

AME 21267 Project 2: Face Shield Design

Group 4: Hannah Rafael, Sean Dixon, Jackson Amigh, Bryant Solomon

Background Statement

This presentation covers a face shield design created by Group 4 that can be distributed to healthcare workers. The purpose of the face shield is to protect the user by preventing exposure of the user's eyes, mouth, and nose to viruses. It has also become a significant means of additional protection in times of other protective equipment shortages.

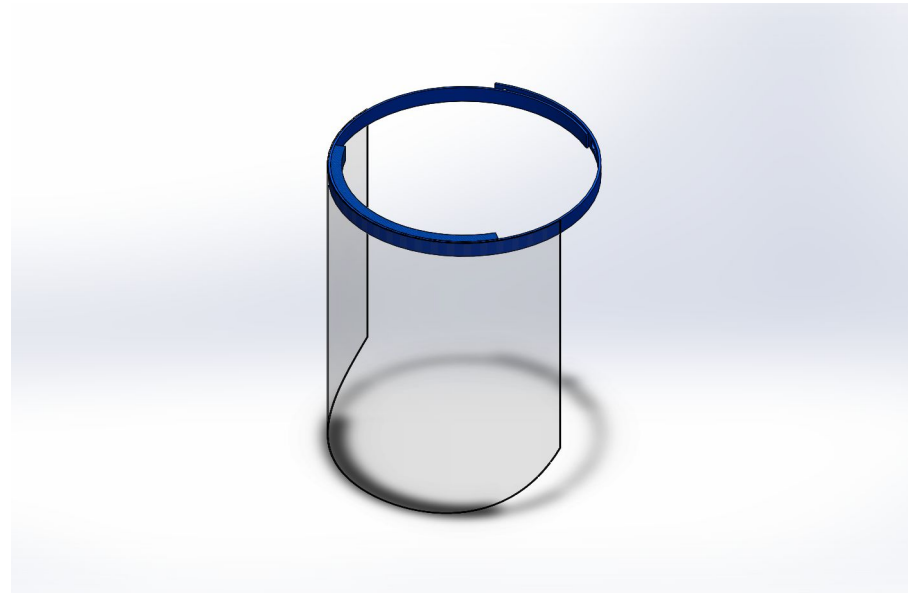


Figure 1. SOLIDWORKS Image of Section 2, Group 4's Face Shield Design

The Issue

Due to the ongoing COVID-19 pandemic, healthcare facilities have experienced vast Personal Protective Equipment (PPE) shortages. This has put healthcare professionals and patients at the risk of being infected by the virus as well as infecting others.

