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PROCESS OF MERCERIZING CELLULOSE MATERIAL

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The present invention relates to an improvement in the process of mercerizing cellulose material.

More particularly our invention consists in adding to the mercerizing baths a mixture of organic substances, whereby the wetting capacity of the said alkaline liquors is very much increased.

The organic substances which are to be used according to the present invention for the said purpose comprise mixtures of phenols, halogenated or otherwise substituted derivatives thereof with urea or thiourea compounds being substituted at the nitrogen atom by organic radicals. Such radicals are, for instance, alkyl, alkylene, hydroxy alkyl, dihydroxy alkyl, cycloalkyl, aralkyl, or aryl radicals.

The amount of the said urea or thiourea compounds contained in the mixtures may be any one above about 2%, but preferably the mixture consists of about 90% of phenols and about 10% of the urea or thiourea compounds.

The mercerizing liquors prepared according to our invention are distinguished by excellent wetting properties, so that the cellulose material treated therein is quickly and homogeneously penetrated. By using the tetraalkyl derivatives of urea or thiourea there is involved the further advantage that the solutions show improved wetting capacity without at the same time forming foams.

All the substances which are employed in carrying out our invention are very stable in alkaline solutions and are therefore not decomposed and made ineffective even by prolonged use of the mercerizing bath.

The following examples will further illustrate the nature of our said invention which, however, is not limited thereto. The parts are by weight.

Example 1

To a mercerizing bath of 30° Bé. are added 1% by vol. of a mixture of 40 parts of crude cresol, 40 parts of crude xylenol and 20 parts of N-butyl-N'-dihydroxy propyl thiourea. Raw cotton placed into the clear solution is immediately wetted.

Example 2

To a bath of 32° Bé. are added 1.5% by vol. of a mixture of 50 parts of crude cresol, 40 parts of crude xylenol and 10 parts of N-ethyl-N'-butyl-N'-hydroxyethyl thiourea. Dry cotton threads or cotton material are immediately wetted.

Example 3

To a mercerizing bath of 28° Bé. are added 1.5% by volume of a mixture of 7 parts of mono phenyl urea, 50 parts of crude cresol and 43 parts of crude xylenol; the mercerizing lye possesses an outstanding wetting capacity.

Example 4

To a bath of 28° Bé. are added 1% by volume of a mixture of 90 parts of crude xylenol and 10 parts of piperidyl urea; a raw cotton thread placed into the bath sinks down swiftly.

Example 5

1.2% by volume of a mixture of 90 parts of crude xylenol, 9 parts of tetrabutyl urea and 1 part of tetraethyl urea are added to a mercerizing bath of 30° Bé. The clear solution, which hardly foams, possesses a good wetting capacity.

Example 6

1% by volume of a mixture of 90 parts of xylenol, 7 parts of tetrabutyl urea and 3 parts of N-diethyl-N'-dibutyl urea is dissolved is a mercerizing bath of 28–32° Bé. In the clear and hardly foaming solution cotton is immediately and thoroughly wetted.

Example 7

0.9% by volume of a mixture of 95 parts of xylenol and 5 parts of p-toluylurea are added to a mercerizing bath which hereby obtains wetting capacity for raw cotton. Instead of p-toluyl urea also m- or o-toluyl urea can be used.

Example 8

The wetting capacity of mercerizing baths will be improved by adding 1.2% by volume of a mixture of 90 parts of xylenol and 10 parts of N-butyl-N'-cyclohexyl thiourea.

Example 9

The wetting capacity of mercerizing baths will be improved by adding a mixture of 20 parts of chloroxylenol, 70 parts of xylenol, 5 parts of tetraethyl urea and 5 parts of tetrabutyl urea. Cotton fibers placed into the bath are quickly and homogeneously penetrated.

Example 10

1.2% by volume of a mixture of 92 parts of xylenol and 8 parts of N-N'-ethylene urea is added to a mercerizing bath of about 28° Bé. The solution shows an excellent wetting capacity.

We claim:—

1. In the process of treating cellulose material with an alkaline solution containing a phenol, the modification which consists in effecting the said treatment in the presence of an organic nitrogen-containing compound selected from the group consisting of the aliphatic, cycloaliphatic, araliphatic and aromatic derivatives of urea and thiourea.

2. The process claimed in claim 1, wherein the amount of the organic nitrogen containing compound is more than about 2%, calculated upon the amount of phenol present.

3. The process claimed in claim 1, wherein the amount of the organic nitrogen containing compound is about 10%, calculated upon the amount of phenol present.

4. In the process of treating cellulose material with an alkaline solution containing a phenol, the modification which consists in effecting the said treatment in the presence of a tetraalkyl derivative of an organic nitrogen containing compound selected from the group consisting of urea and thiourea.

5. In the process of treating cellulose material with an alkaline solution containing a phenol, the modification which consists in effecting the said treatment in the presence of a tetraethyl derivative of an organic nitrogen containing compound selected from the group consisting of urea and thiourea.

6. In the process of treating cellulose material with an alkaline solution containing a phenol, the modification which consists in effecting the said treatment in the presence of a monophenyl derivative of an organic nitrogen-containing compound selected from the group consisting of urea and thiourea.

7. A composition of matter suitable for the alkaline treatment of cellulose material, said composition comprising an aqueous alkaline lye, a phenol, and an organic nitrogen-containing compound selected from the group consisting of aliphatic cycloaliphatic, araliphatic and aromatic derivatives of urea and thiourea.

8. The composition defined in claim 7, wherein the amount of the organic nitrogen-containing compound is more than about 2%, calculated upon the amount of phenol present.

9. The composition defined in claim 7, wherein the amount of the organic nitrogen-containing compound is about 10%, calculated upon the amount of phenol present.

10. A composition of matter suitable for the alkaline treatment of cellulose material, said composition comprising an aqueous alkaline lye, a phenol and tetraalkyl derivative of an organic nitrogen-containing compound selected from the group consisting of urea and thiourea.

11. A composition of matter suitable for the alkaline treatment of cellulose material, said composition comprising an aqueous alkaline lye, a phenol and a tetraethyl derivative of an organic nitrogen compound selected from the group consisting of urea and thiourea.

12. A composition of matter suitable for the alkline treatment of cellulose material, said composition comprising an aqueous alkaline lye, a phenol and a monophenyl derivative of an organic nitrogen-containing compound selected from the group consisting of urea and thiourea.

13. In the process of treating cellulose material with an alkaline solution containing a phenol, the modification which consists in effecting the said treatment in the presence of a tertabutyl derivative of an organic nitrogen containing compound selected from the group consisting of urea and thiourea.

14. A composition of matter suitable for the alkaline treatment of cellulose material, said composition comprising an aqueous alkaline lye, a phenol and a tetrabutyl derivative of an organic nitrogen containing compound selected from the group consisting of urea and thiourea.

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