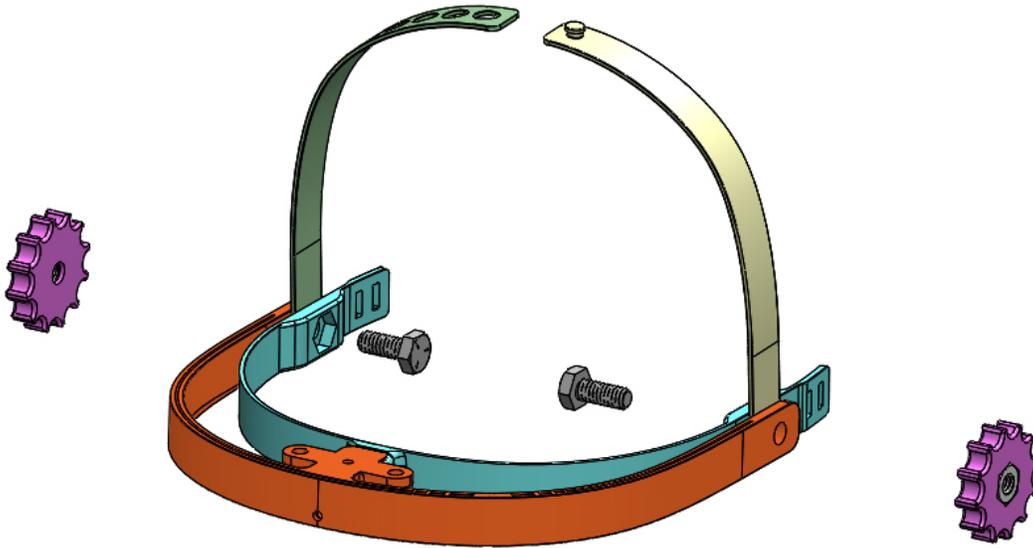
The above are commonly available in any hardware store or from online vendors such as McMaster-Carr: [www.mcmaster.com](http://www.mcmaster.com)

Tools required for assembly:

- Phillips screwdriver (#1 or #2)
- Box cutter or sharp knife
- Pair of household scissors

## Step 1.

Print all parts using the supplied STL files. Note that 2 copies of the thumbnut will be needed.



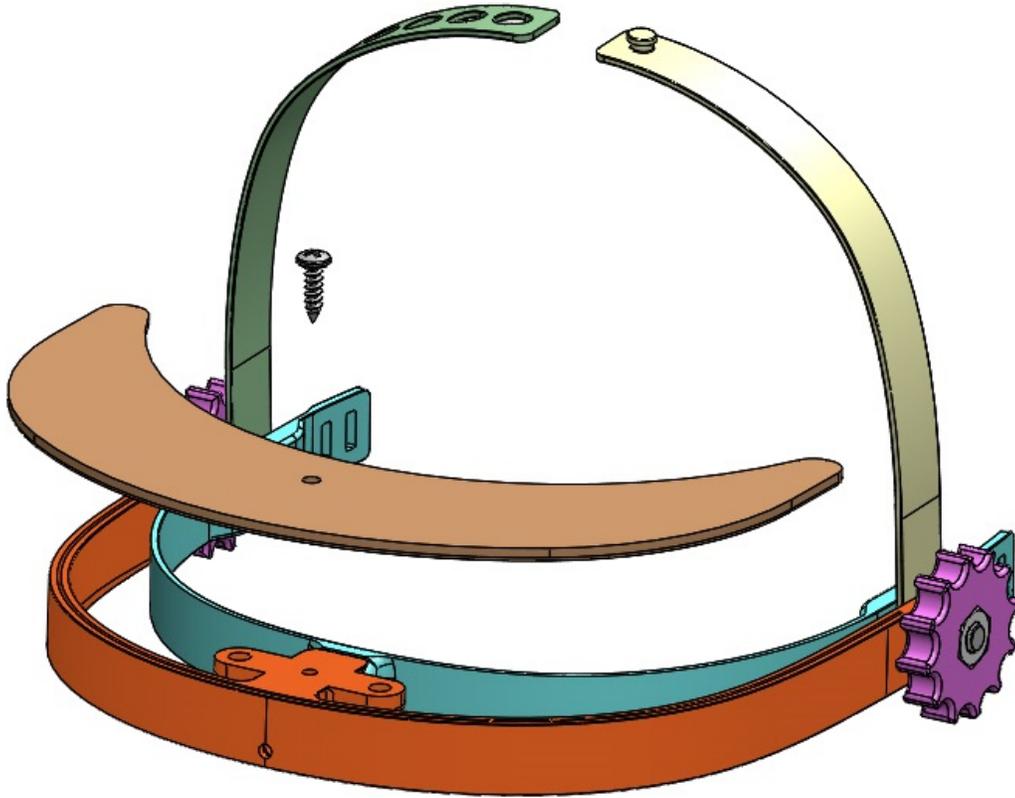
Press the nuts into the thumbnut printed parts.

