MOP HEADS MADE OF POLYESTER WICKING FIBER

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The present invention is directed to mop heads which comprise polyester wicking fibers which assist in absorbing, holding, and applying disinfectant/antimicrobial composition without removing the active disinfectant such as quaternary ammonium salts from the composition.
Figure 1: Composition pick-up and quaternary removed by fibers.
MOP HEADS MADE OF POLYESTER WICKING FIBER

FIELD OF INVENTION

[0001] The present invention is directed to mop heads. In particular, the present invention is directed to mop heads which comprise polyester wicking fibers which assist in holding, and applying disinfectant/antimicrobial composition without removing the active disinfectant (in this case quaternary ammonium salts) from the composition.

BACKGROUND OF THE INVENTION

[0002] In hospitals, food establishments, homes, schools, and other public buildings disinfecting/antimicrobial compositions are applied to eliminate the threat of infections from contacting pathogens such as algae, bacteria, fungi, germs, yeast, and viruses (influenza, hepatitis A and B, measles, mumps, rubies, rubella, herpes simplex, smallpox and, now, Ebola). Mops are designed to sanitize floors in facilities such as those mentioned above.

[0003] Common disinfectants/antimicrobials include quaternary salts (‘quats’) and oxidizing compounds such as hydrogen peroxide and chlorine bleaches. Peroxides and bleaches leave an undesirable smell and will affect color in textiles such as drapes and furniture coverings. These are less desirable.

[0004] Quat salts are effective disinfectants/antimicrobial agents because they are attracted to the protein coating (cell wall) of the microbe and therefore are considered selective in their aggression. They do not use an aggressive chemical action as do other disinfectants compounds such as chlorine bleach or hydrogen peroxide which discolor or degrade textile materials.

[0005] Quat salts have broad spectrum effectiveness against a range of microorganisms and provide excellent commercial value. Quat salts may be formulated with a variety of detergents for more specific applications. For example, a highly alkaline degreaser disinfectant or a pH neutral disinfectant for damp mopping a high gloss floor finish can be made using the same quat salt. Quat salts are used as sanitizers and deodorants in a number of formulas as well.

[0006] Quaternary salts are by far the most popular choice of disinfectants today because of their low cost and selective aggression. There are many quaternary salts, but quaternary ammonium salts are preferred. Chemical Structure of a quaternary ammonium salt:

\[
R_1\text{N}^+\text{R}_2\text{R}_3\text{R}_4^- + X^-
\]

Depending on the nature of the R group, the anion, and the number of quaternary nitrogen atoms present, the antimicrobial quats may be classified into one of the following categories: (1) monoalkyltrimethyl ammonium salts; (2) monoalkyldimethylbenzyl ammonium salts; (3) dialkyldimethyl ammonium salts; (4) heteroaromatic ammonium salts; (5) polysubstituted quaternary ammonium salts; (6) bis-quaternary ammonium salts; and (7) polymeric quaternary ammonium salts. Each category will be discussed herein.

[0008] Monoalkyltrimethyl ammonium salts contain one R group that is a long-chain alkyl group, and the remaining R groups are short-chain alkyl groups, such as methyl or ethyl groups. Some non-limiting examples of monoalkyltrimethyl ammonium salts include cetyltrimethylammonium bromide, commercially available as Rhodac™ M242C/29 from Rhodia (Laurenceville, Ga.) and Delhydro A from Henkel Corp. (Cincinnati, Ohio); alkytrimethyl ammonium chloride, commercially available as Arquad 16 from Akzo Nobel Chemicals Inc. (Chicago, Ill.); alkyalkyltrimethyl ammonium chloride; and cetyltrimethyl ethylammonium bromide, commercially available as Ammonyx DME from Stepan Co. (Northfield, Ill.), and Bretol from Zeeland Chemical Inc. (Zeeland, Mich.).

