United States Patent Office

3,245,151
Patented Apr. 12, 1966

3,245,151

METHOD FOR TREATING TEXTILES

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No Drawing. Filed Apr. 5, 1965, Ser. No. 445,798
Claims priority, application Germany, Apr. 3, 1964, T 25,942
10 Claims. (Cl. 34—5)

The invention pertains to a method for treating textiles such as natural or synthetic fibres, threads, yarn-laps, textile fabrics, knitted fabrics.

When distributing substances contained in a liquid in a textile product, for instance when drying a textile product with an aqueous blend of colours, and when later on removing the liquid from the textile product, the distribution of the substance in the textile product changes as the liquid tends to move to the spots already dried thereby transporting the substance from still wetter spots to already drier spots. Thereby the colouring becomes unregular.

The same problem occurs with substances other than colours, contained in water or any other liquid for treating textiles, as with synthetic resins, oils, salts and aqueous scrooping agents. The movements of such substances within the textile product could not be prevented so far with the usual drying methods.

The invention will avoid this disadvantage. According to the invention, the textile product, after having been treated with a liquid containing a substance of the mentioned kind, is maintained at such a low temperature and at such a low pressure, for instance 4 Torr down to certain circumstances 0.1 Torr, that the frozen liquid sublimes, the sublimate then being removed.

In a preferred method the textile product during a part of the treatment is heated by radiation, and at least a part of that heat is supplied which is being lost by the sublimation.

The textile products may be frozen completely and then be brought into a vacuum, or they may be frozen during the vacuum treatment.

The liquid when frozen and being removed cannot transport substances which it contains from one spot to another spot within the textile product.

The vacuum and the temperature to be used depend upon the kind of liquid and on the desired drying time. The method steps and the apparatus may in general be the same as used for drying foodstuffs and pharmaceutics by freezing.

For example, a polyamide yarn which has been treated with a solution of aqueous scrooping agents and which has been spooled on a crossed coil is maintained for four hours in a vacuum container at 10^{-2} Torr and at —35° C., while below and above the vertically arranged yarn spool a metal plate is provided at a distance of 2 cm. from the yarn spool, said metal plate being heated to 70° C.

I claim:

1. A method of evenly distributing a finely subdivided substance throughout a textile material, comprising the steps of impregnating a textile material with a liquid having said substance in finely subdivided form evenly distributed therethrough; said liquid being adapted to be removed from said textile material by freeze drying without thereby affecting said substance; and subjecting the thus impregnated textile material to freeze drying so as to substantially remove said liquid from said textile material, whereby said substance will remain evenly distributed throughout said textile material.

2. A method according to claim 1, wherein said liquid is an aqueous liquid.

3. A method according to claim 1, wherein said liquid is water.

4. A method according to claim 1, wherein said textile material is a polyamide yarn.

5. A method according to claim 2, wherein said freeze drying of said impregnated textile material comprises the steps of freezing said impregnated textile material; and maintaining the frozen impregnated textile material at a subatmospheric pressure and a temperature sufficiently low to cause sublimation of the frozen liquid thereof.

6. A method according to claim 5, wherein said subatmospheric pressure is less than 0.1 Torr.

7. A method according to claim 5, wherein said subatmospheric pressure is less than 0.1 Torr.

8. A method according to claim 5, and including the step of withdrawing the sublimated frozen liquid formed during freeze drying of said impregnated textile material.

9. A method according to claim 5, wherein during freeze drying of said impregnated textile material at least a portion of the heat required for sublimation of said liquid is supplied from an outside source.

10. A method according to claim 9, wherein said heat is supplied in the form of heat radiation during at least part of the time during which said impregnated textile material is subjected to freeze drying.

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