LEATHER TANNING TECHNOLOGY BASED ON TANNIN, FROM POMEGRANATE PEEL

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Modern technology of leather production is difficult to imagine without chrome tanning. Tanning salts of chromium have the ability to give the skin softness, lightness, strength and light color compared to other tanning agents [1]. Chromium(III) has been reported to be toxic at high concentrations and in certain ligand environments [2]. And hexavalent chromium causes diseases in the skin, mucous membranes, respiratory tract [3], kidneys, etc. Therefore, it is important to reduce the amount of chromium in tanneries to an acceptable level. The chromium concentration can also be reduced by using alternative tanning agents. Leather obtained using vegetable and organic tanning agents will not have high hydrothermal stability. Therefore, the use of acrylic paints [4] in addition to vegetable dubbers makes it possible to obtain leathers with high hydrothermal stability.

Titanium [5], aluminum, zirconium [6] and iron [7] can be used as mineral enhancers. However, each substance has its own disadvantages, such as high cost, discoloration of the skin, low hydrothermal resistance, etc. is included. As for other minerals, tungsten and molybdenum are also used in white leather production processes [8].

Analyzing the literature, it was found that the use of chromium tanning agents in the process of obtaining leather and fur from raw hides affects not only the deficiency of this substance, but also the presence of toxic chromium compounds as additives and in production waste. finished products cause significant damage to the environment and the human body. Despite the fact that chromium tanning agents have many effective uses in the leather industry, worldwide attention is paid to the production of tanning agents that replace this substance.

Vegetable tanning agents are alternative substances that can replace chromium. Vegetable tanning agents are more expensive than chromium tanning agents, and they adversely affect some of the properties of soft leathers.

However, tannins are environmentally friendly and widely distributed in nature, and the use of tannins in the combined tanning process makes it possible to overcome the above disadvantages.

On the basis of the foregoing, a technology for tanning lining leather from sheepskins was developed based on a tanning extract obtained from the peel of a local pomegranate.

Table 1. Pretanning and tanning processes

Process name	Fluid ratio	Duration, hour	Temperature, ℃	Reagent concentration, %
Flushing	1,0	0,5	25 (initial) 35-37 (final)	Running water (drum rotation 8-10 minutes-1)
Anesthesia	1,5	0,5	35-37	Ammonium sulfate - 1.5
Bating	1,2	0,8	30-35	Enzyme GCT RHX – 0,5
Deliming	1,0	0,2	28-30 (initial) 18-20 (final)	Washing is carried out in running water
Pickling	0,6	1,5	25	Sodium chloride - 7; formic acid (85%) - 0.3; sulfuric acid (90%) - 0.5
Neutralization	0,6	0,3	25	Sodium bicarbonate - 0.3-1
Tanning – fatliquoring	1,0	1,5	20-40	Mimosa - 4% Pomegranate peel tanner - 4% J-89 - 2% (greasing material) LNO - 2% (greasing material) D-9 - 2% (greasing material) ATO - 4% L-P-30-SMM
Bedding	-	24	-	Bedding is carried out on racks
Filling	1,0	2,0	20	ATO - 4% Mimosa - 4% Pomegranate peel tanner - 4% DDS - 4%

In the process of tanning, a bouquet of vegetable tanning agents was used, and the process of tanning and fatliquoring was carried out jointly. The consumption of fatliquoring materials is 6% by weight of the hide.

As a result, the following conclusions can be drawn: despite the fact that the tanning technology based on vegetable tanning agents requires additional processes, a safe technology for obtaining lining leathers has been created. When organoleptically assessed, lining leathers obtained from sheep skins were characterized by softness and fullness of topographic parts. The welding temperature was 89.3 ℃.

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