[0009] Monoalkyldimethylbenzyl ammonium salts contain one R group that is a long-chain alkyl group, a second R group that is a benzyl radical, and the two remaining R groups are short-chain alkyl groups, such as methyl or ethyl groups. Monoalkyldimethylbenzyl ammonium salts are generally compatible with nonionic surfactants, detergent builders, perfumes, and other ingredients. Some non-limiting examples of monoalkyldimethylbenzyl ammonium salts include alklyldimethylbenzyl ammonium chlorides, commercially available as BTC 824 from Stepan Company (Northfield, Ill.), Hyamine 3500 from Lonza Inc. (Fair Lawn, N.J.), and Barquat™ MB-80 from Lonza Inc. (Fair Lawn, N.J.); and benzethonium chloride, commercially available as Lonzgard from Lonza Inc. (Fair Lawn, N.J.). Additionally, the monoalkyldimethylbenzyl ammonium salts may be substituted. Non-limiting examples of such salts include dodecyltrimethyl-3,4-dichlorobenzyli ammonium chloride. Finally, there are mixtures of alklyldimethylbenzyl and alklyly dimethyl substituted benzyi (ethylbenzyi) ammonium chlorides commercially available as BTC 2125M from Stepan Company (Northfield, Ill.), and Barquat™ 4250 from Lonza Inc. (Fair Lawn, N.J.).

[0010] Dialkyldimethyl ammonium salts contain two R groups that are long-chain alkyl groups, and the remaining R groups are short-chain alkyl groups, such as methyl groups. Some non-limiting examples of dialkyldimethyl ammonium salts include didecyldimethyl ammonium halides, commercially available as Bardac™ 22 from Lonza Inc. (Fair Lawn, N.J.); didecyl dimethyl ammonium chloride commercially available as Bardac™ 2250 or 2280 from Lonza Inc. (Fair Lawn, N.J.); dioctyl dimethyl ammonium chloride, commercially available as Bardac™ LF and Bardac™ LF-80 from Lonza Inc. (Fair Lawn, N.J.); and octyl decyl dimethyl ammonium chloride sold as a mixture with dicyclo and dioctyl dimethyl ammonium chlorides, commercially available as Bardac™ 2050 and 2080 from Lonza Inc. (Fair Lawn, N.J.).
Heteroaromatic ammonium salts contain one R group that is a long-chain alkyl group, and the remaining R groups are provided by some aromatic system. Accordingly, the quaternary nitrogen to which the R groups are attached is part of an aromatic system such as pyridine, quinoline, or isoquinoline. Some non-limiting examples of heteroaromatic ammonium salts include cetylpyridinium halide, commercially available as Sunquat 6060/CPC from Zeeland Chemical Inc. (Zeeland, Mich.); 1-[3-chloroalkyl]-3,5,7-triazal-1-azoniaadamantane, commercially available as Dowicil 200 from The Dow Chemical Company (Midland, Mich.); and alkyl-isoquinolinium bromide.

Polysubstituted quaternary ammonium salts are a monoalkyltrimethyl ammonium salt, monoalkylammonium benzyl ammonium salt, dialkyldimethyl ammonium salt, or heteroaromatic ammonium salt wherein the anion portion of the molecule is a large, high-molecular weight (MW) organic ion. Some non-limiting examples of polysubstituted quaternary ammonium salts include alkylammonium benzylation ammonium saccharinate, commercially available as Onyxide 3300 from Stepan Company (Northfield, Ill.); and dimethylaminobenzyl ammonium cyclohexylsulfamate, commercially available as Onyxide 172 from Stepan Company (Northfield, Ill.).

Bis-quaternary ammonium salts contain two symmetric quaternary ammonium moieties having the general formula:

\[
\begin{align*}
 \text{N} \quad & \text{CH}_3 \\
& \text{CH}_3
\end{align*}
\]

The long-chain alkyl R groups in the previously described quats have from about 8 carbons to about 18 carbons, from about 10 to about 18 carbons, and from about 12 to about 16 carbons. Such quats are both soluble and good antimicrobial agents.

The term "anionic counterion" includes any ion that can form a salt with quaternary ammonium. Examples of suitable counterions include halides such as chlorides and bromides, propionates, carbonates, methosulphates, saccharinates, ethanolesulphates, hydroxides, acetates, phosphates, and nitrates. Preferably, the anionic counterion is chloride.

The concentration of active quaternary ammonium compound in a composition is determined by the concen-
tration needed to reduce a target microorganism. This is often controlled by federal regulatory agencies, such as the EPA, that regulate antimicrobial products.

[0022] A person skilled in the art of antimicrobial compositions will be able to determine the concentration of quaternary ammonium compound in the composition needed to provide a satisfactory reduction in the targeted microorganism population. The required concentration of a specific disinfectant composition typically is that needed to pass the AOAC Use-Dilution Disinfectant test method as referred to by EPA DSS/TSS-1. Methods of Use. The quaternary salt compounds are generally liquids diluted with suitable water to have a concentration of at least 150 ppm and preferably more.

