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WATERPROOFING OF TEXTILE MATERIALS

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This invention is for improvements in or relating to the waterproofing of textile materials. It is known that aluminium acetate or other aluminates can be employed for the waterproofing of textile materials. The use of these substances, however, has hitherto involved preliminary treatment of the fabric and, in order to obtain the best results, the treatment of the fabric after impregnation, these latter treatments consisting of soaping, and the application of a wax emulsion or a similar treatment.

It is also known to apply to fabrics including textile fabrics a liquid coating which forms a water impermeable film on the surface of the fabric.

It is an object of the present invention to modify the method of waterproofing fabrics with aluminium salts, e. g., aluminium acetate, so as to simplify the process of impregnation and to render it cheaper and more effective.

The present invention deals exclusively with a process of this nature and excludes any process in which a film or coating of water impermeable material is formed over the surface of a textile fabric.

It has now been found that impregnation of textile materials with aluminium salts, e. g., with aluminium acetate may be facilitated by the addition to an aqueous solution of the aluminium salt of a proportion of a substance which lowers the surface tension of the solution and thus enables it to penetrate the textile material readily.

The present invention accordingly comprises a process for the waterproofing of textile materials with a solution of a salt of aluminium which comprises the addition to the aqueous solution of a proportion of an organic substance which lowers the surface tension of the solution. The organic liquid may have a boiling point below 130° C. and may thus be removed substantially completely together with the water by heating the impregnated textile material.

The added organic substance is preferably a liquid which is not miscible with water in all proportions. At the same time the organic liquid selected should be one which is compatible with the aqueous solution of aluminium salt, i. e. one which does not throw the aluminium salt out of solution and is not itself thrown out of solution by the aluminium salt.

The organic liquid may conveniently consist of an alcohol or ketone having a boiling point not exceeding 130° C. Among the alcohols it has been found that butyl and isobutyl alcohols may be employed with advantage.

The waterproofing agent may be an aluminium salt of an organic acid such as aluminium acetate or aluminium lactate.

When dipped into an aqueous solution of aluminium salt containing the added organic substance the textile material is wetted through and through immediately and upon removal from the solution and drying it may be freed from water and from the organic substance, the salt remaining precipitated on the fibres of the textile material in finely subdivided and insoluble form.

The present invention also provides a waterproofing liquid consisting of a dilute aqueous-organic solution of an organic aluminium salt.

Following is a description by way of example of two methods of carrying the invention into effect.

Example I

A 3% solution of aluminium acetate in distilled water is prepared and to the solution is added about 8% of butyl alcohol. A fabric dipped in this solution is thoroughly wetted immediately and when removed and dried it possesses waterproof properties superior to those obtained by earlier processes. The waterproofing treatment calls for no subsequent washing or soaping, such as is required in waterproofing processes hitherto employed.

Example II

A fabric is waterproofed by dipping it into a 3% aqueous solution of aluminium lactate containing about 8% of isobutyl alcohol. The dipped fabric is dried in order to remove water and organic liquid. Again, the fabric is rendered completely waterproof.

I claim:

1. The herein described process for rendering a textile material water-repellant by means of an aluminum salt which remains precipitated on the fibres of the material in finely subdivided and insoluble form, which comprises treating the textile material with a liquid consisting of an organic acid selected from the group consisting of acetic acid and lactic acid mixed with a solution which with the acid will form an aluminum salt and a proportion of an organic liquid wetting agent, which wetting agent (a) is an alcohol selected from the group consisting of butyl alcohol and isobutyl alcohol, (b) is compatible with the said aqueous solution of the aluminum salt in the concentration employed, (c) lowers the surface tension of the solution, (d)

has a boiling point not exceeding 130° C., and drying the treated textile material to remove the organic liquid wetting agent.

2. The herein described process for rendering
5 a textile material water-repellant by means of
an aluminum salt which remains precipitated
on the fibres of the material in finely subdivided
and insoluble form, which comprises treating the
textile material with a liquid consisting substan-
10 tially of a 3% aqueous solution of a salt selected
from the group consisting of aluminum acetate
and aluminum lactate mixed with substantially
8% of an alcohol selected from the group con-
sisting of butyl alcohol and isobutyl alcohol, and
15 thereafter drying the treated textile material to
expel the alcohol therefrom.

3. The herein described process for rendering
a textile material water-repellant by means of
an aluminum salt which remains precipitated on
20 the fibres of the material in finely subdivided and

insoluble form, which comprises treating the
textile material with a liquid consisting substan-
tially of a 3% aqueous solution of a salt selected
from the group consisting of aluminum acetate
and aluminum lactate mixed with substantially 5
8% of butyl alcohol, and thereafter drying the
treated textile material to expel the alcohol
therefrom.

4. A process for rendering a textile material
water-repellant by means of an aluminum salt 10
which remains precipitated on the fibres of the
material in finely subdivided and insoluble form,
which process comprises dipping the textile ma-
terial into a liquid consisting of substantially a
3% aqueous solution of aluminum acetate to 15
which has been added about 8% of butyl alcohol,
and thereafter drying the treated textile ma-
terial to remove the butyl alcohol therefrom.

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