

Developing Reusable Sweat Pads with Polypropylene Inner Layer

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Abstract- Sweating is a healthy indicator, but it leaves skin looking discolored, and feeling moist. To provide an answer for this issue, sweat pads are used. Sweat pads help in absorbing excess sweat and protect the clothes. This comes in two types, disposable sweat pads and reusable sweat pads respectively. Although disposable sweat pads are widely accessible, they don't provide a comfortable fit or sensation. To address the issues faced while using reusable sweat pads, a study was conducted. Convenient sampling mode was chosen to collect responses. The main objective to take up this project is to educate the people about reusable sweat pads and as fashion students it's our responsibility to produce products that are environmentally sustainable. There are three primary sections to the article. The design, manufacturing, and the absorbency.

Keywords- Developing Reusable Sweat Pads, Polypropylene Inner Layer.

I. INTRODUCTION

Underarm sweat pads are small absorbent pads which are placed in the underarm area of garments to prevent perspiration stains and odor. These pads accumulate and absorb sweat, giving you a more confident and pleasant experience. Underarm sweat pads are often used by those who have excessive sweating, also known as hyperhidrosis, or who simply wish to protect themselves from sweat stains on their clothes. The present market forecast for underarm sweat pads is favorable, with significant growth projected in the future years. Increased awareness of personal sanitation, increased disposable incomes, and evolving lifestyles are all driving consumer interest in underarm sweat pads. Furthermore, the increased acceptance and usage of such items among those who desire to have a sweat-free appearance is driving market expansion.

The future prospects for the underarm sweat pad market are likewise encouraging. As the world population urbanizes and becomes more aware of personal hygiene, the market for underarm sweat pads is predicted to rise. Furthermore, the rising prevalence of hyperhidrosis, as well as the growing trend toward sustainable and eco-friendly goods,

offer additional lucrative prospects for producers in this market.

The underarm sweat pad industry serves both men and women, offering a practical solution to excessive perspiration. These discrete pads are intended to be inserted inside the underarm area of garments, absorbing sweat and preventing unappealing sweat marks. For men, these pads are frequently utilized in professional contexts where sweat stains are perceived as unprofessional. Women, on the other hand, frequently use these pads to keep their clothes dry and stain-free, especially on special occasions or when wearing fabrics that are delicate.

Underarm sweat pads are available in two market types: disposable and reusable. Disposable sweat pads are designed for single use and typically consist of absorbent materials that effectively absorb the sweat and smell. They are functional as well as hygienic because they can be effortlessly disposed of after use. Reusable sweat pads, on the other hand, are made of durable supplies that can be washed and reused. These pads are environmentally beneficial and cost-effective in the long run because they decrease the need for periodic purchasing.

Objectives of the Study:

- To design a user-friendly, ecologically conscious sweat pad solution.
- To prevent colour fastness to fabric.
- To increase the sweat pad's perspiration absorbency.
- To educate people about the positive aspects of reusable sweat pads.
- To formulate a product that is safe for skin.

II. METHODOLOGY

Study on Sweat pads

Sweat pads are hygienic devices meant to absorb sweat in the armpits. Sweating in your underarms can generate an unpleasant smell, making you uncomfortable. So, the sweat

pads absorb that sweat, minimizing the probability of that unpleasant odor. Wearing sweat pads can help safeguard your clothes from stains by acting as a barrier between your armpit and your clothing. The sweat pad decreases the need to wash your clothing, as sweat causes unpleasant scents and white spots.

Sweat Pad types

Underarm sweat pads are available in two market types: disposable and reusable products. Disposable sweat pads are intended for single use and are usually comprised of absorbent materials that effectively absorb perspiration and odor. They are practical and sanitary because they can be readily disposed of after use. Reusable sweat pads, on the other hand, are made of long-lasting materials that can be washed and reused. These pads are environmentally sustainable and economical in the long run because they minimize the need for frequent purchasing.

