

⑫

EUROPEAN PATENT APPLICATION

⑳ Application number: **86830076.5**

㉑ Int. Cl. 4: **D 06 L 3/10, D 06 L 3/00**

㉒ Date of filing: **27.03.86**

㉓ Priority: **28.03.85 IT 2012985**

㉔ Applicant: **ELTON CHEMICAL S.p.A., Via Mauro Macchi, 54, I-20124 Milano (IT)**

㉕ Date of publication of application: **01.10.86**
Bulletin 86/40

㉕ Inventor: **Tosca, Eugenio, Via Mauro Macchi, 54, I-20124 Milano (IT)**

㉖ Designated Contracting States: **AT BE CH DE FR GB LI NL SE**

㉖ Representative: **Cicogna, Franco, Ufficio Internazionale Brevetti Dott. Prof. Franco Cicogna Via Visconti di Modrone, 14/A, I-20122 Milano (IT)**

㉗ **A product for finishing bleached fabric after washing.**

㉗ A product for use in finishing linen or cotton fabric after washing, which comprises up to 3% of an anti-oxidising agent as well as a quantity of essential oils and water to 100.

The anti-oxidising agent has an anti-oxidising action for the elimination of residual traces of chemical oxidants based on chlorine and oxygen and their salts, as well as an ability to form complexes with ions of heavy metals in solution in the rinsing water.

- 1 -

"A Product for finishing bleached fabric after washing."

The present invention relates to a product for the finishing of bleached fabrics, such as linen or cotton.

5 As is known, large scale mechanical washing of white bleached fabrics, such as linen or cotton, is normally effected these days using alkaline detergent products which are free from oxidising substances, necessary for chemical bleaching.

10

Special products are used as oxidisers, these products usually including components which evolve chlorine or oxygen, such as for example, sodium hypochlorite, oxygenated water or the like. However, when using the
15 above mentioned products, at the end of the normal rinsing cycles there are usually still residual traces of the oxidising substances in the fabric. These residual traces cause significant problems such as unpleasant odours, skin irritations and an accelerated
20 degradation of the fabric by oxidation at the high temperatures of ironing, particularly because of the pressure of substances which evolve chlorine.

To neutralise the residual traces of oxidising
25 materials it is normal to use either reducing salts, such as sodium bisulphite, or oxygenated water, or sodium perborate which, when used after the use of

- 2 -

chlorine, perform a reducing action in comparison therewith. The rinsing water however often contains traces of metals such as copper and iron and the like, which tend to yellow the fabric and to catalyse the
5 degrading action of the oxidising agents.

Currently, products having the ability to form complexes with the metal ions present are not used and, when the bleached fabric is found to be contaminated by
10 residues of these ions, they have to be treated separately with specific products for the purpose.

Sodium bisulphite does not have the ability to form complexes, is not stable in an acid environment, is not
15 compatible with essential oils and has an unpleasant smell of sulphur.

The use of oxygenated water, such as is available on the market, involves difficulties and risks tied to its
20 low stability, varying quantities of reactive agent, high reactivity with some metals and organic substances, and irritating and blistering properties as well as problems of storing, handling and metering. Moreover, products which include oxygenated water as a
25 component having a reducing action have a wide and poorly defined formulation spectrum and do not offer guarantees of reliability. Oxygenated water is, in fact a product of poor compatibility, which is sensitive to light, to increases in temperature, to
30 some metals and to organic substances. Moreover, oxygenated water does not have the ability to form complexes and is, on the other hand de-stabilised by metal ions and is not compatible with the normal

essential oils.

The object of the present invention is to overcome the above mentioned disadvantages by providing a new
5 combined product for finishing bleached fabric such as cotton or linen after washing, which can replace the conventionally used substances having a reducing action, such as sodium bisulphite, oxygenated water or sodium perborate with an anti-oxidising substance until
10 now used in the later treatment of bleached fabric such as cotton or linen after washing, in such a way as to perform not only the anti-oxidising function, but, contemporaneously, also that of forming complexes with heavy metal ions in solution in the water.

15 According to the present invention, there is provided a product for finishing white bleached fabrics after washing, characterised by the fact that it comprises up to 3% of an anti-oxidising agent, essential oils and
20 water to 100, this product having an anti-oxidising action for the elimination of residual traces of chemical oxidants based on chlorine and oxygen and their salts, and an ability to form complexes with heavy metal ions in solution in the water.

25 A particular advantage of the invention is that it provides a combined product which will be stable with temperature, which is free of the risk of decomposition or variation in its reactive agents, and which,
30 moreover, will be resistant to high ambient temperatures. Another advantage of the present invention is that it provides a combined product which will be stable in an acid environment, and which will be

compatible with essential oils, which does not have particular risks in handling, and which can be stored without particular precautions. A further advantage of the present invention is that it provides a combined
5 product which does not lead to damage of the textile fabric, which will be able to give the widest guarantees of reliability and security in use and, moreover, which will be obtainable starting from elements which are readily available on the market.

