



US 20170051452A1

(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2017/0051452 A1**
GRUBER et al. (43) **Pub. Date: Feb. 23, 2017**(54) **METHOD FOR BRIGHTENING DYED
TEXTILES**(30) **Foreign Application Priority Data**

Apr. 24, 2014 (DE) 10 2014 207 727.3

(71) Applicant: **CHT R. BEITLICH GMBH**, Tübingen
(DE)**Publication Classification**(72) Inventors: **Martin GRUBER**, Stuttgart (DE);
Thomas APLAS, Rommelsbach (DE);
Harald LUTZ, Pliezhausen (DE)(51) **Int. Cl.**
D06L 3/02 (2006.01)(73) Assignee: **CHT R. BEITLICH GMBH**, Tübingen
(DE)(52) **U.S. Cl.**
CPC **D06L 3/025** (2013.01)(21) Appl. No.: **15/305,938**(57) **ABSTRACT**(22) PCT Filed: **Apr. 15, 2015**(86) PCT No.: **PCT/EP2015/058147**

§ 371 (c)(1),

(2) Date: **Oct. 21, 2016**

The invention relates to a method for brightening dyed textiles and to the textiles thereby produced. The method is characterized by treating the materials with an aqueous liquor containing an organic peroxocarboxylic acid having a hydrophobic group, consisting of at least 5 C atoms, as the active component.

METHOD FOR BRIGHTENING DYED TEXTILES

FIELD OF INVENTION

[0001] The invention relates to a process brightening dyed textiles, and to textiles produced thereby.

BACKGROUND

[0002] For many years, there has been a continuing fashion trend towards wash-out and used-look effects. This leads to an increasing demand for dyed textiles made from cellulose fibers, especially denim articles dyed with indigo or other dyes, that are brightened or entirely or partially bleached in further processing steps by in part mechanically enhanced (stonewash) washing processes, often in combination with chemical treatments.

[0003] The classical jeans fabric, or denim, is a fabric consisting of a warp yarn ring-dyed with indigo and a mostly undyed weft yarn. The ring-dyeing of the warp yarn is the reason for the typical wear phenomena that provide the jeans with its individual appearance in the course of its useful life. The dye (usually indigo alone or in combination with sulfur black), which adheres to the yarn only superficially, is gradually removed by mechanical abrasion during laundering and use, and the white fiber core becomes increasingly apparent. Especially on exposed parts, such as seam bulges and wrinkles, this is even more apparent.

[0004] Because there is high demand by the consumers for acquiring clothes with a used look as new products, the provision of the so-called used or vintage look has become one of the commercially most important fashion effects in the casual segment.

[0005] Thus, articles made from ring-dyed fabrics are subjected to abrasive laundering with enzymes and/or pumice stones, which produces abrasion throughout the article in the washing drum. This treatment is often effected in combination with a second bath containing a bleaching agent to additionally brighten the color and enhance light-dark contrasts. In addition, however, the selected local brightening of the articles on the corresponding exposed parts is also employed as an essential means for providing jeans with a really authentic appearance. Thus, the denim surface is at first roughened mechanically by manual abrasion in localized areas, for example, in the thigh and seat areas. Subsequently, these areas are selectively sprayed with a bleaching solution that destroys the dye more or less, depending on the desired intensity of the brightening effect. This produces a perfect illusion of traces of usage and having been worn on a new denim article.

[0006] It is general practice to perform the treatment for brightening the whole surface of dyed textiles in an aqueous bath with a long liquor ratio with hypochlorites, for example, sodium hypochlorite. Sodium hypochlorite is a readily available, cost-effective and efficient bleaching agent by which a large number of dyes, including indigo or indigoid dyes, can be oxidatively decolorized. However, this procedure has the disadvantage that large amounts of waste water loaded with adsorbable organic halogens (AOX) are obtained, which often need to be aftertreated to meet the limits prescribed by the authorities. Sodium hypochlorite is very toxic to aquatic organisms. Therefore, the use of chlorine-based chemicals is heavily criticized by environmental and consumer organizations. In principle, the use of

hypochlorites is also possible for local brightening, for example, by spraying. However, this method is usually not applied in practice because of the strong corrosion and caustic effects as well as the fact that the bleaching effect is difficult to control.

