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TREATMENT OF ARTIFICIAL MATERIALS

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This invention relates to improvements in the treatment of artificial materials and particularly to improvements in the production of pattern effects on fabrics, foils, films and similar articles containing organic derivatives of cellulose.

It has been discovered that when materials which have been treated with a dye component, colouring matter, pigment or other effect material and with a solvent or other swelling agent are subjected to treatment with steam, it is possible by suitable regulation of the steaming conditions, particularly the duration of steaming, to effect fixation of the effect material in the parts which have been treated with the swelling agent without fixing it in the parts free from the swelling agent so that the effect material in these parts can be subsequently removed. By this means greatly improved results may be obtained, particularly with regard to the fastness of the effect produced.

According to the present invention pattern effects are produced on fabrics, foils, films and similar articles containing organic derivatives of cellulose by applying a dye component, colouring matter, pigment or other effect material and a swelling agent to the articles so that selected areas contain both effect material and swelling agent and other areas contain effect material but no swelling agent, steaming the articles only for sufficient time to fix the effect material in the selected areas containing effect material and swelling agent and subsequently removing the effect material from the other areas.

The articles treated may be textiles containing yarns of organic derivatives of cellulose with or without other yarns, for example regenerated cellulose yarns or cotton, wool, silk or other yarns, for which the effect materials may, or may not have an affinity, or they may be films, foils or other articles containing organic derivatives of cellulose.

Printing may be effected in any suitable manner, for example a cellulose acetate fabric may be printed all over in a fine pattern with a suitable dyestuff and may then be over-printed in a bold design with a solvent or other swelling agent and finally steamed for sufficient time to fix the dyestuff only in the portions which have been over printed. After removal of the dyestuff from the portions free from swelling agent a fabric showing the design in a fine pattern is obtained.

The colouring material employed may be a dystuff or a substance which yields a dyestuff upon treatment with another suitable substance, for example a diazo compound or a mordant dyestuff, or it may be an organic or inorganic coloured or white pigment. Examples of suitable dyestuffs for use according to the present invention are Chrysophenine G (Colour Index No. 365), Milling Scarlet 5B (Colour Index No. 487), Coomassie Milling Scarlet G (Colour Index No. 443), Polar Brilliant Red B (listed in Publication No. 723 on "Acid Dyestuffs" by G. R. Geigy), Milling Red R (in pattern book "Acid and Cloth Fast Colours on Woollen Piece", Clayton Aniline Co., consignees for Society of Chemical Industry, Basle), Coomassie Violet R (Colour Index No. 698), Supramine Violet R (I. G. Publication "The Acid Dyestuffs", 730/Be. page 40), Acid Violet 4BNS (Colour Index No. 698), Chloramine Fast Violet 4BL (Sandoz Publication "Direct Colours", No. 1001, page 23), Kiton Pure Blue V (Society of Chemical Industry, Basle, see page 357 of the Colour Index), Disulphine Blue A (Colour Index No. 714), Brillian Acid Blue R (J. R. Geigy "Dyestuffs for Wool", 2nd Edition, 1925), Brilliant Milling Blue B. (Cassella, see page 344 of the Colour Index), Xylene Blue AS (Colour Index No. 673), Kiton Fast Green V (Colour Index No. 735), Azo Dark Green S (Colour Index No. 247, see page 370), Disulphine Green B (Colour Index No. 667), Xylene Fast Green B (Colour Index No. 735), Sulphon Acid Green BBL (listed in "Acid Dyestuffs for Wool", I. G. 730/Be.) Supramine Green BL (I. G. Publication "The Acid Dyestuffs", 730/Be. page 84), Naphthalene Black NS ("Acid Colours", I. C. I. Publication No. 373/1751/631), Naphthalene Black 12B (Colour Index No. 246), Neolan Black WAGA extra (a dyestuff supplied by The Clayton Aniline Co. Ltd.), Coomassie Fast Black GS ("Acid Colours", I. C. I. Publication No. 373/1751/631), Erio Fast Black B ("Union Colours", J. R. Geigy, Publication No. 735). Pigments which may be employed are Prussian Blue, Chrome yellow, titanium dioxide, antimony white, zinc oxide and barium sulphate.

