

UNITED STATES PATENT OFFICE

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THREADS, CORDS, AND FABRICS

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It is known that when cellulose acetate artificial silk, especially "dry-spun" cellulose acetate artificial silk made from cellulose acetate solutions of relatively low concentrations is exposed to the action of hot aqueous media, such as hot or boiling solutions of acids or acid salts, or hot water, and particularly water at from about 90° C. to the boiling point, or moist steam, the cellulose acetate artificial silk loses its natural high lustre to a greater or less extent and becomes converted to a more or less lustreless condition.

The present invention consists of new ornamental threads, cords and knitted, woven or other fabrics comprising both cellulose acetate yarns or threads which have been wholly or partially delustrated by hot aqueous media and normal lustrous cellulose acetate yarns or threads. The new "mixed" threads may be doubled to produce cords, for example for knitting, or may be woven or knitted directly into new fabrics or garments presenting a unique appearance due to the difference in lustre, the effects being enhanced by subsequent dyeing as hereinafter explained. Alternatively the new fabrics may be knitted or woven from unmixed threads, though of course both types of thread, the delustrated and the normal lustrous, must be incorporated to produce the new fabrics. In this case any desired pattern effect may be produced due to the difference in lustre and, even in the white, unique effects are obtainable, and the fabrics are eminently suitable for all purposes to which figured silk fabrics have in the past been applied. The new fabrics admit of cross-dyeing and are superior to known mixed fabrics, for example of cellulose acetate silk and cotton, in a number of important properties, the chief of which are feel and flexibility. Superior feel or handle possesses obvious advantages, while the greater flexibility particularly noticeable in the new fabrics which have been loosely woven, offers the same advantages to the wearer of articles made therefrom which have made knitted fabrics so popular in recent years.

A convenient method of producing uni-

formly delustrated yarn from the normal lustrous yarn consists in the treatment of the latter on cop tubes, bobbins or the like, with wet steam at 100° C., the duration of the treatment being dependent on the degree of delustration required. However, it is to be understood of course that the invention is not limited to this method and that any suitable method of delustring may be employed.

It has been found that the ornamental effects of the white mixed threads, cords or fabrics of the present invention may be enhanced, and in some cases two-colour effects produced, by dyeing or printing the threads, cords or fabrics. It is found that the portion of the new goods wholly or partially delustrated by means of hot aqueous media possesses dyeing properties towards most dyestuffs appreciably different from those of the normal lustrous portion. This is especially the case when using water soluble dyestuffs and more particularly basic dyestuffs, such as Capri blue. The affinity of insoluble or relatively insoluble colours when applied in dispersed form for example by the methods described in British specifications 219,349, 224,925, 242,393, 242,711, 269,960, 273,819 and 273,820 and the U. S. specifications corresponding respectively thereto, namely, U. S. Patent 1,618,413, U. S. Patent 1,618,414, and U. S. applications Serial Nos. 50,525, 48,666, 152,517, 134,138 and 176,289 is not substantially affected by the delustring.

The new mixed goods may be dyed to produce broadly three different effects, viz:—

(1) By dyeing with an insoluble colour (solubilized by pre-treatment with a solubilizing agent), ornamental threads, cords, or fabrics are obtained showing the differential lustre effect in substantially one shade;

(2) By dyeing with a dyestuff such as Capri blue, the affinity of which is markedly affected by the delustration, the effect due to the difference in lustre is brought out in a still more striking fashion, owing to the fact that the lustrous parts are dyed a deeper shade than the delustrated parts;

(3) By utilizing methods (1) and (2) (that is to say by applying two dyestuffs, the one being a dyestuff the affinity of which is

markedly affected by the delustring, while the other is a dyestuff whose affinity is substantially unaffected, such as the insoluble colours referred to above), a distinct two-colour effect is produced, the colour on the lustrous portion being due to the combined effect of the two dyestuffs, and that on the delustred portion to the insoluble colour, more or less shaded by the soluble colour. Thus the goods may first be dyed with the insoluble colour to produce a substantially solid shade over the whole, and then dyed with a dyestuff such as Capri blue, which is absorbed much more readily by the lustrous portion.