[0007] For the partial bleaching of denim articles by a spraying method, the use of potassium permanganate is state of the art. However, severe disadvantages have emerged in the meantime in this case too. Thus, potassium permanganate shows high toxicity to aquatic organisms, and its massive use leads to high heavy metal contents in the waste water. According to the German Chemicals Prohibition Ordinance ("Chemikalienverbotsverordnung", ChemVerV), the distribution of potassium permanganate in Germany requires a proof of use in order to prevent misuse thereof for producing explosives or illegal drugs. Similar limitations exist in numerous other countries, which makes the acquisition and stockpiling of potassium permanganate difficult. In addition, an additional process step for removing the manganese dioxide produced is necessary also in the spraying treatment.

[0008] A number of approaches have been proposed as alternatives for hypochlorite and potassium permanganate, which have also severe disadvantages, however, and could not establish themselves in practice. Thus, among others, vat dyes, especially indigo, can be converted to the soluble leuco form by reducing agents, removed from the fiber, and thus the textile can be brightened. For this purpose, the use of sugars, such as glucose, is known among others, as described in EP 0 654 557 A. However, these methods have the disadvantage of having to be operated at high temperatures (>80° C.) and at a high alkalinity (pH >11). Further, large amounts of waste water are obtained, which in addition have an increased biological and chemical oxygen demand because of the high organic load. These issues also occur, *mutatis mutandis*, when other reducing agents are used, such as keto compounds, for example, hydroxyacetone. In addition, reducing methods are basically unsuitable for producing local bleaching effects, because, unlike in a closed washing drum, an environment having an overall reducing effect cannot be created, and thus the locally produced leuco form is quickly reoxidized by atmospheric oxygen.

[0009] Further, the use of ozone as an oxidant for brightening dyed cotton fabrics has been known (EP 0 554 648 A), but this method has the disadvantage that ozone is a very toxic and caustic gas. Consequently, the handling of ozone in technical production methods is difficult because the gaseous ozone must be produced in a controlled way, supplied to the treatment aggregate, and excess ozone must be removed again. Local treatments of denim articles, for example, are not possible in this way.

[0010] The use of hydrogen peroxide or peracetic acid in the brightening of dyed textiles is also known. However, these substances do not serve as the primary bleaching agent, but, for example, for the neutralization of a cotton fabric already brightened by potassium permanganate, or for the removal of MnO₂ soils formed thereby (cf. WO 92/13987 A).

[0011] U.S. Pat. No. 3,384,596 C discloses the use of peroxocarboxylic acids, such as monoperoxophthalic acid and m-chloroperoxobenzoic acid, in the presence of alkaline earth metal salts as bleaching agents at an alkaline pH.

[0012] U.S. Pat. No. 4,443,352 C proposes the use of monoperoxophthalic acid and its water-soluble salts as a bleach-enhancing component of a powdery detergent for-

mulation. As a process, stain bleaching in household laundry at an alkaline pH is mentioned. An analogous use of monoperoxophthalic acid magnesium salt is claimed in EP 0 027 693 A.

[0013] DE 34 00 950 A discloses the use of monoperoxophthalic acid magnesium salt in combination with an alkali bromide and sulfonamides in a detergent formulation, also for stain bleaching in household laundry at an alkaline pH.

[0014] WO 95/25195 A proposes the use of a hydrogen peroxide source in combination with an iron salt at a strongly acidic pH for bleaching indigo-dyed textiles. This combination has long been known as Fenton's reagent. However, the process is very complicated and cannot be performed in an economically efficient way in practice, because the iron salt must be provided in a preliminary treatment step, and must be removed again in a downstream treatment step using large amounts of complexing agents. In addition, to achieve good effects, an extended treatment time at temperatures of 70° C. and higher is necessary, making this process very energy-intensive.

