METHOD OF OBTAINING EFFECTIVE TRANSFER OF LIQUID FABRIC TREATMENT COMPOSITIONS CONTAINING LIMITED AMOUNTS OF CATIONIC COMPOUNDS TO CLOTHING IN WASHING MACHINES

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ABSTRACT

A method for effectively transferring a fabric treating composition containing a limited amount or no cationic compounds to wet clothing within a clothes washing machine comprises operating the washing machine in the conventional fashion through the rinse cycle. The liquid fabric treating composition is introduced into the washing machine with the saturated clothing after completion of the rinse cycle but in advance of the spin cycle. The liquid fabric treating composition and the saturated clothing are gently tumbled together so that an effective amount of the liquid fabric treating composition may be transferred to the clothing as a result of contact of the liquid fabric treating composition with water contained in the clothing. The spin cycle in then initiated, after which time the clothing may be removed from the washing machine for drying.
10. PLACE CLOTHING IN WASHER

12. INTRODUCE WATER INTO WASHER

14. ADD DETERGENT TO WATER AND CLOTHING

16. WASH CLOTHING IN WASHING CYCLE

18. DRAIN WASH WATER FROM WASHER

20. ADD RINSE WATER TO WASHER

22. RINSE CLOTHING IN RINSEING CYCLE

24. DRAIN RINSE WATER FROM WASHER

26. ADD LIQUID FABRIC TREATMENT COMPOSITION TO WET CLOTHING

28. TUMBLE LIQUID FABRIC TREATMENT COMPOSITION AND WET CLOTHING

30. SPIN CLOTHING IN SPIN CYCLE

32. REMOVE DAMP CLOTHING FROM WASHER

FIG. 1
METHOD OF OBTAINING EFFECTIVE TRANSFER OF LIQUID FABRIC TREATMENT COMPOSITIONS CONTAINING LIMITED AMOUNTS OF CATIONIC COMPOUNDS TO CLOTHING IN WASHING MACHINES

RELATED APPLICATION

[0001] This application claims priority under 35 U.S.C. §119(e) to U.S. Provisional Application Ser. No. 60/891,771 filed Mar. 23, 2007 for all commonly disclosed subject matter. U.S. Provisional Application Ser. No. 60/891,771 is expressly incorporated herein by reference in its entirety to form a part of the present disclosure.

FIELD OF THE INVENTION

[0002] This invention relates to a method of effectively transferring liquid fabric treatment compositions which do not contain cationic compounds, or only a limited amount of cationic compounds, to clothes in washing machines during the course of a washing cycle.

BACKGROUND OF THE INVENTION

[0003] There are generally two types of clothes washing machines commercially available, namely, top loading machines and front loading machines. Although operation of such machines varies to some extent from manufacturer to manufacturer, typically water is introduced into the machine with the clothing and detergent is added either manually or automatically in advance of a washing cycle. After completion of the washing cycle, the used water is drained and clean rinse water is added. The clothes are then removed in a rinse cycle and then the rinse water is drained from the washing machine leaving the clothing saturated with water. A spin cycle is initiated to remove as much water as possible from the clothing, after which the damp clothing may be removed from the washing machine for drying.

[0004] Liquid fabric treating compositions have been developed which are capable of imparting one or more of a variety of properties to articles of clothing, such as softness, fragrance, brightness, body, reduced static, anti-soiling, anti-creasing and others. Liquid fabric treating compositions, such as liquid fabric softeners sold under the "Downy" brand owned by Procter & Gamble of Cincinnati, Ohio, are conventionally introduced into both front loading and top loading clothes washing machines during the rinse cycle. Front loading washing machines use much less water than top loading machines, but with both types of machines a significant quantity of water is nevertheless introduced into the washing machine during the rinse cycle. Consequently, liquid fabric treating compositions added during the rinse cycle must be delivered in relatively high concentrations in order to transfer onto or into the fabric of the clothing.