Press the Hex Head Screws into the recesses in the blue part shown and through the holes in the other parts as shown.

Screw the assembled thumbnuts onto the Hex Head Screws to hold the assembly together.

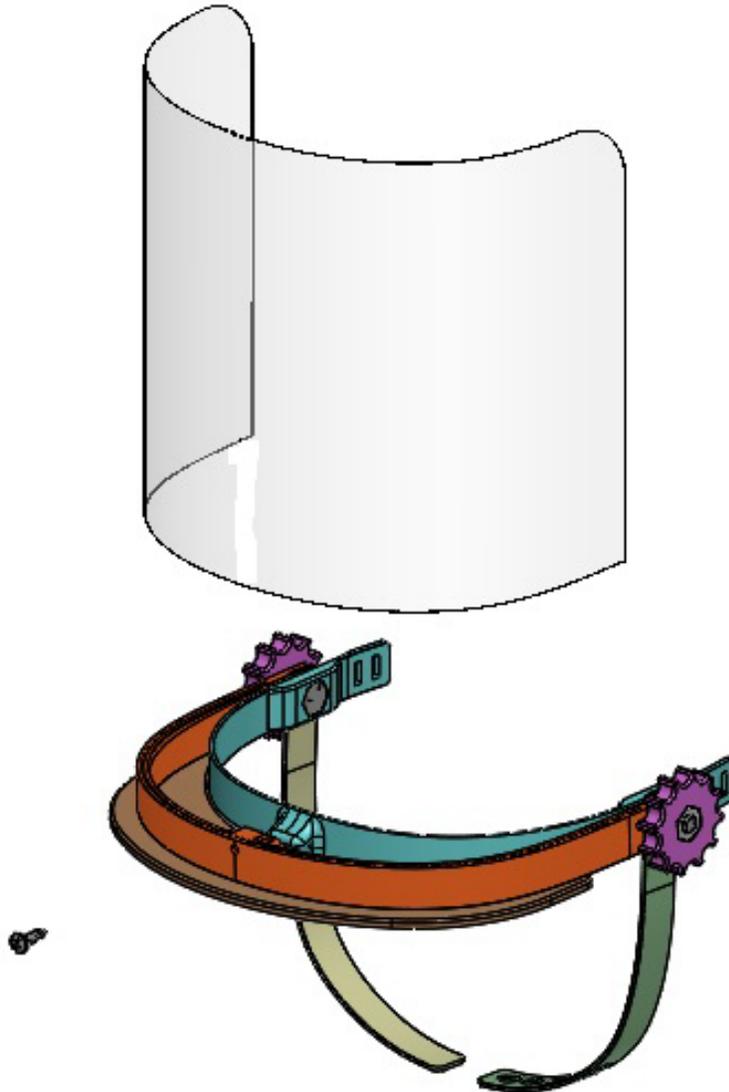
## Step 2.

Secure the cap with one of the #6 sheet metal screws.