[0015] This also applies to another proposal for the brightening of dyed textiles: WO 95/20643 A proposes the use of peroxodisulfates as an oxygen source in combination with a transition metal catalyst. However, peroxodisulfates as oxidants are subject to the same limitations according to ChemVerV as permanganates, and therefore they are not suitable as alternatives under this aspect. In addition, peroxodisulfate solutions as well as Fenton's solution are not suitable for achieving local effects by spraying or paintbrush application.

[0016] EP 0 176 124 A2 (AT 44 763 E) relates to the use of a suspension in water containing, as a bleaching component, a peroxocarboxylic acid derives from a dicarboxylic acid having from 8 to 13 carbons, as a pourable bleaching agent.

[0017] DT 26 20 723 A1 relates to bleaching or cleaning agents, especially with a bleaching effect at low temperatures.

[0018] DT 26 12 587 A1 relates to bleaching agent preparations containing a watersoluble aliphatic peroxy compound and a thickener.

[0019] EP 0 160 342 A2 discloses liquid bleaching solutions containing aliphatic peroxy compounds as solid, particulate, essentially water-insoluble components.

[0020] Further, the brightening of dyed textiles in the presence of an enzyme has been known. Examples thereof include the use of laccase and a hydrogen peroxide source as oxidants (U.S. Pat. No. 5,851,233 C, WO 96/12846 A). These methods are applied in practice, but have a number of disadvantages. Thus, on denim articles, only the indigo fraction is bleached, but sulfur black, which is often included, is not. Several treatment baths are necessary for achieving a strong brightening effect, which makes this process also very cost-intensive. Further, this treatment must also be performed with a long liquor ratio, and partial brightening, for example, by spraying, is not possible.

[0021] Currently, no alternative method for using potassium permanganate for the local bleaching treatment of denim articles that is applied in practice is known.

[0022] Therefore, it is the object of the present invention to provide a process for brightening dyed textiles that enables the whole surface of the textile to be brightened uniformly in the desired shade on the one hand, but also to be bleached in a locally limited way, for example, by

spraying or paintbrush application, in a freely selectable intensity. In its brightening effect, the process should enable results comparable to those obtained using chlorine-based bleaching agents or potassium permanganate, while significantly reducing possible disadvantages and dangers for the environment. In particular, no environmentally harmful chemicals should be used, and an emission of AOX or heavy metals into the waste water should be excluded.

SUMMARY OF INVENTION

[0023] A process for brightening dyed textile fabrics, characterized in that said fabrics are treated with an aqueous solution (liquor) containing an aliphatic or aromatic organic peroxocarboxylic acid with hydrophobic radical, especially alkyl radical or aryl radical, consisting or at least 5 carbon atoms as an active component. Also textiles obtained by the process are within the scope of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0024] Surprisingly, it has been found that organic peroxocarboxylic acids, especially certain linear or cyclic aliphatic or aromatic peroxocarboxylic acids or -dicarboxylic acids, that contain hydrophobic pendant groups, preferably alkyl radicals with at least 5 carbon atoms, more preferably with 5 to 30 carbon atoms and even more preferably with chain lengths of from 6 to 10 carbon atoms, have a very high brightening effect on dyed textiles. In particular, indigo and indigoid dyes can be bleached under moderate conditions, so that a local treatment, for example, by spraying, can be performed simply and under practicable conditions.

[0025] The term "hydrophobic" usually designates the association of non-polar groups or molecules of an aqueous environment. It characterizes substances that do not mix with water and mostly let it "roll off" on surfaces.

[0026] Non-polar materials, such as fats, waxes, alcohols with long alkyl radicals, i.e., except for methanol, ethanol and propanol, alkanes, alkenes etc., are hydrophobic. When hydrophobic materials are dissolved in water, there is generally a so-called hydrophobic effect, and with some small hydrophobic species, such as methane or xenon, even entropically unfavorable clathrate structures form. Therefore, the solubility of such materials in water is generally low.

