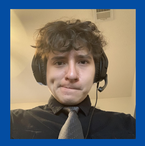

Kristian Mayorga


Brian Rosales


Dipesh Maharjan


Jose Rangel

PROKEEP Mask Protects

Creative Keep

Creative Keep

Abstract

The most accessible masks are disposable, not washable, have high leakage, and are more costly for better features. The PROKEEP Composite mask serves to be a reusable, washable, affordable mask that is able to prevent air leakage efficiently while using interchangeable filters for control of breathability.

Purpose

The objective of PROKEEP Composite Mask is to demonstrate an airflow controlling sealant. It is capable of adapting to different face shapes by using a composite material of memory foam and silicone rubber.

Key Specifications

+Enough Airflow for an Individual to receive sufficient oxygen insulation

+Insulation should have the ability to form to different faces and be replaceable

+Ability to change different filters

+Product meets the pressure differential for ASTM F2100 Standard

+Ability to withstand high temperatures up to 80-90 F

+Dishwasher Safe

Technical Objective

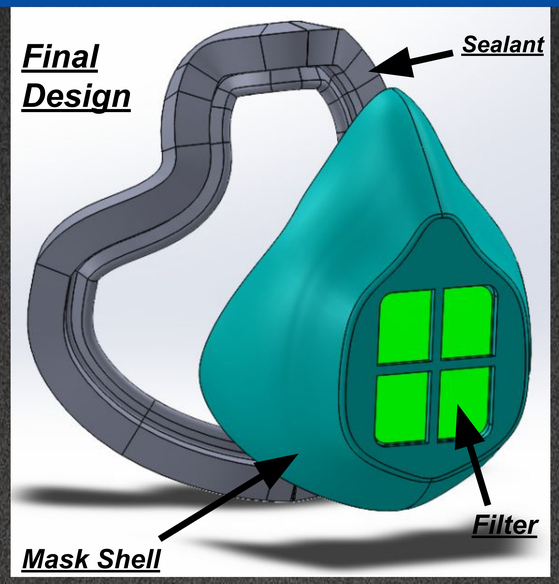
+3mm wide slit within sealant to hug the attachable PETG mask shell

+Filter Dimensions of 1.2 x 1.4 in.

+Must fit over a face height of 4 inches

Fabrication

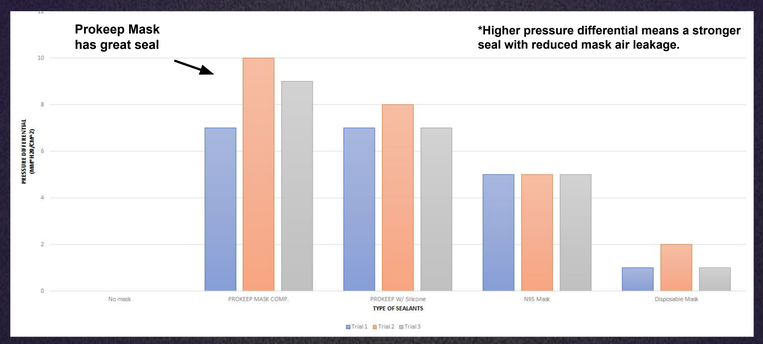
Final Design



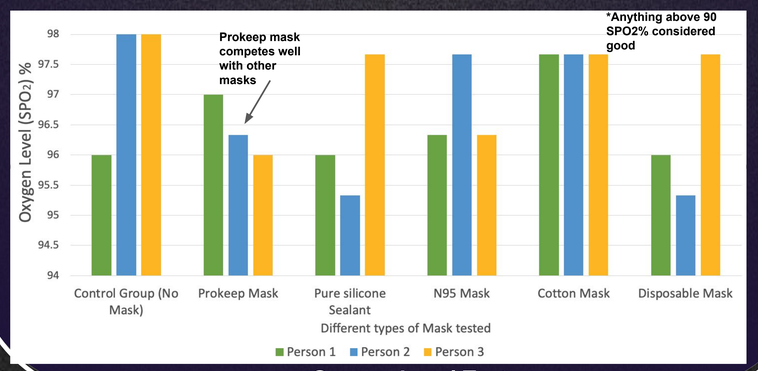
Testing

Using a fog machine, an Anemometer, a BVM resuscitator (Bag Valve Resuscitator) and lastly a Pulse Oximeter, our composite sealant was measured, operating effectively at sealing airflow for the filter. Testing also proved how well the new design compared to the off the shelf products which can be bought from local supermarkets.

BVM Test with Prokeep Mask

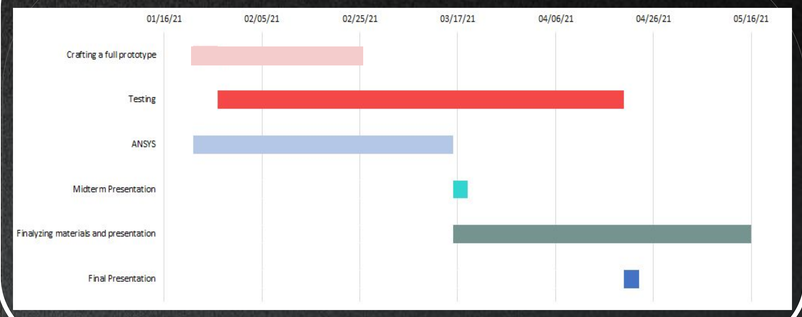


BVM Leak Test

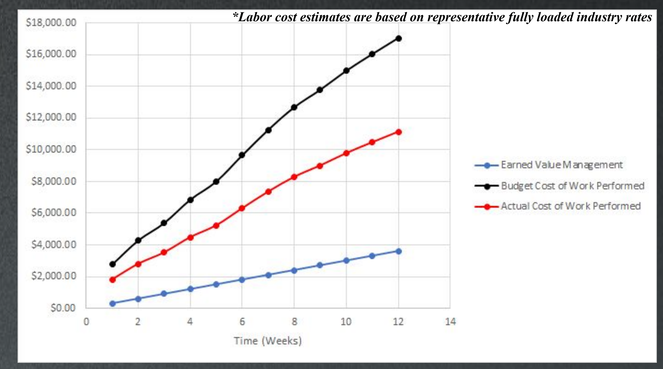


Oxygen Level Test

Senior 1 & 2 Schedule



Project Cost



Labor Cost

Estimated Cost	$	400.00
Cost of Fabrication	$	50.00
Cost of Testing	$	198.00
Total Cost	$	248.00

Cost of Project Materials

Conclusion

Overall the BVM analysis shows the prokeep mask seals effectively along the edges of a face. It also showed that the Prokeep mask has a high differential pressure which could cause problems for breathability, however interchanging filters can guarantee adjustable air pressure. The oxygen level test did show a reduction of oxygen level, but still competes with other masks. Other tests like the dishwasher, airflow test, as well as the leak test also proved the effectiveness of the prokeep mask sealant. Cost required for testing/building mask were within budget. Cost of building the mask was expensive and time consuming but overall the original goal of this project has been met.

Acknowledgements

Richard King

** In partial fulfillment for the requirements of ME 4813, AB Criteria 1,2,3,4,5,6,7*