

UNITED STATES PATENT OFFICE

2,352,245

TEXTILE MATERIAL AND THE PRODUCTION THEREOF

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No Drawing. Application March 10, 1942, Serial
No. 434,066. In Great Britain March 13, 1941

10 Claims. (Cl. 28—76)

This invention relates to textile materials and the production thereof, and more particularly to fabrics of a voluminous character.

According to the invention a fabric of full or voluminous character is produced from yarns formed by spinning together two varieties of staple fibre, one of which is made from filaments of highly polymeric esters or ethers and the other from cellulose filaments, the fabric then being treated with an organic shrinking agent for the first-mentioned fibrous component. The other component remains unaffected, or substantially unaffected, by the shrinking agent and is thus forced to the surface of the fabric. The invention thus makes use of the substantial shrinkage characteristic of the highly polymeric esters and ethers, these materials, besides being thermoplastic, also having the property of readily swelling in suitable organic liquids.

Cellulose acetate is an example of the material of which the first type of staple fibre may be composed. Other organic derivatives of cellulose may likewise be used, e. g. cellulose formate, propionate and butyrate and ethyl, methyl and benzyl cellulose. Again, fibres of a copolymer of vinyl chloride (85-90%) and vinyl acetate (15-10%) may be used. Examples of cellulosic material for the other component are viscose or cuprammonium regenerated cellulose and saponified cellulose acetate or other cellulose derivative filaments or fibres.

Particularly satisfactory results may be obtained, for example, by weaving a fabric with both warp and weft composed of a yarn spun from a mixture of a cellulose acetate or other cellulose derivative staple fibre and a regenerated cellulose (e. g. viscose) staple fibre, and subjecting the fabric to treatment with a shrinking agent for only the cellulose derivative component of the yarn. Thus, the yarn may be produced by spinning together a mixture of cellulose acetate and viscose fibres containing 20% or more, e. g. 30%, of regenerated cellulose and the fabric woven from such yarn may be treated by immersion in a bath of water containing, for example, 200 to 500 grams per litre, of acetic acid, at about 10-25° C., for a time sufficient to develop the desired fullness, say up to 10, 12, 15 or 20 minutes or more. If it is desired to avoid acetic acid fumes, a solution, in similar proportions, of ammonium thiocyanate may be employed instead of a solution of acetic acid. Good results are obtained when a shrinkage of 4-5% is obtained both warp-wise and weft-wise. Although as woven the fabric is

extremely thin and harsh the treatment imparts a most acceptable fullness and pleasant handle.

Other shrinking media may be employed, among which may be mentioned methyl propionate and propylene chloride; mixtures of methylene chloride, ethylene chloride, or a lower alkyl formate with kerosene, benzene, carbon tetrachloride or toluene; and mixtures of methyl acetate, or trichlorethylene with methyl or ethyl alcohol. Acetone (suitably diluted with water) is also capable of giving the desired shrinkage, but tends to yield a harsh product.

After the shrinking treatment the fabrics may be subjected to a slight saponifying operation, though this should not be sufficient to modify the dyeing properties to any substantial extent. Generally, however, a sufficiently pleasing handle is obtained without such further treatment. The fabric may be differentially dyed or it may be dyed in solid colours.

The following are examples of the manner in which fabrics of full or voluminous character may be produced in accordance with the invention.

Example I

Yarn spun from a mixture of 70% of cellulose acetate fibres and 30% of viscose fibres is woven into a fabric, the yarn being employed both for the warp and for the weft of the fabric. The fabric is scoured for 15 minutes in a solution of 1.5 grams of soap per litre at 60° C., is washed off in soft water and dried. The fabric is then treated for 15 minutes in a bath containing 450 grams per litre of glacial acetate acid at 15° C. After washing off and drying, the yarn is rinsed in a solution of 1 gram per litre of sodium carbonate, washed and dried. The fabric so produced is of full and pleasant handle and is ready for use, though if desired it may be subjected to a partial saponifying treatment in a bath containing 5% of caustic soda, based on the weight of the material, for one hour at 80° C.

