A STUDY ON FRAGRANCE FINISH ON MODAL KNIT FABRIC

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ABSTRACT

Innovative fragrance finish on Modal fabric

New textile technologies have enabled the application of cosmetic ingredients on fabric to provide its functional benefit to the end-use product and therefore, cosmetic textiles are moving from research to the stage of commercialisation. Fragrance finish is one such finish that falls under this category.

A fragrance is made from a pleasant smelling aroma compound. Aromachology is a science that studies the effects of fragrances on the human body and mind. It researches how scents can be used to induce relaxation and make life more pleasant.

Finish was prepared and applied by two methods. Tests were conducted to check the performance properties of fragrance finish and the effect of finish on physical properties and mechanical properties of the fabric for unwashed samples. Comparative analysis of the two finishing application methods was done.

Keywords: Modal fabric, knitted, fragrance finish, citronella oil, padding mangle.

1 INTRODUCTION

Modal was first developed by Austria based Lenzing AG Company who trade marked the fabrics' name, but now many manufacturers make their own versions.[1] Single jerseys knitted structures are the primary material for intimate clothing as well for the sport wearing. The main expectation of such clothing is to provide higher level of comfort to the human being .[2]

Fabric Sourcing is on the selection of knitted fabric material of Modal is a wood pulp based cellulosic fiber, made out of pure wooden chips from the beech tree, technically as the European Schneider Zelkova tree. While viscose rayon can be obtained from the wood pulp from a number of different trees, Modal uses only beech wood thus it is essentially a variety of viscose rayon; a generic name for modified viscose rayon fiber that has high tenacity and high wet modulus.[3] R.Divya, et.al.

The human body generates moisture during various conditions of activity leading to sensual and heated action. The bacterial defect of sweat results into foul smell and stains which can produce from different parts of the body like armpit, back and forehead. Hence, fragrance finishing on textiles is one of the treatment which develop the value of the textile products by adding a range of odours to it.[4] dr.k.m.pachiyappan, et.al.

Fragrance finishing is the process of imparting aroma in any textile substrate. The human body generates sweat during various conditions of activity leading to sensory and thermal excitation. Hence, fragrance finishing on textiles is one of the processes which enhance the value of the textile products by adding various odours to it.

Citronella oil is an essential oil that's made from the distillation of the Asian grass plant in the *Cymbopogon* genus. This fragrant grass got its name from the French word meaning "lemon balm," due to its floral, citrus-like aroma. Citronella oil is probably best known as a natural insect repellent, but its uses and benefits extend beyond keeping bugs at bay.

Citronella needs to be reapplied often to be an effective mosquito repellent. However, it may provide protection for up to three hours if it is combined with vanillin. Studies show that it is not as effective as DEET at keeping mosquitos away.[5]

1.1 OBJECTIVES

1. Selection of fragrance finishes with citronella oil.
2. The process of infusing fragrance finish with spray and padding mangle methods.
3. Testing of fragrance finished sample.

2 METHODOLOGY

Fragrance used: Fragrance oil: Citronella oil

Solvents: Silicon Softener, Propylene glycol, Acetic acid

Fabric: Plain jersey knit modal fabric was used for the study.

Finish application was done by two methods

- Spray method.
- Padding mangle method with silicon softener

Finish application by spray method

10% fragrance was applied by dissolving the fragrance (oil soluble) in 50% propylene glycol to make it soluble in water and finally by spraying on to the fabric by means spray gun using a pressure of 4 kg/cm^2 with the distance of 40 cm followed by air drying.

INGREDIENTS	RATIO	RATIO USED
Propylene glycol	50%	60 ml
Water	50%	60 ml
Fragrance oil	10%	12 ml

