https://doi.org/10.53230/tgm.1310-912X.2024.1002.20

IMPACT OF THE COEFFICIENT OF FRICTION ON THE SEAM QUALITY OF DENIM JEANS

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The so called "blue jeans" were invented in the far 1873 and remain modern nowadays. Their quality is determined by the properties of the fabric and that of the seams. The quality of the seam depends on many factors, one of which is the coefficient of friction between the fabrics that influences the slippage of the layers each to other during the sewing process. The value of the friction coefficient depends on the material used, the linear density and the twist of the warp and weft threads, the weave, the density of the threads, and the finishing treatment. In order to increase the friction forces between the fabric layers, a pressure by means of a presser foot is exerted on them.

In the sewing industry, the quality of a product is defined by a set of product properties that satisfy certain consumer needs and/or requirements.

Some authors supplement these approaches with another one: the "21st Century Approach", in which to the professionals, managers and workers, the scientists are added as an important factor in the quality and reliability management system (Tasev, 1996), (Tasev, 2002).

In the context of this study, the authors support the "21st Century Approach" involving as well scientists in the quality management. The main reason for such decision is that research is moving at a fast pace, ahead of business. The complexity of quality management in this process makes the participation of scientists, both in quality management and in technological processing (Andonova, 2004) mandatory.

Many scientific publications have been published indicating the basic functional, constructive, technological, economic, aesthetic, ergonomic, hygienic, social, etc. quality characteristics of the sewing products (Andonova, 2017), (Germanova-Krasteva, D. & Petrov, Ch., 2008). The quality characteristics of the sewing products are formed at the stage of their technological processing.

In this article, we focus on the importance of the coefficient of friction on the qualitative performance of the sewing operations, especially for clothing. The quality of a garment is also judged not only by the sewing materials – fabric, threads, buttons, zippers, adhesive materials, etc., but as well by the quality of the seam – an indicator which is often overlooked.

When joining two pieces of clothing, there should be no mutual displacement, i.e. when making the stitches of the seam, one layer to be stretched and the other one – puckered (Figure 1a) (COATS - Eliminating Seam Puckering). When making a hem, there must be no twist of the hem. Often, when attaching the sleeves to the armholes of the garment, there are displacements, which lead to twisting of the sleeves and discomfort when the clothing is being worn. Such effect could appear when sewing the legs of the jeans (Figure 1b) (Seam Defects | Common Seam Quality Defects in Garments).

The study is carried out for denim fabrics made of 100% cotton in twill weave. The static and dynamic coefficients of friction before and after finishing at different pressure levels are determined.

Keywords: *Static and dynamic coefficients of friction, Denim fabrics, Finishing, Seam quality.*