Patented June 4, 1935 2,003,928

UNITED STATES PATENT OFFICE

2,003,928

STRIPPING AND DISCHARGING DYED TEXTILES

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No Drawing. Application March 16, 1933, Serial No. 661,180. In Great Britain March 19, 1932

16 Claims. (Cl. 8—2)

Dyeings of the so-called azoic colours, that is, of those azo dyestuffs produced by combination on the fibre, are, as is well known, generally fast, and many are extremely fast to bleaching agencies. The outstanding fastness to kier-boiling and chlorine of such dyeings is evidence of this. It often becomes necessary, nevertheless, to remove the dyestuff from the fabric because of faults in the dyeing, or for other reasons, and, although this removal, or discharge, is comparatively easily carried out locally, as in discharge printing processes, it is carried out only with difficulty, and at a prohibitive cost (due to the necessity of using excessive amounts of stripping agents), when a solid shade is to be entirely removed.

An object of this invention relates to the provision of a technically advantageous, economical process of stripping and discharging, particularly adapted to the entire removal of solid shades. Other objects will appear hereinafter.

These objects are accomplished by the following invention which comprises in its preferred form treating dyed textile material in a chemically reducing liquor which may be acid, alkaline or neutral, containing an amine or amine salt, preferably a quaternary ammonium salt, a radical which contains not less than 10 carbon atoms.

The liquor may be either weakly alkaline, neutral or weakly acid, but is preferably acid when the amine is not a quaternary ammonium salt. Further while azoic dyeings on wool or silk or other animal fibre can be stripped satisfactorily in an alkaline bath, a certain risk is incurred owing to the possibility of injury to the fibre on account of the alkali present, it is therefore preferable to treat such fibres in a faintly acid bath. If desired vegetable fibre can be treated in the same manner. The acidity may be produced by means of mineral or organic acid. The fibre is stripped white or slightly tinged. In the latter case, for vegetable fibre, a supplementary chlorine or chemick treatment may be applied further to improve the ground. In the case of animal fibre a supplementary peroxide treatment is sometimes beneficial.

Suitable amines or amine salts are for example β-diethylaminoethyloleyl amide or its acetate or hydrochloride, heptadecylamine or its hydrochloride and suitable quaternary ammonium salts are, for example, octadecylpyridinium bromide, cetylpyridinium bromide (cf. British specification No. 379,396), cetylpyridinium chloride (cf. British specification No. 392,763), octadecyltrimethylammonium iodide (Reychler, Journ. Chem. Soc., CIV Abstracts i, 955), cetyltrimethylammonium bromide, cetyltriethylammonium bromide, cetyltrimethylammonium iodide, β-stearoamidoethyldiethylamine methosulphate (cf. British specification No. 294,582) or β-hydroxyethyl-N-octadecyl morpholinium bromide.

In carrying the invention into practical effect there is applied to the dyed textile material a hot dilute aqueous solution of, for example, sodium hydrosulphite containing a small proportion of the quaternary ammonium salt.

The textile material is then found to be colourless, or at least to have but a yellow tinge. It may be made perfectly white by a further treatment, if necessary in a weak solution of sodium hypochlorite or other chlorine bleach liquor.

The following examples of the invention are included merely for purposes of illustration and not to be regarded as limitations. References to parts are to parts by weight.

Example 1.—Cotton dyed with the 4-bromo-o-anisidide of 2:3-hydroxynaphthoic acid coupled with diazotized 4-chloro-o-toluidine is treated with a boiling solution containing 0.2 parts of sodium hydrosulphite, 0.1 parts sodium carbonate and 0.25 parts of β-hydroxyethyl-N-octadecylmorpholinium bromide in 100 parts of water for 10 minutes. The dyeing is stripped to a pale yellow which can be cleared by a mild treatment with chlorine.

Example 2.—The process is carried out exactly as in Example 1 but using octadecylpyridinium bromide in place of β-hydroxyethyl-N-octadecylmorpholinium bromide.

Example 3.—2.5 parts cotton dyed with the 4-bromo-o-anisidide of 2:3-hydroxynaphthoic acid coupled with diazotized 5-chloro-o-toluidine is treated with a boiling solution containing 0.4 parts sodium formaldehyde sulphoxylate, 0.2 parts acetic acid 30% and 0.2 parts cetyltrimethylammonium bromide in 100 parts water for 30 minutes. The dyeing is stripped to a pale yellow, which can be cleared by a mild treatment with chlorine.