[0027] Hydrophobic materials are almost always lipophilic, i.e., they dissolve well in fat and oil. Surfaces exhibiting a contact angle of more than 90° with water are also referred to as "hydrophobic". Thus, hydrophobic radicals within the meaning of the present invention include, in particular, a contiguous radical of at least 5 carbon atoms, a carbon chain preferably saturated with hydrogen atoms to form an alkyl radical or aryl radical.

[0028] Particularly preferred as bleaching agents according to the invention are aromatic peroxocarboxylic acids consisting of one or more condensed aromatic rings, optionally substituted with one or more further peroxocarboxylic acid groups at any possible position. These aromatic peroxocarboxylic acids according to the invention may further be substituted with at least one functional group selected from alkyl, aryl, carboxylate, sulfonate, halide, nitro or hydroxy groups at any possible position in the aromatic ring system. As preferred examples, there may be mentioned:

mono- or diperoxo-ortho-, -meta- or -paraphthalic acid, mono- or diperoxo-4-methyl-o-phthalic acid, mono- or diperoxo-1,8-naphthalic acid.

[0029] The peroxocarboxylic acids may be employed both in the acid form and as salts, or also be produced in situ by the addition of activated carboxylic acid derivatives (for example, as anhydrides) and a hydrogen peroxide source, or in some other way in the process. As salts, alkali or alkaline earth metal salts are preferably employed, for example, Li, Na, K, Mg or Ca salts.

[0030] Even more surprisingly, it has been found that the treatment can be performed particularly efficiently under acidic pH conditions, although the skilled person knows that peroxocarboxylic acids, for example, peracetic acid, have the highest bleaching efficiency at a pH near the pKs values, i.e., in the neutral to weakly alkaline range. Preferably, the pH of the solution is within a range of from 0 to 7, more preferably within a range of from pH 1 to pH 5, even more preferably within a range of from pH 1.5 to pH 3.5.

[0031] As further additives, native and synthetic thickening agents, salts, such as alkali and alkaline earth metal sulfates, phosphates and, if needed, marking dyes, for example, dyes, wetting agents, humectants, such as glycerol, urea, or dispersing agents or other auxiliary agents are added to the application liquor. The use of dyes (marking agents) serves for a better visual trackability of the course of spraying. This is particularly important to practice, because the purple permanganate strongly colors the spraying solution while the spraying solution according to the invention is basically colorless.

[0032] The above mentioned pH ranges either occur by themselves because of the reactants employed, or may be adjusted by further additives. It is particularly preferred according to the present invention to adjust the pH of the solution with mineral acids or organic acids. Even more preferred in this respect are low volatile acids, i.e., acids having a vapor pressure of <20 Pa at 20° C., such as citric acid, maleic acid, lactic acid, phthalic acid, phosphoric acid, sulfuric acid, or hydrogensulfates.

[0033] A wide variety of methods for contacting the dyed fabrics with the peroxocarboxylic acid are available to those skilled in the art. It is particularly preferred in this respect to contact the dyed fabrics completely or partially with solutions containing peroxocarboxylic acid or salts thereof by a spraying, dipping or coating process.

[0034] By means of the present invention, a wide variety of textiles or textile fabrics can be contacted with the peroxocarboxylic acids. It is particularly preferred in this respect to employ textile fabrics made from cellulose fibers or cellulose fibers in admixture with natural or synthetic fibers, dyed with various dyes. It is particularly preferred according to the present invention to select these dyes from the groups of vat, direct or sulfur dyes.

[0035] The process of the present invention is particularly suitable for textile fabrics dyed with indigo, indigoid dyes or sulfur black, and with combinations of such dyes.

[0036] Another embodiment of the present invention includes bleached textiles obtainable by a process as defined above. Jeans are particularly preferred within the meaning of the definition of such bleached textiles.

[0037] The effect of the liquors according to the invention in a local bleaching treatment was determined in a direct comparison with potassium permanganate, representing the prior art.

