



OstoSeal: Waterproof and Reusable Ostomy Pouch Shower Cover

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Client: Mrs. Tami Mlodik

Advisor: Dr. Duc-Huy Nguyen

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Overview

- Problem Statement
- Client Description
- Background
- Product Design Specification
- Preliminary Designs
- Design Matrix
- Future Work
- References



Figure 1: Design team picture

Problem Statement

Design a safe, comfortable, and reusable ostomy pouch and wafer adhesive cover that will keep the two components dry while showering.



Client Description



Figure 2: Mrs. Tami Mlodik

Mrs. Tami Mlodik

School psychologist at DC Everest Senior High

Underwent permanent end ileostomy surgery to reroute small intestine to abdominal stoma.

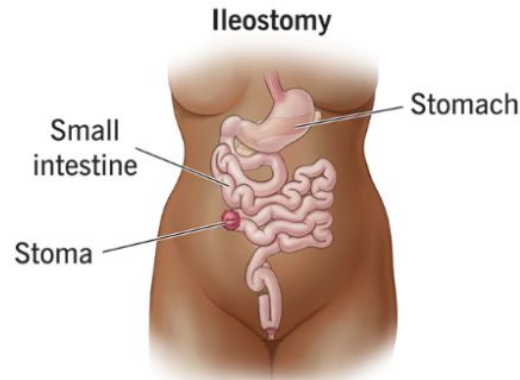


Figure 3: Illustration of the body after ileostomy.

Background

At-home solutions:

- Plastic bag cover
- Waterproof tape
- Frequent ostomy bag removal/reapplication
- Shower avoidance/alternative showering



Figure 4: Client's at-home solution



Figure 5: Front view

Competing Solutions



Figure 6: Belt pouch

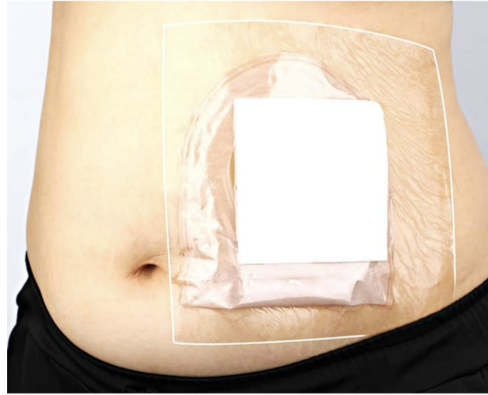


Figure 7: Adhesive square



Figure 8: Scrunch pouch

Design Specifications

PDS Summary:

- Use for daily showering
- Minimal hindrance to bathing
- 6-12 month reusability
- Maintain integrity of ostomy bag

Preliminary Designs

Design 1:

- Ostomy bag fed into pouch
- Tape over flaps to attach

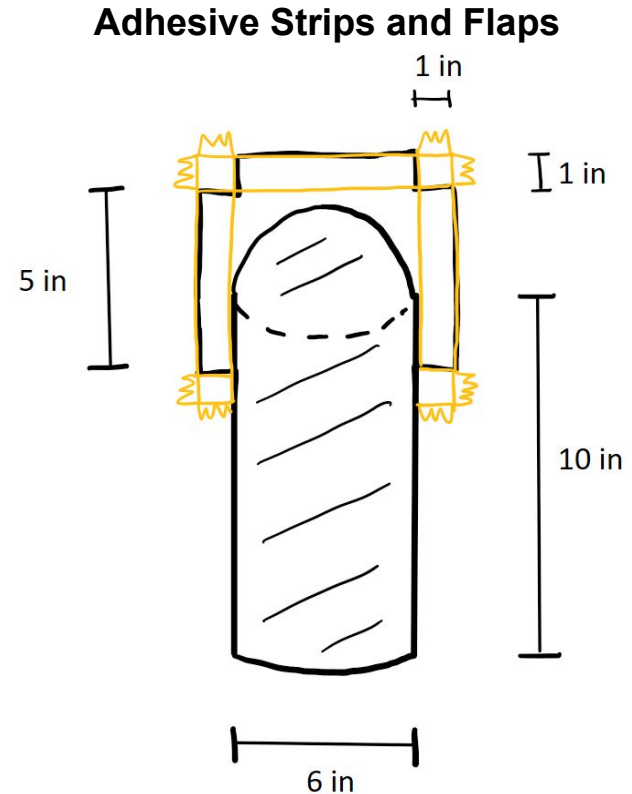
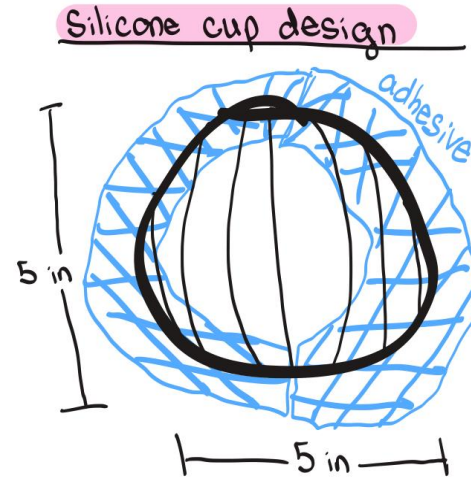


