

## CONTRIBUTIONS TO THE CLASSIFICATION SEAMS INTERLACED MODE OF ATEL THE FOOTWEAR INDUSTRY

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**Abstract:** In this paper the classification nominated stitches depending on how fusing thread in the shoe industry. The proposed classification contains the following criteria: the principle of training, after the manner in which, after fulfilling the role, as class stitching, the degree of rigidity of the parts. This paper presents a case study needed to identify the most common stitches used in the manufacture of footwear. To make the case study were analyzed 100 pairs of shoes. Our study revealed the following aspects: the vastly seam stitching is simple with two threads, followed by zigzag stitching and manual stitching, hand stitching meet the following types, for example, moccasin, moccasin type and footwear for children.

**Key words:** Footwear, grading, sewing, classes, criteria, principles of training.

### 1. INTRODUCTION

The process used to merge, the most commonly used and the oldest is the mechanical stitch, which was conducted from the late eighteenth century and early nineteenth century with the advent of the first sewing machines [4].

The stitches are used to assemble cut parts from various materials, to create semi and final shoe product. One or more threads have multiple opportunities to obtain knitting stitch steps, leading to a variety of destinations and seams with different characteristics. Due to different variants of arrangement of a number of increasingly large steps that make up the seam thread, it was necessary their classification and coding [5, 10, 11].

The stitches are divided into two distinct groups (fig. 1):

I. Seams depending on how fusing thread.

II. Seams where the parts overlap mode.

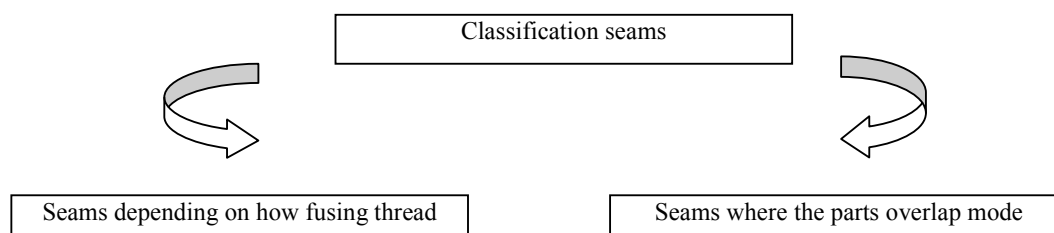


Figure 1. Classification seams

### 2. CLASSIFICATION SEAMS INTERLACED MODE OF ATEL

ISO 4915-1981 "Textiles - Stitch types - Classification and terminology" seam is defined as a structural unit resulting from passage through a different loop thread loops formed by the same thread (fig.2.a), passing a loop of thread another loop of thread through a different (fig.2.b) or braiding (fig.2.c) one or more loops of thread or thread, the depth or the material [5, 10, 11]

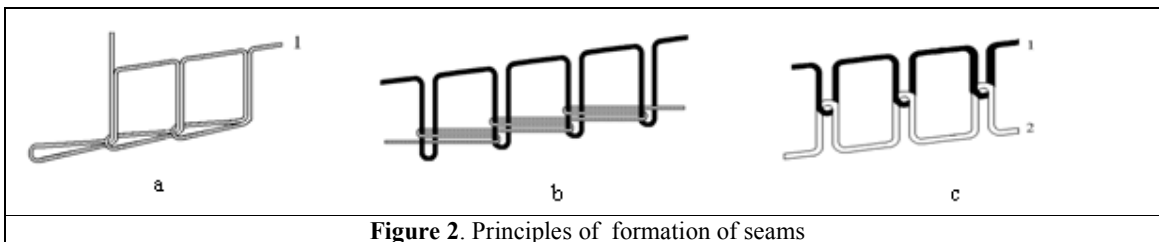


Figure 2. Principles of formation of seams

Classification of seams [1-5, 8-11, 13]:

1. After training principle is:

- the spool stitch made on the principle of blending the two systems of threads. Appears as a key feature that is not extensible, so that seams are called rigid;
- chain stitches made on the principle of passing a loop of thread through a loop formed by the same thread another or passing a loop of thread through a loop of thread another different one or more thread systems. Presented as a central feature extensibility reason are called elastic seams.