[0005] Liquid fabric softeners are usually comprised of cationic compounds, and particularly quaternary ammonium and imidazolium salts, in the form of liquid emulsions. Fabric softeners of this type work by coating the surface of cloth fibers with a thin layer of a cationic compound which has lubricating properties and is electrically conductive. As a result, the fibers are made to feel smoother to the touch and the build-up of static electricity on the fibers is substantially prevented. However, cationic compositions are hydrophobic in nature, and significantly decrease the water absorption capability of fabric which is an issue with towels and other fabric items.

[0006] Assuming an appropriate level of concentration, cationic compositions exhibit a transfer rate to the fibers of clothing in the washer which is typically in the range of 85-90%. In contrast, compositions with no cationic compounds which are introduced into a clothes washer during the rinse cycle may have a much lower transfer rate to the fibers of the clothing, i.e. about 30% or lower.

SUMMARY OF THE INVENTION

[0007] This invention is directed to a method for effectively transferring a fabric treating composition which contains little or no cationic compounds to cloth fabric within a clothes washer. In the presently preferred embodiment, the washing machine is operated in the normal fashion through the rinse cycle, i.e. rinse water is introduced into the washing machine following the wash cycle and then draining leaving the clothing saturated with water. A liquid fabric treating composition containing little or no cationic compounds may be introduced into the washing machine with the saturated clothing after completion of the spin cycle but in advance of the spin cycle. Such liquid fabric treating composition and the saturated clothing are gently tumbled together so that an effective amount of the liquid fabric treating composition may be transferred to the clothing as a result of contact of the liquid fabric treating composition with water contained in the clothing. The spin cycle is then initiated, after which time the clothing may be removed from the washing machine for drying.

[0008] Although the clothing in the washing machine is saturated with water following the spin cycle, the overall volume of water in such clothing is nevertheless far less than the water present in the washing machine during the rinse cycle. Whereas the transfer rate of liquid fabric treating compositions containing a limited amount of cationic compounds or none at all is low when introduced into the comparatively large volume of water used during the spin cycle, such transfer rate to the cloth fabric of the items in the washer is much improved when the only water which is present in the washer is that retained in the clothing after the spin cycle is completed. As discussed below, there are many fabric treating agents capable of imparting desirable properties to articles of clothing, but which do not contain cationic compounds and therefore have not been utilized effectively, if at all, in commercially available liquid fabric treating compositions intended for use in washing machines. The method of this invention allows an effective amount of such compounds to be transferred to the fibers of the clothing laundered in a washing machine, thus obtaining a wide variety of benefits not currently available.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The structure, operation and advantages of the presently preferred embodiment of this invention will become further apparent upon consideration of the following description, taken in conjunction with the accompanying drawings, wherein:

[0010] FIG. 1 is a schematic block diagram of the method of this invention.
DETAILED DESCRIPTION OF THE INVENTION

[0011] Referring to FIG. 1, the method of this invention is schematically depicted in a block diagram. Boxes 10, 12, 14 and 16 are intended to represent a washing cycle performed in conventional top loading or front loading washing machines. The steps denoted by boxes 10, 12 and 14 may be performed in any sequence, i.e. the water could be introduced into the washing machine first and then the clothing followed by the detergent, or the water and detergent could be introduced together followed by the clothing etc. Generally, the clothing is washed in a washing machine by the combination of water and detergent in a washing cycle, depicted by box 16.

[0012] Once the washing cycle is completed, the wash water is drained from the washer as depicted by box 18. Rinse water is then added to the washer, as in box 20, and the rinse cycle is initiated. See box 22. In conventional methods of adding a liquid fabric treating compositions to clothing in the washing machine, such compositions are added with the rinse water and transferred to the clothing in the course of the rinse cycle. That is not the case in this invention. The rinse cycle is completed, and the rinse water is drained from the washing machine as shown in box 24, without the addition of a liquid fabric treating composition.

