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	JIF = 1.500	SJIF (Morocco) = 7.184	OAJI (USA) = 0.350

SOI: 1.1/TAS DOI: 10.15863/TAS

International Scientific Journal

Theoretical & Applied Science

p-ISSN: 2308-4944 (print) **e-ISSN:** 2409-0085 (online)

Year: 2021 **Issue:** 10 **Volume:** 102

Published: 16.10.2021 **http://T-Science.org**

QR – Issue QR – Article

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OBTAINING LEATHER MATERIALS WITH IMPROVED PROTECTIVE AND PHYSICAL AND MECHANICAL CHARACTERISTICS

Abstract: *Traditional methods of production of tanning materials for today does not allow for producing a hydrophobic semifinished leather with the required physical and mechanical and hygienic properties. To solve this problem, the technology of producing leather for shoe uppers, using silicone compounds the impact of nonequilibrium low-temperature plasma.*

Key words: *shoe upper leather, protective properties, plant extractors, low-temperature imbalance.*

Language: *English*

Citation: Homidjonov, A. O., Nabijonov, M. G., & Urmanov, A. A. (2021). Obtaining leather materials with improved protective and physical and mechanical characteristics. *ISJ Theoretical & Applied Science, 10 (102),* 556-558.

Soi: http://s-o-i.org/1.1/TAS-10-102-54 ***Doi***: https://dx.doi.org/10.15863/TAS.2021.10.102.54

Scopus ASCC: *2200.*

Introduction

Despite the rapid development of the production of waterproof materials in the light industry, the demand for products from natural raw materials is high. Due to the quality of raw materials and modern production technology, genuine leather products are distinguished by a unique combination of consumer characteristics. However, to date, traditional methods for the production of leather materials do not allow obtaining a hydrophobic leather semi-finished product with the necessary physical, mechanical and operational properties, since the main disadvantage is that the improvement of the protective properties is usually the deterioration of others. Specifications. To solve this problem, researchers are now suggesting the use of unconventional methods of processing leather semi-finished products, such as complex mechanical or chemical processing. Low-equilibrium low-temperature waterproof materials have been investigated. Water-based processing of leather materials is environmentally friendly, consumes less energy and is also more efficient than traditional processing methods.

Thus, the purpose of this study is to develop a technology for obtaining semi-finished leather products from the skin of cattle (cattle) with protective, improved physical, mechanical and hygienic properties as a result of treatment with organosilicon compounds and plant extractors.

"Development of technology for controlling the microstructure of natural materials in light industry for the sectors of the economy of Uzbekistan (energy, construction, petrochemistry and defense industry)."

Picture 1.

Experimental Part

In recent years, there has been a trend towards an increase in demand for protected natural leather, especially with herbal properties. The leather is produced by growers at various stages of processing and finishing. In particular, various chemical treatments are applied to the skin to affect plant growth, which should provide a stable protective effect on the surface while maintaining high hygienic and operational properties of the skin. In types of processing, a protective layer of emulsion is separated on the surface, which prevents the ingress of water into the thickness of the material. Skin-containing compounds, hydroxyl carboxylic acid derivatives, fatty acid esters and surface effects are based on a higher surface tension than water.

In some cases, multi-layer film coatings are formed on the surface of leather materials, which give them water-resistant properties. They will be durable due to repeated application.

Examples of waterproofing agents are kerosene, silicones, silanes, fluorinated hydrocarbons, etc., for which cationic surfactants are often used. The hydrophobization process using organosilicon compounds involves the interaction of silanes with hydroxyl groups, which are always present in macromolecules, during the polycondensation of silanes to form a polysiloxane film. Silane treatment of the surface leads to effective methylation of the surface, which gives it a sufficiently high hydrophobicity. However, the use of organosilicon compounds as a water repellant prevents the formation of mold, has an antibacterial effect on the skin material. Skin regeneration. As a result of the reaction, polymers are deposited on the fibers of the dermis, forming its structure. Their presence is an indicator.

Improving the quality and competitiveness of leather goods and footwear is directly related to the solution of a number of serious problems in the new conditions of the development of the domestic leather goods market. It is known that the commercial properties and consumer value of leather products are mainly determined by the properties of raw materials, that is, leather materials. At the same time, their quality can be improved due to a radical change in the technology of production and decoration, the use of innovative developments and compositions that improve the characteristics of the finished product. With the help of new additives for hydrophobization, it is possible to achieve almost absolute waterproofing and high water permeability, but at the same time, vapor permeability is significantly reduced, which directly affects the hygienic properties of the finished product. Thus, the real problem facing light industry enterprises today is the production of hydrophobic leather materials with improved hygiene properties.

However, it is known that in the production of natural leather, processing allows to improve the quality of the product in a complex way. In addition, plant growth is one of the most promising and accessible sources of chemically active particles - excited molecules, free atoms and radicals, ions, and electrons. Therefore, the choice of plasma gas during the recirculation process is very important. It was found that plasma treatment with various plasma-forming gases using mixtures of argon, oxygen and argon-propane can significantly increase the strength properties, as well as regulate the protective properties while improving the plastic properties. Leather

materials allow the choice of various processing modes and plasma gas without compromising the hygienic properties of polar polymers. Plasma treatment stimulates structural changes in the natural protein content associated with the modification of primary and secondary fibers. The surface of the plasma-modified material is highly hydrophobic, which improves its hygienic and physical-mechanical properties.

The degree of hygienic properties of the finished leather. The skins treated with plant extractors are characterized by good filling, uniformity of relief of physical and mechanical properties, high abrasion and water resistance, resistance to chemicals and various microorganisms. In this regard, in the traditional technology for the production of chrome semi-finished products from cattle skins, it is proposed to introduce tannin processing at the processing stage to improve the obtained physical and mechanical properties. Leather includes processing the leather until the process is complete.

Based on the results of optimization of the parameters of the NTP for the treatment of leather and hides in a mixture of plasma gases argon and propane-butane, a treatment mode with improved physical, mechanical and hygienic properties was selected. The data on changes in the physical, mechanical and protective properties of cattle skins as a result of tannin processing by complex processing are presented in the article.

The analysis of the results shows that the quality indicators of the control batch of leather correspond to GOST 939-88 "On the upper part of shoes". The return of semi-finished leather products in accordance with GOST leads to an increase in the strength properties of cattle leather by 8%, with plasma treatment - by 13.2%, and after complex exposure - by 24%. The absorption time of water droplets on the skin surface increases by 41%, 33% and 86%, respectively. At the same time, the hygroscopicity index of cattle skins increased by 22-25% as a result of the use of finished skin of the breed, G = 0.04 g / s, Pk = 26.6 Pa, W under the influence of plasma. = 1.3 kw, p = 9 minutes and 42% as a result of complex processing.

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