Instead of cetyltrimethylammonium bromide there may be used an equal quantity of cetylpyridinium bromide.

Example 4.—2.5 parts natural silk which has previously been degummed and dyed with the 4-bromo-o-anisidide of 2:3-hydroxynaphthoic acid coupled with diazotized 4-chloro-o-toluidine is treated for 30 minutes at 90–95° C. in a solution containing 0.4 parts sodium formaldehyde

sulphoxylate, 0.2 parts acetic acid 30% and 0.2 parts cetyltrimethylammonium bromide. The dyeing is stripped from a deep red to pale yellow.

The two preceding examples refer to stripping in an acid reducing bath. The following example illustrates the stripping action in a neutral bath.

Example 5.—2.5 parts cotton dyed with the 5-chloro-o-toluidide of 2:3-hydroxynaphthoic acid coupled with diazotized 4-chloro-o-toluidine is treated with a boiling neutralized solution containing 0.4 parts sodium formaldehyde sulphoxylate and 0.2 parts cetyltrimethylammonium bromide in 100 parts of water for 30 minutes. The neutralization of the solution is effected by the addition of a small amount of acetic acid. The dyeing is completely stripped.

Example 6.—2.5 parts of material dyed with the anilide of 2:3-hydroxynaphthoic acid coupled with diazotized 5-amino-6-benzoylamino-4-methoxy-toluene is boiled for 1 hour in 100 parts of an aqueous solution containing 0.2 parts of sodium sulphoxylate formaldehyde, 0.2 parts of acetic acid (30%) and 0.2 parts of β-diethylaminoethyloleylamide acetate. The material is stripped to a white with a tinge of yellow which can be converted to a perfect white by treatment for 5 minutes in a ¼° Tw. chemick solution.

We claim:—

1. A process for stripping textile materials dyed with azoic colours which comprises treating them with a chemically reducing liquor containing a substance selected from the group consisting of amines and amine salts having an aliphatic radical which contains not less than ten carbon atoms.

2. A process for stripping textile materials dyed with azoic colours which comprises treating them in a chemically reducing liquor containing a cetyltrialkylammonium salt.

3. A process for stripping textile materials dyed with azoic colours which comprises treating them in a chemically reducing liquor containing a cetyltrimethylammonium bromide.

4. A process for stripping textile materials dyed with azoic colours which comprises treating them in a hot dilute chemically reducing liquor containing cetyltrimethylammonium bromide.

5. A process for stripping textile materials dyed with azoic colours which comprises treating them with an alkaline chemically reducing liquor containing a quaternary ammonium salt one radical in which contains not less than 10 carbon atoms.

6. A process for stripping textile materials dyed with azoic colours which comprises treating them in an alkaline chemically reducing liquor containing a cetyltrialkylammonium salt.

7. A process for stripping textile materials dyed with azoic colours which comprises treating them in an alkaline chemically reducing liquor containing a cetyltrimethylammonium bromide.

8. A process for stripping textile materials dyed with azoic colours which comprises treating them in a hot dilute alkaline chemically reducing liquor containing cetyltrimethylammonium bromide.

9. A process for stripping textile materials dyed with azoic colours which comprises treating them with an acid chemically reducing liquor containing a quaternary ammonium salt one radical in which contains not less than 10 carbon atoms.

10. A process for stripping textile materials dyed with azoic colours which comprises treating them in an acid chemically reducing liquor containing a cetyltrialkylammonium salt.

11. A process for stripping textile materials dyed with azoic colours which comprises treating them in an acid chemically reducing liquor containing cetyltrimethylammonium bromide.

12. A process for stripping textile materials dyed with azoic colours which comprises treating them in a hot dilute acid chemically reducing liquor containing cetyltrimethylammonium bromide.

13. A process for stripping textile materials dyed with azoic colours which comprises treating them with a neutral chemically reducing liquor containing a quaternary ammonium salt one radical in which contains not less than 10 carbon atoms.

14. A process for stripping textile materials dyed with azoic colours which comprises treating them in a neutral chemically reducing liquor containing a cetyltrialkylammonium salt.

15. A process for stripping textile materials dyed with azoic colours which comprises treating them in a neutral chemically reducing liquor containing cetyltrimethylammonium bromide.

16. A process for stripping textile materials dyed with azoic colours which comprises treating them in a hot dilute neutral chemically reducing liquor containing cetyltrimethylammonium bromide.

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