Example II

The fabric of Example I is treated, after scouring and washing, in a bath containing 15 grams per litre of ammonium thiocyanate at 20° C., and is then thoroughly washed and dried. As in Example I, the fabric is ready for use, either immediately or after partial saponification.

Having described our invention, what we desire to secure by Letters Patent is:

1. Process for the production of fabrics of full or voluminous character, said process comprising spinning together into a yarn two varieties of

staple fibre, one of which is made from filaments of highly polymeric esters or ethers and the other from cellulose filaments, forming said yarns into a fabric, and treating the fabric with an organic shrinking agent for the first-mentioned fibrous component, said organic shrinking agent having substantially no shrinking effect on the other fibrous component.

2. Process for the production of fabrics of full or voluminous character, said process comprising spinning together into a yarn two varieties of staple fibre, one of which is made from filaments of highly polymeric esters or ethers and the other from cellulose filaments, weaving said yarns into a fabric, and treating the woven fabric with an organic shrinking agent for the first-mentioned fibrous component, said organic shrinking agent having substantially no shrinking effect on the other fibrous component.

3. Process for the production of fabrics of full or voluminous character, said process comprising spinning together into a yarn two varieties of staple fibre, one of which is made from filaments of an organic derivative of cellulose and the other from cellulose filaments, forming said yarns into a fabric, and treating the fabric with an organic shrinking agent for the cellulose derivative fibres, said organic shrinking agent having substantially no shrinking effect on the cellulose fibres.

4. Process for the production of fabrics of full or voluminous character, said process comprising spinning together into a yarn two varieties of staple fibre, one of which is made from filaments of cellulose acetate and the other from cellulose filaments, forming said yarns into a fabric, and treating the fabric with an organic shrinking agent for the cellulose acetate fibres, said organic shrinking agent having substantially no shrinking effect on the cellulose fibres.

5. Process for the production of fabrics of full or voluminous character, said process comprising spinning together into a yarn two varieties of staple fibre, one of which is made from filaments of cellulose acetate and the other from cellulose filaments, forming said yarns into a fabric, and treating the fabric with an aqueous solution of acetic acid, said aqueous solution of acetic acid having substantially no shrinking effect on the cellulose fibres.

6. Process for the production of fabrics of full or voluminous character, said process comprising spinning together into a yarn two varieties of staple fibre, one of which is made from filaments of cellulose acetate and the other from cellulose filaments, forming said yarns into a fabric, and treating the fabric with an aqueous solution of ammonium thiocyanate, said aqueous solution of ammonium thiocyanate having substantially no shrinking effect on the cellulose fibres.

7. Process for the production of fabrics of full or voluminous character, said process comprising spinning together into a yarn two varieties of staple fibre, one of which is made from filaments of a cellulose ester and the other from cellulose filaments, forming said yarns into a fabric, treating the fabric with an organic shrinking agent for the cellulose ester fibres and then partially saponifying the cellulose ester in the fabric.

8. Process for the production of fabrics of full or voluminous character, said process comprising spinning together into a yarn two varieties of staple fibre, one of which is made from filaments of cellulose acetate and the other from cellulose filaments, forming said yarns into a fabric, treating the fabric with an organic shrinking agent for the cellulose acetate fibres and then partially saponifying the cellulose acetate in the fabric.

9. Process for the production of fabrics of full or voluminous character, said process comprising spinning together into a yarn two varieties of staple fibre, one of which is made from filaments of cellulose acetate and the other from cellulose filaments, weaving said yarns into a fabric, treating the woven fabric with an aqueous solution of acetic acid and then partially saponifying the cellulose acetate in said fabric.

10. Process for the production of fabrics of full or voluminous character, said process comprising spinning together into a yarn two varieties of staple fibre, one of which is made from filaments of cellulose acetate and the other from cellulose filaments, weaving said yarns into a fabric, treating the woven fabric with an aqueous solution of ammonium thiocyanate and then partially saponifying the cellulose acetate in said fabric.

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