[0038] All peroxocarboxylic acids were employed in a concentration that corresponds to approximately three times the normality of a 2% potassium permanganate solution as employed on average today.

[0039] The bleaching effect was determined on two different denim fabrics, each with determining the Y values according to CIE with Datacolor International SF 600 Plus-CT, aperture 30 mm LAV, measurement in quadruplicate, calibration with standard light D 65.

[0040] As the bleaching result, it is preferred according to the invention that >40% of the bleaching effect of a standard KMnO₄ solution was achieved, more preferably >60%, even more preferably >80%.

Examples

Reference Example 1

[0041] On two commercially available denim fabrics (denim 1=not desized, scraping pretreatment with abrasive paper; denim 2=desized, stonewash treatment), a rectangular area of 120 cm² was marked and covered with adhesive film at the edges against the adjacent areas. These areas were uniformly sprayed with 2 g each of an aqueous solution of 20 g/l potassium permanganate (0.38 normal), and the fabric specimens were subsequently weighed to determine the quantity applied. After an exposure time of 20 min at room temperature, the fabric specimens were neutralized with 4 g/l sodium bisulfite in a washer-extractor together with untreated denim fabric as ballast at first for 10 min at 50° C. and a liquor ratio of 1:8, then rinsed cold three times at a liquor ratio of 1:10, followed by drying in a tumbler. Of the thus obtained specimens, the Y value according to CIE was measured (Datacolor International SF 600 Plus-CT, aperture 30 mm LAV, measurement in quadruplicate, calibration with standard light D 65) each on and beside the spray-treated area, and the degree of brightening was determined from the difference as ΔY .

[0042] This yielded values of $\Delta Y=19.2$ for denim 1, and $\Delta Y=35.0$ for denim 2.

Comparative Example 1

[0043] From monoperoxoglutaric acid (MPGA), a 1-normal aqueous solution containing 15% by weight MPGA, 2.5% by weight sodium sulfate and 0.4% by weight xanthan gum thickener was prepared and adjusted to a pH of 2.9 with phosphoric acid. Of this solution, 2.0 g was applied on both standard denim fabrics in the same way as in Reference Example 1. After an exposure time of 20 min at 60° C., the fabric specimen was rinsed in a way analogous to that of Reference Example 1 without neutralization once at 40° C. and once cold at a liquor ratio of 1:10, followed by drying in a tumbler. Of the thus obtained specimens, the Y value according to CIE was measured in a way analogous to that of Reference Example 1 each on and beside the spray-treated area and the degree of brightening was determined from the difference as ΔY .

[0044] This yielded values of $\Delta Y=4.7$ for denim 1, and $\Delta Y=8.3$ for denim 2.

Comparative Example 2

[0045] By analogy with Comparative Example 1, monoperoxomaleic acid (MPMA) as a 1-normal aqueous solution containing 13.8% by weight MPMA, 2.5% by weight

sodium sulfate and 0.4% by weight xanthan gum thickener was applied in equal amounts to both standard denim fabrics, processed in the same way, and measured.

[0046] This yielded values of $\Delta Y=4.9$ for denim 1, and $\Delta Y=10.5$ for denim 2.

Example 1

[0047] By analogy with Comparative Example 1, commercially available magnesium bis(monoperoxophthalate) hexahydrate (MMPP) as a 1-normal aqueous solution containing 25% by weight MMPP, 2.5% by weight sodium sulfate and 0.4% by weight xanthan gum thickener was applied in equal amounts to both standard denim fabrics, processed in the same way, and measured.

[0048] This yielded values of $\Delta Y=18.7$ for denim 1, and $\Delta Y=34.3$ for denim 2.

Example 2

[0049] By analogy with Comparative Example 1, monoperoxophthalic acid (MPPA) as a 1-normal aqueous solution containing 16.8% by weight MPPA, 2.5% by weight sodium sulfate and 0.4% by weight xanthan gum thickener was applied in equal amounts to both standard denim fabrics, processed in the same way, and measured.