[0013] Although the rinse water is drained from the washing machine at the end of the rinse cycle, the clothes are nevertheless saturated with water. After the rinse water is drained but before initiating the spin cycle, a liquid fabric treating composition of the type described in detail below is added to the saturated clothing within the washing machine. See box 26. The saturated clothing and liquid fabric treating composition are then gently tumbled for a period of time sufficient to transfer an effective amount of the liquid fabric treating composition to the clothing as a result of contact of such composition with water contained within the clothing. See box 28. The spin cycle 30 may then be initiated, and the clothing removed from the washing machine when the spin cycle is completed. See box 32.

[0014] Without wishing to be limited by any particular theory of operation of the method of this invention, it is believed that the active ingredient(s) within the liquid fabric treating composition is transferred to the clothes within the washing machine as a result of contact of the composition with the water held within the saturated clothing in the washer. No precise volumetric measurement can be given for the amount of water contained within articles of clothing following a rinse cycle due to variations in the quantity of water employed in the rinse cycle of different washing machines and the degree of water retention of clothing articles made from different materials (cotton, synthetics etc.), but such articles of clothing nevertheless contain some amount of water at the end of the rinse cycle, and for purposes of the present discussion are characterized as "saturated." The liquid fabric treating composition migrates or transfers to the saturated clothing, moving throughout the water held in the clothing, and transfers from one article or clothing to another while being tumbled together within the washing machine. It is believed that the fabric treating composition need not make contact with the water contained in each individual article of clothing, but that it need only contact at least some of the articles to transfer the composition thereon. Once some articles of clothing receive the fabric treating composition, they transfer it to other articles by contact with the water in such other articles.

Liquid Fabric Treating Composition

[0015] As noted above, the liquid fabric treating composition of this invention contains no cationic compounds or a limited amount of same. It generally comprises a carrier and one or more active ingredients each capable of imparting a particular property or characteristic to an article of clothing within a clothes dryer during the course of a drying cycle. Such active ingredients may include, without limitation, anti-creasing agents, anti-soil agents, anti-static agents, bacteriostatic agents, brightening agents, bodying agents, softening agents, dyes, fiber emollients, finishing agents, fragrances, insect repellents, germicides, lubricants, mildew-proofing agents, moth-proofing agents, shrinkage controllers and sizing agents, many of which do not contain cationic compounds.

[0016] In the presently preferred embodiment, the carrier is water. The active ingredients noted above may include different classes of compounds, as is well known to those of ordinary skill in the art, but each compound selected for the liquid fabric treating composition of this invention may be added to the carrier to form a solution, dispersion or emulsion at ambient temperatures, without the addition of heat.

[0017] One particular type of active ingredient suitable for use in the liquid fabric treating composition of this invention may comprise a single material or a mixture of materials which are known to provide benefits to the skin. The liquid fabric treating composition is transferred to articles of clothing within a clothes washing machine as described above. Clothing which receives a skin-treating active ingredient subsequently transfers it to the skin when the clothing is worn by an individual.

[0018] The skin-treating active ingredient can comprise essentially any known component for treating human skin, such as insect repellants, UV absorbers, skin moisturizers, tanning agents, wrinkle removers, deodorants, cellulose reducers, vitamins, anti-oxidants, minerals, lipid layer enhancers, hair growth suppressants, emollients, botanical actives and the like. The skin treating active ingredient can be derived from a broad range of classes of materials such as emollients, lubricants, super-fatting agents, natural extracts which provide benefits to the skin depending upon the nature of the natural extracts, the bees from wine-making, DNA derivatives, hydrolyzed proteins both of animal and vegetable origin, derivatives of the hydrolyzed proteins, plant extracts, the skin-active portions of plant extracts and the like.

[0019] One particular skin-treating active ingredient suitable for use in the liquid fabric treating composition of this invention is commercially available under the trademark PLANATEX HCC owned by Cognis Deutschland GmbH & Co. This ingredient is a wax dispersion with glyceryl esters, an emulsifier and water. It contains skin treating components such as glyceroi oleate, which is a lipid layer enhancer.

