



INFLUENCE OF THE PROCESS OF FILLING WITH POLYMER COMPOSITIONS ON THE STRUCTURE AND PROPERTIES OF SKIN

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Abstract: *This article examines the effects of polymers on leather properties, polymers, and leather texture components.*

Keywords: *polymer fillers, genuine leather, skin absorption capacity, molecular chains of collagen, water-soluble polymers.*

INTRODUCTION

Genuine leather has valuable physical, mechanical and hygienic properties that distinguish it from many other materials. The most important of the total mechanical properties of chrome-plated leather and products made from it are durability, expressed in the ability of the leather to withstand repeated cyclic bending deformations and plasticity - the ability to spatially take shape and shape. the sole of the foot and maintain its stability. Among the hygienic properties, the most characteristic of leather is the ability to "breathe". [1]

It should be noted that genuine leather has important disadvantages, the most important of which are: uneven thickness and density of various topographic areas, wrinkles, insufficient bending strength for base leather and thick leather.

At the same time, restoration and filling of the skin allows you to further form the structure of the skin tissue and reduce the elasticity of the skin; it is necessary to compact the front surface of the leather and prepare it for polishing (this is very important for chrome-plated leather). It is necessary to carry out sanding, equalizing the density and thickness of the parts with a soft edge, increasing the water and abrasion resistance of the shoe sole and thick leather. [2]

The distribution of reagents and the binding of dyes, lubricants, as well as the quality of the coloring of the leather coating depends on the chemical nature and structure of the retanning and filling preparations. Carrying out the process of re-coating a semi-finished product increases the heat resistance, strength of the semi-finished product, resistance to oxidizing agents and increases the yield of usable area. When distributing filler reagents, the density of various topographic areas of the semi-finished product should be as uniform as possible. The consumption of filling reagents depends on the characteristics of the feedstock. [3].

The polymer preparation in the leather reduces vapor permeability, affects the mechanism of moisture transfer in the capillary-porous system, increases the field output, improves the quality of the leather and improves the performance characteristics of the entire leather. It should be noted that the preparatory processes for preparing raw materials are interconnected with the nature of the raw materials and the technological stages of



production. Achieving the desired filling effect largely depends on the uniform distribution of polymers throughout all layers of skin tissue. In this case, the distribution of the dispersed phase in the system, that is, the stability of the dispersed system, significantly depends on the particle size. Microdisperse solutions have high kinetic stability. However, particles can be collected under certain conditions. Aggregated particles form soft aggregates of irregular shape [4].

One of the main types of deposit formation is heterocoagulation of polymer particles on fibers, which contributes to the formation of large agglomerates. At the same time, a certain value of the absorbent capacity of the skin is considered a necessary condition for complete processing from the bath. As the particle size of the dispersed phase increases through the thickness of the skin, this promotes selectivity of polymer deposition in topographic sections. [5].

It should be noted that studies in the field of the effects of emulsions on leather have shown that low-molecular solutions lead to an increase in tensile strength with subsequent polymerization, a relative smoothing of the features of topographic areas, since when preparing leather for finishing it is important to ensure the necessary depth of penetration of polymer particles to prevent the formation of stains and formation of folds. In fact, it is water-soluble polymers that are becoming the main components of skin filler today. At the same time, by selecting various low-molecular substances and polymerization conditions, it is possible to change the molecular structure of the polymer during the synthesis process and give it the properties necessary to obtain high-quality skin: interaction of polymers with the functional groups of collagen and surfactants in the structure of skin tissue due to cross-linking molecular chains of collagen make it possible to obtain an additional network structure and at the same time improve the filling of the edges of the semi-finished product. [6].

It should be noted that water-soluble polymers are able to interact with the functional groups of collagen, forming cross-links. In this case, the structure of the semi-finished product arises due to the cross-linking of adjacent polypeptide chains in the presence of embedded polymers. The process of formation of water-soluble polymers occurs as a result of a sharp increase in the forces of intermolecular and intramolecular interaction, which is observed by a change in the arrangement of macromolecules, that is, a sharp increase in molecular weight, as well as a change in the properties of the polymer. [7].

