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CARROTING PROCESS AND SOLUTION

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The present invention relates to a method of producing hair felt which is particularly suitable for the manufacture of hat bodies.

Hat fur is generally produced by slightly moistening air-dried hare or rabbit skins on the flesh side, stretching said moistened skins flat on a table and brushing the hair side with a carroting agent so that about one-third of the hair length as measured from the tips will be treated by the solution. The skins are then placed on latticed screens and dried in suitable appliances at a temperature of about 50 to 80° C. After cooling, and, if necessary, short storage, the skins are again moistened on the flesh side to make them more pliable. Thereafter, the hair is shorn by means of clipping machines and the shorn hair is obtained in the form of tufts; these tufts are collected, loosened and mixed by means of blowers which form them into cones in the forming machine. The cones are then converted by felting and planking into cone-shaped hat bodies.

The generally used carroting solutions contain compositions which have an oxidizing action upon the hair and hydrolytically split the core of the hair. Conventional oxidizing agents are commercial hydrogen peroxide or persalts, and as acid ingredient an acid such as nitric acid or hydrochloric acid is used. In order to increase the carroting effect, oxidation catalysts such as salts of cerium, iron, and the like, may be added.

It has now been found that the efficacy of such carroting agents is considerably improved by the addition of formamide ($HCONH_2$) which greatly increases the felting tendency of the hair. Hat bodies made from fur which was treated with such carroting solutions have a very uniform, dense, and smooth structure.

Further experiments have shown that when carroting solutions containing formamide are used in the preparation of hat bodies, the acid component of such solutions may be omitted without substantially impairing their efficiency. For instance, solutions containing only hydrogen peroxide and formamide have been found to be fully effective carroting agents for hare and rabbit furs.

The conventional method of carroting hair, while still on the skin, by means of solutions containing oxidizing agents and an acid has, among others, the disadvantage that the hair tips moistened by the solution are, as far as the protein is concerned, chemically different from the lower untreated parts of the hair. Therefore, when hat bodies made from such hair are dyed with acid or substantive dyestuffs which are chemically bound by the substance with formation of dyestuff salts, the chemically modified hair tips accept the dyestuffs more quickly and to a greater extent than the untreated parts of the hair. The result is that the hat bodies are unevenly dyed, and must be boiled for an extended period of time in order to make the dyeing more uniform. It has been found that these disadvantages do not occur, if, according to the invention, oxidizing agents such as carroting solutions comprising hydrogen peroxide and formamide, which do not contain any acids such as nitric acid, are used.

For a long time many attempts have been made to eliminate the complicated, time-consuming and expensive procedure of treating the hairs by brushing the solution on the fur, and to replace said procedure by a pot-carroting process. This latter process consists in cutting off the fur in the uncarroted state from the skin, impregnating it by immersing the hair in a loose condition into a carroting solution, then removing the excess moisture and drying the fur. However, it has been found that the fur fibers thus treated are not very suitable for the manufacture of hats. For this reason, such cut carroted fur fibers can generally be used only in mixture with a large percentage of fur fibers which have been carroted before shearing while still on the skin.

It has been found that the formamide containing carroting solutions of the invention, with or without the addition of acids may also be used to treat the hair after it has been removed from the skin in the uncarroted state. This is preferably done in such a manner that the uncarroted fur is formed into cones in the forming machine; the cones are sprayed with hot water, which may be slightly acidified, and after being taken out of the forming machine are prefelted and only in this prefelted condition impregnated by dipping in the carroting solution; subsequently, the excess moisture is removed, for example, by centrifuging, and the cones are worked up in the usual manner by felting and fulling to hat bodies. When the hair, which has been cut off in the uncarroted state from the skins, is formed into cones which are to be carroted later, it has been found advisable in some cases to add to the uncarroted hair small amounts, that is, up to about 10%, of hair the tips of which have already been carroted on the pelt.

When conventional carroting solutions containing oxidizing agents and nitric acid as acid ingredient are employed, the hair or hair tips treated are easily injured when subjected to higher temperatures. When hair is treated on the skin with a nitric acid containing carroting solution, and when the skins thus treated have been allowed to lie at room temperature for a certain length of time and are then dried at a temperature of about 60 to 80° C., the carroted tips of the hair frequently turn a brownish color and become brittle. This drawback is avoided if, according to the invention, carroting solutions containing formamide are used.

