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METHOD OF TREATING TEXTILE MATERIAL AND PRODUCT

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16 Claims. (Cl. 8—5)

This invention relates to the prevention of tendering of dyed goods and in particular goods dyed with sulphur dyes. It especially contemplates the treatment of sulphur black dyed goods with soluble fluorides.

Sulphur black dyes are extensively used for the production of very desirable fast black shades on various grades of cotton goods. The advantages of these dyes are somewhat overshadowed and the use of the dyes somewhat limited by the fact that under certain conditions of storage, such as for example, in a warm humid atmosphere there is a tendency for a material dyed with these dyes to tender.

This invention has for an object the stabilization of goods dyed with sulphur blacks. Other objects are the inhibition of tendering of goods dyed with sulphur blacks and in general an advancement of the art. Other objects will appear hereinafter.

These objects are accomplished by passing goods, dyed with a sulphur black by the usual methods, through an aqueous solution of a soluble salt of hydrofluoric acid. Where convenient or necessary the goods are squeezed or wrung out before drying.

The invention will be readily understood from a consideration of the following examples in which the parts are given by weight.

Example I

Cotton goods dyed with 5% (based on the weight of the goods) Sulfogene Carbon M (a sulphur black dye made by the thionation of di- and tri-nitrophenol) were thoroughly rinsed with a 5% aqueous solution of potassium fluoride, wrung out and dried. Thereafter these goods were heated to a temperature of 95–100° C. for two weeks in a humid atmosphere without observable loss in tensile strength. Samples of the same material without the after-treatment with the fluoride lost 75% of the tensile strength under the same ageing conditions.

Example II

Cotton goods dyed with 12% (based on the weight of the goods) Sulfogene Carbon HXX (a sulphur black dye made by the thionation of a dinitrophenol) were thoroughly rinsed with a 2% solution of sodium fluoride, wrung out under such conditions that 2% of the dried agent (based on the weight of the dyed goods) remained thereon and dried in air. Samples of the dyed goods that had no fluoride after-treatment and samples impregnated with the 2% sodium fluoride solution were then suspended in an air-steam oven maintained at 135° C. for four and one-half hours. At the end of this accelerated ageing test the control or untreated sample was found to have lost 77% of its tensile strength whereas the dyed fabric treated with sodium fluoride had decreased only 12% in tensile strength.

Example III

Cotton goods were dyed with the dye resulting from the thionation of di-nitro-phenol, under such conditions that approximately 12% (based on the weight of the goods) of the dye remained thereon. Samples of this material were thereafter immersed in a 2% solution of sodium fluoride, wrung out and dried. After-treated and untreated samples of the dyed material were placed in atmosphere of air and steam in an oven maintained at about 130° C. for approximately four hours, the samples were then removed and tested whereby it was found that the untreated sample had lost about 75% of its tensile strength whereas the fluoride treated material was only approximately 10% weaker.

Although any soluble salt of hydrofluoric acid may be used in carrying out this invention, the alkali metal and the like salts are particularly valuable. For reasons of economy the sodium and potassium salts are preferred.

The action of these stabilizing agents is especially noticeable in sulphur dyes resulting from the thionation of nitro-phenolic bodies.

The concentration of the fluoride solution may be varied within wide limits as desired. A 2% solution has been found very effective but higher concentrations may be used. The presence of the small quantity of the hydrofluoric acid salt on sulphur black dyed material so stabilizes the goods and inhibits the tendering that they may be considered as essentially unaltered.

As many apparently widely different embodiments of this invention may be made without departing from the spirit and scope thereof, it is to be understood that we do not limit ourselves to the specific embodiments thereof except as defined in the appended claims.

We claim:

1. Sulphur black dyed goods having 2% of sodium fluoride thereon.

2. Sulphur black dyed goods having sodium fluoride thereon.

3. Sulphur black dyed goods having 2% of potassium fluoride thereon.

4. Sulphur black dyed goods having potassium fluoride thereon.

5. Sulphur black dyed goods having a soluble fluoride thereon.

6. Sulphur black dyed goods having an alkali metal fluoride thereon.

7. Sulphur black dyed goods having a fluoride thereon.

8. Sulphur black dyed goods having 2% of a soluble salt of hydrofluoric acid thereon.

9. Cotton goods dyed with a sulphur black produced by thionating a nitro-phenol compound, and having thereon a soluble fluoride.

10. Cotton goods dyed with a sulphur black produced by thionating a di-nitro-phenol compound, and having thereon a soluble fluoride.

11. The process of stabilizing sulphur black dyed goods comprising adding thereto a soluble salt of hydrofluoric acid.

12. The process of preventing or retarding the tendering of goods dyed with sulphur black which comprises soaking the goods in a water solution of an alkali metal fluoride.

13. In the treatment of goods dyed with sulphur black the step of immersing the goods in the water solution of a soluble salt of hydrofluoric acid.

14. Cellulose fibers dyed with a sulphur dye and having thereon a soluble fluoride.

15. Cotton goods dyed with sulphur black and having a soluble fluoride thereon.

16. Process which comprises treating cotton goods dyed with a sulphur dye with a not greater than 10% water solution of an alkali metal fluoride.

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