[0020] Although not required, an emulsifier may be added to the liquid fabric treating composition when using PLANATEX HCC and similar skin-treating active ingredients to promote transfer of the composition to the substrate, described below. It is believed that the additional emulsifier adds softness to the articles of clothing without decreasing the water-absorbency, which typically occurs when using fabric softeners containing cationic compounds as described above.
in connection with a discussion of the prior art. Suitable emulsifiers and co-emulsifiers are nonionic, anionic, cationic or amphoteric emulsifiers, ionic surfactants and esterquats, all of which are well known in the art. Cationic emulsifiers, when used, constitute only a small percentage of the total liquid fabric treating composition.

[0021] The liquid fabric treating composition may further include one or more additives and auxiliaries to provide known benefits to the treated articles of clothing such as anti-static properties, a pleasing aroma, improved shelf life and the like. For example, preservatives such as formaldehyde, parabens, pentanediol, sorbic acid and other classes of compounds may be added, as is well known in the art. A number of different fragrances can be employed in the composition to create the desired smell of the clothing, including, without limitation, rose oil, lavender, lilac, jasmine, vanilla, wisteria, lemon, apple blossom or compound bouquets such as citrus, spice, aldehydic, woods, oriental, baby powder and others.

[0022] When employing a skin-treating active ingredient in the composition of this invention, such as PLANTATEX HCC, the liquid fabric treating composition comprises from 5% by weight to 95% by weight of the skin-treating active ingredient; from 0.1% by weight to 40% by weight of at least one emulsifier; from 0% by weight to 35% by weight of auxiliaries and additives; from 0% by weight to 95% by weight of a carrier; preferably, from 10% by weight to 75% by weight of the skin-treating active ingredient; from 0.5% by weight to 30% by weight of at least one emulsifier; from 20% by weight of auxiliaries and additives; and most preferably, from about 15% by weight to about 50% by weight of the skin-treating active ingredient; from about 5% by weight to about 20% by weight of at least one emulsifier; from about 35% by weight to about 75% by weight of a carrier; and from about 10% by weight to about 20% by weight of auxiliaries and additives.

[0023] As noted above, the carrier is usually water but can be other liquid components which provide a vehicle for impregnating the substrate with the skin-treating active ingredient and the emulsifier. The carrier can be one of the components of the skin-treating active ingredient or the emulsifier or mixture of emulsifiers which can provide a mixture which is liquid at ambient temperature and has a viscosity allowing application of the composition onto the substrate.

[0024] While boxes 26 and 28 depicted in FIG. 1 and the discussion above contemplate that the step of introducing the liquid fabric treating composition into the washing machine for transfer to the clothing, and the step of tumbling the clothing, are performed separately and in that sequence, it should be understood that these steps could be performed simultaneously and/or in a different sequence. For example, tumbling of the clothes within the washing machine can be initiated before the liquid fabric treating composition is directed onto the clothing. Alternatively, the liquid fabric treating composition can be introduced into the washing machine at the same time the tumbling begins. Each of these variations is considered within the scope of the present invention.

[0025] While the invention has been described with reference to a preferred embodiment, it should be understood by those skilled in the art that various changes may be made and equivalents substituted for elements thereof without departing from the scope of the invention. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the invention without departing from the essential scope thereof. Therefore, it is intended that the invention not be limited to the particular embodiment disclosed as the best mode contemplated for carrying out this invention, but that the invention will include all embodiments falling within the scope of the appended claims.

What is claimed is:

1. A method of transferring a liquid fabric treating composition to clothing within a clothes washing machine, comprising:
(a) introducing clothing into a washing machine;
(b) performing a washing cycle;
(c) contacting the clothing with a liquid fabric treating composition that contains substantially no cationic components;
(d) tumbling the clothing so that an effective amount of said liquid fabric treating composition is transferred to the clothing as a result of contact of said liquid fabric treating composition with water contained within the clothing;
(e) thereafter performing a spin cycle.
2. The method of claim 1 in which steps (c) and (d) result in a transfer rate of said liquid fabric treating composition to said clothing that is greater than about 30%.

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