Solvents or other swelling agents employed for the present invention are preferably of low volatility, e. g. ethyl lactate, glycol mono-acetate, methyl glycol mono-acetate, glyezine A (thiodiglycol), sodium thiocyanate and barium thiocyanate. Preferably, for printing purposes, they are mixed with suitable thickening agents, for example gum arabic or colloresin (water soluble methyl cellulose).

As stated above, the steaming conditions employed according to the present invention are such as to fix the effect material only in the

portions of the fabric or other article which contains both effect material and swelling agent. Preferably dry steam is employed, and in general a treatment of from about 2–5 minutes with dry steam at about 210–220° F. gives good results.

In addition to improving the fastness of the effects produced the process of the present invention has the further advantage that when the materials treated are non-lustrous or of reduced lustre, relustring of the portions containing the swelling agent may be effected. In this manner, therefore, a lustrous coloured pattern may be produced upon a delustred background.

For example, a delustred cellulose acetate satin crêpe fabric may be printed in an all-over design with a paste containing about .5% of any of the dyestuffs mentioned above, and about 20% of water and 75% of starch/tragacanth, overprinted with a paste consisting of 25% of Glyezine A and 75% starch/tragacanth, and steamed as above. After washing off and lightly soaping and if necessary clearing with 1% sodium hydrosulphite bath at 35–45° C., a lustrous coloured pattern on a white delustred ground is obtained.

The following example illustrates the production of a coloured pattern on a cellulose acetate fabric according to the present invention.

Example

A cellulose acetate crêpe fabric which has been previously delustred by boiling for two hours in a .5% soap solution is printed with an all-over pin spot design in three colours by means of printing pastes containing 4 parts by weight respectively of Chrysophenine G (Colour Index No. 365) Coomassie Milling Scarlet G (Colour Index No. 443) and Supramine Violet R (I. G. Publication, supra page 40)., 21 parts by weight of water, and 25 parts by weight of Colloresin 10%. It is then overprinted with a suitably designed roller with one of the following printing pastes:—

	1	2	3	4	5
	Parts by weight				
Ethyl lactate	32	30	----	----	----
Glyezine A	8	----	30	----	----
Sodium thiocyanate	----	----	----	30	----
Barium thiocyanate	----	----	----	----	30
Colloresin 10%	60	70	70	70	70

The printed fabric is dried and aged for 3 minutes in a Mather and Platt ager with dry steam at 210–220 F., and then washed off and lightly soaped. In this manner a lustrous coloured pattern is obtained upon a delustred white background.

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

1. Process for the treatment of fabrics, films, foils and similar articles containing organic derivatives of cellulose, which comprises applying an effect material and a swelling agent to the articles so that selected areas contain both said effect material and swelling agent and other areas contain said effect material but no swelling agent, steaming the articles with dry steam for a time sufficient only to fix said effect material in the selected areas containing said effect material and swelling agent and subsequently removing said effect material from the other areas.

2. Process for the the treatment of fabrics, films, foils and similar articles containing cellulose acetate, which comprises applying a dyestuff and a swelling agent to the articles so that selected areas contain both said dyestuff and swelling agent and other areas contain said dyestuff but no swelling agent, steaming the articles with dry steam for a time sufficient only to fix said dyestuff in the selected areas containing said dyestuff and swelling agent and subsequently removing said dyestuff from the other areas.

3. Process for the treatment of fabrics, films, foils and similar articles containing organic derivatives of cellulose, which comprises applying an effect material and a swelling agent to the articles, so that selected areas contain both said effect material and swelling agent and other areas contain said effect material but no swelling agent, steaming the articles with dry steam at a temperature of 210 to 220° F. for a period of 2 to 5 minutes so as to fix said effect material only in selected areas containing said effect material and swelling agent, and subsequently removing said effect material from the other areas.

4. Process for the treatment of fabrics, films, foils and similar articles containing cellulose acetate, which comprises applying a dyestuff and a swelling agent to the articles, so that selected areas contain both said dyestuff and swelling agent and other areas contain said dyestuff but no swelling agent, steaming the articles with dry steam at a temperature of 210–220° F. for a period of 2 to 5 minutes so as to fix said dyestuff only in the selected areas containing said dyestuff and swelling agent, and subsequently removing said dyestuff from the other areas.

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