[0023] Mop heads based upon cotton yarns or fabrics have existed for many years and more sophisticated mops and materials are now available. Webster defines a mop as “an implement for washing floors, having a bundle of cloth or yarn at the end of a long handle”. The mop head can be a string mop head or a flat mop head and made out of cotton, rayon, polyester, nylon, polyolefin or a combination thereof. A flat mop (a flat pad secured on a flat support that is attached to a handle) is preferable made of polyester and nylon micro fiber. Flat mops are not preferred in the facilities mentioned above because they do not hold as much antimicrobial composition. Sting mops are preferred for facilities with large floor areas. Micro fiber is any fiber having less than 1.0 denier per filament or a fiber diameter of 10 microns or less. Suitable polyesters may be polyethylene terephthalate, polymethylene terephthalate, polybutylene terephthalate, or blends thereof.

[0024] Thomas W. Steward is generally considered the inventor of the modern mop and was awarded Patent Number 499,402 on Jun. 13, 1893. His invention includes a handle, textile mop head, and an attachment system to connect the two. Thus mops with replaceable mop heads are known and within the scope of the present invention.

[0025] U.S. Published Patent Application 2008/0264445 to Carlson et al discloses a system and method for treating floors. Disclosed are various quaternary ammonium salts mixed with water and applied to a floor using a mop. No specific details are disclosed relative to the mop.

[0026] To achieve desired environmental cleaning outcomes, it is critical to ensure that the right amount of disinfectant is delivered to surfaces. Mops, particularly string mops, are used to apply disinfecting solutions to floors, however, not all mops perform the same way. When used with a quat salt disinfectant, hydrophilic cellulose fibers absorb some of the disinfectant and reduce the concentration of disinfectant that is ultimately delivered to surfaces. This phenomenon is known as ‘quat absorption’. Environmental hygiene programs that are not designed to effectively control this variable can yield unexpectedly poor cleaning and disinfecting outcomes.

[0027] Public health departments have requirements to measure the quat salt disinfectant/antimicrobial concentration in wash water. A minimum mandated quat salt concentration of 150 parts per million (ppm) is typical; however, best practice targets a 200 ppm minimum. The inspected establishment must have detector papers to show that these standards are met.

[0028] Today, yarns comprising cellulose fibers in the form of cotton or viscose or lyocell rayon are blended with synthetic fibers such as polyester, polyolefin or nylon for mop heads. Compared to cellulose, thermoplastic synthetic fibers have higher tensile strength, improved durability, and less linting, but have lower fluid absorption. Cellulosic fibers absorb the antimicrobial quaternary salt from the water/quat salt composition and thus more of the antimicrobial composition must continually be added—this is a detriment as one must continually add more antimicrobial quat salt to the water to maintain the effective amount (at least 150 ppm).

[0029] Although cotton is the most economical fiber, it has natural oil that must be rinsed out with warm, soapy water prior to achieving maximum absorption. This break-in period can be time consuming and costly. Rayon conversely achieves maximum absorption immediately but, like cotton, will absorb quats. The ultimate goal is to obtain yarns that are a mix of the best qualities of different fiber types and to achieve good fluid absorbency, short break-in time, low quat absorption, high durability, and low cost.

SUMMARY OF THE INVENTION

[0030] Embodiments of the present invention are directed to mop heads comprising polyester wicking fibers. Such mop heads have the advantage of not absorbing quaternary salt disinfectants/antimicrobials while offering good liquid adsorption and durability. Polyester wicking fibers comprise about 20 wt % to 100 wt % of the fibers in the mop head. The cost of mop heads on hand, must be relatively low to be competitive, but must be effective in dispersing the water/quat composition, without absorbing the quat salt causing the water/quat composition to no longer be effective as a disinfectant. Most preferably the polyester wicking fibers comprise 25 wt %, less preferably 50 wt % of the total fiber in mop heads, but 100 wt % of the fibers in the mop head is within the scope of the present invention even though it is relatively costly. This means other fibers can be mixed with the polyester wicking fibers. While the other fibers can be cotton and other cellulosic fibers, preferred other fibers are synthetic fibers such as non-wicking polyester, nylon and polyolefin, up to 80 wt %. Most preferably are polyester wicking fibers with normal non-wicking polyester fibers.

