

Materials we have used:

- Visor: 'Food Grade' Clear PVC
- Headband: HIPS (strips cut from the long side of regular coloured sheets to fit a school vacuum former)
- Forehead Cushion Strip: Plastazote (soft foam) & 20-25mm Double-Sided Tape
- Tensioner: Regular Rubber Band, approx. 80mm unstretched
- Fasteners: Brass Plated (Steel) Textile Hole Reinforcers/"Rivets"

After making an initial prototype (with the blue band below), we quickly realised that the visor sat quite/too close to the wearer's face. So Mark 2 Model has an additional strip of HIPS to push the PVC further forwards, as showing on the revised prototype (with the green band below).

The Visor depth was based on an 'approved' template from the following site: <https://www.3dnatives.com/en/prusa-medical-shields-covid-19-200320205/> This site's design is based on 3D printing the headband.

We decided to simplify the manufacturing design/process, because 3D printing the headbands (as specified above) while ideal, would have taken approximately 2-4 hours each to produce. This is far too slow for our high local Primary Care Team demand levels.

The steps below have a shorter visor depth dimension of 270mm, based on the clear PVC we had available in any quantity. Our local nurses felt this was fine after giving them a test and check over.



Mark 1 - Prototype



Mark 2 - Production Model



Production Steps

The trimmer works well for cutting the clear PVC. A craft knife and safety rule also works fine.

(Trimmer might need sharpening sooner rather than later!)



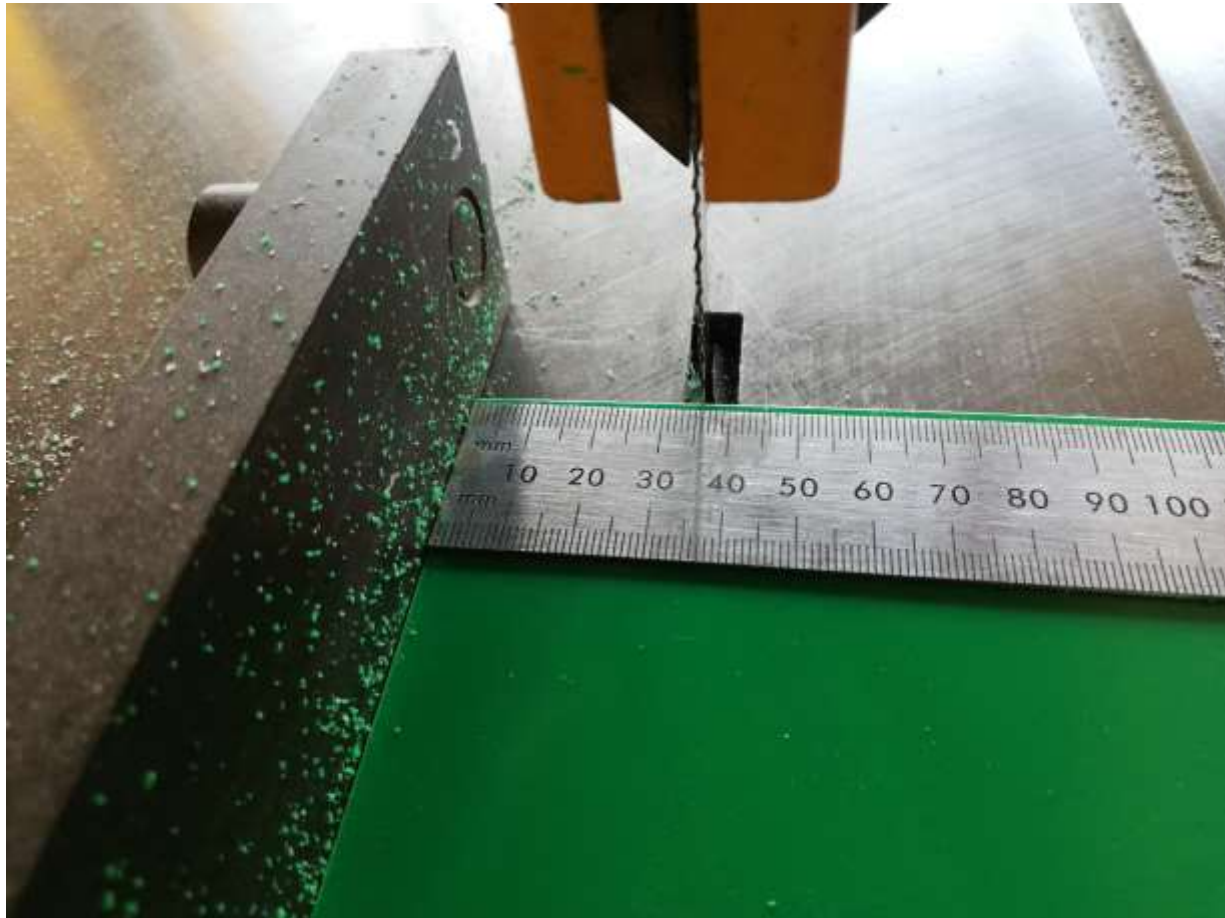
Cut it off at 240mm in width. As it comes on a roll this is the direction of the natural built-in curvature; handy!