Survey on sweat pads in market

There is a rising demand for sustainable sweat pads produced from biodegradable materials or with reusable designs. Sweat pad design is always evolving, with sophisticated materials being used to improve absorption, breathability, and comfort levels. Brands are broadening their product lines to be more inclusive, with sweat pads created for people of all genders. There is a steadily increasing need for bespoke and adjustable sweat pads that cater to individual preferences and needs.

Customer feedback

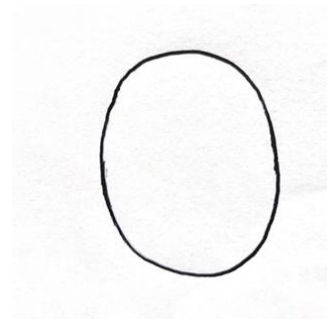
A google form was made and a survey was conducted to know about the customer preferences in choosing sweat pad. Convenient sampling mode was chosen. 50 people were surveyed to understand the insights of the problems in reusable sweat pads to design an efficient product.

Evaluation of the survey

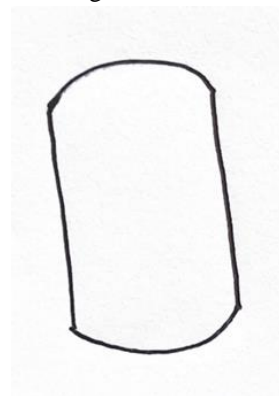
The responses from the survey were analyzed using pie chart. It is a circular statistical graphic which is divided into slices to illustrate numerical proportion. This helps us to easily understand the figures and make out the decision.

Designing of Sweat Pad

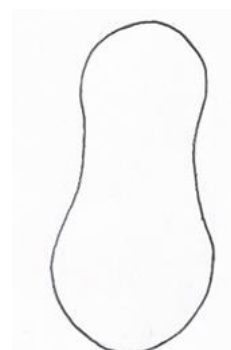
Analyzing the customer preferences, few sample were designed to suit the problems identified.



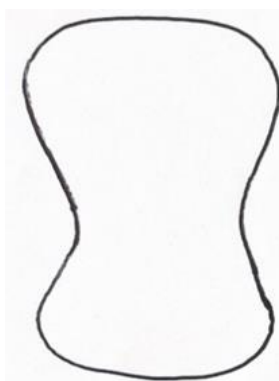
Design 1 ,Plate 3.4.1



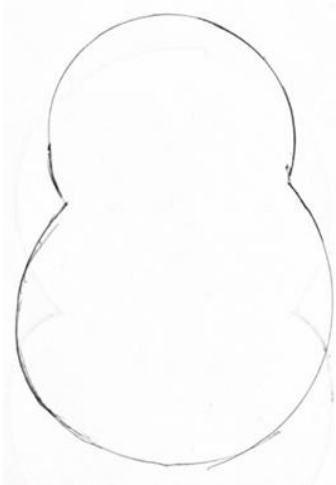
Design 2,Plate 3.4.2



Design 3,Plate 3.4.3



Design 4,Plate 3.4.4



Design 5 Plate 3.4.5

Fabric Selection

Base Fabric

Modal fabric was chosen as the base fabric. Modal fabric is a bio-based fabric developed by spinning beech tree cellulose. Modal is widely seen as an environmentally friendly replacement to cotton because beech trees do not require much water to thrive, hence the production process consumes around 10-20 times less water. The foremost reason to adopt this fabric is that Modal is pleasant to the touch and highly breathable. It is twice as absorbent than cotton, with micropores within the fabric absorbing any water or sweat that comes into touch with it.

Inner Layers

To absorb the sweat much better, the modal is stuffed with a 4-layered gauze and a polypropylene material. This gauze is used in medical field to absorb blood quickly. Its structure is of thin translucent material with loose open weave and is made of cotton. The polypropylene material is with its one side laminated with a non-woven material, which absorbs the sweat and dries up without letting it transfer to the next layer.

Pattern Making

The next step after deciding upon the design and fabric is pattern making. Patterns can help ensure that clothing has been produced to the desired requirements, resulting in improved quality as well as client fulfillment. Patterns may assist cut costs by lowering fabric waste and boosting manufacturing efficiency. After pattern making, fabric is cut accordingly. Cutting establishes the basis for the quality of the garment to be created; any flaw in the cutting process could

end in non-conformance with the quality requirements of all subsequent procedures.

