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SIZING OF TEXTILES

Jean Fraizy, Lyon, France, assignor to Societe "Rhodi-aceta," Paris, France, a company of France

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1 Claim. (Cl. 106—135)

The present invention relates to new compositions having a gelatine basis for the sizing of textiles of any kind and in any form.

It is known that sizing compositions having a gelatine basis often give rise for various reasons, which are not completely understood, to irregularities which manifest themselves for example, by variations in the rigidity of the sized threads, by defective agglomeration of the filaments, by bad wetting of the threads by the sizing composition, and by insufficient adherence of the latter, or by other phenomena giving rise to difficulties in the subsequent weaving.

The defects due to bad wetting or to the lack of adhesion are of course particularly undesirable in the sizing of threads which are more or less water-repellent such as those of cellulose derivatives or of synthetic materials such as superpolyamides, polymers or copolymers of vinyl chloride, of acrylonitrile, of vinyl acetate and the like.

The compositions according to the invention enable an excellent sizing of great uniformity to be obtained on all fibres and particularly on the water-repellent fibres mentioned above. They are characterized by the fact that in addition to gelatine they contain a salt of an oxygenated acid with an organic base containing at least one hydroxyl group, which for convenience will hereinafter be referred to as an hydroxylated organic base.

It has already been proposed to introduce mineral salts such as the nitrates of zinc or sodium or metallic salts of organic acids such as sodium salicylate into gelatine sizing compositions. Experience shows that the compositions according to the invention, in which together with the gelatine there are used salts of oxygenated acids with hydroxylated organic bases, give sizings which are much more regular and are well suited in all cases even for the most water-repellent fibres.

The bases which can take part in the salts to be used can be mono- or poly-hydroxylated, as, for example, the mono-, di- and triethanolamines or dimethylaminoethanol.

The oxygenated acids can be mineral acids such as nitric or sulphuric acid, or organic acids such as acetic acid.

From 0.5 to 30% of the salts of the hydroxylated organic bases can be introduced into the sizing composition. Particularly valuable results are obtained with from 2 to 6% of these salts. It is obvious that these quantities will vary according to the properties of the gelatine and the concentration thereof, and according to the salt or salts which are used.

The salts of the hydroxylated organic bases can be introduced into the aqueous solution of the gelatine in any desired manner, either before or after dissolving the gelatine or in the course of this operation.

The sizing compositions can contain one or several salts of the hydroxylated organic bases.

The new sizing compositions can be used at any desirable pH.

The sizing compositions according to the invention, although they are particularly valuable for water-repellent

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fibres, can be used for sizing all fibres, natural, synthetic or artificial. These new compositions allow sizing to be carried out far more economically as perfectly sized threads are generally obtained with quantities of 2 to 5% instead of 5 to 8% on the fibre which are usually considered necessary for obtaining good weaving properties.

The following examples describe details of carrying out the invention without limiting it in any way.

Example 1

5 kg. of gelatine are caused to swell in 10 kg. of water for 12 hours. The swollen mixture is heated to 55° C. to dissolve the gelatine completely, and 4.3 kg. of triethanolamine nitrate are added to it and then 85 kg. of water and the whole well mixed by stirring.

This composition is brought to a temperature of 55° C. and is used on a machine of the known type for sizing a warp formed of threads of cellulose acetate of 100 deniers.

The wetting of the warp is excellent and the filaments are very regularly agglomerated even when the amount of the size is only 3.2%.

The behaviour of this warp in weaving is particularly good; an identical warp sized with the same quantity of a composition of gelatine and a metallic nitrate instead of the organic nitrate of the present invention behaves badly on weaving.

Example 2

5 kg. of gelatine are caused to swell for 12 hours in 10 kg. of water at a temperature of 22° C. The mixture is heated to 55° C. until the gelatine has completely dissolved and 2.5 kg. of triethanolamine sulphate are added to it with stirring at pH 7.5.

This mixture is diluted to 100 litres by the addition of water and the product is heated to 60° C.

A warp formed of threads of cellulose acetate of 100 deniers is sized with this composition at 60° C. This warp is very well sized and its behavior on weaving is excellent.

Example 3

4.5 kg. of gelatine are swollen in 7 kg. of water as described in Example 1 and dissolved at 55° C. 3.2 kg. of diethanolamine nitrate is added to this solution and then 90 kg. of water with stirring. The composition obtained is heated to 45° C. before being used to size a warp formed of superpolyamide threads of 45 deniers and 28 filaments. 4.6% of the size remain on the threads the filaments of which are very well agglomerated. The thread is very readily woven.

Example 4

A thread of 190 deniers consisting of 60 filaments of polyvinyl chloride is sized with a composition containing:

Water	-----kg--	9
Gelatine	-----g--	500
Triethanolamine nitrate	-----g--	500

The sizing is carried out at 45° C. continuously on a twisting machine. A warp is obtained of excellent properties having threads of which the filaments are perfectly agglomerated.

Example 5

A continuous thread of cellulose acetate of 100 deniers containing 18 filaments is sized at 45° C. on a twisting machine with a composition containing:

3.5 parts by weight of gelatine
3.5 parts by weight of dimethylaminoethanolnitrate
93.0 parts by weight of water

The pH of this composition is 7.5. The thread is very well sized.

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Example 6

A thread of cellulose acetate of 100 deniers consisting of 18 filaments is caused to pass through a solution containing:

3.0 parts by weight of triethanolamine acetate
3.5 parts by weight of gelatine and
93.5 parts by weight of water

The sizing is carried out at 45° C. on a twisting machine.
The thread after drying behaves particularly well on weaving.

What I claim and desire to secure by Letters Patent is:

A sizing agent for all kinds of textiles, which consists of an aqueous solution of gelatine containing 2 to 6% by weight of diethanolamine nitrate.

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