BRIEF DESCRIPTION OF THE DRAWINGS

[0031] FIG. 1 is a chart demonstrating water and quaternary ammonium salt absorption by a group of five fibers: wicking polyester, normal polyester, hydrophilic polypropylene, nylon, and viscose rayon.

DETAILED DESCRIPTION OF THE INVENTION

[0032] A mop yarn comprising polyester wicking fibers is shown to not remove quat from a water/quat composition with initial concentration of 400 ppm quat. This mop yarn provides at least 50 wt % greater fluid absorbency, wring out, and working weight over a typical all-polyester mop yarn.

[0033] Polyester fibers are an excellent choice for low quat absorption, durability, and cost, but lack the desired fluid absorbing capacity. To produce polyester wicking fibers, normal polyester fibers are chemically or physically modified or coated or impregnated with a wicking agent or finish. Polyester fibers wicking fibers can increase the overall fluid
Yarns for string mop heads are spun using any staple fiber spinning process including ring, open end, air jet, worsted and DREF spinning. Multiple spun yarns are twisted, secured or fastened together to form final mop heads. Generally, mop yarns comprise blends of natural and synthetic fibers to achieve fast initial wet-out (break-in time), good fluid absorbency, low quat salt absorption, high durability, and low cost. The fibers may be round, non-round, hollow, solid, or porous, or bicomponent in cross section, wherein the non-round fibers may comprise many different shapes, such as dogbone, oval, trilobal, hexalobal, elliptical, crescent, or with exterior channels in cross section, or a blend of 2 or more of these.

Mop heads include the category of flat mop heads which do not provide the high fluid absorbency or durability of string mops. Typically, flat mop heads are made from inexpensive woven or non-woven fabrics. Non-woven fabrics are manufactured using processes including needle punched, spun laced, stitch bonded, or combinations thereof, all of which are well known processes.

The absorbency behavior of ideal mop heads is one, which upon dipping in liquid, picks up a large quantity of mopping liquid and maintains a large percentage of the liquid after surface moisture is removed by using the wringing feature of a mop bucket (available from many suppliers including Rubbermaid Corporation). A wringer typical applies 60 foot-pounds force to the mop head.

It is desired that after wringing, a large quantity of liquid remains in the mop head to maximize the surface area mopped, yet, not be so large that excess liquid drips or is flung from the mop. The quantity of liquid which remains after wringing is known as the ‘Working Weight’. Unfortunately, ordinary polyester fibers do not readily hold the water/quat salt composition and do not achieve the desired working weight.

Three measurements are made to rate yarns for mops:

1. Dry yarn weight per unit length
2. Percent increase of dry yarn weight after a 30 second immersion in an aqueous based composition followed by a 30 second period of dripping (% Absorbency’)
3. Liquid retained in the yarn after wringing. (“Working Weight’)

Polyester wicking fiber is an excellent material for making string mop heads. However mop makers are very cost conscious. The wicking agent applied to the normal or chemically modified polyester fiber is relatively expensive. To reduce the cost, string mop heads having 80 wt. % other fibers and 20 wt. % polyester wicking fiber still have excellent wicking properties. It is within the scope of the present invention that a string mop head have from 20 to 100 wt % polyester wicking fiber and 80 to 0 wt % other fibers.

Polyester wicking fibers comprise at least 20 wt % of the fibers in the mop, and preferably 25 wt. %, more preferably 50 wt. % and most preferably 100 wt. %. The means other fibers can be mixed with the polyester wicking fibers. While the other fibers can be cotton and other cellulosic fibers, preferred other fibers are synthetic fiber such as polyester, nylon and polyolefin, or a blend thereof, up to 80 wt. %. Most preferably are polyester wicking fibers with normal non-wicking polyester fibers.

Textiles wicking fibers are chemically finished with a hydrophilic surfactant and wicking agent to give the finished article the ability to disperse and spread liquids. Wicking agents are selected from the group comprising hydrophilic, organic, and polymeric materials. Suitable wicking agents can comprise one or more of the following materials: 1) Nonionic surfactants such as fatty acids, ethoxylated alcohols, and polyethylene glycol derivatives (available as Triton X-100 from the Dow Chemical Company; and Tween 20, Tween 60 or Tween 80 from Unigema); 2) Ionic surfactants include carboxylates and sulphonates; and 3) Hydrophilic polymers such as cross linked polyvinylpyrrolidone and polyorganosiloxanes (from Piedmont Chemical Industries or Wacker Group) or cross linked polyacrylic acid. Other suitable wicking/surfactant agents are: 1) Potassium phosphates, such as potassium dihydrogen phosphate or potassium phosphate dibasic, 2) Laureth phosphate such as laureth-4 phosphate, and 3) Those described in Handbook of Fiber Finish Technology, Philip E. Slade, published by MARCEL DEKKER, INC., pages 181-271 and 352-377, hereby incorporated by reference.

