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Single-criterion optimization of the air permeability of woven fabrics using Taguchi method

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Abstract: Woven fabric's breathability is one of the most important characteristics concerning fabrics used as tents, raincoats and uniform shirtings. It is mainly evaluated and compared significantly via fabric air permeability. This study aimed to optimization of the fabric parameters influencing the woven cotton fabrics' air permeability. Twenty seven different fabric combinations using a 3^3 full factorial design were diminished to only nine fabric samples according to L_9 Taguchi's orthogonal design. These fabric samples were produced, tested and evaluated. Using S/N ratios, the best combinations of factor levels which yield the highest value of fabric air permeability were detected efficiently.
Keywords: Taguchi methodology, Woven fabric, Air permeability, Orthogonal array, Optimization.

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