MAIN PROCESSES OF -LEATHER PRODUCTION

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Annotation: *In this article, leather production, animal skins, which are the main raw materials of the leather industry, are divided into types according to their classification, importance, field of application. information about their chemical composition, chemical processing processes for obtaining leather from animal skins.*

Key words: *leather, animal, epidermis, sheepskin, collagen, reticulin, elastin, keratin, inorganic substances, cattle, horses, donkeys, mules, camels, sheep, goats, pig.*

All operations of leather production are divided into: soaking-ash (preparatory), pre-tanning, tanning, drying and moisturizing and finishing.

I. Cleaning-ash operations and pre-tanning

Washing-ash operations serve to transfer raw hides into a paired state and prepare the dermis for tanning. For this, the following operations are carried out:

1. Washing and soaking skins is carried out in water with the addition of sharpening agents (for example, sodium sulfide), wetting agents, surfactants and antiseptics (for example, sodium silicofluoride). As a result of this operation, preservatives, blood and water-soluble proteins are removed from the skin. The duration of the soaking of wet-salted canning is 6-24 hours. Skins are washed and soaked in stationary drums, but the skins are fixed on movable frames rotating in the drum. After the operation, the primary removal of the subcutaneous tissue (mesdra) is carried out. With insufficient soaking of the skin, they have increased rigidity and a screed of the facial layer, and with prolonged soaking, they become friable and fragrant.

2. Dehairing - application of suspensions of calcium hydroxyl or a mixture of calcium hydroxide and sodium sulfide (spread mixture) to the bahtar side of the skin, followed by soaking for 4-16 hours and wool shedding after sore.

(Dehairing can occur in conjunction with ashing)

3. The ashing of skins is carried out with an ash liquid - slaked lime (calcium hydroxide) and sodium sulfide. As a result of gilding, loosening and splitting of fiber bundles, removal of the interfiber substance, fat burning and degreasing occur.

4. Repeated mining is also carried out on machines for the complete removal of subcutaneous tissue - the core.

5. Shutting the wool. The hairline can be removed after the dehairing and ashing operations on the wool shearing machines.

6. Double. In the event that the dermis has a significant thickness (skins of medium and heavy weights), it is subjected to a doubling operation - sawing in thickness. This

makes it possible to improve the course of subsequent chemical-physical operations of leather production and increase the yield of the skin - that is, its area.

Pretanning operations

7. Flushing. After the operation of gilding, shearing of hair and skin, in order to remove alkali from the skin, which prevents the course of the tanning process, washing and deashing with ammonium sulfate is carried out for 0.5-6 hours.

8. Softening. To give the skin a smooth facial layer, increased softness, permeability, the skin after deashing is subjected to softening - a short-term treatment with enzyme preparations that remove decay products of proteins, interfiber substances, and epidermis residues from the structure of the dermis of the skin. Then the skin is washed.

9. Picking. To impart an acidic environment and additional loosening of the microstructure of the dermis for subsequent chrome tanning, as the most common method, the pelt is treated with a solution of sulfuric acid and neutral salt after softening. This solution is called a pickle, and the pickling operation

II. Tanning.

Tanning is the process of converting the dermis of the skin into the skin as a result of the chemical and adsorption interaction of tanning agents with collagen and the formation of cross-links between the polypeptide chains of the collagen macromolecule, leading to an irreversible change in the properties of the dermis.

The tanning process consists of the penetration (diffusion) of the tanning solution into the hide and the subsequent binding of the tanning agent to the active groups of the collagen. These processes run in parallel.

Tanning agents are divided into inorganic and organic.

Salts of chromium (III), as well as salts of zirconium (IV), titanium (IV) and aluminum (IV) are used as inorganic tanning agents.

As organic tanning agents are used:

- complex (aromatic series)
- simple (aliphatic series) organic compounds.

Complex organic tanning agents include vegetable tannins (tannins), which are obtained by extraction from the bark of willow, spruce, larch, oak wood, and other plants, and synthetic tanning agents, which are water-soluble condensation products of aromatic hydrocarbons (phenol, naphthalene, etc.).) with formaldehyde. To simple - aldehydes and some types of fats of marine animals (tanning fats).

III. Drying and moisturizing and finishing operations.

Mechanical post-processing

Extraction of moisture - removal of excess moisture up to 55-60% on roller through and non-through machines.

Double - only for the semi-finished product of chrome tanning methods, which is not doubled into the net.

Planting - leveling the semi-finished product in thickness and obtaining a smooth bakhtar surface.