Figure 9: Adhesive Strips and Flaps Drawing

Preliminary Designs

Design 2:

- Silicone cup encloses entire bag
- Adheres to body with silicone tape



* Cup: Rigid silicone material

* Adhesive: Silicone tape.

Figure 10: Silicone Cup Design Drawing

Preliminary Designs

Design 3:

- Ostomy bag fed into pouch
- Two part adhesive:
 - Permanent silicone
 - Acrylic tape
- Adjustable

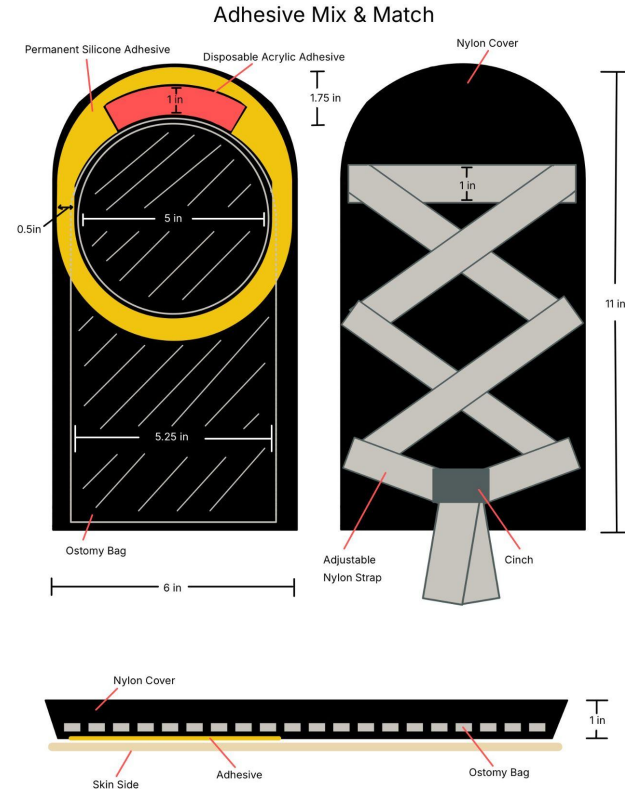


Figure 11: Adhesive Mix & Match Drawing



Design Matrix

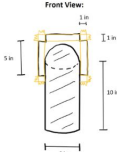
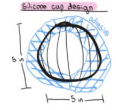
		Adhesive Mix and Match 		Adhesive Strips on Flaps 		Silicone Cup Design 	
Criteria	Weight	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score
Waterproofness	25	4/5	20	5/5	25	2/5	10
Ease of Use	20	4/5	16	3.5/5	14	5/5	20
Reusability	15	3/5	9	2/5	6	5/5	15
Comfort	15	4/5	12	4/5	12	2/5	6
Ease of Fabrication	10	3/5	6	4/5	8	5/5	10
Adjustability	10	5/5	10	2/5	4	0/5	0
Cost	5	4/5	4	5/5	5	5/5	5
Total	100	Sum	76	Sum	74	Sum	66

Figure 12: Design Matrix

Final Design

- Waterproofed nylon cover
- BioThane elastic adjustable strap
- Combination of disposable acrylic adhesive, silicone adhesive, and a silicone gasket maintains the product-to-skin seal

