The effect of twist multiplier on the tear strength of woven fabrics

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Paper History:
Paper received 13th February 2020, Accepted 27th March 2021, Published 1st of May 2021

Abstract:
Tearing strength is one of the important quality items of finished woven fabrics. It refers to the rupture of a fabric progressively along a line thread by thread. Tearing strength mainly depends on fibre, yarn and fabric characteristics along with mechanical and chemical finishing treatments given to the fabric. From an industry point of view, studying this fabric characteristic is an essential and urgent step because it reflects the endurance extent of the end textile structure. The main objective of this investigation is to examine the effect of twist multiplier (4.1, 4.4 and 4.7) on weft/warp tear strengths for fabric samples of cotton/polyester blend (50:50) using carded and combed spun yarns. In addition, three weft densities being 18, 22 and 25 were also applied. Results exhibited that the weft/warp tearing strengths are negatively responded to the increase of twist multiplier and weft density for the two spinning systems. In some cases, the weft-way and warp-way warp tearing strengths may be decreased with increasing twist multiplier to a certain extent and then slightly decreased or constant. On the other hand, it is observed that weft/warp tearing strength values for the fabrics made of combed spun yarns were very close to their corresponding values for carded spun yarns under most tested treatments.

References:

Keywords:
fabric structure, tearing strength, twist multiplier, weft density