The new goods may also be printed in one, two or more colours, using either or both types of dyestuff above described according to the design required. Thus very elegant effects may be produced by printing a fabric with a basic dyestuff in any required pattern, the coloured portions exhibiting two shades of the same colour, due to the different affinities of the lustrous and delustred portions, with a white ground, the whole fabric being figured by the difference in lustre.

The following examples illustrate methods of obtaining solid and differentially coloured fabric woven with a warp of normal lustrous cellulose acetate artificial silk and a weft of cellulose acetate artificial silk delustred by means of hot aqueous media, but it will be understood that the examples are by no means exhaustive of the effects obtainable by the present invention:—

Example 1.—To dye 10 kilograms of the mixed lustrous and delustred cellulose acetate fabric an even shade of orange.

A boiling soap solution is poured on to 1 kilogram of S. R. A. orange II standard paste whilst stirring. The colour solution is then added to a dyebath containing about 250 litres of soft cold water. The goods are entered and the temperature raised during $\frac{3}{4}$ hour to 70–80° C. and dyeing continued for a further $\frac{3}{4}$ hour. The goods are then removed, rinsed in water at about 45° C. and dried or otherwise finished as desired.

Example 2.—To dye 10 kilograms of the mixed cellulose acetate fabric in differential shades of blue.

A dyebath of 300 litres is made up in the usual manner with 0.2% of Capri blue reckoned on the weight of the goods and 1 cubic centimetre per litre of glacial acetic acid. The goods are entered at about 50° C., the temperature raised gradually to 80° C. and dyeing continued for 1 hour or until the required shade is produced. The goods, now dyed a deep shade of blue on the lustrous portion and a very pale almost white shade on the delustred portion, are soaped, rinsed and dried or otherwise finished.

Example 3.—To dye 10 kilograms of the mixed cellulose acetate a violet grey shade on

the lustrous portion and heliotrope on the delustred portion.

The fabric is first dyed with Capri blue as in Example 2, lifted, rinsed and entered at about 40° C. into a dyebath made up as Example 1 but using S. R. A. heliotrope I standard paste instead of S. R. A. orange II. The temperature is raised to about 80° C. during $\frac{1}{2}$ hour and dyeing continued for a further hour. The goods are lifted, rinsed and dried.

The term textile products used in the appended claims is to be understood to include threads, cards and knitted, woven or other fabrics.

What we claim and desire to secure by Letters Patent is:—

1. Textile products capable of yielding cross-dyed effects with basic dyes and of yielding solid color effects with dispersed insoluble colors, comprising cellulose acetate artificial silk capable of being delustred by hot aqueous media, part of which is at least partially so delustred and part of which has the normal lustre.

2. Textile products capable of yielding cross-dyed effects with basic dyes and of yielding solid color effects with dispersed insoluble colors, comprising cellulose acetate artificial silk capable of being delustred by hot aqueous media, part of which is so delustred and part of which has the normal lustre.

3. Fabrics capable of yielding cross-dyed effects with basic dyes and of yielding solid color effects with dispersed insoluble colors, comprising cellulose acetate artificial silk capable of being delustred by hot aqueous media, part of which is so delustred and part of which has the normal lustre.

4. Textile products comprising cellulose acetate artificial silk capable of being delustred by hot aqueous media, part of which is so delustred and part of which has the normal lustre, the products being cross-dyed by means of basis dyestuffs.

5. Textile products comprising cellulose acetate artificial silk capable of being delustred by hot aqueous media, part of which is so delustred and part of which has the normal lustre, the products being cross-dyed by means of basic dyestuffs and colored with dispersed relatively insoluble colors.

In testimony whereof we have hereunto subscribed our names.

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