10

Various embodiments of the invention will now be more particularly described hereinbelow with specific reference to the detailed examples of formulations according to the invention of specific, combined
15 products for the finishing of bleached white textile fabrics after washing.

A first, very simple embodiment of the invention, is composed of up to 3% of anti-oxidising agent, a
20 quantity of essential oils and water to 100. As opposed to products currently in use, the anti-oxidising product according to the invention, because of its compatibility and thermal stability allows the formulation, in the liquid state, of a single product
25 having a multiple action for the partial or complete treatment of bleached fabrics after washing, which is stable, and which does not involve any risk of separation, decomposition or variation in active ingredients, and which is efficacious and resistant to
30 high and low ambient temperatures.

- 5 -

Another feature of the use of the anti-oxidising product of the invention is constituted by the fact that particular precautions for handling and storing are not required; moreover, the product of the
5 invention is easily metered through modern automatic liquid metering equipment.

If it is desired to obtain a combined product which, as well as offering an anti-oxidising action and being
10 capable of forming complexes with metal ions, has characteristics of acidifying, by means of solubilisation and neutralisation of alkaline residues of detergents present in the washed fabrics, it is possible to obtain a combined product which has the
15 following formulation:

up to 3% of anti-oxidising agent,
from 3% to 20% of formic acid,
a sufficient quantity of essential oils,
water to 100.

20 It is, moreover, possible to obtain a softening and anti-static action by making further additions to the specific products of the invention (as long as the additions are not of quaternary ammonium compounds,
25 because these have poor temperature stability when utilised in mixtures of oxidising or anti-oxidising substances). For the purpose of obtaining stable compounds which can perform an anti-oxidising action, can form complexes with heavy metal ions, and can
30 perform a softening and anti-static function, a product of the hydroxyalkyldiamidoamine acetate type may be employed. A typical formulation to obtain a stable product having the above mentioned anti-oxidising

- 6 -

action and ability to form complexes with heavy metal ions, as well as performing a softening and anti-static function, comprises:

- up to 3% of anti-oxidising agent,
- 5 up to 8% of hydroxyalkyldiamidoamine acetate,
- a sufficient quantity of essential oils,
- water to 100.

10 If it is desired to obtain a combined product which will have an anti-oxidising action as well as the ability to form complexes with heavy metal ions, and which will be acidifying, softening and anti-static, the following product may be formed, namely:

- up to 3% of anti-oxidising agent,
- 15 up to 20% of formic acid,
- up to 8% of hydroxyalkyldiamidoamine acetate,
- a sufficient quantity of essential oils,
- water to 100.

20 In a preferred embodiment, the anti-oxidising agent is advantageously constituted by a thiourea with the following structural or chemical formulation:



This anti-oxidising product, also being known under the name sulphourea or thiocarbamide.

30 The combined product described above may be variously modified in dependence on the particular requirements in use. Moreover, the proportions of the four main products which perform the four distinct functions,

- 7 -

that is to say the oxidising function, the function of forming complexes with heavy metal ions, the acidifying function, and the softening and anti-static function, may be varied in dependence on the quantity of
5 anti-oxidants and alkaline detergents utilised in the washing of the fabrics, and on the degree of softening which it is desired to obtain.

The combined product illustrated above is preferably
10 utilised in quantities of 4-6 gms per kg of fabric during the last rinsing.

All proportions of constituents given herein are expressed as proportions by weight of the constituents
15 concerned.

Claims:

- 5 1. A product for finishing white bleached fabric, such as cotton or linen, after washing, characterised by the fact that it comprises up to 3% of an anti-oxidising agent, essential oils and water to 100, this product having an anti-oxidising action for
10 the elimination of residual traces of chemical oxidants based on chlorine and oxygen and their salts, and an ability to form complexes with heavy metal ions in solution in the water.
- 15 2. A product according to Claim 1, characterised by the fact that the said anti-oxidising agent is constituted by thiourea, also called sulphourea or thiocarbamide.
- 20 3. A product according to Claim 1 or Claim 2, characterised by the fact that it comprises up to 3% of anti-oxidising agent, from 3% to 20% of formic acid, essential oils and water to 100, the formic acid being
25 present to form an acidifying function, by means of solubilisation and neutralisation of the alkaline residues of detergents present in the washed fabrics.
- 30 4. A product according to any of Claims from 1 to 3, characterised by the fact that it comprises up to 3% anti-oxidising agent, up to 8% hydroxyalkyldiamidoamine acetate, essential oils and water to 100, the hydroxyalkyldiamidoamine acetate having a softening and anti-static function.

- 9 -

5. A product for addition to fabric rinsing water, according to any preceding Claim, characterised by the fact that it comprises up to 3% anti-oxidising agent, up to 20% formic acid, up to 8% hydroxyalkyldiam-
5 idoamine acetate, essential oils, and water to 100, the quantities in use of such product varying in a ratio dependent on the quantity of oxidants and alkaline detergent utilised in the washing of the fabrics and on the desired degree of softness in the rinsed fabric.

10