The fiber composition comprises in part stearyl alcohol, potassium dihydrogen phosphate, 2-ethylhexyl ester (pelmitate is preferred), potassium phosphate dibasic, laureth-4 phosphate or blends thereof. These components, along with PET make up Raypol fiber, a wicking fiber available from Huvis Corporation.

The total wicking finish on said polyester wicking fiber is about 0.25 to about 2.0 wt. % of the polyester wicking fiber in the mop head. When measured by American Association of Textile Chemist and Colorists (AATCC), Method 20 A Fiber Analysis: Quantitative and Hexane and Methanol solvents.

Example 1

Select fibers with different moisture regain absorbencies. The group of fibers is comprised of Raypol wicking polyester—(moisture regain 0.8 wt. %), polyester (moisture regain 0.4 wt. %), hydrophilic polypropylene (moisture regain 0.3 wt. %), nylon (moisture regain 4.2 wt. %) and viscose rayon (moisture regain 13.0 wt. %);

1. Mix a quaternary salt test composition by adding 1 ounce of quaternary ammonium compound per gallon of water. As measured by detector paper, the quat concentration is 400 ppm.
2. Prepare ten containers, each holding 200 grams of test composition.
3. Weigh two sets of the five specimen fibers each comprising 16 grams of fiber.
4. Submerge one set of fibers into its test composition until saturated. Remove and let each fiber specimen drain for 24 hours at 50% relative humidity and 22°C.
5. Weigh the drained samples and subtract the weight of the dry specimen. Divide this difference by the initial dry weight to calculate the ‘composition pick-up’ in percent. The results are plotted on the left side vertical axis of FIG. 1.
6. In the other set of containers, immerse each fiber for 2 hours after which time the quaternary
 ammonium concentration in each container is measured using detector paper. The composition concentration for each specimen is plotted on the right side vertical axis of FIG. 1.

[0053] With the exception of wicking polyester, it is observed that the trend for fibers with greater water/quat salt composition pickup, absorb a greater quantity of quat salts, and that polyester-based fibers do not absorb quat salts.

Example 2

[0054] Polyester fibers with and without a wicking finish are spun into 1's cotton count (5,315 denier) yarn using a standard staple fiber yarn processing method. One yarn comprises 100% regular polyester fibers and the other comprises 25% regular polyester fibers and 25% polyester fibers with wicking finish.

[0055] Four ends of each type yarn are twisted together to form a mop yarn.

[0056] The yarns are wound into skeins and tested for standard properties including:

[0057] 1. Dry yarn weight: Weight of the skein is in grains (7000 grains=1 pound)

[0058] 2. Percent increase of dry yarn weight after immersion in water ("% Absorbency"). (Skein dipped for 30 seconds and allowed to drip liquid for 30 seconds prior to weighing (weight divided by dry weight is % Absorbency)

[0059] 3. The percent liquid retained in the yarn after wringing. ("Working Weight"). The wringer torque in the standard mop bucket to set to 60 foot-pounds. Dip the yarn for 30 secs. In the water, let the water drip off for 30 secs., squeeze the yarn via a wringer, weigh wet yarn, subtract the dry yarn weight, equals Working Weight.

Results are summarized below:

<table>
<thead>
<tr>
<th>Mop Material</th>
<th>Comparative Regular Polyester</th>
<th>Polyester with Wicking Finish</th>
<th>% Advantage from Wicking Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber Composition</td>
<td>100% Regular Polyester</td>
<td>75/25 Regular/Wicking Polyester</td>
<td></td>
</tr>
<tr>
<td>Dry weight, grains</td>
<td>243</td>
<td>267</td>
<td>85%</td>
</tr>
<tr>
<td>30 second drip</td>
<td>650</td>
<td>1203</td>
<td>85%</td>
</tr>
<tr>
<td>weight, gr</td>
<td>268</td>
<td>451</td>
<td>68%</td>
</tr>
<tr>
<td>% Absorbency</td>
<td>254</td>
<td>429</td>
<td>69%</td>
</tr>
<tr>
<td>Working Weight, gr</td>
<td>&gt;5 minutes</td>
<td>10 seconds</td>
<td></td>
</tr>
</tbody>
</table>

[0060] The yarn comprising polyester fibers with wicking finish has at least 50% greater water/quat salt composition pick-up, absorbancy, and working weight than the yarn comprising conventional polyester fibers.

