
THE TECHNOLOGICAL IMPORTANCE OF THE DEGREASING PROCESS IN LEATHER MANUFACTURING**Nabiyeva Dilnoza Dilshod qizi**

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<https://doi.org/10.5281/zenodo.20548543>**Abstract**

This article analyzes the technological importance of the degreasing stage in leather manufacturing, as well as its effect on leather quality and subsequent processing operations. Raw hides contain natural fats, protein residues, impurities, and other organic substances that may negatively affect the uniform tanning, dyeing, and finishing of leather. Therefore, the degreasing process is an important stage in reducing excess fats between leather fibers, ensuring the uniform penetration of chemical reagents into the leather structure, and improving the physical and mechanical properties of finished leather. The article discusses degreasing methods, the reagents used, factors influencing process efficiency, and environmental aspects.

Keywords:

leather, raw hide, degreasing, natural fat, surfactants, emulsification, leather quality, technological process.

In the leather industry, transforming raw hides into finished leather consists of several complex technological stages. Each of these stages directly affects the quality of the final product. During raw hide processing, such operations as soaking, unhairing, liming, pickling, tanning, dyeing, fatliquoring, and finishing are carried out. Among these stages, the degreasing process has particular importance. Raw hides contain a certain amount of natural fatty substances. The fat content may be relatively high, especially in sheep, goat, and some cattle hides. Excess fats in the hide interfere with the uniform course of technological processes. Such fats make it difficult for tanning agents, dyes, and finishing components to penetrate deeply into the fiber structure of the hide. Therefore, in leather production, the degreasing process is considered one of the key technological stages that determines the quality, appearance, color, softness, strength, and performance properties of finished leather.

Main Part: The Essence of the Degreasing Process Degreasing is the process of reducing or removing excess natural fatty substances from raw hides or semi-finished leather. This process is mainly based on emulsifying, dissolving, or separating fats from the fiber structure with the help of surfactants.

Fats in the hide have hydrophobic properties, meaning they do not mix well with water or aqueous solutions. For this reason, special surfactants, alkaline solutions, organic solvents, or enzymatic preparations are used in the degreasing process. These substances break fats into fine particles and transfer them into the aqueous medium.

If the degreasing process is not carried out sufficiently, defects such as stains on the leather surface, uneven dye absorption, color differences, stiffness, or poor adhesion of the finishing coating may occur.

The Effect of Fats in Raw Hides on Leather Quality The amount of fat in raw hides depends on the type of hide, the age of the animal, feeding conditions, and storage method. In certain amounts, fats may help preserve the natural softness of the leather structure. However, their excessive presence is considered a negative factor in leather manufacturing.

Excess fats cause the following technological problems:

they make it difficult for tanning agents to penetrate into the inner layers of the hide;
they interfere with the uniform absorption of dyes;
they cause oily stains on the leather surface;
they reduce the adhesion of finishing coatings;
they worsen the hygienic and aesthetic properties of finished leather;
they may cause an unpleasant odor in the product.

Therefore, the proper organization of the degreasing process is one of the main conditions for improving the quality of finished leather.

Substances Used in Degreasing: Various chemical substances are used for degreasing in leather production. Their selection depends on the type of hide, fat content, the assortment of leather to be produced, and the requirements of the technological process.

Surfactants are the most commonly used reagents in degreasing. They transform fat particles into a fine emulsion and ensure their transfer into the aqueous medium. Surfactants are divided into anionic, cationic, nonionic, and amphoteric types.

Alkaline substances help break down and saponify fats. However, an excessively strong alkaline medium may damage the leather fibers. Therefore, the pH level must be strictly controlled.

Organic solvents have the ability to dissolve fats. However, due to their high environmental risk, their use in modern leather manufacturing is limited or replaced with alternative environmentally safer methods.

Enzymatic preparations have a mild effect on the leather structure. They help decompose organic residues and are considered relatively safer from an environmental point of view.

Factors Affecting the Degreasing Process: The efficiency of degreasing depends on several technological factors. If these factors are properly controlled, excess fats in the hide are effectively removed and a high-quality semi-finished product is obtained for subsequent processing stages.

The main factors include:

the type of degreasing agent used;
solution concentration;
processing temperature;
process duration;
pH of the solution;
degree of mechanical agitation;
type of hide and its fat content.

Temperature plays an important role in the degreasing process. An increase in temperature accelerates the melting and emulsification of fats. However, excessively high temperatures may damage the collagen fibers of the hide.

The pH medium also determines the efficiency of the process. Although an alkaline medium helps saponify fats, exceeding the required level negatively affects the strength of the leather. Therefore, strict compliance with the technological regime is necessary during the degreasing process.

The Effect of Degreasing on Subsequent Processes: The degreasing process is directly connected with the subsequent stages of leather manufacturing. If fats are not sufficiently removed from the hide, the tanning process proceeds unevenly. As a result, some areas of the leather may not be properly tanned or may become stiff.

The quality of degreasing also plays an important role in the dyeing process. In fatty areas, the dye does not penetrate sufficiently into the leather. This leads to color differences, stains, and uneven shade on the surface of finished leather.

At the finishing stage, the adhesion of the coating layer decreases on leather that has not been properly degreased. Such leather products wear out quickly during use, and their surface may crack or the coating may peel off.

Thus, the degreasing process directly affects the aesthetic appearance, color stability, elasticity, strength, and service life of finished leather.

Environmental Aspects of the Degreasing Process. Wastewater generated during the degreasing process may contain fats, surfactants, organic residues, and chemical reagents. If such wastewater is discharged into the environment without treatment, it may cause pollution of water bodies and soil.

In particular, some types of synthetic surfactants may be difficult to biodegrade. Therefore, in modern leather manufacturing, the use of biodegradable and environmentally safe degreasing agents is of great importance.

To ensure environmental safety, the following measures should be implemented:

- use biodegradable types of surfactants;
- collect and treat oily wastewater separately;
- apply flotation, coagulation, and biological treatment methods;
- study the possibilities of recycling oily wastes;
- introduce closed technological systems that reduce water consumption;
- strictly control the dosage of reagents in technological processes.

These measures not only increase the environmental safety of production but also improve the economic efficiency of the enterprise.

Conclusion: In leather manufacturing, the degreasing process is one of the important technological stages that determines the quality of the finished product. Excess natural fats in raw hides interfere with the uniform course of tanning, dyeing, and finishing processes. As a result, stains, uneven coloration, stiffness, poor adhesion of the finishing coating, and reduced performance properties may occur on the leather surface.

Surfactants, alkaline solutions, organic solvents, and enzymatic preparations are used in the degreasing process. The correct selection of these reagents, as well as the proper control of temperature, pH, process duration, and mechanical treatment, increases the efficiency of degreasing.

In addition, environmentally safe treatment of wastewater generated during degreasing, the use of biodegradable reagents, and the introduction of resource-saving technologies are of great importance for the sustainable development of the leather industry.

Overall, the scientific organization of the degreasing process contributes to improving leather quality indicators, increasing color and finishing quality, and ensuring the environmental safety of production.

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