Finish application by padding method with silicon softener

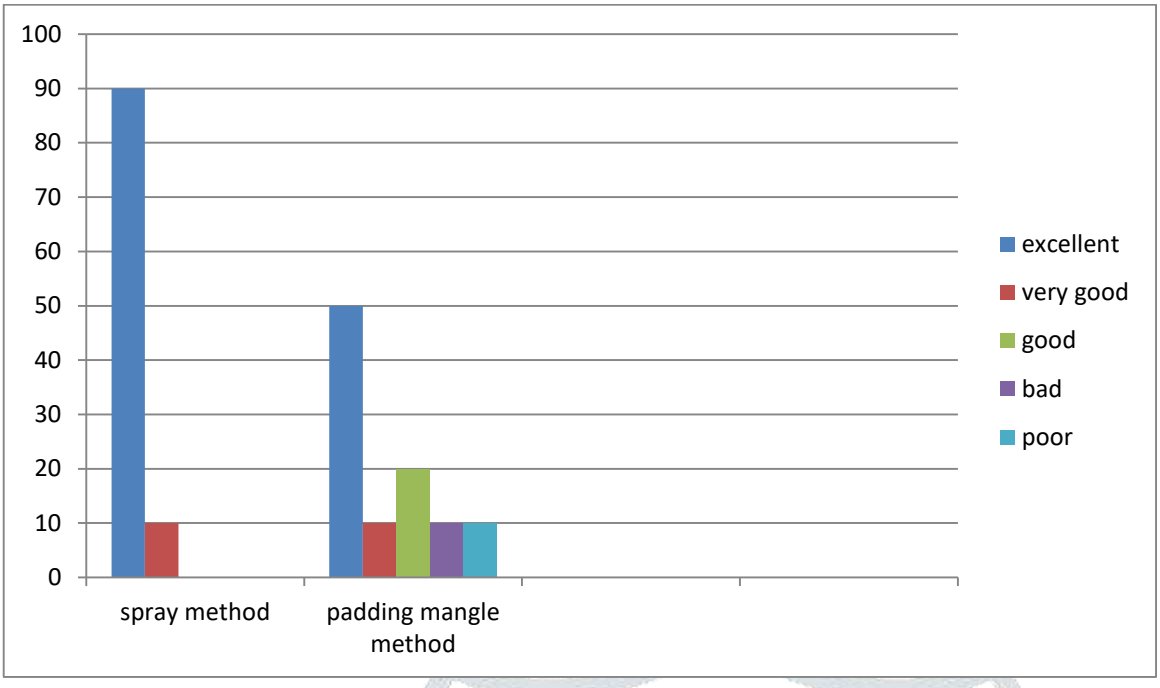
Silicon softener and the fragrance solution prepared earlier for spray method were mixed to a mixture. This solution needs to be mixed very well. Water was added and mixing was done to ensure a good dispersion. pH was adjusted to 5.5 with acetic acid. After this the fabric was dipped into the solution and was passed through padding mangle for one dip and one nip. Sample was dried and cured.

Silicon softeners are finish applied onto fabrics to give it a softer feel. In a study it was revealed that silicon softener causes higher encapsulation of fragrance than cationic and non-ionic softeners and improves the wrinkle recovery of the fabric.

INGREDIENTS	RATIO	RATIO USED
Fragrance solution	9 times	1180 ml
MLR	1:10	1180 ml
Temperature	<40° c	<40° c
pH value	5 – 5.5	5 – 5.5
Time	1 dip/ 1 nip	1 dip/ 1 nip

1. Rate the smell of the fabric on spray method and padding mangle method.

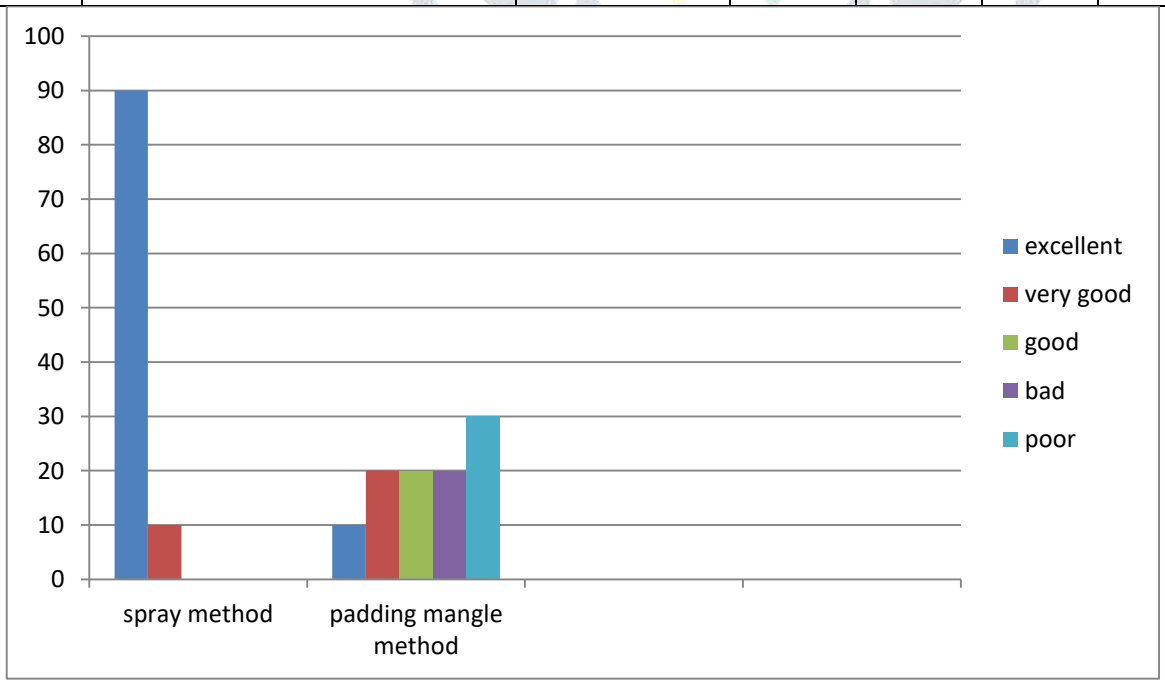
S.NO	QUESTIONS	EXCELLENT	VERY GOOD	GOOD	BAD	POOR
1	Rate the smell of the fabric on spray method	90	10	-	-	-
2	Rate the smell of the fabric on padding mangle method	50	10	20	10	10



Thus, the smell of the fabric on spray method is higher than the padding mangle method values.

