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GUANIDE-FORMALDEHYDE CONDENSATION PRODUCTS FOR TANNING AND BLEACHING LEATHER

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10 Claims. (Cl. 8—94.24)

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This invention relates to the treatment of skins and/or hides or leather and more particularly, to a process for obtaining white leather.

It is an object of the present invention to provide a bleaching agent for tanned hides and/or skins.

It is another object of the present invention to provide a tanning agent which will tan skins and/or hides white.

A further object of the present invention is the provision of an agent which will whiten chrome tanned leather.

Another object of the present invention is the provision of a new tanning and bleaching agent.

Still another object of the present invention is to provide a leather tanning and bleaching agent which may be used alone or in conjunction with other tanning agents such as, mineral, vegetable, and synthetic tanning agents.

The above and other objects are attained by treating hides and/or skins or tanned leather with a water-soluble formaldehyde condensation product of a guanide, and particularly of acetoguanide.

The invention will be described in greater detail in conjunction with the following specific examples in which proportions are given in parts by weight. These examples are not intended to limit the scope of the invention; they are merely illustrative.

Example 1

126 parts (1 mol) of acetoguanide and 243 parts (3 mols) of 37% aqueous formaldehyde solution are refluxed for 30 minutes and cooled to 40° C. 74 parts of 50% sodium hydroxide solution are then slowly added with stirring and cooling to prevent the temperature of the mixture from rising above 50° C. The reaction mixture is then refluxed for 20 minutes longer, and a clear stable solution of acetoguanide-formaldehyde resin is obtained.

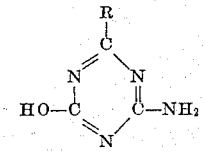
100 parts of chrome tanned leather are drummed for one hour with 100 parts of a 5% solution of the resin prepared as described above. The leather is then rinsed, fat liquored and dried, the final leather product being a white full leather having good characteristics.

Example 2

Example 1 is repeated using a resin prepared as follows: 28.5 (0.23 mol) of acetoguanide, 60.8 (0.75 mol) of 37% aqueous formaldehyde solution and 20 parts concentrated sulfuric acid are heated together at 90° C. and then quickly cooled. A clear stable solution of resin is obtained.

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My new tanning agents include formaldehyde condensation products of guanides of the following general formula:



in which R is an alkyl hydrocarbon having from 1–3 carbon atoms or an aryl hydrocarbon of from 6–8 carbon atoms.

The condensation products are prepared by condensing from about 1 to about 3 mols of formaldehyde with each mol of the guanide under either acid or alkaline conditions.

Formaldehyde-yielding materials such as paraformaldehyde and hexamethylenetetramine may be substituted for the formaldehyde of the examples as may other aldehydes including acetaldehyde, paraldehyde, furfural, and the like.

The guanides themselves may be readily prepared from dicyandiamide and the particular acid corresponding to the R group. Thus the acetoguanide of the examples was prepared by refluxing 48 parts of glacial acetic acid with 33.6 parts of dicyandiamide until reaction ceased. Water was added to the reaction mixture, and the acetoguanide which precipitated out was filtered off.

The water-soluble condensation products here described are acid-sensitive. In aqueous solution they may be converted to the insoluble or hydrophobe state by the addition of acid, with consequent precipitation of a solid white resin. Since the chrome salts in leather tanned therewith will generate sulfuric acid when brought into contact with water, it is possible by the process of the present invention to capitalize on the acid-sensitivity of the condensation products on the one hand, and the capacity of the chrome-tanned leather to generate sulfuric acid in the presence of water on the other, for the bleaching or whitening of green chrome-tanned leather.

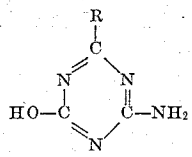
The bleaching process of the present invention may be carried out simply by drumming chromed leather in a water solution of one of the described guanide condensation products. Varying concentrations, e. g., from about 1% to about 50% by weight of solid resin based on the shaved weight of the stock, may be used in the process and my invention is in no sense limited to the use of any particular concentration. I prefer to use from about 5% to about 25% resin, on the same basis.

The new tanning agents of the present invention may be used either alone or in conjunction with other tanning agents such as oils, vegetable tannins, alum, chrome, syntans, formaldehyde and the like. Thus the guanide resins can be used directly to obtain a white tanned leather or they may be used to whiten leather tanned by some other agent. Similarly, white tanned skins obtained by treatment with the guanide condensation products described in the present specification may be further tanned by means of other type agents such as those listed above.

It is an advantage of the guanide resins of the present invention that they may be precipitated and dissolved under pH conditions which are suitable for leather work.

I claim:

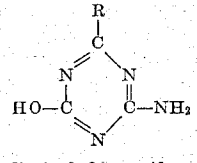
1. A process which comprises impregnating skins and hides with an aqueous solution of a water-dilutable, acid-sensitive condensation product of 1 mol of a guanide of the formula:



in which R is selected from the group consisting of alkyl radicals of from 1 to 3 carbon atoms and aryl radicals of from 6 to 8 carbon atoms with from about 1 to about 3 mols of formaldehyde.

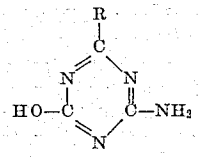
2. A process which comprises impregnating skins and hides with an aqueous solution of a water-dilutable, acid-sensitive condensation product of 1 mol of acetoguanide with from about 1 to about 3 mols of formaldehyde.

3. A process which comprises impregnating skins and hides first with an aqueous solution of a water dilutable, acid-sensitive condensation product of 1 mol of a guanide of the formula:



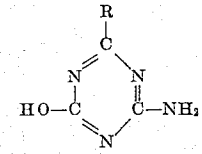
wherein R is selected from the group consisting of alkyl radicals of from 1 to 3 carbon atoms and aryl radicals of from 6–8 carbon atoms with from about 1 to about 3 mols of formaldehyde and then with a different tanning agent.

4. A process which comprises impregnating tanned leather with a different tanning agent comprising an aqueous solution of a water-dilutable acid-sensitive condensation product of 1 mol of a guanide of the formula:



wherein R is selected from the group consisting of alkyl radicals of from 1 to 3 carbon atoms and aryl radicals of from 6–8 carbon atoms with from about 1 to about 3 mols of formaldehyde.

5. A process which comprises bleaching chrome tanned leather by impregnation with an aqueous solution of a water dilutable condensation product of 1 mol of a guanide of the formula:



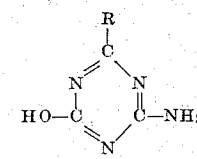
wherein R is selected from the group consisting of alkyl radicals of from 1 to 3 carbon atoms and aryl radicals of from 6–8 carbon atoms with from about 1 to about 3 mols of formaldehyde.

6. The process of claim 3 wherein the guanide is acetoguanide.

7. The process of claim 4 wherein the guanide is acetoguanide.

8. The process of claim 5 wherein the guanide is acetoguanide.

9. White tanned leather having incorporated therein the insolubilized condensation product of 1 mol of a guanide of the formula:



in which R is selected from the group consisting of alkyl radicals of from 1 to 3 carbon atoms and aryl radicals of from 6–8 carbon atoms with from about 1 to about 3 mols of formaldehyde, said leather being obtained by the process of claim 1.

10. White tanned leather obtained by the process of claim 9 wherein the guanide is acetoguanide.

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