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ANTISEPTIC FABRIC

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This invention relates to antiseptic fabrics, more especially waterproof and water-repellent fabrics, possessing antiseptic properties.

More particularly, the invention is concerned primarily with waterproof and water-repellent fabrics which are used for making various articles which come in contact with the human body or parts thereof and/or which are exposed to body emissions. Among such articles are baby pants, shower-bath curtains, dress shields, bed sheets, etc. The articles may be composed wholly or partly of the waterproof or water-repellent fabrics possessing the antiseptic properties imparted thereto, in accordance with the present invention, as will hereinafter appear. Ordinarily in the case of shower-bath curtains and baby pants, such articles are composed substantially entirely of the waterproof or water-repellent fabrics, while in the case of such articles as dress shields, the latter comprise waterproof or water-repellent fabric layers disposed within moisture permeable fabric envelopes, said fabric layers taking the place of the sheet rubber layers with which dress shields are customarily provided. The waterproof or water-repellent fabrics are usually pure silk or cotton fabrics, but may be other fabrics, for example, artificial silk, wool, linen, etc., or mixtures of silk, artificial silk, wool, cotton, linen, etc.

Heretofore baby pants, shower-bath curtains and dress shields have been made of fabrics such as silk or cotton coated or impregnated with pyroxylin or another suitable waterproofing agent. Pyroxylin waterproofing agents are readily available on the market and constitute well known articles of commerce. Such waterproofing agents comprise, as is well known, cellulose derivatives such as cellulose nitrate, cellulose acetate, ethyl cellulose, etc., in a solvent therefor and include also a plasticizer. The pyroxylin waterproofing agent is applied to the fabric on one or both surfaces thereof, usually both surfaces, and is of a semi-liquid consistency whereby ordinarily the fibers of the fabric are impregnated thereby, and in addition a thin coating is ordinarily formed on the surface of the fabric, the thickness of the coating depending upon the intended use of the fabric. The manner of utilizing the pyroxylin waterproofing agent for producing waterproof fabrics of the character referred to is well known, and needs no further description. This is also true of the composition of the pyroxylin agent. It will of course be understood that the waterproof fabrics are relatively soft and flexible whereby they are suitable

for use in the above mentioned and similar articles. For convenience in reference, fabrics wholly or partly waterproof or water-repellent will hereinafter be referred to as water-resistant fabrics, it being understood that the term water-resistant fabrics includes fabrics which are wholly or partly waterproof or water-repellent.

In accordance with the present invention, the fabrics produced are not only water-resistant but also possess antiseptic properties which are retained by the fabrics even after several washings thereof. This is accomplished by incorporating an antiseptic agent in the fabric, preferably by introducing the antiseptic agent in the pyroxylin or other waterproofing agent with which the fabric is treated. The preferred antiseptic agent is tetramethylthiuram disulfide. This is known as a rubber accelerator and is sold under the trade-name "Tuads." Other antiseptic agents such as tetramethylthiuram monosulfide, which is also known as a rubber accelerator and is sold under the trade-names "Monex" and "Thionex," may be used. Salicylanilide, phenyl mercuric chloride, otherwise known as merphenyl chloride, and phenyl mercuric nitrate, otherwise known as merphenyl nitrate, are other examples of suitable antiseptic agents. The proportion of antiseptic agent used is preferably 6% of the pyroxylin waterproofing agent, in the case of tetramethylthiuram disulfide, tetramethylthiuram monosulfide, or salicylanilide, and $\frac{1}{4}$ of 1% of the pyroxylin waterproofing agent in the case of phenyl mercuric chloride or phenyl mercuric nitrate, all percentages being referred to the dry weight of the pyroxylin agent, that is the weight of the waterproofing agent in the solid state thereof on the fabric after the solvent of said agent has evaporated following the application of the waterproofing agent to the fabric. It will be understood that the proportion of the antiseptic agent may be varied and may be lower or higher than that specified. In general it may be stated while the proportions hereinbefore specified are preferred, satisfactory results may be obtained with substantially lower proportions of antiseptic agents, for example, about 2% of tetramethylthiuram disulfide, tetramethylthiuram monosulfide, or salicylanilide by dry weight of the pyroxylin coating agent as hereinbefore specified, and about $\frac{1}{20}$ of 1% of merphenyl chloride or merphenyl nitrate by dry weight of the pyroxylin waterproofing agent as hereinbefore specified. It will also be apparent that larger quantities of the antiseptic agent may be used compatible with

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the non-irritating effect of the agent on the skin of the body.

The antiseptic is incorporated in the pyroxylin waterproofing agent by first dissolving the antiseptic in a mutual solvent for the antiseptic and for the pyroxylin, acetone being usually suitable for this purpose. Then the solution of the antiseptic in acetone or other solvent which is also a solvent for or is compatible with the pyroxylin is added to the latter in its above mentioned semi-liquid condition and thoroughly stirred therein. Then the waterproofing agent with the incorporated antiseptic is applied to the fabrics in the same manner as heretofore known in the art of producing water-resistant fabrics of the class described.

In the case of other water-resistant fabrics, for example, oiled silk, the proportion of antiseptic agent utilized for imparting antiseptic properties to the fabric may be the same as that hereinbefore indicated in reference to the pyroxylin water-proofing agent and is preferably in the proportion of 6% of tetramethylthiuram disulfide, tetramethylthiuram monosulfide, or salicylanilide and $\frac{1}{4}$ of 1% of phenyl mercuric chloride or phenyl mercuric nitrate by dry weight of the waterproofing agent, which in the case of oiled silk are constituted by oxidized oils or synthetic resins as is well known to those skilled in the art.

