

A Cram on the Production of Footwear with various fibers, sponges and medical roots

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ABSTRACT

The abstract or idea of this project is to produce a non woven fabric material by using grains vetiver roots and both Cotton Bamboo fibers mixed in 1:3:1 ratio, (ie) 20 % bamboo and 60% cotton fiber, 20 % of cut pieces of vetiver roots. This non-woven Slipper will be highly Anti-Microbial smooth, soft material will be having the cooling property and fragrance with more comfortness for the walkers. More over this product has medical nature and medical usage that is this product and my application of this material will be enhance to impact the root essence more comfortness while walking. Combination of textile technology and medical sciences has resulted into a new field called medical textiles. This foot wears work; a successful attempt had been made to develop an ecofriendly non- woven fabric Slipper made up of bamboo fiber and grains of vetiver, which is a new approach.

Key words: , Non-Woven's, Bamboo, Grains of Vetiver roots, Cotton, Slippers

1 INTRODUCTION:

1.1Non Woven

A nonwoven is a sheet of fibers. continuous filaments, of any nature or origin, that have been formed into a web, layers and bonded together by mechanical, chemical or thermal means and by needle punching Techniques.Non-woven materials are used in various applications such as surgical gowns, surgical Masks, oil and air filters, vacuum cleaner bags, canal constructions, erosion control, shopping bags, etc. The physical properties like strength or efficacy of these products are highly influenced by the micro structure of the materials used. Realistic 3D models for a fiber system are required to analyze the micro structure of these products. These models help to study the influence of the micro structure on its macroscopic properties.



Available at https://edupediapublications.org/journals

e-ISSN: 2348-6848 p-ISSN: 2348-795X Volume 04 Issue-17 December 2017

1.2 Medical Textile

Combination of textile technology and medical science has resulted into a field called medical textiles. Medical textiles are one of the most rapidly expanding sectors in the textile market, according to reports, and hosiery products with medical industry applications are among a long list of textile products being consumed in that market. New areas applications for medical textiles have been identified with the development of new fiber manufacturing technologies for yarns and fabrics. Development in the field of textiles, either natural or manmade textiles, normally aimed at how they enhance the comfort to the users. Development of medical textiles can be considered as one such development, which is really meant for converting the painful days of patients to comfortable days.

Here I'm making a non-woven product made of 60% cotton, 20% bamboo and 20% grains of vetiver roots which has many medical properties like Anti-microbial property. It is done by mixing the three fiber materials together and by using needle punching technique by taking materials in the ratio of 3:1:1 ratio. It will be placed in a sandwich form i.e. cotton fiber in the upper and lower layer and bamboo and vetiver coming in the middle layer. This is done because the irritation which is made by the vetiver can be reduced by the softness of the cotton fiber. This product gives more comfort and this since it cannot be classified in apparel textile, it is more of a techno mechanical application of textile. Industrial textiles are widely used in transportation vehicles and systems including cars, trains, buses, airplanes and marine vehicles and travels.

1.3 Objective

- To produce new Slippers with medical sense and make the medical essence of the roots into foot wears.
- To implement the Herbal roots such as
 Vetiver into a non woven product.
- To produce the medico foot wear product with prevention and reduction of pain in the Foot and toes.
- To study and make survive about of Medico/Foot wear product utilisation.

1.4 NON WOVEN FABRIC MADE OF COTTON, BAMBOO AND VETIVERT

Cotton, bamboo fiber and vetiver has got many properties. Products of these materials with different properties are available. But a non woven product or product made of these materials is for the first time in the textile industry for the car seats. This is the



International Journal of Research Available at https://edupediapublications.org/journals e-ISSN: 2348-6848 p-ISSN: 2348-795X Volume 04 Issue-17 December 2017

most specialty of this material, Bamboo and vetiver grains have got anti-microbial properties in nature. By enhancing that properties plus the anti-fungal cooling effect, fragrance of the vetiver and the UV protective nature of the bamboo fiber, this product has been developed.



