

The Effect of Potassium Permanganate on the Indigo Coloration Removal Using Printing Techniques

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Abstract:

This research aims to the ability of indigo discharge printing for the **Denim** with Eco-friendly materials showing the impact of the preparation material's (Potassium permanganate), use, and its influence's knowledge on the fabrics in the in the study's situation, as the importance of this research is cleared in the ability of the functional properties on the **Denim** by using discharge printing to advance the level's quality of the final product and the energy and resources consuming limit that has an environmental feedback, as well as suitable fabrics were produced for this reason with various sizes of weft and warp yarns, whereas the descriptions of these yarns were constant in all the produced fabrics under the research: cotton 100% but with different numbers 8/1, 12/1, 16/1 and the cotton warp 100% with various numbers 8/1, 12/1, 16/1 by using 17 picks/cm, by using weave structure (twill 1/2), and after the first preparations' procedure on the produced fabrics that were done under the research according to the specific changes and descriptions. Then it was done by a printed dough which is made of artificial thickener with the addition of the Potassium permanganate material, with three concentration (2%, 4%, 6%), and the drying was done on the room's temperature, then washing samples with water which contain sodium meta bisulfite (a helper material) that helps in breaking the permanganate, after that, . The results were analyzed statistically using analysis of variance, to obtain correlation, in addition to use (radar-chart multi-axis) which was used to evaluate quality of clothes produced under study . The results reveal that the fabrics under the weave structure Twill 2/1 with warp yarn 16/1 cotton and weft yarn 12/1 cotton after treated by Potassium permanganate, (2%) is the best ever for all performance by factor of quality 99.24 And the least samples produced under research were the weave structure Twill 2/1 with warp yarn 12/1 cotton and weft yarn 16/1 cotton after treated by Potassium permanganate, (6%) by factor of quality 84.20. **Research problem:** The study focused on using a printing by revealing technique using potassium permanganate instead of liquid chlorine commonly used now, because of its harmful effect on the raw material, so, the research problem is in answering the following questions: Are there differences between the different concentrations of potassium permanganate on the properties of the functionality of the fabrics produced under the research? Are there differences between the various fabrics on the properties of the functionality of the fabric after discharge printing? **Aim of the research:** This research aims to determine: The most suitable concentration of potassium permanganate on the properties of the functionality of the produced fabrics under the search. The most suitable type of fabrics yarn in the best properties of the produced fabrics under the search. **Research Methodology:** This research relies on experimental method (applied) and the analytical method for relevance to achieve the objectives of the research. **Results: Tests that have been carried out on the fabrics under the research:** Some laboratory tests performed on produced fabrics under the research in order to determine the effect of potassium permanganate with different concentrations as well as spinning yarns of fabrics under study on the functional properties of the produced fabrics under the research. These tests were carried out at (Misr Spinning and Weaving El Mahalla El-Kubra, and the National Research Center laboratories) and were include the following properties (weight of square meter, tensile strength and elongation, abrasion resistance, stiffness).

Keywords:

Potassium Permanganate, Denim Materials, Discharge Painting