



International Journal of ChemTech Research CODEN (USA): IJCRGG, ISSN: 0974-4290, ISSN(Online):2455-9555 Vol.11 No.05, pp 500-508, 2018

Influencing sheath type and core draft ratios on the physical properties of stretchable yarns

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Abstract : Composite yarns based spandex have gained much concern and popularity during the last two decades all over the world due to their elastic and comfort properties. Draft ratio of the core, namely spandex, and the sheath type are the main parameters controlling the physical properties of this type of yarns. In this study, the influences of spandex draft ratio and the sheath type on the yarn properties were investigated. Two types of staple fibers were used as a sheath, i.e. polyester and cotton staple fibers. The core (spandex monofilament) was subjected to four different levels of draft ratios, namely 2%, 3%, 4% and 5% respectively. An analysis of variance in the form of Two-way was conducted to study the influence of sheath type and the draft ratio of the core on the physical properties characteristics of the produced yarns. It was revealed that increasing the spandex draft ratio leads to an increase of the yarn tensile properties also enhanced yarn uniformity and imperfection index. While the draft ratio of spandex monofilament increased yarn hairiness significantly. It was also noticed that polyester staple fiber that incorporated as a sheath improved significantly the most core-spun yarn properties unexpectedly, as compared to cotton staple fibers.

Key words: Sheath type, core draft ratios, stretchable yarns, physical properties.

International Journal of ChemTech Research, 2018,11(05): 500-508.

DOI= http://dx.doi.org/10.20902/IJCTR.2018.110555