[0050] This yielded values of $\Delta Y=18.1$ for denim 1, and $\Delta Y=32.2$ for denim 2.

Comparative Example 3

[0051] By analogy with Comparative Example 1, monoperoxo-cis-cyclohexane-1,2-dicarboxylic acid (MPDCA) as a 1-normal aqueous solution containing 17.5% by weight MPDCA, 2.5% by weight sodium sulfate and 0.4% by weight xanthan gum thickener was applied in equal amounts to both standard denim fabrics, processed in the same way, and measured.

[0052] This yielded values of $\Delta Y=12.4$ for denim 1, and $\Delta Y=24.5$ for denim 2.

Example 4

[0053] By analogy with Comparative Example 1, monoperoxo-4-methylphthalic acid Mg salt (MPMP) as a 1-normal aqueous solution containing 18.4% by weight MPMP, 2.5% by weight sodium sulfate and 0.4% by weight xanthan gum thickener, and in addition 1 g/l of a marking dye was applied in equal amounts to both standard denim fabrics. The marking dye was removed again in the subsequent rinsing steps and only served to make the course of the spraying and the uniformity of the application more visible. The processing and measurement were effected in the same way as in Comparative Example 1.

[0054] This yielded values of $\Delta Y=18.9$ for denim 1, and $\Delta Y=32.5$ for denim 2.

TABLE 1

Spray application on denim 1 (not desized, abrasive-treated)					
	pH	Temperature [° C.]	Exposure time [min]	Δ CIE Y	Efficiency relative to KMnO_4
Monoperoxophthalic acid Mg salt	2.8	60	20	18.7	93%

TABLE 1-continued

Spray application on denim 1 (not desized, abrasive-treated)					
	pH	Temperature [° C.]	Exposure time [min]	Δ CIE Y	Efficiency relative to KMnO_4
Monoperoxophthalic acid	2.8	60	20	18.1	90%
Monoperoxomaleic acid	2.8	60	20	4.9	24%
Monoperoxo-cis-cyclohexane-1,2-dicarboxylic acid	2.8	60	20	12.4	61%
Monoperoxoglutaric acid	2.8	60	20	4.1	20%
Monoperoxo-4-methylphthalic acid Mg salt	2.8	60	20	18.9	94%
Potassium permanganate reference	7.0	25	10	20.2	—

TABLE 2

Spray application on denim 2 (desized, stonewashed)					
	pH	Temperature [° C.]	Exposure time [min]	Δ CIE Y	Efficiency relative to KMnO_4
Monoperoxophthalic acid Mg salt	2.8	60	20	33.4	95%
Monoperoxophthalic acid	2.8	60	20	32.2	92%
Monoperoxomaleic acid	2.8	60	20	10.5	30%
Monoperoxo-cis-cyclohexane-1,2-dicarboxylic acid	2.8	60	20	24.5	70%
Monoperoxoglutaric acid	2.8	60	20	8.3	24%
Monoperoxo-4-methylphthalic acid Mg salt	2.8	60	20	32.5	93%
Potassium permanganate reference	7.0	25	10	35.0	—

Example 5

[0055] From commercially available magnesium bis(monoperoxophthalate) hexahydrate (MMPP), several 1-normal aqueous solutions containing 25% by weight MMPP, 2.5% by weight sodium sulfate and 0.4% by weight xanthan gum thickener were prepared and adjusted to a pH of from 5.5 to 2.5 with phosphoric acid. Of these solutions, 2.0 g was applied to standard denim fabric 2 in the same way as in Comparative Example 1, processed in the same way, and measured.

[0056] The values of ΔY obtained thereby are summarized in Table 3.