1.5 BAMBOO

Bamboo fiber is cellulose fiber extracted or fabricated from natural bamboo (and possibly other additives) and is made from (or in the case of material fabrications, is the pulp of bamboo plant.



 It is usually not made from the fibers of the plant, but is a synthetic viscose made from bamboo cellulose. (In the US, the Federal Trade Commission (FTC) has ruled that unless a yarn is made directly with bamboo fiber- often called "mechanically processes bamboo" – it must be called "rayon" or "rayon made from bamboo".

• Bamboo has gained popularity as a "green" fiber. Manufacturers tout the fact that bamboo can be cultivated quickly, can be used as a cash crop to develop improvised regions of the third world, and is a natural fiber (as opposed to popular synthetics like polyester) whose cultivation results in a decrease in greenhouse gases.

1.6 VETIVERT

A fragrant extract or essential oil obtained from the root of an Indian grass, used in perfumery and aromatherapy. The grass is Vetiveria zizanioides, *family* Gramineae.

A member of the Gramineae family, vetiver is native of the South Asian region which includes India and



Ceylon.

- Fig: 3
- Since most major applications require a large number of plants, the quality of the planting material is important for the successful application of the vetiver system (VS). This requires



International Journal of Research Available at https://edupediapublications.org/journals

e-ISSN: 2348-6848 p-ISSN: 2348-795X Volume 04 Issue-17 December 2017

nurseries capable of producing large quantities of high quality low cost plant materials.

The exclusive use of only sterile vetiver cultivars will prevent weedy vetiver from becoming established in a new environment. DNA tests prove that the sterile vetiver cultivar used around the world id genetically similar to Sunshine and Monto cultivars, both of which originate in Southern India. Given its sterility, this vetiver must be propagated vegetative stress and balance hormonal system.

make cloth, the short fibers can be used in the paper industry. You can make oil or margarine out of the seeds of the cotton plant. The leaves and stalks of the cotton plant are plowed into the ground to make the soil better. Other parts of the plant are fed to animals.

1.8 CHARATERISTICSOFCOTTON

Cotton, as a natural cellulosic fiber, has a lot of characteristics, such as;

- Comfortable Soft hand
- Good absorbency
- Color retention
- Prints well
- Machine-washable
- Dry-cleanable
- Good strength

1.7 COTTON



Cotton is a plant that produces fibers, which are used to make clothes and other products, like towels, carpets or sheets. Clothes made out of cotton are especially light and comfortable. Every part of the cotton plant can be used. The long cotton fibers are used to

- Drapes well
- Easy to handle and sew

2 METHODOLOGIES

This chapter deals the material used, methodology and procedures adopted for the development of non woven material of automobile textile for car seats made of 60% of cotton fibers, 20% of bamboo fibers and 20% of vetiver roots, which is anti-microbial and an eco-friendly product in nature.

2.1 MATERIALS AND METHODS

✓ The experimental plan consists of the following stages: How to manufacture the automobile textile product of car seats by using the mixture of 60%



cotton,20% bamboo and 20% vetiver grains.



PARAMETERS CAN BE TESTED

For this non woven product the below test can be tested for further proceedings,

- Anti-microbial activity test
- Anti- fungal activity test
- U-V nature
- Smoothness after home laundering.
- Durability Test
- Colour Fastness

4 ANALYSIS OF THE SURVEY

The survey is taken towards the mothers towards this product can be based on questionnaires,

4.1 COLOUR

An attribute of things that results from the light they reflect, transmit or emit in so far Fig: 3 – Slipper Process

3 METHODOLOGY

The Footwear/Medical Product/ Ecofriendly is produced by the combo of 60% Cotton,20% of bamboo, 20% of grains vetiver r formation. Subjective analysis of the products by public survey

Alignment of the sponges & footwear formation. Subjective analysis of the products by Public Survey.

as light causes a visual sensation that depends on the wave length.

4.2 COMFORTNESS

A state or situation in which you are relaxed and do not have any physically unpleasant feelings caused by pain, heat, cold, etc. : a state or feeling of being less worried, upset, frightened, etc., during a time of trouble or emotional pain is comfortness. Implies that the subject is in state of pain, suffering or affliction and comfort in carrying. One can provide physical comfort to someone who is not in a position to be uncomfortable.