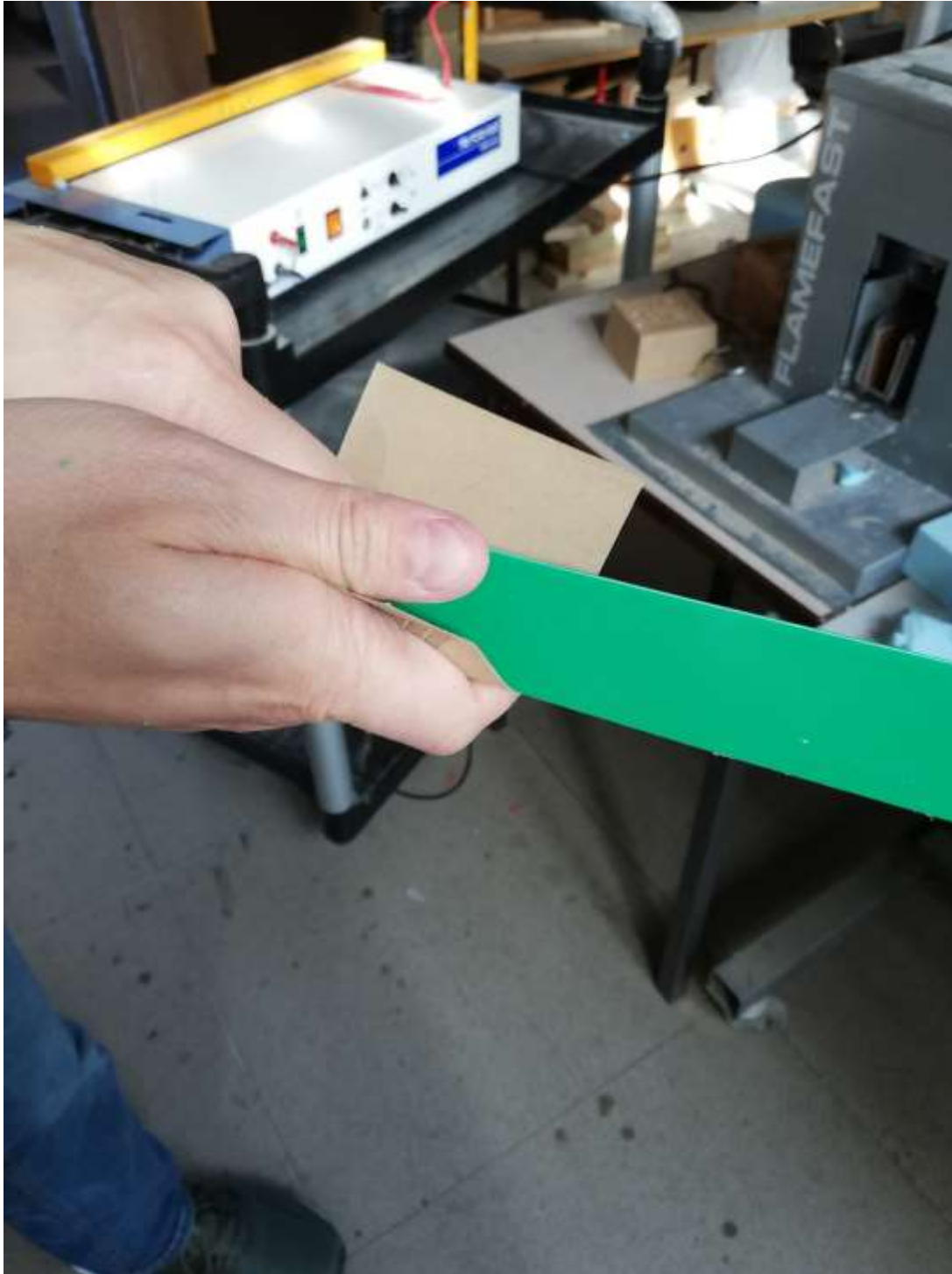
We had already cut our roll in half on the bandsaw (for existing vacuum forming projects) so it was approx. 270mm which seems fine. This will be the depth of the visor from forehead to chin.



The HIPS headband strip is cut at approx. 35mm width, down the long side of a regular sheet; bought to exactly fit our school vacuum former; CR Clarke machine. Tilgear Ltd supply this size in school packs.



Sand off the 'swarf' from the cut edges with some fine abrasive paper.



Place headband on the strip heater with about 20mm (min) over the element. Heat steadily on both sides until flexible enough to fold over. NB: we found this to be trickiest task of the whole process; getting the temperature just right, so it bends neatly and retains strength/spring.



Textile 'rivets' work well for fixing the visor to the headband. If you don't have any/enough of these then small cable ties would probably work fine.



Assembly: Rivet the visor onto the headband. Please note which way the end-bends on the headband face; upwards. (Yes, we got it wrong once!) 3 rivets seems fine.



NB: With Mark 2 Model, we first attached an extra strip of HIPS to the visor (initially with just one rivet in the middle) and then attached that combined component onto the main headband strip, with the two further rivets. Whilst doing this, you need to add the extra curvature to make it 'stand out' from the wearer's face; as below.





