ABSTRACT: A swab comprises a stick having a teardrop-shaped nonwoven mass of cotton fibers on an end thereof covered by an adherent sheath of regenerated cellulose sponge. The swab is produced by dipping the stick mounted cotton mass into viscose containing particulate sodium sulfate to form a coating, and then coagulating and regenerating the cellulose in the coating.
METHOD OF PRODUCING AN IMPROVED SWAB

BACKGROUND OF THE INVENTION

The present invention relates generally to a method for producing an improved swab.

Small swabs are widely employed in wiping or applying liquids to surfaces which are frequently of a delicate nature so that any contamination thereof presents serious problems. For example, such swabs are employed in surgery, in the wiping of tissue and the application of medication thereto in the cleaning and lubricating of delicate equipment and machinery and in many other applications. A common form of swab which is generally used comprises a stick having wound on one or both ends thereof and adherent thereto, a teardrop-shaped non-woven cotton mass which projects beyond the end of the stick. These conventional swabs possess a very important drawback in that the cotton fibers are frequently released and separated from the swab during use and deposit on the swabbed area and are overlooked or removed only with difficulty. This results in highly undesirable consequences and greatly limits the applications and dependability of the conventional swab.

SUMMARY OF THE INVENTION

It is a principal object of the present invention to provide a method for producing an improved applicator.

Another object of the present invention is to provide a method for producing an improved swab.

Still another object of the present invention is to provide a method for producing an improved swab in which contamination of the swabbed area by deposits of portions of the swab is obviated.

A further object of the present invention is to provide an improved method for producing an improved swab of the above nature characterized by its versatility, adaptability and low cost.

The above and other objects of the present invention will become apparent by a reading of the following description taken in conjunction with the accompanying drawing which illustrates a preferred embodiment thereof.

In a sense the present invention contemplates the provision of a swab comprising a stick element, a core defining, shaped resilient mass mounted on an end of said stick element and a hydrophilic porous sheath adherent to and enclosing said core. According to a preferred form of the improved swab the core is teardrop-shaped with the rounded end extending beyond the end of the stick and is formed of a nonwoven mass of cotton wound onto and adherent to the stick. The sheath is a thin film of porous regenerated cellulose sponge which extends beyond the inner end of the core and coats a short length of the stick.

The improved swab is advantageously produced by immersing the stick carried swab into a sponge-forming fluid comprising viscose having dispersed therein pore forming particulate sodium sulfate decahydrate, raising the swab and permitting excess liquid to drain therefrom and coating the viscose and regenerating the cellulose therein by immersing the coated core into a hot sodium sulfate solution.

The improved swab possesses all of the advantages of the conventional cotton swab, being very soft and highly absorbent and is characterized by the obviation of any separation of the swab material therefrom, such as fibers or the like, which is an important drawback of the conventional swab. The improved swab is inexpensive and easy to produce.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of a swab embodying the present invention;

FIG. 2 is an enlarged elevational view of a portion of the swab in an intermediate stage of its production; and

FIG. 3 is an enlarged sectional view taken along line 3-3 in FIG. 1.

DESCRIPTION OF PREFERRED EMBODIMENT

Referring now to the drawing which illustrates a preferred embodiment of the present invention the reference numeral 10 generally designates the improved swab which may be single or double ended and is preferably of overall dimensions corresponding to those of the conventional swab. The swab 10 includes an elongated handle or stick 11 which may be of any desired length and may be formed of wooden or plastic rod, plastic tubing or the like.

Positioned at one or both ends of the stick 10 is a swab head 12 which may be of any desired configuration but is advantageously of teardrop configuration with the curved blunt end directed outwardly and spaced outwardly from the corresponding end of the stick 10. The head 12 includes a soft resilient, absorbent, advantageously hydrophilic core 13 which, as shown in the drawing is formed of nonwoven cotton fibers wound about the end of the stick in the known fashion and preferably secured thereto by adhesive between the contracting faces of the stick 11 and core 13. The core 13 may be of any desired dimensions, preferably between one-half inch and 2 inches long and between thirty-sixteenth inch and five-sixteenth inch wide.

The core 13 is enclosed in an adherent sheath 14 formed of a fine pored hydrophilic sponge material, advantageously of regenerated cellulose. The sheath 14 is advantageously of a thickness between 0.01 inch and 0.10 inch, the core cotton fibers at the sheath core interface being at least partially imbedded in the sheath 14. Further, the sheath 14 advantageously extends beyond the inner end of the core 13 and coats and adheres to the contiguous portion of the stick 11, in which case it is not necessary to directly adhere the core 13 to the stick 11.

The improved swab 10 is advantageously produced by immersing the stick supported core 13 in a porous sponge-forming liquid, and raising the core from the solution and permitting the excess solution to drain from the solution 13, with the rounded outer end thereof lowermost, until a substantially uniform coating remains on the core 13 and part of the stick 11. The sponge-forming solution is then solidified. The thickness of the coating and hence the sponge sheath 14 may be controlled by adjusting the viscosity of the sponge-forming solution. The core 13 is formed and applied to the stick 11 in the known manner.

The sponge-forming solution is advantageously a low viscosity viscose solution having been dispersed therein as a pore forming material, a particulate sodium sulfate decahydrate. For example the viscose has a high carbon bisulfide content and contains about 6 percent cellulose by weight. The pore forming sodium sulfate decahydrate preferably has a particle size averaging between 0.25 and 1.25 millimeters, by weight, and the ratio of particulate sodium sulfate decahydrate to viscose is between 1 to 3:1, preferably about 2:1. The sponge-forming viscose solution may be prepared in the manner described in U.S. Pat. No. 2,842,799 granted July 15, 1958 to Alfred Politzer. The sponge-forming solution may contain soft reinforcing fibers but these may be advantageously omitted.

After the core 13 is coated with the viscose sponge-forming material, in the manner set forth above or otherwise, the coating is coagulated and the viscose therein regenerated by immersing the coated core into a hot sodium sulfate solution until regeneration is affected, for example, into a 20 percent sodium sulfate solution at 103° C. for about 5 minutes. The swab is then removed from the regenerating bath and thoroughly washed, for example, for about 1 hour in a 0.2 percent sulfuric acid solution, then washed in water, and then dried.

While there has been described and illustrated a preferred embodiment of the present invention it is apparent that numerous alterations, omissions and additions may be made without departing from the spirit thereof.

1 claim:
1. The method of producing a swab including a stick element, a core defining, shaped resilient mass mounted on an end of said stick element and having a front face and a peripheral face extending rearwardly from said front face, and a hydrophilic porous cellulosic sheath overlying and adherent to said front and peripheral faces of said core, comprising the steps of applying to the surface of said core mounted on said stick, a layer of viscose containing a pore forming material by immersing said core in said viscose and suspending said viscose coated mass to permit excess viscose to drop therefrom, coagulating said viscose layer and regenerating the cellulose therein, and thereafter washing said layer.

2. The method of claim 1 wherein said pore-forming material comprises sodium sulfate decahydrate having, by weight, an average particle size between 0.25 and 1.25 millimeters and the ratio of said pore-forming material to said viscose is between 1:1 to 3:1.