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PROCESS FOR BLEACHING WITH CHLORITES

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1 Claim. (Cl. 8—108)

The present invention relates to bleaching with chlorites; more particularly it concerns a process wherein bleaching with chlorites, in particular sodium chlorite, is carried out in the presence of amides, carbodiimides, amino acids or sulfamic acid compounds.

As amides there come into consideration, for example the amides of carboxylic acids or sulphonic acids or their substitution products; suitable representatives are, for example, the following compounds: formamide, acetamide, chloroacetamide, acetoacetic acid anilide, acetoacetic acid - 2 - chloroanilide, acetoacetic acid - 2 - anisidide, stearoyl amide, benzamide, benzosulfonic acid amide, 1 - methyl benzene - 2 - sulfonic acid amide and cyclohexyl amino sulfonic amide. Di-isopropyl carbodiimide may be mentioned for example as the carbodiimide.

As amino acids for carrying out the present invention there come into consideration in the first place amino carboxylic acids and amino sulfonic acids or their substitution products. Suitable representatives are, for example, amino acetic acid, methyl amino acetic acid, amino ethane sulfonic acid or methyl amino ethane sulfonic acid.

As sulfamic acid compounds there are to be understood the compounds of the general formula

$$HO—SO_2—NXY$$

wherein X and Y stand for hydrogen and/or aliphatic, aromatic or hydroaromatic hydrocarbon radicals which may be substituted, or wherein X and Y together with the nitrogen atom form a heterocyclic radical. As hydrocarbon radicals the methyl, ethyl, phenyl or cyclohexyl radicals and as heterocyclic radicals the ethylene imine, pyrrolidine, piperidine or morpholine radicals may be mentioned as examples.

The chlorite-containing bleaching bath is suitably rendered weakly alkaline or neutral before the commencement of bleaching.

Materials which can be bleached by the process according to the present invention are in principle all materials which can be bleached with chlorites. It is remarkable that the process of the present invention leads to outstanding bleaching yields at temperatures as low as 70–80° C. in a relatively short time, whereby practically no disagreeable odour is evolved from released chlorine dioxide gas. The risk of corrosion of the bleaching apparatus is also considerably reduced.

The required quantities of amides, carbodiimides, amino acids or sulfamic acid compounds may be readily determined by preliminary experiments in each case.

The following examples serve to further illustrate the invention without, however, limiting the scope thereof.

Example 1

A desired calico containing husks is soaked with a solution which contains per litre 13 g. of 80% sodium chlorite, 4 g. of a surface active paraffin sulfonate, 3 g. of sodium pyrophosphate and 4 g. of monochloroacetamide. The fabric is then squeezed until it shows 100% added weight and is maintained in a steam atmosphere at 80° C. for 2–3 hours. Finally the fabric is rinsed as usual; it is then outstandingly bleached and the cotton husks are completely removed.

If desired, the bleaching time can be reduced to 1 hour if the temperature is raised to about 95° C.

Instead of the amide applied above, one of the other aforementioned amides or carbodiimides can be used in approximately equal quantities.

Example 2

A desized calico containing husks is soaked with a solution which contains per litre 13 g. of 80% sodium chlorite, 4 g. of a surface active paraffin sulfonate, 0.7 g. of monochloroacetamide and 1 g. ammonium sulfate. The fabric is then squeezed until it shows 100% added weight, heated to 95–98° C. and kept at this temperature for 45 minutes. After the usual rinsing the fabric is outstandingly bleached and the cotton husks are completely removed.

Instead of ammonium sulfate, other ammonium salts, such as for instance ammonium phosphates may likewise be applied with advantage.

Example 3

A desized calico containing husks is soaked with a solution which contains per litre 18 g. of 80% sodium chlorite, 4 g. of a surface active paraffin sulfonate, 5 g. of acid sodium pyrophosphate and 3 g. of amino acetic acid. The fabric is then squeezed to give 100% added weight and maintained in a steam atmosphere at 90–95° C. for 3–4 hours. Finally the fabric is rinsed as usual; it is then outstandingly bleached and the cotton husks are completely removed.

Example 4

A cotton cord containing husks is soaked with a solution which contains per litre 18 g. of 80% sodium chlorite, 4 g. of a surface active paraffin sulfonate, 4 g. of acid sodium pyrophosphate and 1 g. of amino ethane sulphonic acid. The fabric is then squeezed to give 100% added weight and maintained in a steam atmosphere at 90–95° C. for 3–4 hours. Finally the fabric is rinsed as usual; it is then outstandingly bleached, the cotton husks being simultaneously removed.

Example 5

A calico containing husks is soaked with a solution which contains per litre 18 g. of 80% sodium chlorite, 4 g. of a surface active paraffin sulfonate and 0.18 g. sulfamic acid. The fabric is then squeezed to give 100% added weight and maintained in a steam atmosphere at 90° C. for 1½ hours. Finally the fabric is rinsed as usual; it is then outstandingly bleached, the cotton husks being completely removed.

The bleaching time can be reduced to 40 minutes, if the temperature is raised to 100° C.

We claim:

In the process of bleaching textile materials by impregnating the materials with a non-acidic aqueous solution of a chlorite bleaching agent, squeezing the impreg-

nated materials and subsequently exposing them to the action of steam the improvement wherein said non-acidic aqueous chlorite solution contains monochloroacetamide.

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