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Felt Cloak Manufacturing and Some Evaluations In Terms Of Occupational Safety

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ABSTRACT :

Felt, which is one of the leading products of the art of felt making, which is among the Traditional Turkish Handicrafts in Yalvaç, is a special shepherd's clothing that has survived to the present day. It is a cultural symbol that continues without losing its functionality from the past to the present. As in the past, today, when livestock is mentioned, a shepherd comes to mind. It should be accepted as a symbol that resists change for centuries and preserves its functionality among felt products.

Yalvaç has a feature that continues to be produced without being affected by the developments in the historical process, without changing and transforming from many traditional products produced by the masters for centuries within the art of felt making.

In this article, the historical process, raw materials, tools used in its production, decoration, design and structural features of the rebound felt in Yalvaç, which is one of our traditional handicraft products, will be discussed. Felt cloak production businesses were evaluated in terms of occupational health and safety and suggestions were made on some risk factors.

***Keywords**: Wool, Felt, Handicraft, Shepherd*

1.INTRODUCTION

Felt is a textile product used in Central Asia and has an old history. It was moved to different places in the world by the Turks. Yalvaç is one of the places where production continues with the traditional method today.

"Felt is the texture created by connecting wool to each other with the help of heat, humidity and pressure [3]. The motifs on the felts made in different cities of Anatolia and reflecting the identity of the community in it differ from region to region. The natural colors of the wool are generally used on the floors of the felts produced. These colors are mostly white, brown and black. It is seen that all of the felts produced as felt cloak have geometric decorations, followed by meaning-laden decorations, herbal decorations and figurative decorations, and meaning-laden decorations are used together with other decorations. It was observed that more geometric decoration was used in Yalvaç, followed by vegetal and symbolic decoration, respectively.

Felt cloak, which is one of the products of Felt making, which is included in Handicrafts in Yalvaç, has survived to the present day. Today, as in the past, when animal husbandry is

mentioned, shutter comes to mind. Felt products have resisted change for centuries and have preserved their functionality.

Today, when people say "Felt" and "Feltmaking", "Felt cloak" comes to mind and contributes to the promotion of felt art. In this article, the structural features of the design and manufacture of felt cloak will be discussed, in particular the rebound felt in Yalvaç, one of our traditional handicraft products [1-2].

In this article, the historical process, raw materials, tools used in its production, decoration, design and structural features of the rebound felt in Yalvaç, which is one of our traditional handicraft products, will be discussed. Felt production businesses were evaluated in terms of occupational health and safety and suggestions were made on some risk factors.

2. CONSTRUCTION STAGES

Patterns are placed on the front of the shepherd's felt cloak. Generally, local motifs are preferred and the moon and star are optionally placed. It has been observed that the colors used by the Knee Felt masters in Yalvaç district are the 3 colors of raw wool, white, black and brown. It is used in the center or border of the motifs used in kick felt, where there are local differences and the motifs they use for meaning features [1].

2.1.Paint boiler

It is a dye boiler used in the coloring process of wool. It is made of copper and aluminum.

Figure 1. *Paint boiler*

2.2.Wicker

In the past, mats woven with rope from dried plant stems and reed stems were used, but nowadays, synthetic fiber-textured mats are preferred due to their rapid wear, high cost and laborious construction. The wool of the felts, which are formed with or without naaş, are laid on the mould. This mat is used in kicking and cooking processes.

Figure 2. *Wicker*

2.3.Rod

It is a tool that ensures that the wool to be thrown on the mat, which is 40-50 cm in length and opened in the form of a fan with five or six handles, made of walnut, redwood, poplar branches, is spread evenly and the wool is collected on the edges.

Figure 3. *Rod*

2.4.Scales

It is the tool used to determine the amount of wool to be spent on the product to be made of the wool coming out of the carding machine.

Figure 4. *Scales*

2.5.Stereotype

It is made of thick and densely sewn fabrics such as 1.5-meter canvas or tarpaulin, which is used at the end of the mold used to prevent the wear of the mat that is wrapped in a standing or kicking machine, and is wrapped and tied on the mat.