DYEING AND FAT PROCESSES

Washing - for 30-40 minutes in water to remove electrolytes (salts) introduced into the semi-finished product during pickling, tanning and retanning.

Neutralization - removal of excess acid, which hinders the process of dyeing and fatliquoring.

Dyeing. Two dyeing methods are used: drum, when the semi-finished product is placed in a drum with dye, and in this case the semi-finished product is painted over the entire thickness; covering, when the dye is sprayed onto the front and bahtarmy sides of the semi-finished product.

Greasing - increasing the softness and deformability of the semi-finished product.

Filling with aqueous dispersions of polymers - alignment of properties in topographic areas

Washing - washing in water to remove unbound substances from the semi-finished product.

Mechanical operations after dyeing and greasing processes

SPIN - removal of excess moisture up to 55-60%.

Breaking - elimination of folds, wrinkles. The operation is carried out on roller machines.

Drying-wetting and finishing processes and operations

Drying - removal of wetting and capillary moisture by:

- drying up to a moisture content of 40-45%
- main drying up to 14-16%.

Heavy - loosening the structural elements glued after drying and giving them the required orientation.

FINISH (APPEARANCE OF THE FRONT SURFACE)

According to the method of finishing, leather with a natural and artificial front surface is distinguished. By the nature of the people. surfaces - smooth, embossed, cut, lacquered, with a pile finish.

The most valuable are leathers with a natural facial surface, preserving the pattern of natural size, and produced from raw materials with a minimum number of facial defects.

The nature of the finish of leathers with a natural grain surface can emphasize the natural dimension (smooth leathers) or create various artistic effects - like old leather, shagreen, chevro, etc. (embossed, wrinkled leather). MEREYA - a pattern on the front side of the skin formed as a result of the removal of hair from the skin.

The measure of the skin characterizes the type of raw material:

- in the skin of cattle, the measure is small,
- in the skins of small cattle, the measure is medium,
- in pig skins, as well as reptiles, the mereya is large.

Leather with an artificial front surface is produced from raw materials with a large number of facial defects or a rough texture of the front layer (pork raw materials). The natural front layer of such leathers is completely removed by grinding (sometimes doubling) and an artificial front surface is applied in the form of a polymer coating, which achieves the effect of ennobling the front surface.

A variation of the method of finishing leather with a natural front surface is the grinding of the front surface with partial removal of the measure in order to mask minor facial defects of the raw material. The resulting leathers have a pile velvety surface and are called nubuck.

The skins produced by grinding the bahtar side from raw materials with a large number of defects in the front layer and from chrome-tanned split baht are called velor.

Lacque leathers, smooth and with artistic embossing, are produced with a natural and refined front surface, as well as on the basis of split batam leather primed with polymer primers, followed by the application of a varnish finish.

Finishing coating significantly affects the aesthetic perception and preservation of the appearance of leathers in the conditions of operation of shoes, determines the permeability (hygiene) of leathers. Various polymer coatings are used to finish the front surface of leather.

Casein coatings, which are used on leathers with a natural grain surface, provide high permeability, however, are not very resistant to light weather and wet friction. Due to the poor hiding power of casein dyes, they are used only when dyeing leather black.

Emulsion-casein coating - a combined coating on leathers with a natural and ennobled front surface. In the lower soil layers of the coating, an emulsion film former is used, in the upper one - casein dressing. Finishing with such a coating allows the use of a semi-finished product with a large number of facial defects. It is used in the dressing of leather from the skins of cattle dyed black.

Emulsion cover - a coating on leather with a natural, sanded and polished front surface, obtained using emulsion film formers in impregnating and pigmented primers and fixed with nitro-emulsion varnishes. Emulsion coating is the main type of finish for chrome-tanned grain leathers, any color for uppers and shoe linings.

Nitro-emulsion coating - a combined coating on leather with a sanded and sanded front surface, the lower ground layers of which are formed from emulsion film formers, and the upper one - nitro-paints or nitro-varnishes. Due to a significant reduction in permeability, high water resistance, hiding power, nitroemulsion coating is used only when dyeing shoe leathers white, as well as when finishing lining and haberdashery leathers, with Antique and Florantic finishes.

Natural grain leathers can be produced with an aniline finish (uncoated drum-dyed) or a semi-aniline finish combining drum-dyeing with a top coat. Both methods exclude the use of pigment dyes in the upper finishing layer. This finish preserves the natural appearance of the leather, its measure and neck as much as possible.

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