ABSTRACT

Air-jet texturing is a well-established filament yarn processing technology that has been around for more than half a century. Various aspects of the process such as the mechanism of loop formation, role of water in air texturing and the influence of process variables on air textured yarn structure have been extensively studied. However, studies on comfort, durability and physical properties of fabrics produced from blended air-jet textured yarn have not been reported in most of the papers in this area. An attempt has been made in the current research to understand the effect of different variables and other aspects of the process on these yarns and fabric properties produced with these yarns. This study also compares the properties of these fabrics vis-à-vis their ring spun counterparts.

With increasing texturing speed the physical bulk of the yarn reduces whereas the yarn instability increases with process speed. Instability shows an increase with increasing air pressure. The instability values of the textured yarns increase with increasing overfeed, particularly at higher overfeed levels. Viscose yarns behave differently as compared to other P/V blends exhibiting higher instability values. The instability values of these yarns show a decreasing trend at higher overfeed and air pressure levels. The tenacity of the blended textured yarns decreases marginally with increase in air pressure. As the polyester content in the blend increases the tenacity increases. As the process speed increases the tenacity of the yarn increases marginally. A marginal reduction in tenacity occurs as the overfeed is increased. The effects of interaction of different process parameters on the properties of blended air-jet textured yarns have also been analyzed.

As the polyester content in the blend of the weft yarn increases the air permeability and water vapour permeability reduces both in ring spun yarn as well as textured yarn fabrics whereas thermal insulation, fabric strength, transverse wicking, abrasion resistance, shear rigidity and bending rigidity shows an increasing trend with increasing polyester content in the weft yarns of these fabrics.
Textured yarn fabric provides lower air permeability, pilling tendency, crease recovery and weft way extensibility as compared to the ring yarn fabrics, whereas they exhibit higher thermal insulation, water vapor permeability, transverse wicking, abrasion resistance, shear rigidity and bending rigidity than their ring spun counterparts.