Impact of Different Seam Types on Seam Strength

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Abstract

Seam strength is the strength of the seam measured from a sewn garment. A seam can be failed due to different reasons like breaking of sewing thread, tearing of fabric, excessive seam slippage or can be a combination of those. The objective of this study is to find out the effect of different seam on seam strength. For this experiment, a denim fabric having the construction of (68*9)/(46*7) has been collected. Then the samples are prepared according to ASTM D1683 (EQ28C) method having dimension of 10cm width 20cm long. After that seam strength of all the samples have been done using tensile strength tester.

Index terms— seam strength, seam types, stitch types.

1 Introduction

eam is used to assemble two or more pieces together to make 3D garment. Sewing is defined as a two or more fabric pieces are joined using sewing machines, sewing threads and various types of stitching methods [1].Fabric and sewing thread are the basic raw-materials of garment industry. Properties of the raw material in fluences the seam quality of the garment. Fabric quality alone does not fulfil all the criteria for high quality garments production [2,3].Proper selection of raw material not only gives comfort to the wearer but also helps in smooth functioning of manufacturing process and finally lead to defect free product [4]. In the garment industry, overall seam quality defined through various types of functional and aesthetic performances required for the garments product during their end-use. The quality of a garment not only depends on its appearance but also on its technical properties. For getting a quality product it is necessary to select the appropriate type of fabric, seam and sewing conditions. The functional performance mainly refers to the strength, efficiency, tenacity, elasticity, elongation, flexibility, bending stiffness, abrasion resistance, washing resistance and dry cleaning resistance of the seam under stress mechanical conditions for a definite period of time [5][6][7].Good seams are essential for durability, quality, and aesthetic appearance of the garments. Seam performance is influenced by a selection of seam type, appropriate sewing thread, sewing process parameters, and ease of sewability of the fabric [8]. Properties like as, strength, tenacity and efficiency is required for determining the serviceability of apparel. When joining materials aesthetic appeal, strength and durability are some factors of others should be considered [9].Seam efficiency is also an important factor and has been defined as the ratio of seam strength to the strength of fabric un-sewn expressed as percentage of fabric strength [8,10,14].The simplest seam type of ISO stitch class is stitch class 1 which is formed by superimposing the edge of one piece of material on to another.ISO Class 2 of lapped seams is common used in jeans; this provides a very strong seam in garments that will take a lot of wear, though there is a possibility that the thread on the surface may suffer abrasion in areas such as inside leg seams [13]. To maximize a potential seam, it must be ensure that seam will interact with the components of the fabric to ensure the best product durability [11][12]. So, the objective of this paper is to investigate the effect of different seams on seam strength.

2 II.

3 Material & Methods

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For this experiment a denim fabric having construction of (EPI = 68, PPI = 46, Warp Count = 9 Ne & Weft count = 7 Ne) has been collected. Then the samples are prepared according to ASTM D1683 (EQ28C) method having dimension of 10cm width & 20 cm long. After that seam strength of all the samples have been done using tensile strength tester. Some properties like sewing thread counts of the needle, bobbin and lopper are 40/2 Ne for all (100% polyester) remain constant and some properties are varied like seam types (SSa1, LSa1 & LSc1), stitch type (Lock stitch 301 & Chain= stitch 401) etc. Finally the seam Abstract-Seam strength is the strength of the seam measured from a sewn garment. A seam can be failed due to different reasons like breaking of sewing thread, tearing of fabric, excessive seam slippage or can be a combination of those. The objective of this study is to find out the effect of different seam on seam strength. For this experiment, a denim fabric having the construction of (68*9)/(46*7) has been collected. Then the samples are prepared according to ASTM D1683 (EQ28C) method having dimension of 10cm width & 20cm long. After that seam strength of all the samples have been done using tensile strength tester. Some properties like sewing thread counts of the needle, bobbin and lopper are 40/2 Ne for all (100% polyester) remain constant and some properties are varied like seam types (SSa1, LSa1 & LSc1), stitch type (Lock stitch 301 & Chain stitch 401) etc. Finally the seam strength reports are collected from the machine. From the comparative result, it can be said that superimposed seam (SSa1) has higher strength than lapped seam 2 (LSc1) which has higher strength than lapped seam 1 (LSa1). Lock stitch seam has higher strength than chain stitch for all kinds of seam and seam strength of warp-way has higher strength than weft-seam. way strength reports are collected from the machine.

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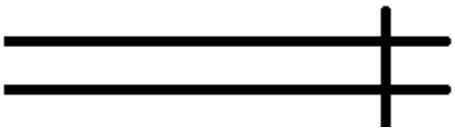
6 Result Discussion

From Table **??** & figure **??**, it can be said that superimposed seam (SSa1) has higher strength than lapped seam 2 (LSc1) which has higher strength than lapped seam 1 (LSa1). Lock stitch seam has higher strength than chain stitch for all kinds of seam and seam strength of warp-way has higher strength than weft-way seam.

V.

7 Conclusion

The apparel makers select stitch types, seam type based on fabric type and sewing threads without paying attention to their effect on the overall performance of the apparel being made. The seam strength & slippage must be tested to guarantee that they meet those standards before entering the international market to enable consumers assured of the quality of garment product in the market which will help the consumers achieve desired results in terms of seam efficiency. Based on the outcomes of the current study, it is recommended that apparel manufacturers should be more conscious about using appropriate seam & stitch types in the construction of apparels to ensure the quality full apparel products. [1]



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