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AN INVESTIGATION OF ARCING IN TWO STRUCTURE WEFT KNIT FABRICS

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ABSTRACT

A wide range of weft knitted products is used for apparel, industrial, and medical purposes. Due to the technological advancement of computerized knitting machinery, it is possible to knit different structures side-by-side, in addition to a sequential manner. This research investigated the occurrence of one type of fabric distortion, arcing, when two different structures were knitted side-by-side, where the abutted areas were composed of the combination of any two different structures. Three weft knit structures were selected for this research (single jersey, 1x1 rib, and the moss stitch). The effects of changes in loop length, yarn type, and fiber type on physical properties of dry-relaxed two-structure fabrics are investigated by an adapted ASTM standard. The results of this examination of arcing in knitted structures will be of interest to designers, academicians, and industry.

Keywords: weft knitting, fabric distortion, arcing

1. INTRODUCTION

Products such as sports jerseys, sweaters, compression bandages, filters, bulletproof vests, and fluid absorbing sheets may all contain different knit structures as part of their constructions. The construction may provide each product its optimum performance characteristics. Many types of industries use knit fabrics because of their ability to conform to any dimension. This flexible, elastic fabric adapts easily to body movement which makes it ideal for close fitting garments like orthopedic braces, compression gloves, hosiery, and athletic wear. Precisely engineered products are required, and higher performance standards are required for highly technical products such as skin grafts and vascular grafts (Smith, 2004). Knit fabrics of specific structures have unique properties that may be affected if one structure is knitted side-by-side with another specific or different structure.