TABLE 3

Spray application on denim 2—influence of pH					
	pH	Temperature [° C.]	Exposure time [min]	Δ CIE Y	Efficiency relative to KMnO_4
Monoperoxophthalic acid Mg salt	5.5	60	20	10.4	30%
	4.5	60	20	12.2	35%
	3.5	60	20	24.5	70%
	3.0	60	20	31.0	89%
	2.5	60	20	34.1	97%

TABLE 3-continued

Spray application on denim 2—influence of pH					
	pH	Tem- perature [° C.]	Exposure time [min]	Δ CIE Y	Efficiency relative to KMnO ₄
Potassium permanganate reference	7.0	25	10	35.0	—

Reference Example 2

[0057] Standard denim fabric 2 was treated on a washer-extractor at a liquor ratio of 1:8 with a liquor containing 15 ml/l Na hypochlorite solution (120 g/l active chlorine) at 50° C. for 15 min. This was followed by rinsing twice with cold soft water at a liquor ratio of 1:10, and subsequently, the fabric was neutralized in 2 steps at first with 4 g/l sodium bisulfite and then with 4 ml/l hydrogen peroxide 35% for 10 min each at a liquor ratio of 1:10 and a temperature of 40° C. After drying in a tumbler, the Y value according to CIE of one specimen was measured (Datacolor International SF 600 Plus-CT, aperture 30 mm LAV, measurement in quadruplicate, calibration with standard light D 65).

[0058] This yielded a value of Y=19.2.

Example 6

[0059] Standard denim fabric 2 was treated on a washer-extractor at a liquor ratio of 1:8 with a liquor containing 20 g/l magnesium bis(monoperoxophthalate) hexahydrate (MMPP) at 60° C. for 20 min after adjusting to pH 3.0 with citric acid. This was followed by rinsing twice with soft water at 40° C. at a liquor ratio of 1:10. After drying in a tumbler, the Y value according to CIE of one specimen was measured (Datacolor International SF 600 Plus-CT, aperture 30 mm LAV, measurement in quadruplicate, calibration with standard light D 65).

[0060] This yielded a value of Y=17.8.

1. A process for brightening dyed textile fabrics by treatment with a bleaching solution that more or less destroys the dye, characterized in that said fabrics are treated with an aqueous solution containing an aromatic organic peroxocarboxylic acid as an active component, under acidic pH conditions.

2. The process according to claim 1, characterized in that an aromatic carboxylic acid with one or more percarboxy

groups, optionally substituted with further functional groups, is employed as said peroxocarboxylic acid, for example, monoperoxo-orthophthalic acid, monoperoxo-metaphthalic acid, monoperoxo-paraphthalic acid, monoperoxo-4-methylphthalic acid, and/or monoperoxo-1,8-naphthalic acid.

3. The process according to claim 1, characterized in that said brightening is performed at a pH within a range of from 0 to 7, especially from pH 1 to pH 5.
4. The process according to claim 1, characterized in that said peroxocarboxylic acids are directly employed in the acid form or as salts, or obtained by the addition of activated carboxylic acid derivatives, such as anhydrides, and a hydrogen peroxide source.
5. The process according to claim 1, characterized in that the pH of the solution is adjusted by mineral acids or organic acids, especially with low volatile acids having a vapor pressure of <20 Pa at 20° C., such as citric acid, maleic acid, lactic acid, phthalic acid, phosphoric acid, sulfuric acid, or hydrogensulfates.
6. The process according to claim 1, characterized in that the dyed fabrics are contacted with a solution containing said peroxocarboxylic acid or salts thereof by a spraying, dipping or coating process.
7. The process according to claim 1, characterized in that said aqueous solution may contain one or more of thickening agents, salts, marking dyes, wetting agents, humectants, dispersing agents and/or other auxiliary agents.
8. The process according to claim 1, characterized in that textile fabrics are made from cellulose fibers or cellulose fibers in admixture with natural or synthetic fibers, and are dyed with dyes selected from the groups of vat, direct or sulfur dyes.
9. The process according to claim 8, characterized in that textile fabrics are dyed with indigo, indigoid dyes or sulfur black, and with combinations of such dyes.
10. (canceled)
11. The process according to claim 3, wherein said pH is within a range of 1 to 5.
12. The process according to claim 3, wherein said pH is within a range of 1.5 to 3.5.

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