Figure 5. *Stereotype*

2.6.Kicking Machine

The felt recoiling process, which was done with the knee, feet and chest in the past, is now provided by the recoiling machine with the development of technology. The molds, which are wrapped with molds in the form of a roll, are placed in the kicking machine by tying rubber ropes on the edges. It takes about two, two and a half hours in the machine. Body power has been replaced by a kicking machine. In some regions, this machine is replaced by the same process in the cooking machine[4].

Figure 6. *Kicking Machine*

2.7.Cooking Machine

It is a machine that provides felting of wool with the help of steam. The felt inside the mold that comes out of the kicking machine is cooked in the cooking machine by continuously giving steam for about 7-8

hours. In the past, this process was done in felt baths [2].

Figure 7. *Cooking Machine*

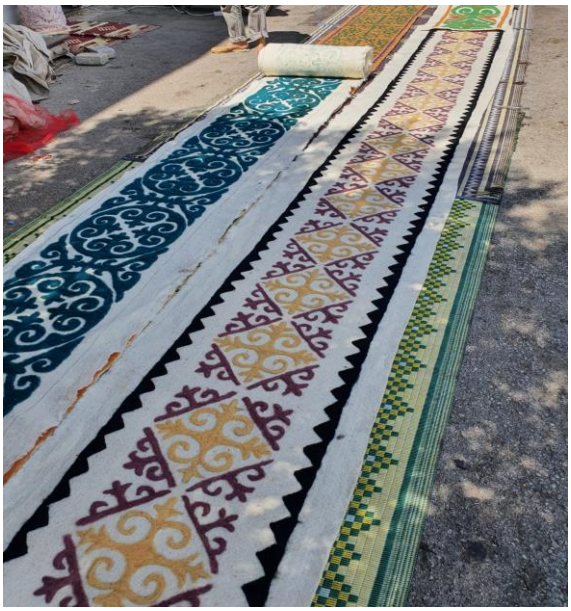

Figure 8. *Felt patterns*

Wool is sheared in autumn to make felt. Wool is washed for cleaning and combed by drying. When the wool throwing is completed, soapy water is sprinkled.

Figure 9. *Sprinkling of wool*

In the next stage, the second layer of wool is thrown. When the beating is completed, the edges are smoothed by hand and the second water is sprinkled, the third layer of wool is thrown and the edges are collected by hand and smoothed.

Figure 10. *Pattern placement*

As a pattern, the engagement is placed on the front of the shutter. The kicking process takes one hour and the front and back parts of the shutter are folded and the parts that need to be joined are opened manually and joined into the other floor. The front and back parts of the shutter are combined by the master with the capping method. The shoulder parts are shaped into the body and the shutter is placed in the kicking machine again and kicked [12].

Figure 11. *Cooking*

After the topping process, the cooking process is started and the felting process is realized by cooking with hot water for ten hours.

Figure 12. *Cut in half*

Figure 13. *Correcting the edges*

After cooking, the bran is given its final shape and the front and neck parts are opened with scissors and hung to dry.

Figure 14. *Drying*

For the drying process, the drying process is carried out in natural weather conditions on hangers and it is made ready for the use of shepherds

Figure 15. *View*

Figure 16. *Model*

The felting master of Yalvaç, Gencer Kondal, states that the quality of the shutter is in wool and good felting. We thank Mustafa Kodaloğlu, Ali İhsan Kodaloğlu and Emine Kondal for providing the photographs.

3.OCCUPATIONAL HEALTH AND SAFETY MEASURES

3.1.Precautions Against Risks Arising from Dusts

Occupational diseases caused by dust are mostly encountered in wool enterprises. It is possible to define silicosis as a disease evaluated under the title of "pneumoconioses" in the classification of occupational lung diseases, and pneumoconiosis as the accumulation of mineral dust on wool in the lung and the tissue reaction to this accumulation.[5]

Precautions to be Taken for Prevention

• Proper ventilation, etc., to prevent the spread of dust in workplaces. prevent dust from spreading.

• Have the ventilation system regularly maintained and checked.

• Have dust measurements done at the intervals specified in your risk assessment, and ensure that the values are below the occupational exposure limit values.

• If the amount of dust cannot be reduced to a non-hazardous level despite all the precautions, or in case of an accident, provide the employees with appropriate personal protective equipment and ensure that they are used [6,7].

