



## FILLING OF SKINS WITH PROTEIN-POLYMER COMPOSITIONS

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**Abstract:** *This article presents data on the filling of skins with protein-polymer compositions, as well as data on the use of protein-polymer compositions with hydrolyzed polyacrylonitrile of local production*

**Keywords:** *кожевенная промышленность, мех, материал, кожа, дерма, сырьё, белок, композиция, полимер.*

In leather and fur production, raw materials of biological origin are used, the main component of which are protein substances, or proteins - dermal collagen and hair keratin.

Collagen in the animal body is very common: its content is 25-35% of all proteins. Therefore, it is natural that scientists of different specialties deal with the structure of collagen. Collagen as an integral part of a living organism should be of interest to medical histologists, surgeons, rheumatologists, dermatologists, etc., biologists and biochemists.

Recently, physicists have been paying much attention to collagen as a fibrillar protein and a high-molecular compound. Finally, collagen is also of industrial importance. The dermis of the skin of animals is the main substance for the production of a technical product - skin. Glue and gelatin are prepared from collagen. Consequently, technologists are no less interested in studying the structure and properties of collagen than other specialists. This explains the large number of papers devoted to the study of this protein.

Collagen is an integral part of connective tissue. In addition to the fibrous material, cells and the basic substance were also found in the connective tissue. In this regard, of course, special comprehensive studies were carried out. The main part of the leather fur raw materials are proteins. These proteins are read by natural polymers. During the processing of leather raw materials, some waste is generated.

Waste from tanneries in the form of peripheral sections of hides, mezdra, minnow trimmings, substandard sawn-off can be used for the manufacture of gelatin, feed flour and protein hydrolysis.

Based on the protein modifier developed by us, collagen-polymer derivatives were obtained from non-chrome leather waste in a composition from local raw materials. As you know, currently in production conditions, imported expensive raw materials are used when filling leather, and this is economically impractical. In this regard, we used protein-polymer compositions with hydrolyzed polyacrylonitrile of local production to fill the skins. The composition of the resulting protein-polymer composition is given in Table 1.

**Table 1.**

<b>№</b>	<b>Name of the source components</b>	<b>Mass part</b>
1.	Protein Hydrolysate	40
2.	Hydrolyzed polyacrylonitrile	30
3.	Technical ammonia water	3
4.	surfactant (OP-10, OP-7)	2
5.	Water condensate	25

Total	100
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The protein-polymer composition was prepared as follows. Into a reactor equipped with a mechanical stirrer 40 wt. h. 52.3% protein hydrolysate of chromium chips, 30 wt. h. hydrolyzed sodium hydroxide polyacrylonitrile with saponification step 40%, 3 wt. h. ammonium hydroxide – 25%, 25 wt. h. water condensate and 2.0 wt. h. nonionic surfactant (OP-10) with intensive stirring, they were heated with compressed water vapor through the reactor jacket to a temperature of 55-700C for 3-4 hours. As a result of the reaction, a homogeneous protein-polymer composition was formed with a dry residue of 20.4% and pH = 8.2.

Further experiments were aimed at using the resulting protein-polymer composition in leather filling technology. To do this, after the tanning process, the chrome semi-finished product was loaded into a drum, where the filling process was carried out. At the stage of the filling process, fillers were fed through the hollow axis of the drum at a rate of consumption per 100 m<sup>2</sup>. The composition of the filler is shown in Table 2.

Table 2.

**The composition of the protein-polymer composition for filling leather**

№	Name of fillers	Consumption per 100 m <sup>2</sup>			
		According to a well-known technology, col		Experienced technology	
		%	kg	%	kg
1.	MX-30	2,5	2,49	1,3	1,29
2.	BN-30K-2	0,6	0,51	0,2	0,17
3.	Protein-polymer osition	-	-	2,5	1,18

After adding the fillers, the LC = 1.0-1.2 was adjusted and the drum was rotated at a temperature of 60-650C for 45-60 minutes. After filling the semi-finished product, all finishing processes and operations were carried out according to the production method.

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