4.3 SMOOTHNESS

This fabric gives smoothness and softness because it is made of natural fibers and the smell gives the pleasant odour.

4.4 FEEL



The person who drives at very first time will not feel much comfortable when they use this often they feel better.

4.5 EXPERIENCE

Experiencing will not be the correct method for survey the beddings but the collective opinion regarding the comfortable for the baby who uses this comfort covers at very first time. It takes time for them to make themselves comfortable while carrying the baby.

4.6 PRODUCT SAMPLE:



Fig: 4

4.7 RESULTS AND DISCUSSIONS

4.7.1 ANALYSIS OF THE SURVEY

X-axis – Aesthetic properties

Y-axis - Grade points

4.7.2 GRADE POINTS:

1- Fair

- 2- Average
- 3- Good
- 4- Very good
- 5- Excellent.

4.7.3. AGE SPLIT

The age of usages?

a. 22 - 27

b.28 - 32

c.33 - 38

Rate of the product = Rs.680/-

4.7.4 ANALYSIS OF THE SURVEY



4.8 Data analysis

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International Journal of Research Available at https://edupediapublications.org/journals e-ISSN: 2348-6848 p-ISSN: 2348-795X Volume 04 Issue-17 December 2017

The Medical Slipper of 5 numbers is given to 100 peoples for the survey and the Feed Back Analysis of the Usage and experience Footwear with various fibers, sponges and medical roots and People Opinion by using the tool called Chi-Square test.

4.8.1 Chi-square test

A chi-square goodness of fit test determines if

a sample data matches a population.

S • n o	Variab les	Calcula ted χ ² values	Degre es of freedo m	$\chi^2_{0.05}$	Inferen ce
1	Colour	8.264*	4	9.49	H ₀ – Accept ed
2	Comfor tness	10.346*	4	9.49	H ₀ – Rejecte d
3	Smooth ness	8.653*	4	9.49	H ₀ – Accept ed
4	Feel	18.943*	4	9.49	H ₀ – Rejecte d
5	Experie nce of the Usage	7.892*	4	9.49	H ₀ – Accept ed

 $\chi_c^2 = \sum \frac{(O_i - E_i)^2}{E_i}$

4.8.2 Footwear with various fibers, sponges and medical roots and People Opinion

To find out the association between two variables the Usage of Medical Slipper and People Opinion, for this chi-square test was applied.

4.8.3 Medical Footwear and People Opinion TABLE: 1- Medical Footwear and People

Opinion (chi-square test)

* Statistically Significant at 5 percent level

 H_0 : There is no significant association between the Medical Footwear and People Opinion (chi-square test).

 H_a : There is a significant association between Medical Footwear and People Opinion (chi-square test).

4.8.4 Interpretation

From the above table it is interpreted that calculated values χ^2 with the theoretical values of $\chi 2$ 0.5, helps in Colour, Smoothness, and Experience of the usage, hence these calculated values are lesser than the table value. Hence, the null hypothesis is accepted, so there is no significant relationship between helps in Colour, Smoothness, and Experience



of the usage and the Usage of Medical Footwear and People Opinion. Whereas the calculated value of Comfortness and Feel is higher than the table value. Hence, the null hypothesis is rejected, so there is significant relationship between Comfortness and Feel and the Usage of Medical Footwear and People Opinion.

5. CONCLUSIONS

The new product which is produced by the cotton, bamboo fiber and vetiver is having the properties of medicinal healing reduces the knee pain. This is the highlight of this non-woven product. Medical accept is the most important properties which have to be noticed is that it's Anti- microbial and Antifungal property as well as its fragrance. Our ultimate aim was to develop a Slipper textile product which has got medicinal values rather alone a cushion effect. From the above observations the mothers are considered for the survey. We can conclude that the non woven needle punched material textile Slipper will have the medicinal properties of cotton, bamboo and vetiver. Hence there is no usage of chemicals for the development of this product it is said to be an Eco-friendly too.

