

Title: Natural dyes in textile printing: parameters, methods, and performance

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Abstract: In recent years, consumer preferences have begun to turn back to natural dyes, whereas synthetic dyes have been pushed into the background over the previous 60 years. This is a result of increased knowledge of the potential hazards associated with the creation of synthetic dyes, which use raw materials derived from petrochemicals and involve intense chemical interactions. Such dyes need a lot of energy to produce, and their negative effects on the environment increase pollution. It has been discovered that several of these dyes, particularly the azo-based ones are carcinogenic. On the contrary, natural dyes are getting more attention from scientists and researchers as a result of their several advantages like being eco-friendly, biodegradable and renewable, sustainable, available in nature, having no disposal problems, minimizing the consumption of fossil fuel, anti-bacterial, insect repellent, and anti-allergic, anti-ultraviolet, intensify dyeing and finishing process efficiency, less expensive, and no adverse effects on human health and environment. However, there are also some drawbacks, like poor fastness properties, natural dye printing for bulk production, difficulties in reproducibility of shades, and so forth. Despite all these limitations, the demand for natural dyes is increasing significantly in textile industries because they offer far more safety than synthetic dyes. This study provides an overall concept of the natural dyes in textile printing. It illustrates parameters of printing performance, methods, and techniques of extraction of natural dyes, printing methods, and printing of natural and synthetic fibers. Finally, this study describes the challenges and future prospects of natural dyes in textile printing.

Keywords: Extraction method, Printing technique, Natural dyes, Fibers, Chemical

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