

Analysis of the durability and properties on the natural printed fabric using hydramin made from a sea seed

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1. INTRODUCTION

Hydramin treatment print is a new eco friendly option for printing which uses natural materials in place of standard dyes used in traditional printing techniques. Through proprietary techniques developed by hydramin sea-grass particles are impregnated into the fabric to create a unique and subtle look.

Functional materials having both good mechanical properties of cotton and excellent chemical properties of hydramin, such as durability, antimicrobial property, biocompatibility, non-toxic and so on. Also, the knitted fabric, woven fabric and non-woven fabrics having excellent dyeing absorption property. The process is non-toxic and has a lower impact on the environment by using fewer chemicals and producing less waste.

In this research, we were to produce several fabrics (cotton, cotton mix, nylon, polyester) from hydramin solution treatment according the printing condition. Printing condition control factors were content and hydramin solution concentration



2. EXPERIMENTAL

2-1. Fabric Treatment

Bleached Cotton and Cotton mix fabrics were treated with the hydramin of different concentration solution, and were printed through a rotary printing machinery (The Korea Dyeing Technology Center).

Cotton and cotton mix fabrics were treated with hydramin solution 3%, 5%, 6%

Table 1. Specifications of fabrics

Samples	Content	Weave	Yarn	Solution(%)
A-1	CTN 100%	Twill	20S x 16S	3%
A-2	CTN 100%	Twill	20S x 16S	5%
A-3	CTN 100%	Twill	20S x 16S	6%
B-1	CTN75% NY25%	Twill	CM20'S X NY160D	3%
B-2	CTN75% NY25%	Twill	CM20'S X NY160D	5%
B-3	CTN75% NY25%	Twill	CM20'S X NY160D	6%

Table 2. Classified test specifications

Test	Standard
Colorfastness to water	ISO 105 E01
Colorfastness to washing	ISO 105 C06
Colorfastness to light	ISO 105 B02
Water repellency (after 20 washing)	AATCC 22
Water resistance (Rain test)	AATCC 35
pH value	JIS L 1096
pH value	JIS L 1096

3. RESULTS AND DISCUSSION

The colorfastness of printed cotton and cotton fabrics after laundering is summarized Table 1 in terms of color staining. In all cases, cotton fabric was better than that of cotton mix, and almost as same as colorfastness. Besides, water repellency of cotton fabric was significantly better than cotton mix fabric.

Table 3. Color.fastness to washing

Sample	Color change	Color staining					
		Acetate	Cotton	Nylon	Polyester	Acrylic	Wool
A-1	4-5	4-5	4-5	4-5	4-5	4-5	4-5
A-2	4-5	4-5	4-5	4-5	4-5	4-5	4-5
A-3	4-5	4-5	4-5	4-5	4-5	4-5	4-5
B-1	4-5	4-5	4	4-5	4-5	4-5	4-5
B-2	4-5	4-5	4	4-5	4-5	4-5	4-5
B-3	4-5	4-5	4	4-5	4-5	4-5	4-5

Table 4 Color.fastness to water

Sample	Color change	Color staining					
		Acetate	Cotton	Nylon	Polyester	Acrylic	Wool
A-1	4-5	4-5	4-5	4-5	4-5	4-5	4-5
A-2	4-5st	4-5	4-5	4-5	4-5	4-5	4-5
A-3	4-5	4-5	4-5	4-5	4-5	4-5	4-5
B-1	4-5	4-5	4	4	4-5	4-5	4-5
B-2	4-5	4-5	4	4	4-5	4-5	4-5
B-3	4-5	4-5	4	4	4-5	4-5	4-5

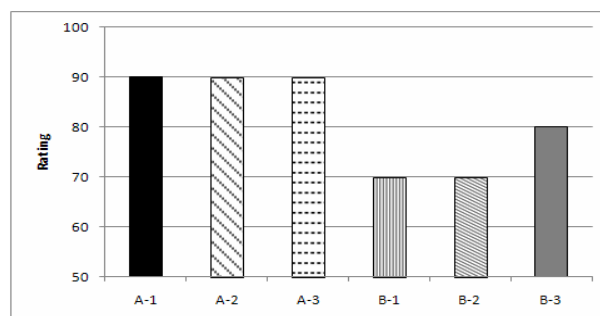


Figure 1. Water repellency(spray test)

4. CONCLUSIONS

Colorfastness properties of the hydramin treated cotton fabric and cotton mix were studied with the hydramin of different concentration such as hydramin solution 3%, 5% and 6%. The water-fastness and washing-fastness of hydramin treated fabrics are more excellent cotton mix fabric than cotton fabric.

5. REFERENCES

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