Thus this product Medical Slipper with all the Sponge materials such as cotton fibers and Bamboo fibers, and roots with some soft padding materials. This is accepted among the 100 sample of pupils and the result predicts the utilization the product is falls on the positive tendency nature towards the acceptance level.

5.1 END USES:

- ✓ Applications in Medical field for reducing the tension, back pain, skin rashes and other Anti – microbial clearance.
- ✓ Due to its pleasant smell of the roots it can be used as intelligent textiles. Rather other new yield in Wide Home Textiles like beds, cushions, pillows & Sofas etc.
- ✓ A new Stuff towards Textiles for the infants.

6. REFERENCES:

- [1] Non woven fabrics edited by Wihelm Albrecht, Hilmar Fuchs, Walter Kittelmann
- [2] Hand book of non wovens edited by S.J. Russel, Textile institute, woodhead publishing
- [3] The non wovens- by Givovannitanchis, ACIMIT
- [4] Needle punched nonwovens- M.G. Kamath, Atul D Rahiya, Ragavendra R. Hedge



- [5] Properties of bamboo fiber by By: Dr. Subrata Das, www. Fiber2fashion.com
- [6] www.bamboofabricstore.com.au/Dynamic/i d/9/Properties.htm
- [7] Needle punched nonwovens web.utk.edu/~mse/Textiles/Needle%20Pun ched%20Nonwovens.htm
- [8] 2010-2011 Nelson's Pocket Book of Pediatric Antimicrobial Therapy
- [9] Bamboo preservation technlques : A REVIEW Satish Kumar, KS Shukla TndraDev, PB Dobriyal International Network for Bamboo and Rattan And Indian Council of Forestry Research Education ,Published jointly by INBAR and ICFRE 1994
- [10] Antimicrobial textiles- an overview, Dr. T. Ramachandran, R. Rajendran
- [11] Textile Magazine, P Aravin Prince, P. Raja
- [12] Cloths line, February 2006
- [13] Journal of Textile Association
- [14] The science of clothing comfort, textile progress
- [15] "Antimicrobial Definition from the Merriam-Webster Online Dictionary". Retrieved 2009-05-02.
- [16] Levy SB ((1994) Drug Resistance: The New Apocalypse (special issue) Trends Microbial 2: 341–425
- [17] Challenges for the Development of New Antimicrobials — Rethinking the Approaches Bookshelf ID: NBK19843
- [18]
 - http://www.rail.co/2011/07/22/chileansubway-protected-with-antimicrobialcopper
- [19] Esoteric Oils CC and Sallamander Concepts (Pty) Ltd 1998 - 2011.
- [20] Federal Trade Commission (August 2009). "How to Avoid Bamboozling Your Customers". Retrieved 18 December 2011.

- [21] Federal Trade Commission (3 February 2010). "FTC Warns 78 Retailers, Including Wal-Mart, Target, and Kmart, to Stop Labeling and Advertising Rayon Textile Products as "Bamboo"". Retrieved 18 December 2011.
- [22] "Is Bamboo Fibre Sustainable? Musings on the great bamboo debate. Planet Green. 22 Apr 2008". Planetgreen.discovery.com. Retrieved 2009-06-19.
- [23] "Is bamboo really an environmentally friendly alternative to wood for making paper? buzzle.com, editorial". Buzzle.com. 2006-10-07. Retrieved 2009-06-19.
- [24] Smith, Ray A. (2008-05-24). "Shades of Green: Decoding Eco Fashion's Claims. The Wall Street Journal. 24 May 2008". Online.wsj.com. Retrieved 2009-06-19.
- [25] P. Bottcher. Int. Textile Bull-Nonwovens/industrial textiles
- [26] J. Rupp, international textile bulletinnonwovens
- [27] S.C Anand, textile technol. Int.
- [28] http://www.statisticshowto.com/probabi lity-and-statistics/chi-square/

Available online: https://edupediapublications.org/journals/index.php/IJR/