

# ALIEN PROPERTY CUSTODIAN

## METHOD OF DYEING AND FINISHING TEXTILES

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The present invention relates to a method of simultaneously dyeing and refining or finishing respectively textiles by applying artificial resins upon the fibre.

It is well known to render textiles, also dyed textiles, wrinkle-proof, or in another manner to refine or finish them respectively by applying artificial resins upon the fibre, for instance by impregnating the textile material with a solution containing a parent substance of artificial resin, for instance methylol urea. By applying resins upon the fibre the ability of shrinkage and swelling also is reduced and the value of the fabric is increased, particularly if, in accordance with another proposal, not only the usually employed resins, as for instance urea resin, are applied which in the hardened state are relatively brittle, but also components, for instance polyvinyl alcohol, are used which cause the formation of a relatively soft resin upon the fibre.

If a tissue or fabric is to be dyed as well as refined, a relatively complicated operation is required, as the fabric must be introduced into the refining bath in the dry state, because otherwise the tissue or fabric does not absorb the components of the artificial resin or the preliminary products respectively. The dyed tissue or fabric, therefore, must after dyeing—and treatment with soap—be dried to reach the refining bath in the dry state. Moreover, definite relatively expensive dye-stuffs must be used which cannot react with the chemicals present in the refining bath and cannot be unfavorably influenced by them respectively.

Now, accordance to the invention the proposal is made to carry out the dyeing and at the same time the refining or finishing respectively by the application of artificial resins.

In accordance with the invention the tissues or fabrics are treated in a solution, containing water-soluble lignine transformation products, particularly alkali lignine, obtained by the treatment of lignine with aqueous alkaline solutions preferably heated and subjected to pressure, as well as substances by which the precipitation of the artificial resin upon the fibre is effected and substances which react with lignine and cause the formation of dye-stuffs.

Lignine forms dye-stuffs with phenols or their homologues or substitution products and, moreover, with components forming dye-stuffs when carrying out the so-called wood reaction.

So for instance, dyeings of the textile material are obtained, if the solution on the one hand contains alkali lignine and on the other hand

chlorides or sulphates of the following bases. If an acid reaction is adjusted, for instance by means of hydrochloric acid or sulphuric acid, the presence of the bases results in the following dyeings:

Carbazole-----	Cherry red
Phenol-----	Green blue
m-Cresol-----	Blue
p-Cresol-----	Olive green
o-Aminophenol-----	Yellow
Pyrocatechin-----	Green
Resorcinol-----	Blue violet
Phloroglucinol-----	Violet red
Thymol and its isomerides-----	Green
1,4 dihydroxynaphthalene-----	Flesh-colored

The alkali lignine used may possibly react and form resin with the components forming resin or with the preliminary products respectively, for instance, the products of the preliminary condensation, and a portion of the components, forming dye-stuffs with the lignine, in turn reacts with a portion of the resin components, for instance, formaldehyde or methylol urea.

According to the invention, moreover, other dye-stuffs also may be employed, whereby, however, notice is to be taken of the fact that the reaction may be disturbed by the presence of hydroxyl- and amine-residues.

Besides the components forming a resin, for instance, phenol, formaldehyde and urea, and formaldehyde and the products of the preliminary condensation respectively, resins or components of resin formers or preliminary products of resin may be used which cause the precipitation of a relatively soft resin upon the fibre. Besides phenol and formaldehyde or a water-soluble product of preliminary condensation of a phenol-formaldehyde resin respectively, the bath, therefore, may contain for instance an aniline resin or a glyptal resin respectively, the components for the formation of such resins or preliminary products.

The impregnation of the textiles with the solution is effected in the usual manner. After the impregnation, squeezing and drying, preferably a heat treatment follows by which the formation and hardening of the resin is effected.

Alkali lignine transformation products obtained by known methods are used in accordance with the invention with particular advantage. For instance, a product obtained when carrying out the wood hydrolysis and which represents a mixture of various substances and is called lignine may be treated with an aqueous soda lye

or a potash lye or other alkaline reacting solutions until all soluble substances are solved. During this treatment heat may be applied, for instance, by boiling and pressure may be exerted. Then the solution is decanted from the unsolved residue. The solution contains the alkali lignine. From this solution solid alkali lignine may be obtained by evaporation and/or salting out. The alkali lignine solution itself, eventually after concentration, may be used for carrying out the method according to the invention.

If a textile material is impregnated with a solution to which has been added such an alkali lignine solution and a water-soluble product of preliminary condensation of phenol formaldehyde as well as m-phenylene-di-amine, then after squeezing, drying, condensing and hardening a wrinkle-proof fabric ready for use results which has a dark brown washing- and boiling-proof dyeing and which, even after having been subjected to various energetical washing methods, maintains its effects. The ability of use increased by the treatment according to the invention, therefore, proves to be permanent and also the dyeing obtained simultaneously is genuine.

Anhydrous formaldehyde-aniline, for instance, may also be added, whereby softer resins are obtained.

The process may, moreover, be so carried out that from the lignine lyes formed during the treatment the alkali lignine is obtained in a dry state, for instance by salting out, and is then added to the solution.

#### Example 1

50 parts of urea, 100 parts of formaldehyde, 3 parts of ammonium thiocyanate, 20 parts of alkali lignine, 4 parts of sulphuric acid and 9 parts of p-nitro-aniline are filled up to 1000 parts of water and the fibrous material to be treated is impregnated with this solution and then subjected to a heat treatment. An orange to brick-red dyeing results and at the same time a permanent refining of the material.

#### Example 2

40 parts of polyvinyl-alcohol, 150 parts of formaldehyde, 6 parts of hydrochloric acid, 8 parts of di-phenyl-amine and 40 parts of alkali lignine are filled up with water to 1000 parts, and the fibrous material to be treated is impregnated with this solution and subjected to a heat treatment. A strong fibre possessing increased strength when wet, increased strength against rubbing and at the same time an intensive yellow dyeing result.

#### Example 3

30 parts of melamine, 140 parts of formaldehyde, 26 parts of alkali lignine, 8 parts of sulphuric acid and 14 parts of indole are filled up with water to 1000 parts, and the fibrous material to be treated is impregnated with this solution. A wrinkle-proof fabric of high strength when wet and of a cherry red dyeing is obtained.

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