The Mechanical and Comfort Properties of Cotton/Micro-Tencel Lawn Fabrics

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Abstract : Lawn fabric was usually prepared from originally of linen but at present chiefly cotton. Lawn fabric is worn in summer. Cotton Lawn is a lightweight pure cloth which is heavier than voile. It is so fine that it is somewhat transparent. It is soft and superb to wear thus it is perfect for summer clothes or for regular wear in hotter climates. Tencel (Lyocell) fiber is considered as the fiber of the future as Tencel fibers are absorbent, soft, and extremely strong when wet or dry, and resistant to wrinkles. Fibers are more absorbent than cotton, softer than silk and cooler than linen. High water absorption and water vapor absorption give more heat capacity and heat balancing effect for thermo-regulation. This thermo-regulation is analogous with the action of phase-change-materials. The thermal wear properties result in cool and dry touch that gives cooling effect in sportswear, and the warmth properties (when used as an insulation layer). These cooling and warming effects are adaptive to the environment giving comfort in a broad range of climatic conditions. In this work, single yarns of Ne 80s were made. Yarns were made from conventional ring spinning. Different yarns of 100% cotton, 100% micro-Tencel and Cotton:micro-Tencel blends (67:33, 50:50:33:67) were made. The mechanical and comfort properties of the woven fabrics were compared. The mechanical properties include the tensile and tear strength, bending length, pilling and abrasion resistance whereas comfort properties include the air permeability, moisture management and thermal resistance. It is found that as the content of the micro-Tencel is increased, the mechanical and comfort properties of the woven fabric are also increased.

Keywords : combed cotton, comfort properties , mechanical properties, micro-Tencel