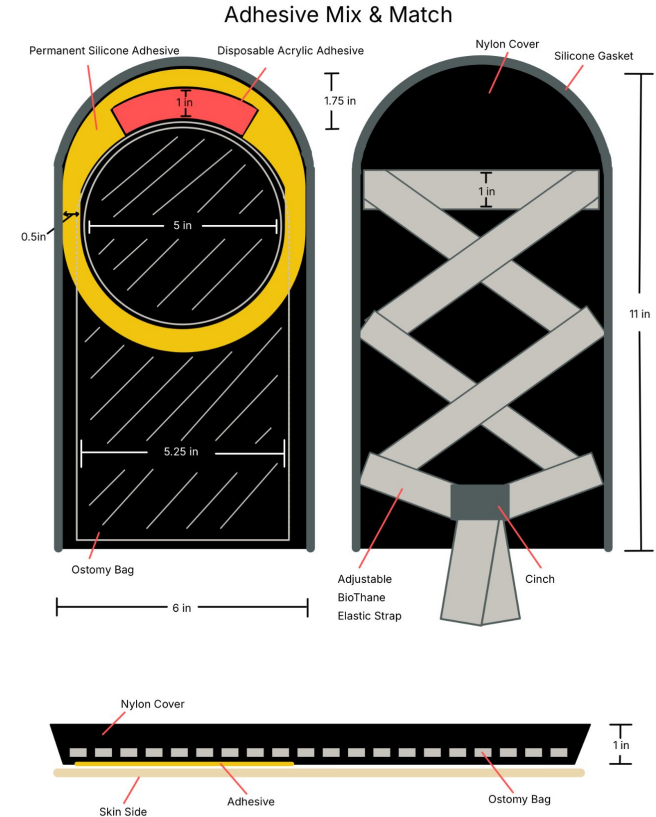


Figure 13: Mix and Match Design



Future Testing

No Current testing, Future Plans:

- Waterproofness of the seal/silicone gasket
- Adhesive performance and reusability
- Adjustability and comfort

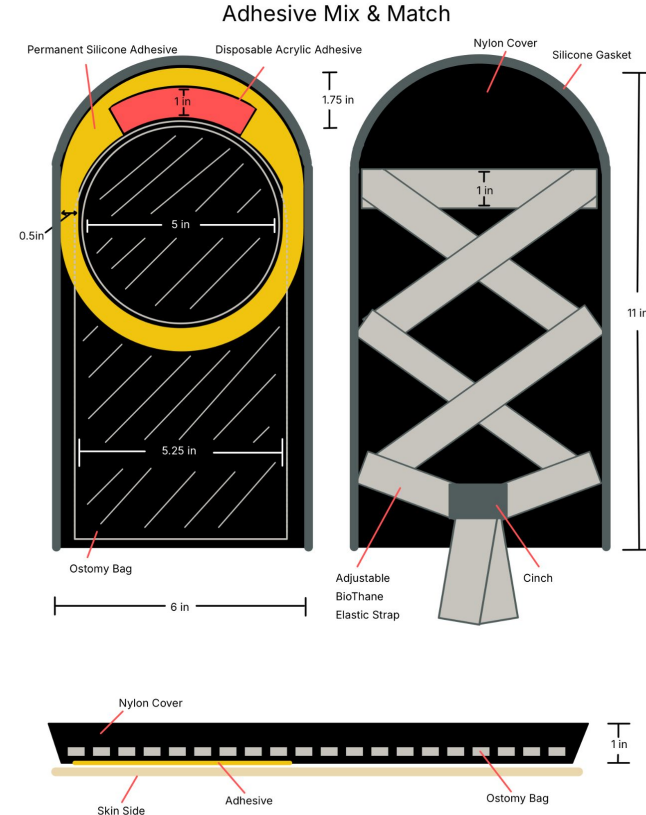
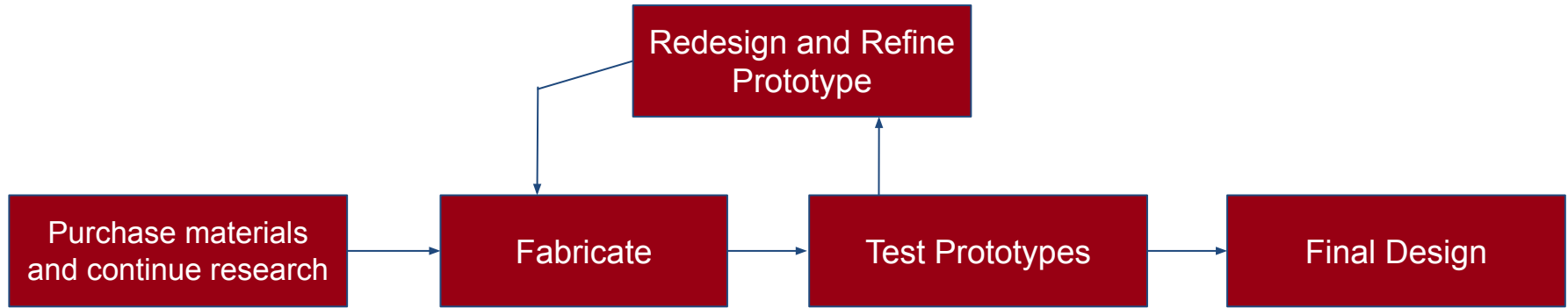


Figure 14: Mix and Match Design



Future Plans



Pass project on to future group(s)?

Acknowledgments

Thank You!

Mrs. Tami Mlodik

Dr. Duc-Huy Nguyen

Dr. John Puccinelli

UW-Madison College of Engineering



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