2. Which smells better, spray method or padding mangle method?

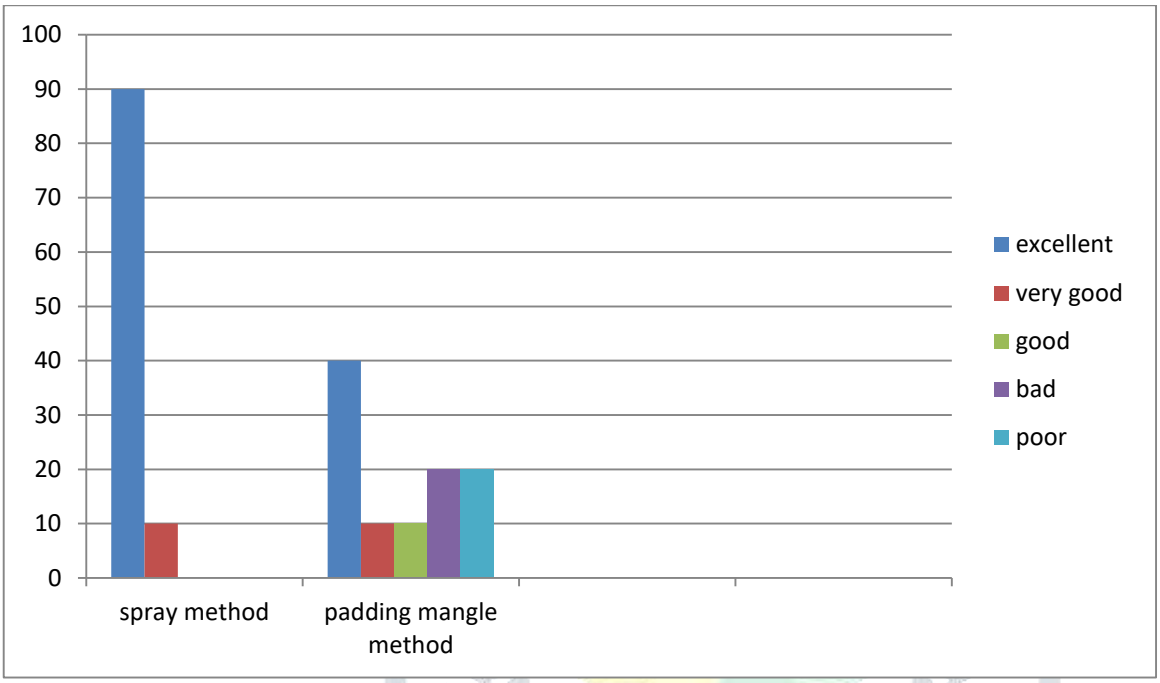
S.No	QUESTIONS	EXCELLENT	VERY GOOD	GOOD	BAD	POOR
1	Spray method fabric smells better than padding mangle fabric	90	10	-	-	-
2	Padding mangle fabric smells better than spray method fabric	10	20	20	20	30



Thus, the spray method sample is better than padding mangle method

3. Acceptance of fragrance finish idea by the respondents

S.No	QUESTIONS	EXCELLENT	VERY GOOD	GOOD	BAD	POOR
1	Acceptance of fragrance finish with spray method	90	10	-	-	-
2	Acceptance of fragrance finish with padding mangle method	40	10	10	20	20



Thus, spray method is excellence in accepatancy the padding mangle method.

3 SUMMARY AND CONCLUSION

In the study, this finish was applied on modal fabric which is a revolutionary new fabric with all unique characteristics, thus we can conclude that this combination of unique fabric with innovative finish like fragrance can be of great consumer worth.

Modal knitted single jersey fabric with 30’s count where selected for giving fragrance finish with citronella oil

The modal knitted fabric was tested for before finish with physical and mechanical tests followed by yarn count, loop length, coarse per inch, wales per inch, thickness, GSM for physical test and abrasion test, busting test, drape test for mechanical test was carried out.

Citronella oil was selected for giving fragrance finish on modal knit single with 30’s count which gives pleasant fragrant smell and as well it’s a mosquito replant and insect replant.

The process of infusing fragrance finish with spray and padding mangle methods was carried out for giving fragrance finish on modal knit fabric. Where spray method was done by spray bottle and padding method with padding mangle machine.

After finish test was done with testing of fragrance finished sample of rub test, manual test, wash test and questioner method and analysis as done.

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With microencapsulation method, fragrance lasts for more number of washes since microencapsulation makes the finished particles more securely attached to the internal structure of the fibre and thus releasing with the much slower rate, affirm **Avernita Srivastava, Rohini** and **Dr M S Parmar.**