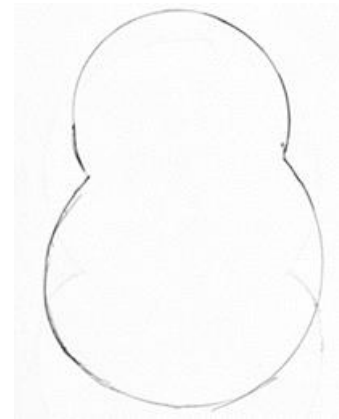


Plate 3.6.1 Finalized design.

3.7 Sewing

The reusable pad is stitched with the inner layers gauze and polypropylene covered by modal fabric. Single-needle machine is used to stitch the product and an elastic is added to wear it comfortably.



Plate 3.7.1 Product Sample

3.8 Testing

For testing of the sample, free swell absorptive capacity test was done to know the absorbency of the sample. It is the capability to absorb and retain perspiration. A commercial sample was also tested with the sample we made to compare the results.

III. RESULTS AND DISCUSSION

The present survey was conducted with a sample size of 50 and the results from the survey are discussed below,

Age Category of Participants : The data collected shows / reveals the age group of respondents be 18 – 21 17.6%, 22 – 26 4.0%, 27 – 35 62.7%, above 35 15.7%.
Occupation: The data collected shows that maximum of the respondents are students.
Body Sweat type: Data collected from this survey talks about how much the participants naturally sweat according to their body and activities.
Comfort Factor: The data of this survey reflects that most of the participants are feeling uncomfortable after they sweat.
Sweating in different Season / Occasion: The data collected reveals that most of the participants are said to sweat a lot during a particular season or occasion.
Which arm sweats more for you? This survey analyses that most of the participants have voted that both their hands sweat equally.
Usage of Arm pads: The data of this survey gets us the knowledge of how much our participants indulge sweat pads in their regular living, and most of our participants have answered “NO”.
Type of sweat pad preferred: The data collected from the survey reveals that most of the participants have voted for disposable sweat pads.
Usage of sweat pad on clothing type: The surveys shows that participants have mostly answered for functional / party wear dresses.
Problem faced while using: The data of the survey explains that most of our participants had found it difficult to place the sweat pads in proper position.
Preference while choosing a sweat pad: The data collected shows d us most of the participants have preferred more absorbency of all other qualities.
Nominal price for reusable sweat pads: The data collected from the survey reveals that the price range that participants are looking for a reusable sweat pad is Rs. 25 – Rs. 35.

Subjective Evaluation of wearer’s comfort:

Subjective evaluation of wearer's comfort has been done from the feedback on the impression of five wearers on the comfort characteristics like absorbency, comfort, freedom of movement and overall impression about the sweat pad which was taken in the form of questionnaire the evaluation is done based on the majority opinion which is given in the following table.

S NO	Properties	Average Percentage
1	Absorbency	93%
2	Comfort	91%
3	Freedom of Movement	96%
4	Overall impression	89%

IV. CONCLUSION

Reusable sweat pads are a sustainable option and is a skin – friendly product. From the survey, it can be concluded that,

- i. Most of the respondents fall in the age category of 27 – 35,
- ii. 82.4% of the respondents feel uncomfortable after sweating
- iii. 82.4% of the respondents voted disposable sweat pads as there is no awareness about reusable sweat pads.
- iv. 64.7% of the respondents prefer to use sweat pads for functional/ party wear
- v. 51% of the respondents found placing the sweat pad properly as their main problem.
- vi. Absorbency was the first preference of choice by 43.1% of the respondents.

Analyzing these factors, a sample was prepared with modal fabric and its inner layers consisting of 4 – layered gauze and polypropylene non – woven sheet. The sample was further tested by Free Swell Absorptive Capacity Test to know about the sample’s absorbency the test yielded a result of 8.8734 grammes.

Further, wear study was conducted to test the product among people. 80% of the feedback had a positive approach and 20% suggested minor corrections like change of strap type, colour options, and scent infusion.

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