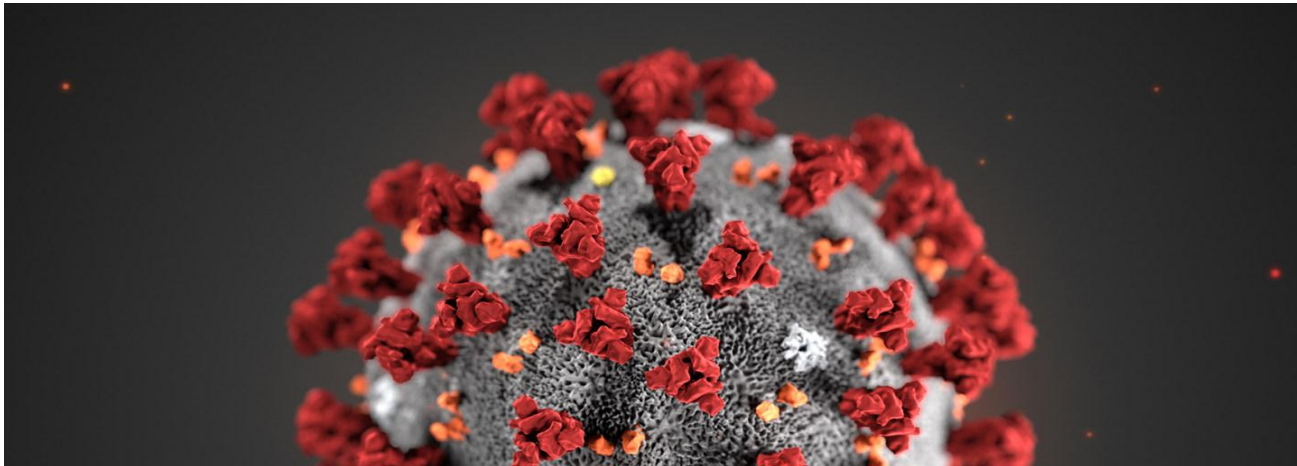


Figure 2. A digital illustration of the Coronavirus, courtesy of Centers for Disease Control and Prevention.

Group 4's Design

An assembly that consists of three parts:

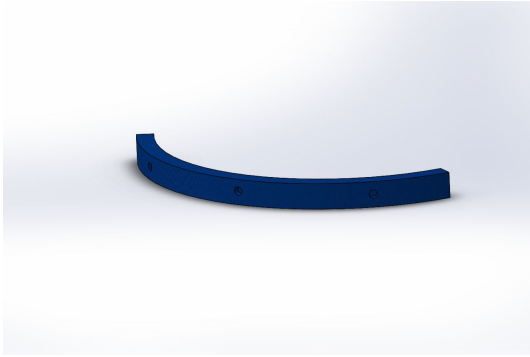


Figure 3. Cushion

The user is able to rest their forehead against this part, and it is attached to the ring.

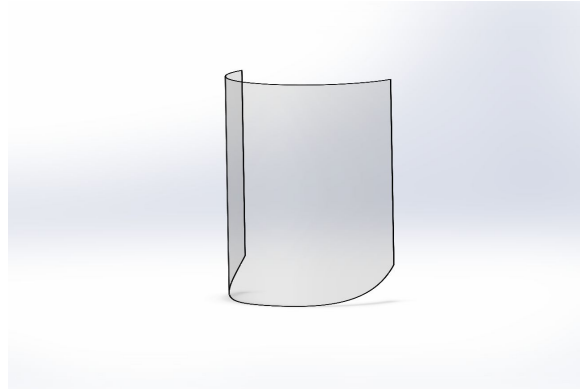


Figure 4. Cover

The cover acts as the component that shields the wearer from the virus. It is rounded to cover the sides of the user's face.

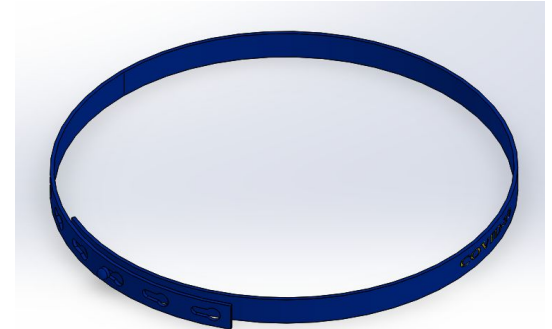


Figure 5. Ring

This part allows the user to fit the headpiece to their head firmly and is adjustable.

How the Design Works to Help People

- Provides health care personnel with additional protection during this period of PPE shortages.
- Enables employees to continue working in medical facilities where the virus may be present.
- Helps prevent employees from spreading the virus if they are asymptomatic carriers.
- Provides greater peace-of-mind to care personnel and patients during a stressful time.



Figure 7. Two health workers wearing face shields at a Brooklyn Hospital Center tent, courtesy of *Business Insider*.

Overall Product Evaluation

- The final product would cost about \$2.53 to produce and is reusable.
- Potential issues:
 - User's breathe could cause the shield to fog up
 - Visual distortion from fogging could limit work performance
 - Adjustments may still not fit perfectly
- Proposed Improvements:
 - Suggest washing the shield to alleviate visual distortion
 - Choose a different cover material
 - More hole adjustments in smaller increments



Any Questions?