A mop head (1) incorporates silver in a form and an amount which is sufficient to exhibit antimicrobial properties. Silver ions (Ag+) are very effective against most bacteria, yeasts, fungi and similar microbes. Normal cellular processes are disrupted and the cell quickly becomes poisoned and dies. Silver is easy to incorporate during manufacture of the mop head without involving additional manufacturing steps and is effective over a prolonged period of use. In a preferred form the mop head incorporates silver-coated fibres. The mop head may be of a known kind including a cloth backing (2) which carries tufts or loops (3) of a liquid-absorbent yarn. The silver coated fibres may be incorporated into the backing and/or the tufts or loops.
MOP HEAD

TECHNICAL FIELD OF THE INVENTION

This invention relates to heads for cleaning mops.

BACKGROUND

By way of example, a common form of cleaning mop has a mop head stretched over a metal frame secured to a handle. The mop head generally has tufts or loops of a liquid-absorbent yarn carried on a cloth backing, with pockets formed at each end to receive the mop frame.

Mops of this kind are often used to clean floors and other surfaces and to remove spillages of various liquids. In the course of such use, the mop head quickly becomes contaminated with bacteria and other micro-organisms, which can quickly multiply in the warm damp environment of the mop head. This can often cause unpleasant smells and, more seriously, may spread potentially harmful bacteria during use of the mop.

It is already known to impregnate mop heads with antimicrobial compounds, and this generally involves immersing the mop head in a solution of the
material, draining off excess solution, and then heat-curing the compound so that it becomes firmly bound to the fabric of the mop. However, this process adds significantly to the manufacturing cost and, furthermore, is not highly effective since the compounds tend to become less effective with use.

The present invention seeks to provide a new and inventive form of mop head which has long-lasting and effective antimicrobial properties yet does not complicate the manufacturing process.

SUMMARY OF THE INVENTION

The present invention provides a mop head which incorporates silver in a form and an amount which is sufficient to exhibit antimicrobial properties.

Silver ions (Ag+) exhibit known antimicrobial properties and are very effective against most bacteria, yeasts, fungi and similar microbes. The ions appear to bind non-specifically to cell membranes and disrupt normal membrane function. They also pass through the cell wall by a variety of mechanisms including active transport systems which normally move essential ions into the cell. Once inside the cell, they readily combine with electron donor groups containing sulphur, oxygen and nitrogen as well as negatively charged groups such as phosphates and chlorides. Silver ions also combine with thiol (-SH) groups commonly found in enzymes, causing them to become denatured due to critical conformational changes in the enzyme molecule. As a result, normal cellular processes are disrupted and the cell quickly becomes poisoned and dies.
Silver is easy to incorporate during manufacture of the mop head without involving additional manufacturing steps and is effective over a prolonged period of use.

In a preferred form the mop head incorporates silver-coated fibres.

The mop head may be of a known kind including a cloth backing which carries tufts or loops of a liquid-absorbent yarn. The silver coated fibres may be incorporated into the backing and/or the tufts or loops.

BRIEF DESCRIPTION OF THE DRAWINGS

The following description and the accompanying drawings referred to therein are included by way of non-limiting example in order to illustrate how the invention may be put into practice. In the drawings:

Figure 1 is a general view of a mop head in accordance with the invention.

DETAILED DESCRIPTION OF THE DRAWINGS

The mop head 1, which is shown as an example of a preferred form of mop head to which the invention may be applied, has an elongate rectangular cloth backing 2 with a liquid-absorbent textile yarn, e.g. cotton, stitched through the backing in rows to form an array of closely-spaced loops 3, typically about 20mm long, which cover the underside of the backing.
Rather than being provided as loops, the yarn may be cut in short lengths which are inserted through the backing to form separate tufts.

Though not essential, a cloth cover 4 may be superimposed on the upper surface of the backing 2 and secured thereto, e.g. by a line of stitching 5 extending around the periphery of the backing. The cover 4 is shown partly cut-away in the drawing to reveal the backing 2, but when present, serves to hide the rear stitched area from view. At opposite ends of the mop head, pieces of relatively stiff material 6 are attached to the backing, e.g. by being sown between the cover 4 and the backing 2. The pieces of stiff material are then turned inwards and secured to opposite longitudinal edges of the backing by means of additional lines of stitching 7. The stiff material thus forms pockets having opposing inward-facing mouths 8 which serve, in known manner, to permit mounting of the mop head on a rectangular metal frame to which a handle is secured.

In accordance with the present invention, the cloth backing 2 incorporates threads of polyamide which are silver-coated during manufacture by means of an electrodeless plating process. The coated threads may be blended with uncoated threads of polyamide, other thermoplastics or natural fibres such as cotton in any proportion to vary the amount of silver present. The ratio of coated to uncoated fibres may typically be between 5% and 25% by volume. A suitable silver-coated fibre is available from Noble Fiber Technologies, Inc. under the trade name X-STATIC.

Instead of, or in addition to the incorporation of silver-coated threads into the backing 2, similar threads may also be incorporated into the yarn 3 in similar proportions. Where a cover 4 is provided, this too may incorporate a similar
ratio of silver-coated fibres.

The incorporation of the silver-coated threads into the mop head slowly releases silver ions which greatly inhibit microbial growth and multiplication within the mop head, as described above. The threads are incorporated as part of the normal manufacturing process so that no additional impregnation or heat-curing steps are required. Furthermore, the antimicrobial properties can be maintained substantially undiminished throughout the normal lifetime of the head.

It will be appreciated that the features disclosed herein may be present in any feasible combination. Whilst the above description lays emphasis on those areas which, in combination, are believed to be new, protection is claimed for any inventive combination of the features disclosed herein.
CLAIMS

1. A mop head which incorporates silver in a form and an amount which is sufficient to exhibit antimicrobial properties.

2. A mop head according to Claim 1 in which the silver is in a form which releases silver ions (Ag+).

3. A mop head according to Claim 1 which incorporates silver-coated fibres.

4. A mop head according to Claim 3 in which the ratio of coated to uncoated fibres is between 5% and 25% by volume.

5. A mop head according to Claim 1 including a cloth backing (2) which carries tufts of a liquid-absorbent yarn.

6. A mop head according to Claim 5 having silver-coated fibres incorporated into the backing.

7. A mop head according to Claim 5 having silver-coated fibres incorporated into the tufts.

8. A mop head according to Claim 1 including a cloth backing (2) which carries loops (3) of a liquid-absorbent yarn.

9. A mop head according to Claim 8 having silver-coated fibres
incorporated into the backing.

10 A mop head according to Claim 8 having silver-coated fibres incorporated into the loops.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A47L13/20

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A47L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database consulted during the international search (name of database and, where practical, search terms used)
EPO-Internal, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

Date of the actual completion of the international search: 22 July 2004

Date of mailing of the international search report: 03/08/2004

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Authorized officer:
Martin Gonzalez, G
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