Analysis of the above literature data shows that proposals for the use of various organic compounds in leather production have been published in many publications. However, there are still no products of acceptable quality. To obtain products from low-grade raw materials, it is proposed to tan the leather with chrome tanning agents and fill it with polymers. Analyzing scientific sources, we can say that the use of sulpharomatic compounds as additional fortifiers and fillers in the leather industry has been studied very little, and the structure of benzene and resorcinol indicates the possibility of achieving good results. It should be noted that the high reaction properties of resorcinol in the ortho- and para-position of the phenolic core form bonds that increase the ability to be filled with collagen. The use of resorcinol as preparations for grinding and filling ensures the formation



of additional bonds between HA groups and atoms of the functional groups of collagen, thereby significantly improving the quality of the product. At the same time, given the structure of polymer preparations for skin resurfacing and filling, it should be noted that the volume of skin absorption should facilitate the full use of the drug, and the particle size should ensure sedimentation. skin in peripheral areas. The use of the above preparations in leather technology helps improve the quality of the finished product. In addition, it is necessary to emphasize the economic feasibility of using aromatic preparations. [8].

CONCLUSIONS

The urgency of the problem of obtaining high-quality leather from low-grade raw materials predetermines the search for technical solutions for the use of enhancing and filling drugs in the processing of semi-finished products. Analysis of scientific sources shows the high efficiency of using water-soluble polymers, providing high consumer properties, good fillability of skins for regeneration and filling of the skin;

- development of synthesis methods and fillers based on water-soluble polymer compounds and study of their properties;
- study of the influence of polymers on the properties of leather, polymers and components of leather fabrics;
- study the technological conditions for packaging and replenishing semi-finished products and select the most optimal technological mode;
- assessment of the consumer characteristics of leather obtained using the developed preparations and the feasibility of their use.

REFERENCES:

1. Муродова З. О. Оптимизация состава подошвенных композиций на основе тройного этиленпропиленового каучука и полипропилена //Вестник магистратуры. – 2021. – №. 5-6 (116). – С. 54-58.
2. Турсункулова М. С., Муродова З. О. Структура и свойства термопластичных эластомеров //УЧЕННЫЙ XXI ВЕКА международный научный журнал. – №. 5-2. – С. 52.
3. Турсункулова М. С., Муродова З. О. Термопластичные эластомеры на основе бутадиен-нитрильного каучука //Ученый XXI века международный научный журнал. – №. 5-2. – С. 52.
4. Murodova Z., Musayev S., Olimov B. TECHNOLOGICAL ASPECTS OF OBTAINING AMINOALDEHYDE OLIGOMER MODIFIED WITH CROTONALDEHYDE //EPRA International Journal of Multidisciplinary Research (IJMR). – 2022. – Т. 8. – №. 11. – С. 32-35.
5. Мурадова З.О. ИССЛЕДОВАНИЕ РАЦИОНАЛЬНОЙ ВНУТРЕННЕЙ ФОРМЫ ОБУВИ // Вестник магистратуры. 2021. №6-1 (117). URL: <https://cyberleninka.ru/article/n/issledovanie-ratsionalnoy-vnutrenney-formy-obuvi> (дата обращения: 02.03.2023).



6. Murodova Z., Ergashev B. Properties of aminoaldehydes based compositions //Scientific Collection «InterConf». – 2023. – №. 146. – С. 366-369.

7. Муродова З. О. ПОЛУЧЕНИЕ И ПРИМЕНЕНИЕ КОМПОЗИЦИЙ НА ОСНОВЕ ОБРЕЗКОВ ХРОМИРОВАННОЙ КОЖИ //SCHOLAR. – 2023. – Т. 1. – №. 15. – С. 222-225.

8. Муродова З. и Эргашев Б. (2023). Исследование свойств композиций на основе серицина. Научный сборник «ИнтерКонф» , (148), 431–434. Получено из <https://archive.interconf.center/index.php/conference-proceeding/article/view/2857>