Optimization of Batik Cap Production Process Parameters For Colour Fastness With The Taguchi Method
(Study Case in UMKM Batik Sekar Idaman, Sleman)

ABSTRACT

UMKM Batik Sekar Idaman is a home industry in Yogyakarta with one of they product is batik cap. UMKM Batik Sekar Idaman often gets complaints from consumers about their products fading when washed. As a result, several batik cap products were returned to the craftsmen due to poor quality. This study aims to determine the optimal combination of factors and factor levels to obtain batik cap with a quality level of colour fastness toward cloth washing according to SNI 8303: 2016.

This study uses the Taguchi method to determine setting level which produces an optimal level of colour fastness of batik. There are four control factors used, namely the type of fabric, the type of dye, the mixture of the locking materials, and the ratio of the locking materials. Each factor consists of three levels and consider the interaction so that this study uses an orthogonal array $L_{27}(3^{13})$ with three replications. The level of colour fastness is a response characteristic that is tested and graded by grey scale. The test results were then analyzed using ANOVA.

The results of ANOVA calculations on the average value and SNR show that three factors significantly affect the degree of discoloration of the fabric after being tested, namely the type of fabric, the type of dye, and the mixture of locking agents. The combination of factors and factor levels that produce the optimal level of colour fastness of the fabric are the type of primisima fabric, the type of indigosol dye, a mixture of HCl + nitrite locking materials, and a 1:2 ratio of a locking materials. The results of the colour fastness test of the fabric in the confirmation experiment showed that the results met SNI 8303:2016.

Keywords: batik cap, colour fastness, Taguchi method, ANOVA, optimization