

ALIEN PROPERTY CUSTODIAN

PROCESS FOR THE IMPROVEMENT OF TEXTILES

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This invention relates to a process for the improvement of textiles.

It is known to increase the resistance to creasing of textiles and to reduce shrinking and tendency to swell, by applying artificial resins on to the fibres, these artificial resins being either condensation products, e. g., of phenols and formaldehyde or urea and formaldehyde, or polymerisation products, e. g., polyvinyl artificial resins.

With both processes, there is attained to a certain extent an improvement of the textiles, the resistance to creasing of the textiles being for example very considerably increased. Both known processes, that is, the application of condensation products and the application of polymerisation products are, however, accompanied by disadvantages, those in the case of condensation products consisting for example in the effect not being particularly resistant to washing, whilst sometimes there is damage to the fibres by the heat treatment of the textiles used when employing these condensation products. With the other process, that is, in the application of polymerisation products, the effect of resistance to creasing is not very good and frequently the tendency of the fabric treated to swell is not sufficiently reduced, so that the results attained by this process also leave something to be desired.

It has now been found according to this invention that the disadvantages of the known processes do not occur and advantages are attained if both artificial resin polymerisation products and also artificial resin condensation products are applied to the textiles to be treated. In any case, results are then attained which are better than if, under otherwise like conditions, only condensation products or only polymerisation products were applied. Such a combination effect was not to be expected according to the behaviour of the individual substances and it is surprising that these improved effects are attained by the combination according to the invention.

The resistance to creasing, for example, of the fabric treated according to the invention is always better than that of fabrics which have only been treated with the condensation resin or only with the polymerisation resin. Furthermore, in each case, the tendency to shrink and swell is reduced and a considerable improvement of the handle is attained and in particular when comparatively little resin, i. e., less than is necessary for resisting creasing is applied to the fibres. Furthermore, according to various conditions, special effects occur.

As condensation resins, there can be used for example those obtained from phenol and formaldehyde or from urea and formaldehyde. As polymerisation artificial resin substances those are for example suitable which are prepared from organic unsaturated compounds, such as styrol, acrolein, vinyl compounds and the like. These substances easily polymerise with moderate action of heat by the effect of light.

The textiles to be treated are, for example, saturated with phenol and formaldehyde, and also with styrol, whereupon by the action of heat the desired effect is produced.

In the saturation of the textiles with pre-condensates or aqueous solutions which contain the resin-forming components, the quantities of the resin applied to the fibre are below the concentrations hitherto used. The optimum quantity of the polymerisable compounds used in individual cases can easily be determined. By addition of catalysts or anti-catalysts, e. g. metal halides, per-compounds, acids or bases, the reaction can be controlled as desired.

Protective colloids or dispersion agents can be used.

A stable effect is attained by the action of heat.

Simultaneously with the treatment for attaining a resistance of the textiles to creasing and for obtaining products which have a low shrinking and swelling capacity, there can take place a treatment for attaining other effects. There can be, for example, attained simultaneously a weighting, increase of volume, increase of stiffness or stability, the attainment of a wool-like handle, the reduction of heat conductivity, resistance to water or fireproofing or impermeability to gases.

Examples

1. The fibre is saturated in a solution which contains phenol, formaldehyde, formic acid, polyvinyl alcohol, ammonium acetate and a protective colloid. Drying then takes place at 50-60° C. with condensation for a short time at higher temperatures of 80° C.

2. The fibres are saturated in a solution which contains a mixture of urea and thiourea, hexamethylene tetramine, common salt, ammonium acetate, tartaric acid and glyoxal. There then follows a thermal treatment.

3. There are added to the solutions employed according to Examples 1 or 2, tungstates, borophosphates and the like and a thermal treatment is also applied. In this way, washable and non-inflammable textiles are obtained.

4. The solutions according to Example 1, 2 or 3, are mixed with hydrophobic substances such for example as stearic acid anhydride and the like, whereby there is attained a water-resisting action with increased washability.

5. The textiles to be improved are saturated in a solution which contains 150 parts of dimethylol urea, 15 parts of polyvinyl alcohol, 8 parts of ammonium thiocyanate and an acid or an acid-yielding salt. On drying at 50-60° C. and condensing for 5-10 minutes at 130° C. there is attained in addition to the resistance to creasing, no shrinking and reduced swelling already mentioned, an improvement of the resistance to moisture, which amounts to over 50%.

6. The material is saturated in a solution which contains 200 gms. of dimethylol urea, 20 gms. of polyvinyl alcohol, 6 gms. of aluminium sulphate and 10 gms. of lactic acid. Drying then takes place in known manner and condensation and polymerisation with heating. In addition to resistance to creasing, no shrinking and reduced swelling, there is attained in addition to the improvement of the resistance to moisture, a finish similar in appearance to linen.

7. The material is saturated in a solution which contains 200 gms. of urea or thiourea, 650 gms. of 30% formaldehyde, 100 gms. of ammonium sulphite, 15 gms. of polyvinyl acetate and 15 gms. of 30° Be aluminium chloride solution. There is added as protective agent 7 gms. of glucose. Drying and ripening by heating takes place in known manner. The results thus attained such as resistance to creasing, no shrinking, reduced swelling, increased resistance to moisture, become much more valuable by the attainment of a particularly good wash-resisting linen-like handle of the material.

8. The material is saturated in a solution which contains 250 gms. of urea, 10 gms. of ammonium acetate, 120 gms. of formaldehyde, 10 gms. of acryl acid methyl ester, 4 gms. of sodium

sulphocyanide, 15 gms. of glycol acid and a stable plasticiser, and is treated in known manner with heating. The goods obtain a stable agreeable woolly handle which in addition to the resistance to creasing, no shrinking, reduction of the swelling and increased resistance to moisture, represents an important improvement in quality.

9. The material is treated in a solution which contains 75-100 gms. of dimethyl urea, 8 gms. of polyvinyl alcohol, 20 gms. of thiourea, 12 gms. of paraformaldehyde, 10 gms. of glue, 8 gms. of ammonium thiocyanate, 4 gms. of aluminium chloride, and is subjected to a thermal ripening. In addition to the resistance to creasing, no shrinking, reduced swelling and increased resistance to moisture, there is attained a particularly good bundle elasticity, that is, an improvement in the resistance to standing and treading desired for many purposes, e. g. for carpet yarn.

10. The material is treated in a solution of 150 gms. of dimethyl urea, 50 gms. of phenol, 32 gms. of formaldehyde (30%), 10 gms. of diacetin, 8 gms. of polyvinyl acetate, 5 gms. of sodium metaphosphate, 5 gms. of boric acid and 0.2 gms. of hydrochloric acid. After condensation or polymerisation with heating, there is obtained a material which in addition to resisting creasing, not shrinking, resisting moisture and being only slightly subject to swelling, has also an increased heat retaining capacity.

11. The material is treated in a solution which contains 300 gms. of urea, 15 gms. of polyvinyl chloride, 5 gms. of aluminium sulphate, 3 gms. of tartaric acid and 10-15 gms. of a paraffin emulsion. After thermal treatment, there is obtained a material which has a slight tendency to creasing, does not shrink, has great resistance to moisture and in addition possesses good heat insulating properties and resistance to soiling.

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