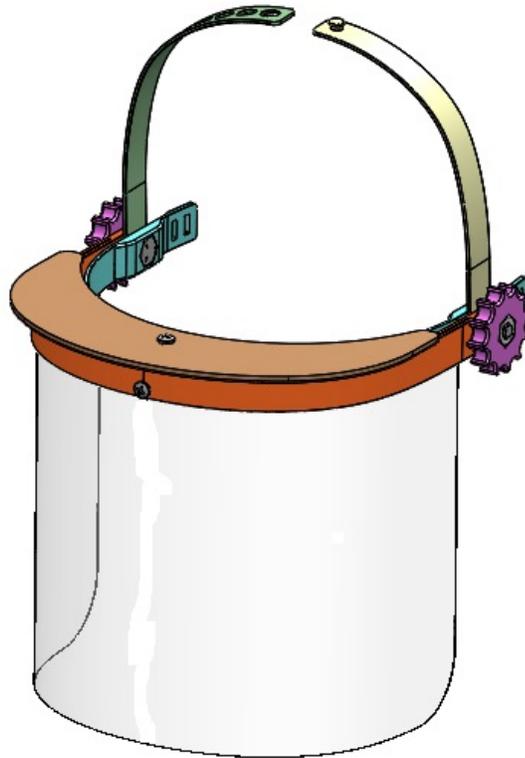


### Step 3.

Slip the visor into the gap in the orange part shown until it butts up to the cap. Secure in place with the other #6 screw. If necessary, use a sharp pointed object or drill to make a hole in the visor material first.



## Use Instructions:



Clip the top loops together to fit the user's head comfortably. This is a weak point, so if necessary, use a band aid or loop of Duct Tape to secure.

The thumbnuts on either side can be loosened to adjust the angle at which the visor fits relative to the top loop and tightened again to hold the visor in the up position as required.

Wearing a head bandana or padding the front of the blue loop area may improve user comfort.

Shield can be cleaned with normal household detergents and water.

**Do not use any abrasive cleaners on the clear visor.**

# Making a Visor from a Two-Liter Soda Bottle

## Step 1.

Find a two-liter, straight sided soda bottle. This store brand bottle cost \$0.60. Use caution when emptying the bottle so that the plastic does not crease.



## Step 2.

Remove the label by cutting it with scissors and peeling it off. It's likely there will be a 1-2" wide band of adhesive left on the bottle.

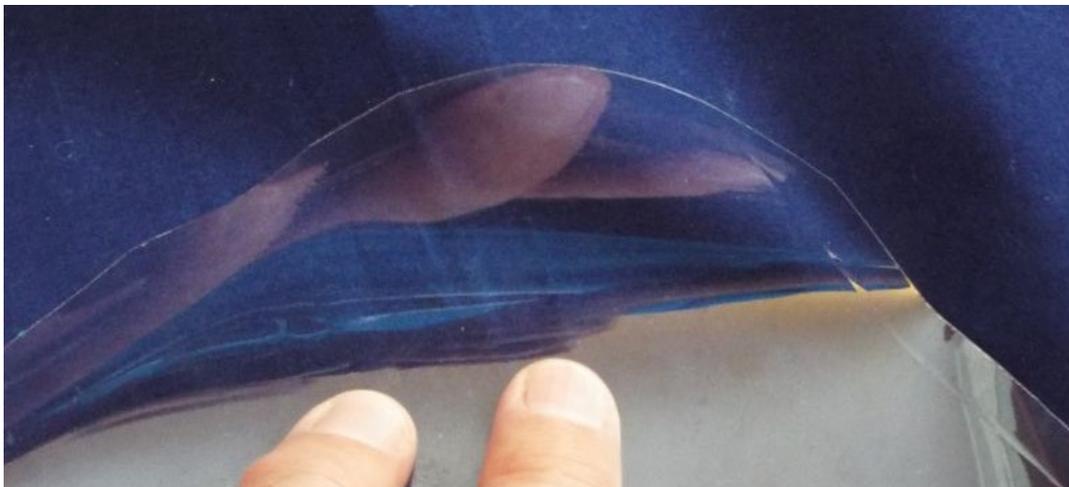
Cut bottle approximately along the lines shown. Use box cutter or knife to make the initial hole. The bottle should then cut easily with a pair of scissors. The edges can be neatened up after the section has been cut out. The line pictured on the left is on the straight section of the bottle, and the line pictured on the right is about 1" onto the curved top section.

The adhesive covered section has been cut off at this stage. A clear section of the bottle, approximately 11" x 7" will be left. Take care not to scratch or crease the plastic.



### Step 3.

Round the corners on the edge that has the curve from the original bottle. This edge will form the bottom of the visor. Ensure the other three edges are straight.



## Visor as Fitted to 3D Printed Parts:



The visor curves in tighter at the bottom to provide a good fit around the sides of the face. The plastic is clear enough for most purposes.