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Technology Of Wool Fiber Washing and Oil Removal

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Annotation: The composition of the washing solution consists of surfactant and soda. Under the influence of soda, the residual fat-wax substances in the fiber become soluble, and the surfactant emulsifies the fat-wax substances that have passed into this soluble state, ensuring their release from the fiber.

Keywords: Washing, Fiber, Conical Tube, Return Cooler, Glass Cartridge Case, Glass Cartridge

Introduction

Wool fiber is an important factor in the effective removal of impurities in the primary processing. The amount of fat in wool can range from 0.5% to 30%. As the amount of fat increases, the vapor, air, and water permeability properties of wool fiber decrease, and conversely, the tensile strength, solubility, softness, and strength properties increase. The nutrients are unevenly distributed across the fiber sections. The fiber content can be of 2 types, bound and unbound. The bound substances are separated by extraction by means of organic solvents.

Unbound substances are separated from the fiber content by hydrolysis using a strong base. Ingredients: can be animal fats, vegetable oils, synthetic oils and fatty substances. These substances have different solubilities and are separated from the fiber content using different solvents. Dichloroethane, chloroform, methyl alcohol, and carbon chloride are commonly used as solvents. There are several different methods for the determination of binding substances in fiber, the most common of which is the extraction method. This device consists of: conical tube, return cooler, glass cartridge case, glass cartridge [2].

By extracting the bonded material by means of organic solvents, 3-4 g of wool fiber is weighed on an analytical balance and placed in a glass sleeve. The top of the sample is covered with a similar filter paper. The glass sleeve is tied back to the bottom tube of the refrigerator using a thread. The refrigerant and the glass sleeve mass are attached to a clear, conical tube and an organic solvent is placed through the top hole of the refrigerator. The distance between the solvent and the sleeve should be 1 cm. The tube is placed in a sand electric bath. When the solvent begins to boil, the vapors condense and drip into the sleeve. Drops of solvent pass through the sample, extract the lubricant, and fall into the flask. Extraction time is 1-1.5 hours. If no droplets remain on the filter paper from the droplets dripping from the cartridge into the tube, the extraction process can be considered complete. Continuing to heat the flask, the cartridge is replaced with a glass cartridge and the solvent is pumped out. The solvent collected in the cartridge is taken to another container. This solvent can be reused. In this way, wool fiber was extracted from fatty substances in various organic solvents, the results of which are shown in.

Based on the results presented, perchlorethylene was used to degrease the raw wool fiber for further studies.In order to give the required capillary to the degreased wool fiber and to remove other contaminants, a wool washing process was carried out. The effect of the concentrations of the chemical reagents used and other factors on the wettability of the fiber was studied. The processes of washing, dripping and bleaching-bleaching are of special importance in the initial processing of wool fibers. The purpose of washing is to remove various types of waste, natural oil residues, mineral waste from wool fiber materials [2].

The complex composition of the waste, in addition to natural waste, requires the selection of special technology and equipment for the preparation of starch, its hydrolysis products, PVS, PAA, mineral oil, etc., which are also used in enterprises. The composition of the washing solution consists of surfactant and soda. Under the influence of soda, the residual fat-wax substances in the fiber become soluble, and the surfactant emulsifies the fat-wax substances that have passed into this soluble state, ensuring their release from the fiber. Various surfactants and soap solutions were used to wash the local wool fiber. The washing quality is assessed by maintaining the fiber length and increasing the wettability. Anionic SAM - sulfanol NP-1, nonionic SAM - prevotsel V-OF were used as surfactants in the experiments.

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Not only the nature of the surfactant but also the pH of the solution may have affected the washing process. Therefore, the effect of pH on the process was studied. From the given diagram we can construct that the fiber length and its wettability are proportional when the washing solution medium is pH = 9. When the pH value exceeds 10, the solubility of the fiber gives a good result, but its size decreases sharply, and at the same time the brittleness of the fiber is felt on organoleptic analysis. Under the influence of soda, the water softens, the swelling of the fiber improves, as a result it is quickly cleared of waste, neutralizes acidic fats. At the same time, as a result of the decrease in the concentration of alkaline agent in the solution, the release of fatty-waxy substances in the fiber is also reduced [2].

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