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DYEING OF LEATHER

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1 Claim. (Cl. 8—5)

This invention relates to new colored leathers, and especially to leathers which are dyed with a class of leuco vat dyestuffs and to improved processes of dyeing leathers.

Dyeings on leather which are fast to washing, more especially the dyeings on glove leather, have been obtainable generally only in pale or dull shades, such as dyeings produced by sulphur dyestuffs. Bright shades on leather which have been produced were not entirely satisfactory from the standpoint of fastness to washing, such as leathers dyed with the acid or direct colors. For example, it has hitherto been found impossible to obtain bright reds, oranges, blues and greens, especially on glove leather which had good light fastness and would withstand reasonable washing treatment.

It is among the objects of the invention to provide dyed leathers in bright shades which have good fastness to washing and light. Another object is to provide improved processes for dyeing leathers. Other objects of the invention will be apparent from the following more detailed description of the invention.

The objects of the invention are attained by applying to leather, such as aldehyde-tanned chamois and other washable leathers to which leathers the invention lends particular value, compounds which are sulphuric esters of leuco vat dyestuffs and these compounds are then developed on the leather to the vat dyestuffs themselves, whereupon the dyed leathers may be finished by fat liquoring preceded, if desired, by soaping treatment. By means of my invention shades may be produced on leather of a fastness to washing and light hitherto unattainable. The leuco vat dyestuff sulphuric esters may be conveniently applied according to the invention and the invention is more particularly illustrated in the following examples which are illustrative and not limitative of the invention.

Example I

50 lbs. of aldehyde dressed sheepskin splits were washed by drumming for 5 minutes in warm water, rinsed and then immersed in 30 gallons of water at 35° C. in the drum. After rotating for a few minutes, 5 lbs. of the leuco sulphuric ester of the dyestuff known as dimethoxydibenzanthrone (Color Index 1101), previously dissolved in 3 gallons of water at 50° C. were added and after a further 20 minutes 1½ lbs. of glacial acetic acid diluted with twice the volume of water was introduced gradually during the course of the next 15 minutes and drumming continued for another 20 minutes. The leather was then taken out of the drum and 3½ lbs. of concentrated sulphuric acid diluted with 2 gallons of water added slowly to the exhausted dye liquor; 1 lb. of sodium nitrite dissolved in 1 gallon of water was then run in, the skins re-entered and drumming continued for 2 minutes. They were then rinsed, neutralized for 30 minutes in a 1.0% solution of sodium bicarbonate and then fat liquored. The dyed leather was found to have good fastness to light and washing.

Example II

50 lbs. of chamois leather were stripped and wetted back with warm water in which was dissolved ½ lb. soda ash, rinsed and immersed in 30 gallons of water at 35° C. in the drum. 5 lbs. of the leuco sulphuric ester of the dyestuff known as 5:5'-dichloro-6:6'-dimethyl-2:2'-bisthionaphthene indigo (Color Index 1212) dissolved in 10 gallons of water were added and after 20 minutes agitation, 3 lbs. of glacial acetic acid diluted with 2 quarts of water were added slowly, dyeing being completed in a further 30 minutes. The exhausted dye liquor was then run off and the skins refloated in a 1% aqueous sulphuric acid solution at 20° C. to which 1½ lbs. sodium nitrite were added. After 5 minutes the skins were further treated as in Example I.

Example III

Leukanol stained chrome tanned cabretta glove leather was wet out with a dilute ammonia solution, the treatment being carried on for 30 minutes at 102° F. After washing and striking out excess water a 5% solution of a mixture of equal parts of formic and sulphuric acid was brushed on the grain side to prevent undue penetration of the dyestuff and the excess water was struck out. A 2% aqueous solution of "Ponsol" jade green soluble was brushed on, and followed immediately by a 1% aqueous solution of sodium nitrite. The surface was then washed with a liberal flow of fresh water at 70° F. followed by tumbling for 5 minutes. Finally it was fat liquored with sulphonated neat's-foot oil.

The dyeing was of a full bright shade having much better fastness to washing than dyeings obtainable with water solutions of acid, direct, chrome or basic dyestuffs. The leather was colored only on one side and there was no undue penetration of the dyestuff, such as that which is undesirable on leather for women's gloves.

Similar results were obtained by brushing

treatment when "Ponsol" Blue BF Soluble was used instead of the green dye.

Similar results were obtained with both the green and the blue dye when they were applied to sumac stained chrome tanned cabretta glove leather which was prepared for dyeing in the same manner.

Example IV

The dyes used in accordance with Example III were used to dye Leukanol stained chrome tanned cabretta glove leather in the drum. The leather was wet out for 30 minutes at 102° F. with 2% ammonia solution, then 5% by weight of the dyestuff was added and the leather was run in the drum for 30 minutes. 2½% of formic acid and 2½% of sulphuric acid were then added, and after 5 minutes sodium nitrite to make the solution up to 2% was added, and run for 20 minutes. After washing the stock was fat liquored with sulphonated neat's-foot oil and was found to be dyed medium shades of green and blue accordingly as the green or blue dye was used. The dyeings had good fastness to washing and compared favorably with the results obtained by brush treatment as illustrated in Example III.

Similar results were obtained when similar treatment was applied to sumac stained chrome tanned cabretta glove leather.

As illustrative of other suitable coloring matters of the kind which can be used according to the invention as illustrated are the leuco sulphuric esters of the dyestuffs known as flavanthrone (Color Index 1118), dichloroisodibenzanthrone (Color Index 1104), 5:7:5':7'-tetrabromindigotin (Color Index 1184), trichloro-N-dihydro-1:2:1':2'-anthraquinoneazine. The most of the leuco esters of vat dyestuffs which are used in accordance with the invention are of excellent fastness to light and all are of very good fastness to washing.

In certain cases, as exemplified, for instance, in Example I, it is advisable to add the acid gradually to the dye bath to promote greater levelness of shade. The degree of penetration into the leather may be regulated by increasing or diminishing the time of dyeing previous to adding the acid. Development may be carried out in the exhausted dye liquor or in a fresh solution and other developing agents, for instance, ammonium persulphate in dilute mineral acid, may be employed in place of acidified nitrite.

Incorporation of soap up to 2 parts per 1000 in the fat liquor or separate soaping in a similar strength solution at 50° C. may be employed, if desired, to give brighter shades and better fastness to rubbing.

As still other modifications of the invention will be suggested to those skilled in the art without departing from the spirit and scope of the invention, it is to be understood that no limitations are intended other than those which are specifically expressed in the appended claims or are imposed by the prior art.

Still other types of leather dyeing machinery, e. g. paddles, may be used.

I claim:

The process which comprises dyeing at least an outer layer of a wet-out leather with an aqueous solution of the sulphuric ester of a leuco vat dyestuff, gradually acidifying with a dilute acid and there developing the color by applying a dilute acidified solution of an oxidizing agent, the temperature of said saturating, acidifying and development not exceeding 50° C.

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