3.2.Precautions Against Fire Risk

Fire is an undesirable and uncontrollable combustion event, and flammable material, oxygen and heat are required in the environment for fire to occur. It is found as a necessity of work in workplaces that use flammable material wool [8].

Both the scattered and large quantities of raw materials in the workplace and the accumulation of flammable materials in the environment as a result of the accumulation of dust formed in the production process in various places in the workplace increase the risk of fire in the workplaces [9].

• Prevent the accumulation of wool dust in the workplace, the irregular and dispersed presence of raw materials and products, their random throwing into the workplace, and regular cleaning in the workplaces.

• Check the ignition sources (overheating equipment, electrical equipment, sparks from friction, cigarettes, ignition of electrical cables due to overloading, faulty grounding, open conductors, damaged cables, short circuit due to power extension cables, non-off lighting flammable dust, etc.)

• Do not allow extension sockets to be randomly located on the workplace floor, ensure that they are in a duct.

• Have the grounding installation, electrical installation, lightning rod periodically checked. Install residual current relays on the main and sub-panels.

•Use completely enclosed type of lighting in places where there is a risk of burning due to dust and fibrous materials.

• Make sure that there are no open flame sources, overheated surfaces, especially in areas where flammable fibers are processed, where wool fiber is present.

• Store the wool fiber separately, in a fireproof compartment and in neat stacks,

• Do not stack near distribution boards of electrical panels.

• Do the storage and stacking in a way that does not interfere with the lighting.

• Do not stack under lighting lamps and heat sources.

• Have effective and sufficient fire extinguishing equipment according to the size of the workplace, the characteristics of the work done, the equipment in the workplace, the characteristics of the materials used and the number of employees.

• Place detectors and alarms sensitive to smoke, heat or flame in accordance with the work done in the workplace or workplace sections.

• Place fire extinguishers in easy-to-reach places, and mark their locations in a way that is easy to see.

• Do not allow storage in front of fire cabinets and portable fire extinguishers in a way that prevents easy access in case of emergency.

• Train employees on what to do and how to act in the event of a fire.

3.3.Precautions Against Risks Arising from Hazardous Chemicals

Some organic and inorganic acids, bases, polyvinyl acetate, hydrogen peroxide, salts, dyestuffs that give color to textile products, etc. for various processes in the wool processing sector. chemicals are used. In general, although the use of chemicals is not intense, except for the companies that make dyeing; pretreatment (washing, burning, bleaching) etc.), there is intensive use of chemicals in dyeing, printing and finishing departments.

• Identify the hazardous chemicals in your workplace, determine the precautions (general precautions, special precautions, health surveillance, environmental measurements, emergency action plan, etc.) by making a risk assessment and implement them. provide.

• Carry out the operations of storing, weighing and transferring the dyestuffs to the transport container in a separate section from other chemicals.

3.4.Precautions Against Noise

Noise from wool kicking machines poses a significant hazard and often exceeds 90 decibels. In order to prevent noise in workplaces, to reduce noise if it cannot be prevented, and in any case to prevent exposure of people, it is necessary to comply with the relevant legislation.

However, if the following precautions are also followed or the noise risk cannot be completely eliminated by other measures, it should be reduced to an acceptable level.

•Choose work equipment that produces as little noise as possible. Have work equipment maintained. Provide employees with the necessary information and training on the use of work equipment.

• Place work equipment on floors that prevent or significantly reduce vibration and noise.

• Eliminate sources that will reflect noise.

•Screening, covering, noise absorbing covers, etc. of the airborne noise. reduce methods.

3.5.Measures Against Risks Caused by Work Equipment and Moving Parts

Moving parts in work equipment (machines and workbenches, etc.) used in the production of shutters pose a danger and there is a risk of occupational accidents such as crushing, breaking, breaking, etc. of the arms, hands, fingers or other parts of the body of the workers caused by these hazards by being caught between the moving parts.

3.6.Precautions Against Risks Arising from Business, Operations and Non-Ergonomic Working Conditions

It is the most appropriate way of working to carry out the works in the whole shutter manufacturing process

in the most appropriate way to the natural stance of the human being. Natural posture is the safest and most comfortable posture for work. Unnatural and inappropriate postures cause musculoskeletal disorders and increase work stress by pushing the physical limits of the body as a result of pressure on muscles and joints.

