

Research Paper :

## Effect of chemicals on the colour shade and fastness properties of pigment printed silk and silk blend fabrics

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### ABSTRACT

The effect of chemical treatments on the pigment printed silk and silk blend has been analyzed in term of colour shade and fastness properties. Both the fabrics showed improvement in colour shade, but the better result was obtained with EDA treatment than PEG and EG. The fastness properties of the print were ranged between good to excellent. Result also showed that silk blend fabric can be easily printed with pigment dye.

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**Key words :** Ethylene diamine (EDA), Ethylene glycol (EG), Polyethylene glycol (PEG), Pigment emulsion

Colour can be added to textiles objects by either dyes or pigments. Pigments are insoluble colour particles that are held on the surface of a fabric by a binding agent. In recent year, there has been tendency towards an increased use of pigment in textile printing. Pigment colour printing was the most popular means of textile printing in the U.S.A. more than 80% of all printed textile yardage contained pigments colour (Khanna, 1999). Pigment printing which was earlier restricted only to cotton is now virtually used on all fibers and fiber combinations. Silk has a good receptivity for a large number of dyes such as acid, direct and indigo. But the demand for washable prints has kindled a new interest in the use of pigment dyes for printing (Chattopadhyay and Bhadra, 1997)

Permanent printing of pigment is very important from practical point of view for the manufacturer as well as consumer. Pigment emulsion colours are known for their brilliant shades but the achievement of optimum colour fastness to washing, dry cleaning and crocking is still a matter of dispute (Bishnoi, 1999).

Keeping this thing in mind the different chemicals were used as treatment for the pigment printing and their effects on the shade and fastness properties was studied.

### METHODOLOGY

Study was carried out on two fabrics viz, 100% silk and silk blend (50:50 silk and cotton). The fabrics were scoured before printing. Preliminary data of the fabrics such as thread count, weight, thickness and weave was

determined.

The assisting agents which used in the study were 30% ethylene diamine (EDA), 20% ethylene glycol (EG) and 20% polyethylene glycol (PEG). The fabric samples were pretreated with these chemicals. After the pretreatments, the samples were washed thoroughly, air dried and printed with the pigment emulsion (Acron Brilliant Red- FJC) at 3% shade. Printing paste was prepared by using 3 parts of pigment emulsion, 2.25 parts of diammonium phosphate, and 2.25 parts of water and rest of SLN Binder to make the 100 parts. Samples were screen printed. After printing, the samples were dried at room temperature and then cured at 150°C for 5 minutes.

The degree of colour yield was evaluated in the form of shade obtained and sharpness of print. Subjective analysis was done by a panel of textile experts. Three point rating scale was used. Obtained results were calculated in form of Weighted Mean Scores. Besides, visual assessments of the laundered, rubbed and ironed samples were carried out using geometric grey scale having rating 1-5.

### FINDINGS AND DISCUSSION

Table 1 shows the preliminary data of the silk and silk blend fabrics. The weight of the silk and silk blend was 1.5g and 3.32g, while the thickness of samples was 0.16mm and 0.23 mm respectively. Both samples were woven in plain weave.

Table 2 indicates the effect of chemical treatments