[0061] Another indication of absorbancy is that, when laid on water, the yarn comprising the wicking polyester fiber will sink whereas yarn without the wicking polyester fiber will not sink. One inch lengths of yarn are floated in a container of water. The polyester staple fiber wicking yarn sinks almost immediately. The regular polyester staple fiber yarn does not immediately sink and after 5 minutes the test was discontinued.

[0062] The surfactant component of the wicking fiber finish promotes liquid migration and wetting into the open air space in the yarn, thus permitting faster saturation of the yarn and rapid sinking.

[0063] Surfactants and wetting agents include: stearyl alcohol [non-ionic surfactant holds water], potassium dihexyl phosphate [wetting agent Trylac from Henkel], 2-ethylhexyl palmitate, potassium phosphate dibasic, laur-th-4 phosphate [emulsifier/surfactant from Zschimmer & Schwartz or blends thereof.

[0064] By extension of the above, liquid wicking polyester fibers can increase the absorbency of flat mop heads including disposable mops with heads comprising nonwoven fabrics.

[0065] From the above examples, it is shown, that compared to regular polyester fibers, polyester fibers with a wicking finish offer superior liquid absorbancy without changing the amount of quat removed from the disinfecting composition.

[0066] Thus it is apparent that there has been provided, in accordance with the invention, an article that fully satisfies the objects, aims, and advantages set forth herein. While the invention has been described in conjunction with specific embodiments thereof, it is evident that many alternatives, modifications, and variations will be apparent to those skilled in the art in light of the foregoing description. Accordingly, the invention is intended to embrace all such alternatives, and modifications and variations as fall within the spirit and broad scope of the intended claims.

What is claimed is:

1. A mop head comprising in part a fluid absorbing and/or wicking polyester staple fiber.

2. The mop head of claim 1, wherein the mop head is a string mop head comprising polyester staple spun yarns.

3. The mop head of claim 1, wherein the mop head comprises a fabric.

4. The mop head of claim 1, and having at least 300% liquid absorbency.

5. The mop head of claim 3, wherein the mop head fabric is a nonwoven fabric.

6. The mop head of claim 2, wherein polyester staple spun yarn sinks when laid on water.

7. The mop head of claim 1, comprising in part a polyester staple fiber chosen from the group of fibers consisting of polyethylene terephthalate, polymethylene terephthalate, polybutylene terephthalate, or blends thereof.

8. The mop head of claim 7, wherein said polyester staple fiber is round, non-round, solid, hollow, or porous or bicomponent in cross section, or a mixture of two or more of these.

9. The mop head of claim 8, wherein said non-round fiber is dogbone, oval, trilobal, hexalobal, elliptical, crescent, or with exterior channels in cross section.

10. The mop head of claim 7, wherein said polyester staple fiber is a microfiber.

11. The mop head of claim 7 wherein said polyester staple fiber comprises a wicking finish of hydrophilic surfactants, wetting agents, or blends thereof.

12. The mop head of claim 11, wherein said wicking finish comprises nonionic and ionic surfactants and wetting agents.

13. The mop head of claim 11, wherein wicking finish comprises in part stearyl alcohol, potassium dihexyl phosphate, 2-ethylhexyl ester, potassium phosphate dibasic, laur-th-4 phosphate or blends thereof.
14. The mop head of claim 11, wherein the extractable amount of said wicking finish is about 0.25 to about 2.0 wt. % based on the weight of the wicking fibers.

15. The mop head of claim 1, wherein said wicking polyester staple fibers comprises at least 20 wt. % of the total fibers in the mop head.

16. The mop head of claim 15, wherein 75 wt. % or less of said total fibers are non-wicking polyester fibers.

17. The mop head of claim 14, wherein said total fibers pick-up but do not absorb quaternary ammonium salt compositions.

18. The mop head of claim 6, wherein said wicking polyester staple fibers in the form of yarns sink when laid on water.

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