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[54] **BLEACHING OF ALDEHYDE-TANNED LEATHER WITH SODIUM BOROHYDRIDE**

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[51] **Int. Cl.** **C14c 3/28;** D06l 3/10

[58] **Field of Search** 8/101, 107, 94.21, 94.33, 8/94.16, 94.2; 252/188, 8.57

[56] **References Cited**

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[57] **ABSTRACT**

Leather which has been discolored by aldehyde tanning is bleached by treatment of the tanned leather with sodium borohydride.

5 Claims, No Drawings

BLEACHING OF ALDEHYDE-TANNED LEATHER WITH SODIUM BOROHYDRIDE

This invention relates to the tanning of leather, and in particular to a method of bleaching aldehyde-tanned leather.

Aldehydes have long been utilized as tanning agents for tanning leather and have various advantages over other tanning agents. Glutaraldehyde has been especially widely used, not only because it provides rapid tanning action over an extremely wide pH range, but also because it produces leather having reversible shrinkage and exceptional resistance to deterioration by perspiration. However, the use of aldehydes as tanning agents has one major disadvantage — leather treated with aldehydes tends to be discolored, thus making aldehyde tanning unsuitable for making leathers to be finished in lighter shades and for treating hair-on leathers and furs.

It has now been found that discoloration of leather caused by aldehyde tanning can be removed by bleaching the aldehyde-tanned leather with sodium borohydride. Surprisingly, although sodium borohydride is a strong reducing agent, it has been found to have no deleterious effect on the tanned leather and to leave unimpaired the particular advantageous properties imparted to the leather by the aldehyde tanning.

The use of aldehydes in tanning leather is well-known in the art. A description of the techniques used in this tanning process can be found, for example, in U.S. Pat. No. 2,851,329, of Seligsberger, granted Sept. 9, 1958, U.S. Pat. No. 2,941,859, of Fein et al., granted June 21, 1960, and U.S. Pat. No. 2,971,814, of Seligsberger, granted Feb. 14, 1961. Among the aldehydes which have been used as tanning agents and which produce leather which can be advantageously treated by the process of the present invention are glutaraldehyde, formaldehyde, glyoxal, malonaldehyde, succinaldehyde, acetaldehyde, pyruvaldehyde, and the like. Aldehydes can be used as the sole tanning agents, in combination with common mineral and vegetable tannages, or in separate tanning operations, either as the initial tannage or as a retannage for mineral-or vegetable-tanned leather.

The process of the invention is carried out by treating aldehyde-tanned leather with a solution, preferably aqueous, of sodium borohydride. The process can be carried out over a broad temperature range, although generally a temperature of about 70° to about 110°F, preferably about 80° to about 90°F, gives suitable results. Generally, the leather is first washed to remove excess tanning materials, since such materials may be reducible and thus unnecessarily consume sodium borohydride. The amount of sodium borohydride required to effect the bleaching is commonly about 0.1 to about 2% or more by weight, preferably about 0.25 to about 1% by weight, based on the weight of the leather to be treated. This amount will vary depending on the nature and amount of aldehyde used in tanning the leather, the degree of bleaching desired, and related factors.

Sodium borohydride can be applied to the tanned leather in any convenient fashion. One useful method involves treating the leather with an aqueoous solution of the borohydride, by dipping, spraying, padding or the like. Generally, the borohydride is applied to the tanned or retanned leather prior to fatliquoring, but it can be applied to the dried leather after fatliquoring and prior to finishing.

The following examples will further illustrate the invention, but are not intended to limit it in any way.

EXAMPLE 1

Two pieces of pickled calfskin are given an overnight tannage with glutaraldehyde (5% on the stock weight). The stock is then washed and exhibits the typical brown color associated with glutaraldehyde tannages. One of the pieces is then tumbled with sodium borohydride (one-half percent on the stock weight) and the brown color is bleached to white. Shrink temperatures of both unbleached and bleached samples are 185°F. The pieces are then dried and are ready for further finishing.

EXAMPLE 2

Part of the unbleached piece from Example 1 is swabbed with a one-half percent solution of sodium borohydride. This portion of the piece is bleached to a much ligher color, considerably better than the untreated portion.

EXAMPLE 3 percent

Two chrome-tanned calfskin pieces are retanned with glutaraldehyde (2% on the stock weight) in a 100% float for 40 minutes at 85°F. The stock is then washed for 10 minutes at 80°F. One of the pieces is then bleached with one-fourth percent sodium borohydride in a 100% float at 80°F for 30 minutes. Both pieces are then washed and fat liquored and taken to the crust condition. Definite bleaching action is observed, the borohydride-treated piece being a light creamy white and the untreated piece light brown.

It is to be understood that changes and variations may be made without departing from the spirit and scope of the invention as defined by the appended claims.

We claim:

1. In a process for tanning leather by treating the leather with a solution of an aldehyde thereby producing a tanned leather, the improvement which comprises bleaching the tanned leather with an effective amount of sodium borohydride.

2. The process of claim 1 wherein the aldehyde is glutaradehyde.

3. The process of claim 1 wherein the bleaching is carried out at a temperature of about 70° to about 110°F.

4. The process of claim 1 wherein the amount of sodium borohydride is about 0.1 to about 2% by weight based on the weight of the leather.

5. Leather treated by the process of claim 1.

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