Round the visor corners as they are very sharp. Strong scissors work fine.

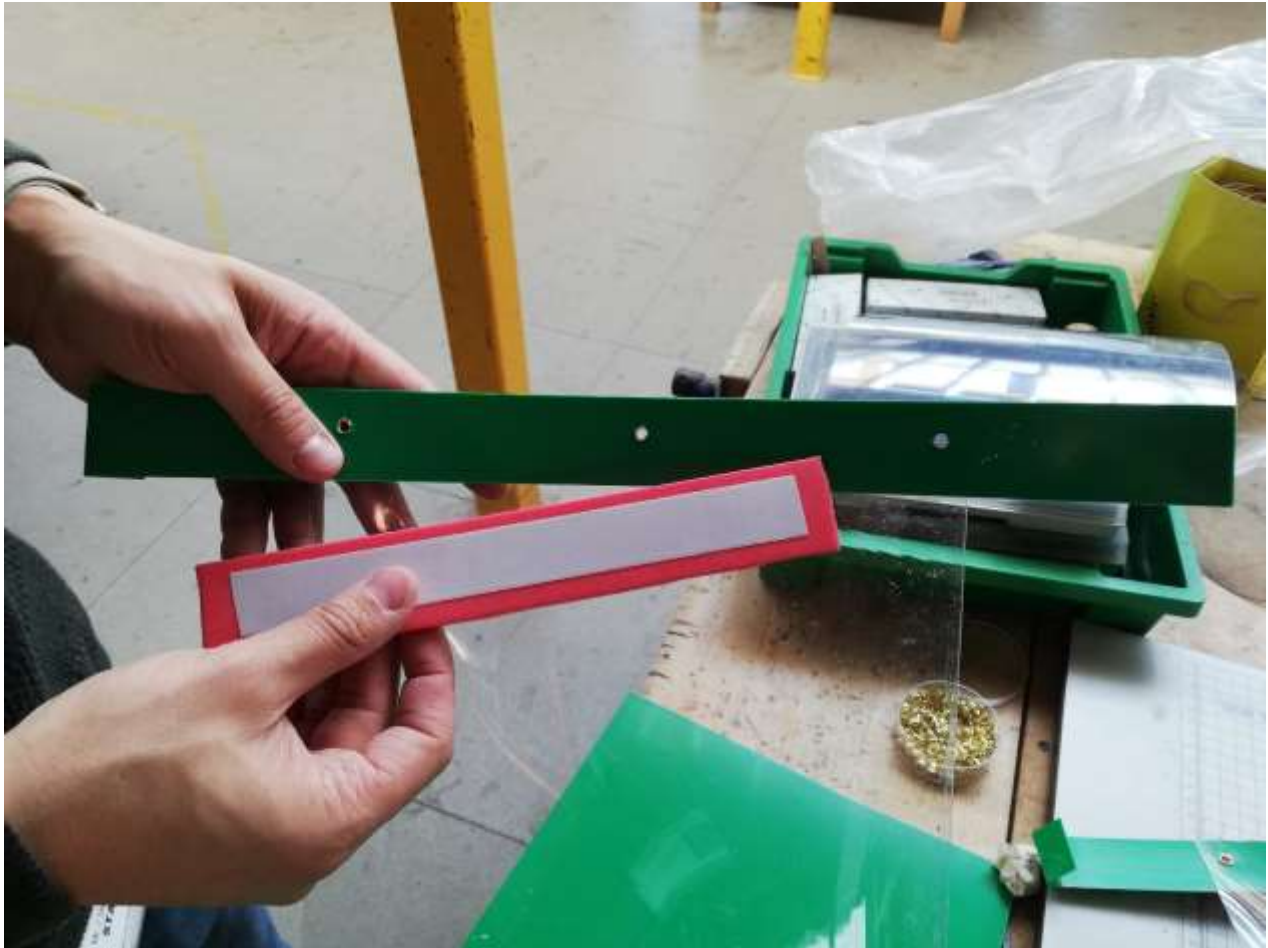


Forehead Cushion Strip of approx. 240mm. We have left the double-sided tape just a bit shorter at both ends, so that medical staff could peel off the foam more easily and replace with fresh when required.

NB: Mark 2 Model has just 160mm length of Plastizote, as this is sufficient and saves resources.



We are because the medical staff will probably want/need to sanitise the hard parts of the visor and then apply the foam strip. With the extra spare foam strips, this will hopefully enable them to be re-used after interim re-sanitising.



In terms of timescale, it took 4 of us about 8 hours to make 120.



Initial feedback from local Primary Care staff has been very positive, but there are undoubtedly points that could be improved, based on a longer period of usage.

Good luck with your own manufacture and any improvements you come up with. Our email addresses are right at the end of the document and we would love to hear from you and receive any pictures of your products and your making processes please.



Any thoughts/suggestions/pictures welcome please, to:

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Our main supplier of materials for this product is:

Tilgear Limited

<https://www.tilgear.info/index.php?route=information/contact>