EFFECT OF RECYCLED COTTON BLEND RATIO ON YARN AND KNITTED FABRIC PERFORMANCES

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Abstract:

Sustainability plays a critical role in line with the goals of protecting human health, preserving the environment, reducing waste, and leaving a livable world to future generations. In this context, global cotton fiber consumption is constantly increasing with population growth, quality of life, and fast-fashion effects. In recent years, there has been a notable focus on utilizing recycled cotton fibers in the production of knitted fabrics, primarily due to their environmental advantages and contributions to resource preservation. Manufacturers are increasingly turning to recycled cotton sourced from either post-consumer textile waste or pre-consumer industrial remnants as a means to reduce landfill accumulation and alleviate the environmental footprint linked with traditional cotton cultivation. Additionally, recycled cotton fibers offer comparable quality and performance to newly harvested cotton, rendering them a sustainable choice for various textile applications. Research conducted by Aznar-Sánchez et al. [1] and Rao et al. [2] has underscored the practicality and efficacy of integrating recycled cotton fibers into knitted fabrics, highlighting their potential to bolster sustainability in the textile sector while upholding standards of product excellence and performance. This transition towards sustainable methodologies aligns with the surging consumer demand for eco-conscious goods and emphasizes the significance of adopting circular economy principles within textile production [3]. The aim of this study is to investigate the usability limits of recycled cotton fibers in blends with pristine cotton during spinning as well as the effect of recycled cotton content on fabric performances. The fiber contents that are given in Table 1 are used in spinning recycled-pristine fiber blend cotton yarns. All yarn samples are tested for yarn unevenness and tensile strength. Yarn performances are compared with those of with compared the yarn properties. Furthermore, fabrics are knitted from those yarns and their bursting strength, color fastness, light fastness, washing fastness, and dimensional stability performances are investigated.

Keywords: *recycled cotton, pristine cotton, sustainability, formatting, performance*

Table 1 Sample fiber content details

Samples	Fiber Content (%)	
	Pristine Cotton	***Recycled Cotton***
Sample 1	100	0
Sample 2	80	20
Sample 3	50	50
Sample 4	20	80
Sample 5	0	100

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