The production of water-resistant fabric possessing antiseptic properties which are retained by the fabrics, notwithstanding repeated washings thereof, is a most surprising result, because it was to be expected that the antiseptic agent would be prevented, by the waterproofing agent, from being effective externally of the fabric inasmuch as the waterproofing agent, especially in the case of waterproof fabrics, would be expected to render the surface of the fabric impervious to the passage of the antiseptic agent from the fabric inwardly of the surface thereof to the exterior of the fabric, but I have discovered that the waterproofing agent does not as a matter of fact inhibit the effect exteriorly of the fabric of the antiseptic agent contained in the fabric or in the waterproofing agent, but on the contrary waterproof fabrics containing the antiseptic agents incorporated therein in accordance with the present invention possess marked antiseptic properties in respect to external media.

It will be understood that any suitable antiseptic agent compatible with the waterproofing agent and non-irritating to the skin of the body may be used. The waterproofing agent should contain a plasticizer therefor, as it usually does when used on fabrics of the class described herein, as the plasticizer slowly and progressively comes to the exterior of the fabric and is believed to carry with it some of the antiseptic agent, whereby the latter is leachable from the fabric and is effective externally of the fabric. Any of the well known plasticizers suitable for the waterproofing agents of the character referred to may be used. The use of "Tuads" as the antiseptic agent is preferred because it is effective, relatively inexpensive and also because it possesses marked anti-mildew properties which makes its use particularly desirable for fabrics in shower-bath curtains.

While I have described the preferred manner of practicing my invention, it will be understood that various changes in the mode of applying the invention and in the materials produced in accordance therewith may be made. Thus, for ex-

ample, the antiseptic agent may be applied to the fabric before the application of the waterproofing agent, instead of being incorporated in the waterproofing agent and applied together with the latter. Other changes in the above described method of producing the waterproof fabrics possessing antiseptic properties will occur to those skilled in the art in view of the present disclosure. Accordingly, I do not wish to be limited to the fabrics and sheet materials herein specifically described, except as may be required by the scope of the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. Sheet material of the class described for use in such articles as wearing apparel, shower curtains, bed sheets, etc., comprising a sheet of water-resistant fabric carrying an antiseptic substance of the class consisting of tetramethylthiuram disulfide and tetramethylthiuram monosulfide, said antiseptic substance being leachable from the fabric whereby said sheet material is actively antiseptic in respect to external media.

2. Sheet material of the class described for use in such articles as wearing apparel, shower curtains, bed sheets, etc., comprising a sheet of fabric coated with a waterproofing agent having an antiseptic substance of the class consisting of tetramethylthiuram disulfide and tetramethylthiuram monosulfide incorporated therein, said antiseptic substance being leachable from the fabric through said waterproofing agent whereby said sheet material is actively antiseptic in respect to external media.

3. Sheet material of the class described for use in such articles as wearing apparel, shower curtains, bed sheets, etc., comprising a sheet of fabric coated or impregnated with a pyroxylin waterproofing agent and carrying an antiseptic substance of the class consisting of tetramethylthiuram disulfide and tetramethylthiuram monosulfide, said antiseptic substance being leachable from the fabric through said pyroxylin waterproofing agent whereby said sheet material is actively antiseptic in respect to external media.

4. Sheet material of the class described for use in such articles as wearing apparel, shower curtains, bed sheets, etc., comprising a sheet of fabric coated with a waterproofing agent of the class consisting of pyroxylin, oxidized oil and synthetic resins, said waterproofed fabric having an antiseptic substance of the class consisting of tetramethylthiuram disulfide and tetramethylthiuram monosulfide incorporated therein, said antiseptic substance being leachable from the fabric through said waterproofing agent whereby said sheet material is actively antiseptic in respect to external media.

5. Sheet material of the class described for use in such articles as wearing apparel, shower curtains, bed sheets, etc., comprising a sheet of fabric coated with a pyroxylin waterproofing agent containing as an ingredient thereof an antiseptic substance of the class consisting of tetramethylthiuram disulfide, and tetramethylthiuram monosulfide, said antiseptic substance being leachable from the fabric through said pyroxylin waterproofing agent whereby said sheet material is actively antiseptic in respect to external media.

6. Sheet material of the class described for use in such articles as wearing apparel, shower curtains, bed sheets, etc., comprising a sheet of fabric coated with a waterproofing agent of the class consisting of pyroxylin, oxidized oil and synthetic

resins, said waterproofed fabric having an antiseptic substance incorporated therein of the class consisting of tetramethylthiuram disulfide, and tetramethylthiuram monosulfide, said antiseptic substance being leachable from the fabric through said waterproofing agent whereby said sheet material is actively antiseptic in respect to external media.

7. Sheet material of the class described for use in such articles as wearing apparel, shower curtains, bed sheets, etc., comprising a sheet of

woven silk fabric treated with a pyroxylin waterproofing agent having a plasticizer whereby said fabric is soft and flexible, said fabric carrying an antiseptic substance of the class consisting of tetramethylthiuram disulfide and tetramethylthiuram monosulfide, said antiseptic being leachable through said pyroxylin waterproofing agent whereby said sheet material is actively antiseptic in respect to external media.

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