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IODIZATION OF TEXTILE FABRICS

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7 Claims. (Cl. 167-84)

The present invention relates to the iodization of textile fabrics.

It is an object of the present invention to provide a process for impregnating all kind of textile fabrics with any fixed dose of free and active iodine, and in such a manner that the impregnated fabric can give off substantially its full content of free and active iodine when the impregnated fabric is moistened or soaked in water or in any other suitable liquid.

It is another object to prevent the iodine from affecting substantially the textile tissues.

It is still another object to protect the active iodine from decomposition and atmospheric influences.

It is a further object to preserve the hydrophilic qualities of the impregnated fabric.

The impregnated fabric according to this invention is particularly useful for surgical purposes since the material can be kept sterilized and dry. When put on a wound it gives off active iodine as soon as it is moistened by the secretion of the wound. Alternatively, by soaking the impregnated material in water or any other suitable liquid it is possible to obtain a solution of iodine which may be used for surgical purposes.

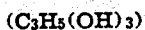
According to the invention the textile fabric is impregnated with isinglass and iodine. Sugar and glycerine may be added. Experiments have shown that the fabric impregnated according to the invention is able to be stored for a considerable time without losing its advantageous qualities. A possible explanation for this result seems to be that the isinglass protects the tissues of the fabric against being affected by the iodine while the sugar and glycerine act as an adhesive.

The process of impregnating the fabric according to this invention may comprise the following steps:

(1) The textile fabric is freed from any dressings or hot pressing ingredients by washing and/or boiling in the usual way.

(2) When dry and if the impregnated fabric is used for surgical purposes it is sterilized by means of saturated steam at high temperature.

(3) The fabric is immersed in a solution of water (H_2O), sugar ($C_{12}H_{22}O_{11}$), glycerine



and isinglass.

(4) The fabric is allowed to dry.

(5) The fabric is then passed through a bath of a solution of iodine and is slightly wrung by means of a wringing machine. The solution of iodine is in an aqueous solvent.

(6) The material is allowed to dry again.

(7) The process No. 5 is repeated, but the aqueous solution of iodine contains now an admixture of alcohol and sugar.

(8) The material is allowed to dry finally.

In order that the invention may be more clearly understood a particular process of impregnating fabric with iodine which has proved very successful in practice will now be described in detail.

The textile fabric is thoroughly freed of all hot pressing ingredients, particularly of any starch by washing and/or boiling in known manner. If intended for surgical purposes as fabric hydrophilic gauze may be used. The fabric is sterilized by means of saturated steam at a temperature of about 150° to 180° C.

2 gms. of purified isinglass as used for medicinal purposes are mixed with 100 gms. of water. The mixture is left swelling up for about 24 hours. It is then slowly heated on a water bath to about 60° C. while it is permanently stirred. When the isinglass is completely dissolved, the solution is filtered. To the filtered solution 0.024 gm. of glycerine and 0.05 gm. of sugar ($C_{12}H_{22}O_{11}$) are added. Subsequently, the solution is, again, well stirred.

The textile fabric is immersed in the solution thus prepared until it is saturated. The temperature of the solution should be kept during this step at at least about 50° C.

The fabric is then passed through a wringing machine so that it contains, after passing the machine, about 20 per cent of the solution. Subsequently the material is thoroughly dried in any known manner.

The fabric is then passed through a first aqueous solution of iodine. The percentage of iodine is chosen according to requirements. A 4 to 4.5 per cent iodine solution meets normally almost all requirements. The solution may consist of 2 gms. resublimed iodine, 4 gms. potassium iodide and 50 gms. distilled water. The fabric is immersed in the solution until it is saturated, and is then passed through a wringing machine so that it contains after passing the machine about 20 per cent of the solution. The metal parts of the wringing machine are preferably protected by a coating of an acid resisting lacquer.

The fabric is now thoroughly dried in a drying chamber having a good air ventilation at a temperature between about 18° and 25° C. During this drying process the material should be protected against light.

The fabric is now stored for about 48 hours

during which time it should be protected against light, moisture and heat.

The fabric is then passed through a second iodine solution which contains half the amount of re-sublimed iodine and potassium iodide contained in the first solution but to which are added 0.05 gm. of alcohol and 0.02 gm. of sugar. The temperature of this second solution should be at least 15° C. The fabric is not saturated with the second solution but is passed quickly there-through and is thereupon at once passed through a wringing machine so that it contains finally about 5% of the solution. It is then again dried as before.

For storage the impregnated material is well packed in a suitable packing material. For normal climates it is sufficient to wrap the material in waxed paper and in addition in thick, dark packaging paper and to store it at a dry place.

For tropical climates the waxed paper is replaced by plasticized polyvinyl.

I claim:

1. Method of preparing an iodine-impregnated textile fabric comprising the steps of impregnating the fabric first with isinglass and then with a solution of iodine.

2. Method of impregnating a textile fabric with iodine comprising the steps of immersing the fabric in an aqueous solution of isinglass, drying the fabric, immersing the fabric in a solution of iodine, and drying the fabric.

3. Method of impregnating a textile fabric with iodine comprising the steps of immersing the fabric in an aqueous solution of sugar, glycerine and isinglass, drying the fabric, immers-

ing the fabric in a first aqueous solution of iodine, drying it again, passing the fabric through a second aqueous solution of iodine containing an admixture of alcohol and sugar, and again drying the fabric.

4. Method of impregnating a textile fabric with iodine comprising the steps of freeing the fabric from hot pressing ingredients, immersing the fabric in an aqueous solution of sugar, glycerine and isinglass, drying the fabric, immersing the fabric in a first aqueous solution of iodine until it is saturated, wringing the fabric slightly, drying the fabric, passing the fabric quickly through a second solution of iodine in water containing in addition alcohol and sugar, and again drying the fabric.

5. Method as defined in claim 4 for impregnating a textile fabric with iodine for surgical purposes, wherein the fabric, after it has been freed from hot pressing ingredients, is sterilized.

6. Method as defined in claim 4 for impregnating a textile fabric with iodine for surgical purposes, wherein the fabric is hydrophilic gauze which, after it has been freed from hot pressing ingredients, is sterilized by means of saturated steam at a temperature of about 150° to 180° C.

7. A textile fabric impregnated with isinglass and iodine, the isinglass preventing substantially any chemical reaction between the fabric and the iodine and binding the iodine mechanically without substantially reacting chemically with the iodine, whereby free active iodine is released from the impregnated fabric when moistened.

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