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2,832,518

PROCESS OF APPLYING LANOLIN FINISH TO NYLON HOSIERY AND HEAT SETTING THE HOSIERY AND PRODUCTS PRODUCED THEREFROM

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This invention relates to the finishing of knit fabrics and more particularly to the finishing of hosiery knitted from synthetic yarn or fiber such as nylon.

A variety of finishes are in use in the production of nylon hose and permit the obtaining of considerable variation in the appearance and handle or feel of the hosiery. However, in all cases the material has a characteristically hard and cold feel by comparison with the smoothness, softness and flexibility of natural silk.

The general object of the invention is to provide a finish which eliminates these defects and permits the production of nylon hosiery having a markedly improved handle or feel and approximately much more closely to the handle or feel of natural silk than has heretofore been possible.

It has previously been proposed to treat textile fabrics including certain synthetics such as rayon with a variety of animal and vegetable oils, the materials being applied in the form of an emulsion or solution. Both animal and vegetable fats, waxes and oils have been used in a variety of combinations, the thus treated threads or fibers being thereafter knitted or woven to form the desired garment or fabric. Such methods, however, have not been applicable to nylon hosiery which presents peculiar characteristics in dyeing, finishing and subsequent laundering.

In the method of the present invention, the nylon hosiery is produced with a finish consisting essentially of an extremely thin coating of purified lanolin wax.

In the preferred practice of the invention, the stockings previously knitted in any usual manner from any textile nylon are treated after dyeing and rinsing with an emulsion of lanolin and are then, after removal of excess water, as by use of the centrifugal separator, boarded in the usual manner. The following example illustrates the practice of the invention in a preferred form:

After dyeing and rinsing and while still in the dyeing machine a batch of about twenty pounds of nylon stockings is processed in an emulsion of about two pounds of purified lanolin wax thoroughly dispersed into about fifty gallons of water at a temperature of 110° F., the machine being rotated in the usual way for about ten minutes to tumble and thoroughly impregnate the stockings with the emulsion. Thereafter, and while the cylinder continues to rotate, the emulsion is drained off, the batch of hosiery is removed from the machine and the excess water is eliminated by placing the batch in a centrifugal extractor for about one minute. The hosiery is then boarded, being applied to forms and placed in a retort where it is subjected to a temperature of 250° F. at twenty pounds steam pressure for an interval of one minute. The hosiery is then removed and processed in the conventional manner.

It was found that hosiery thus produced had markedly superior characteristics as to smoothness, softness and flexibility and was closer in these characteristics to silk than to nylon hosiery produced in other ways. This was true regardless of gauge and denier, similar effects being

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observed in both 15 denier, 51 gauge stockings and in 30 denier, low gauge stockings. Preliminary results of customer acceptance and service tests now in progress indicate in all cases the perception of a marked difference in finish, both by experts in the hosiery industry and by the average woman. The difference in handle was immediately apparent and increased comfort in wear was repeatedly commented upon. Preliminary results of stretch and service tests also appear to indicate improvement in wear due to a decrease in tendency to snag and form runs.

The emulsion may be formed in any convenient manner and with the use of any desired emulsifying agents or aids. For completeness of description, one convenient method of preparing the emulsion will now be given. In this method a pound of lanolin together with a detergent in suitable quantity (two ounces of Igepon T gel which is the commercial name for sodium N methyl N oleoyl laurate, 16% active, or one ounce of Igepon T powder which is the commercial name for sodium N methyl N oleoyl laurate, 32% active being suitable), is introduced into a vessel containing about three gallons of water at 180° F. to 200° F. and thoroughly emulsified by introducing live steam into the liquid to form a suspension of the wax as the discontinuous phase of a typical creamy or milky emulsion. The concentrated emulsion is then strained into the machine containing the batch of stockings and water as above stated and is thoroughly dispersed by the machine rotation to form a dilute emulsion containing about 1/2% by weight of the lanolin.

The lanolin used consists of commercially available highly purified lanolin and should be practically of U. S. P. grade, in which the free fatty acid (expressed as oleic acid) is below 0.56% by weight of the anhydrous material. No objectionable odor results from this treatment nor is there any tendency toward the development of rancidity or any other objectionable odor after the lapse of long intervals of time.

It was found that the finish was permanent over repeated launderings in mild soap at temperatures approaching 110° F. and was accordingly permanent under the lower and lukewarm temperatures at which nylon hosiery is invariably washed by the user.

It may be noted that purified lanolin used in the finishing method of the present invention will have a melting point between 98° F. and 108° F., and that the processing involves boarding utilizing a temperature of 250° F. It will also be noted that the finish is resistant to washing at temperatures approximating the melting point. While the exact condition of the lanolin film on the nylon fiber is not known, it is, however, apparent that it is an extremely thin film probably of substantially molecular thickness and that it appears to be incorporated in the surface of the nylon in the manner of a plasticizer.

What is claimed is:

1. A new article of manufacture, hosiery composed of textile nylon hosiery fiber having a permanent coating finish consisting essentially of lanolin, which imparts to said hosiery a characteristic smooth, soft and flexible hand which persists after repeated launderings in mild soap and water at lukewarm temperatures.

2. The method of finishing hosiery composed of textile nylon hosiery fiber, which comprises impregnating said hosiery with a finish consisting essentially of lanolin.

3. The method of finishing hosiery composed of textile nylon hosiery fiber, which comprises impregnating said hosiery with a finish consisting substantially entirely of lanolin.

4. The method of claim 2 in which the hosiery is impregnated with lanolin from an aqueous emulsion, said emulsion having a lanolin content of approximately one-half of one percent by weight of the emulsion,

5. The method of finishing hosiery composed of textile nylon hosiery fiber which comprises impregnating said hosiery with a finish consisting essentially of lanolin, and drying said hosiery.

6. The method of finishing hosiery composed of textile nylon hosiery fiber which comprises impregnating said hosiery with a coating finish consisting essentially of lanolin from an aqueous emulsion of lanolin and drying said hosiery.

7. The method of finishing hosiery composed of textile nylon hosiery fiber which comprises impregnating said hosiery with a coating finish consisting substantially entirely of lanolin, boarding said hosiery and then heat setting the boarded hosiery.

8. The method of finishing hosiery composed of textile nylon hosiery fiber which comprises impregnating said hosiery with a coating consisting substantially entirely

of lanolin, boarding said hosiery and heat setting the boarded hosiery at a temperature of approximately 250 degrees F.

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