When the formamide containing carroting solutions of the invention are used in a pot-carroting process, it is of advantage to add formaldehyde, which improves the feel and makes it more "pithy." The addition of formaldehyde is of particular advantage when acid-free carroting solutions are used.

The following examples are given to illustrate some embodiments of the invention but are not to be considered as limiting the invention in any way. Parts are given by volume unless specified otherwise.

The volume concentrations of the carroting agents used in aqueous solution may vary within the following limits:

1 to 5 percent of H_2O_2 (calculated as 100% H_2O_2)
2 to 10 percent of formamide
3 to 10 percent of acid (calculated as 100% nitric acid or 100% hydrochloric acid)
2 to 10 percent of formaldehyde (calculated as 30% formaldehyde)

Example 1

Grey rabbit skins are treated in the usual manner by

brushing thereon a carroting solution containing the following composition:

1 part of a 30% H_2O_2 solution
1 part of 45% nitric acid
0.5 part of formamide
8 parts of water
0.05 part of cerium nitrate

The treated skins are allowed to lie for about two hours, and then dried for one hour at 70° C.; subsequently they are shorn as usual. The shorn fur formed in the forming machine has excellent felting and fulling properties.

Example 2

A carroting solution consisting of 2 parts of stabilized 30% hydrogen peroxide, 1 part of formamide, and 7 parts of water is brushed in the usual manner on rabbit skins so that about one-third of the hair length measured from the tips is impregnated by the carroting agent. Further treatment is then carried out as in Example 1.

Example 3

Rabbit fur is cut in uncarroted condition from the skins, loosened and mixed in a blower and formed into cones in the forming machine. The cones are sprayed with hot, slightly acidified water, removed from metal cones of the forming machine, wrapped up together with three more cones of the same fur in a linen cloth, then slightly prefelted first by hand, and then in the planking machine. In this condition the cones are immersed into a carroting solution containing 3 parts of stabilized 30% H_2O_2, 4.5 parts of conc. HCl, and 3 parts of formamide. After the cones have been thoroughly impregnated with this solution, the excess moisture is removed by centrifuging and the cones are then worked up as usual by felting and fulling so as to form hat bodies.

Example 4

A hair mixture, 90% of which consists of uncarroted hair cut from the skin, and 10% of which is hair carroted on the skin and then cut off, is shaped in a forming machine into cones, which are then sprayed with warm water, removed from the metal cone, prefelted, and then immersed into an aqueous carroting solution having the following composition:

10 parts of a stabilized 30% hydrogen peroxide solution
10 parts of formamide
10 parts of a 30% formaldehyde solution
70 parts of water

The cones impregnated with this solution are partly

dried by centrifuging and after a short storage at room temperature dried for one hour at a temperature of 85° C. in a channel drier. Thereafter they are worked up into hat bodies by felting and fulling.

While the foregoing description sets forth in detail what I regard as the preferred embodiments of my invention, it is to be understood that numerous changes may be made therein without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. A method of producing hair felt including the step of subjecting fur fibers to the action of a carroting solution containing at least one oxidizing agent of the group consisting of hydrogen peroxide and persalts in an amount corresponding to not more than about 5 percent by volume of 100% hydrogen peroxide, an acid of the group consisting of nitric acid and hydrochloric acid in an amount of about 3 to 10 percent by volume, calculated on 100% acid, and formamide in an amount of about 2 to 10 percent by volume.

2. An aqueous carroting solution for fur fibers used in the manufacture of hat bodies, said solution containing about 1 to 5 percent by volume of hydrogen peroxide and about 2 to 10 percent by volume of formamide.

3. A method of producing hair felt including the step of subjecting fur fibers to the action of a carroting solution containing at least one oxidizing agent of the group consisting of hydrogen peroxide and persalts in an amount corresponding to not more than about 5 percent by volume of 10% hydrogen peroxide, and formamide in an amount of about 2 to 10 percent volume.

4. An aqueous carroting solution for fur fibers used in the manufacture of hat bodies, said solution containing by volume about 1 to 5 percent of hydrogen peroxide, about 3 to 10 percent of an acid selected from the group consisting of nitric acid and hydrochloric acid, and about 2 to 10 percent of formamide.

5. An aqueous carroting solution for fur fibers used in the manufacture of hat bodies, said solution containing by volume about 1 to 5 percent of hydrogen peroxide, about 2 to 10 percent of 30% formaldehyde, and about 2 to 10 percent of formamide.

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