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The development and application of a fabric objective measurement data system in the South African apparel industry: Hygral expansion and formability

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Abstract

A programme has been initiated with the objective to develop an advanced Fabric Objective Measurement (FOM) based technology, knowledge and data system which is relevant to, and can be implemented in, the South African apparel industry to benchmark and improve the quality of locally produced woven apparel fabrics and garments. To this end, various FOM and other quality related parameters have been measured and analysed for a wide range of commercial worsted type fabrics used in the South African apparel manufacturing industry. This paper deals with one aspect of this data system, namely fabric hygral expansion and formability, two key properties when it comes to the making up (tailorability) of fabrics. Further papers will deal with the other lesser important properties, and ultimately, with the system in its totality. Some 394 commercial worsted woven type fabrics, of different structure (plain, twill, venetian, gabardine, baratheia, hopsack and herringbone) and blend (mainly wool and wool blends), the majority varying in weight between 150 and 300 g/m² have been sourced from fabric and garment manufacturers and tested on the Fabric Assurance by Simple Testing (FAST) FOM system. The effect of fabric weight, thickness, structure and composition on hygral expansion and formability has been investigated, using ANOVA, the results being presented in tabular and graphical form. It was found that the hygral expansion of the wool fabrics was, on average, higher than that of the wool blend fabrics, while the heavier and thicker fabrics had higher (better) formability in both warp and weft directions. These factors need to be taken into consideration in preparing the envisaged FOM based system.