It is thought that it would be beneficial to take measures by considering the following issues along with the provisions of the legislation in workplaces.

• Ensure that the workplace is wide and high enough to do the job.

• While arranging the workplaces, take into account the physical characteristics of the employees and the dimensions of the workbenches and make the necessary arrangements to work in a comfortable posture.

• Seats, chairs, etc. in the work done while sitting. Adjust the height of the workbench so that the worker can work most comfortably and that there is adequate space for feet and legs under the table/bench. Choose seats with adjustable height and backrest whenever possible. When chairs (seats) are adjusted, desks should be at elbow level.

• Since people will get tired more while standing, ensure that the work is done sitting down as much as possible.

• Make arrangements to prevent workers from constantly standing and working at a tiring pace, change the way they work at certain periods, make arrangements for them to rest.

• In the case of standing work, the height of the desk should be suitable for the work done at the desks. It should be close to waist level for work that requires power, and close to eye level for fine work that requires careful attention.

• Organize the work so that there is no need to carry the loads manually in the workplace and take the necessary measures to ensure that the load is carried by appropriate methods, especially by using mechanical systems.

• In cases where manual handling of wool sacks is unavoidable, ensure that appropriate methods are used to reduce the risk arising from manual handling and make necessary arrangements in this regard. Shorten transport distances as much as possible. Do not employ employees whose physical structures are not suitable for carrying out the work to be done.

• Provide employees with adequate information and training on how to transport loads correctly and the risks that may arise if they are handled incorrectly.

• Ensure that all parts of the workplace, especially the quality control departments, are adequately and adequately illuminated. Lighting should be done in such a way that it is not reflected in the eyes of the worker.

•Use suitable tools for lighting.

• Measure whether the lighting is sufficient in the workplaces, due to the long time spent and intense visual activities.

• Ensure that work equipment and computer screens are placed at eye level for standing or sitting work.

• Since the floor may become slippery due to the work done in the workplaces, prevent slippery floors by regularly cleaning the work areas from debris and spills in a way to prevent falling and slipping.

3.7.Measures Against Risks Caused by Unsuitable Thermal Comfort Conditions

Thermal comfort conditions are one of the important issues that affect work efficiency, health and safety of employees and their psychological state. In wool processing, having to provide certain temperature and humidity in some sections can complicate the working conditions.
•Measure and evaluate thermal comfort conditions in workplaces.

• Position the tools used for heating and cooling in a way that does not disturb the employee and does not create a risk of accident.
• Take the necessary measures to protect the employees from the negative effects of sunlight, heat and air currents coming from windows and vents.
• Although the ambient temperature should be suitable for the work being done, it should be moderate and at a temperature that will not adversely affect the health of the employees, or protect the employees from extreme heat and cold by appropriate selection of clothes, adjustment of working hours, etc.[10,11].

4.CONCLUSION and RECOMMENDATIONS

Felt has the characteristic of being the oldest textile surface obtained by shearing the wool of sheep and its

derivatives at certain times and by felting these wools after processing. It has been determined that the masters in Yalvaç, which is one of the production areas, make their living by making felt cloak.

When the data on the colors of the felt cloaks in the region were evaluated, it was determined that the masters used the natural colors of the sheep, white, black and brown, respectively. In the direction of the examination made in the region, it has been determined that the motifs used by the masters related to the motifs are unique to the region and that they are generally obtained with geometric shapes and these shapes are given meaning.

The art of traditional recoil felting and shutter production is a branch of art that contains the features of design such as form, color, texture, size and surface, and today it can be applied everywhere with the development of wet felt and dry felt techniques besides traditional production.

Advice for felt manufacturers:

1- The working conditions of the craftsmen in Yalvaç should be improved by the relevant institutions and organizations.
2- It should be ensured that the masters work together with the designers.
3- A national workshop promoting the felt making profession should be held.
4- It should be aimed to produce the products for touristic purposes.
5- Students should be introduced to the relevant fields of Isparta University of Applied Sciences.
7- It is necessary to create a museum by protecting the samples from the shutters produced.
8- Ensuring that occupational health and safety measures are taken at an adequate level in Shepherd's felt cloak workshops

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