Title: Investigations of the spinning consistency index (SCI) and its impact on yarn quality

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Abstract

Purpose: This study aims to analyze the spinning consistency index (SCI) and its impact on yarn quality. It focuses on the relationship between SCI and the final properties of 30 Ne carded hosiery yarn. By evaluating key quality parameters, the research seeks to determine how SCI can serve as a predictive tool for optimizing yarn production. Design/methodology/approach: The study involved producing 30 Ne carded hosiery yarn and rigorously testing its properties using the Uster Evenness Tester-5. Various quality parameters, including neps content, mass irregularity, yarn imperfections and tensile behavior,

were evaluated at each processing stage. Findings: The findings reveal that Type 1 yarn demonstrated a count strength product value approximately 15% higher than the other two types. In addition, it exhibited a CVm% that was 18% lower, highlighting reduced mass variation and enhanced uniformity. Regarding imperfections, Type 1 yarn showed a 25% reduction compared to the other two types, reflecting improved fiber spinnability and overall yarn performance. Originality/value: This research thoroughly examines SCI's role in yarn production, highlighting its predictive value for optimizing yarn quality. The study offers valuable insights for textile manufacturers seeking to enhance the efficiency and effectiveness of their spinning processes, ultimately contributing to the development of higher-quality textile products. © 2025, Emerald Publishing Limited.

Author keywords

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