2. After how to do are:

- handmade seams;
- sewing machine made.

3. After fulfilling the role are:

- decorative stitches to embellish landmarks visible role in the composition of products;
- joining seams are those seams which is achieved through joining two or more parts of the composition of a product;
- building seams are designed to strengthen joint between two parts sewn above;
- seam edge coverage are designed to strengthen joint between two parts sewn before, this is usually carried out on the parts;
- hidden seam stitching are those through which the assembly is made of two or more parts of the composition of a product, but the seam is not visible on the outer parts.

4. Depending on the degree of stiffness of parts:

- flexible seam for joining parts (all upper shoe);
- seams for joining rigid parts (frame on the insole, the whole frame of the shoe upper and insole, the foot frame).

5. After stitching class are:

ISO 4915-1981 is 6 classes, denoted by three digits, the first number represents class and the other two - subclass, so [13]:

- Class 100 - chain stitches formed by one or more threads on the principle of passing a loop of thread through a loop formed by the same thread another;
- Class 200 - hand sewing;
- Class 300 - stitch the spool made of two or more systems weave a thread on principle;
- Class 400 - chain stitches made of two or more systems on the principle of passing a thread loop another loop through a string of different threads;
- Class 500 - stitch the edges binding made of one or more thread systems crossing the principles of a loop of thread through a loop formed by the same thread another and passing a loop of thread through a loop of another different thread. The main feature is the development thread over the edge of the material;
- Class 600 - seam cover made of three or more systems on the principle of passing a thread loop another loop through a string of different threads. The main feature is the cover material on both sides of the seam.

According GOST 12807-2003 there are 7 classes, denoted by three digits, the first number represents class and the other two - subclass, so [3]:

- Class 100 - chain stitches formed by one or more threads on the principle of passing a loop of thread through a loop formed by the same thread another;
  - Class 200 - hand sewing;
  - Class 300 - stitch the spool made of two or more systems weave a thread on principle;
  - Class 400 - chain stitches made of two or more systems on the principle of passing a thread loop another loop through a string of different threads;
  - Class 500 - stitch the edges binding made of one or more thread systems crossing the principles of a loop of thread through a loop formed by the same thread another and passing a loop of thread through a loop of another different thread. The main feature is the development thread over the edge of the material;
  - Class 600 - seam cover made of three or more systems on the principle of passing a thread loop another loop through a string of different threads. The main feature is the cover material on both sides of the seam.
  - Class 700 - welded seams, the class contains two subclasses 701 (welding service) and 702 (continuously welded).
- The literature mentions the class 800 (seams combined, for example, consists 804 of 301 and 503) [2, 8, 9].

### 3. CASE STUDY

The case study was conducted to identify the seams are commonly used in the footwear industry. For the study were analyzed 100 pairs of shoes.

Shoes analyzed are classified as [6, 7, 12]:

a) After the selection:

- Boots
- Shoes
- Sandals

b) After confection system:

- Shoes with feet flat
- Soles sewn on frame
- Sole stitched through insole
- Shoes tubular
- Combinations

c) After sex:

- Female
- Masculine
- Teens
- School
- Care
- Children

d) After the season:

- The transition (spring-autumn)
- Hot (Summer)
- Cold (Winter)

e) After landing:

- Sports
- Consumables
- The Gala
- Leisure
- House
- For children
- For older people.

The study revealed the following:

1. The seam is vastly simple 2 thread stitching, zigzag stitching and stitching followed by manual.
2. Hand stitching meet the following types, for example, moccasin, moccasin type and footwear for children.

#### 4. CONCLUSIONS

In this study we conclude:

1. This paper presents contributions to the classification based on how seam fusing thread.
2. The case study identified the most commonly encountered types of seams in the shoe industry.
3. The proposed classification differs from those already known by the presence of criteria, for example, the degree of stiffening of parts.
4. The study highlighted the need for a standard which will include types of stitches for the footwear industry.

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