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PROCESS OF PRODUCING PRINTS OR DISCHARGES ON WOOL AND OTHER ANIMAL FIBERS

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Printing fabrics of wool and other animal fibers with vat-dyes has hitherto been practically impossible because the alkali necessary for vatting the dye attacks the fiber, especially in the steaming operation.

Our present invention relates to a process in which such damage to the fiber is prevented or minimized by adding aminoacetic acid, or a salt thereof, to the alkaline printing paste. This addition also serves to fix intensively the dye so that the duration of the steaming, which is not beneficial to the fiber, may be diminished and the result of the printing is less dependent on variation of the steam pressure.

In the following examples there are prescribed several pastes for the treatment of wool fiber, but the composition can be varied within wide limits. Thus the pastes may contain other additions than those named which are usual in the textile industry, such as thickening agents or the like. The content of the paste in an aminoacetic acid salt is also variable and depends on the sensitiveness of the wool material to be treated:—

Example 1.—A paste for printing on wool with a vat-dye has the following composition:

	Parts
Indigo pure BASF 20 per cent paste (Schultz, Farbstofftabellen, 1301, VII Edition)	15
Glycerine	5
Gum thickening (1:1)	50
Potassium carbonate	7.5
Sodium formaldehyde-sulfoxylate	10
Sodium aminoacetate of 50 per cent strength	5
Water	7.5
	100

This paste can be printed on wool in the usual manner, dried, steamed while moist, exposed to air for a short time, passed through a bath containing 5 grams of sodium perborate and 5 grams of acetic acid of 30 per cent strength per liter, rinsed, soaped and dried. The goods thus treated show no deterioration in strength and feel, whereas the same goods printed without the addition of an aminoacetic acid salt to the printing paste, but otherwise under precisely similar conditions of treatment, show a considerable damage of the fiber, a hard feel and shrinkage. Moreover, owing to the addition of the aminoacetic acid salt the dye is fully fixed after only about 5 minutes steaming, whereas a print obtained without aminoacetic acid salt requires about twice to thrice as much time for complete fixation by the steaming.

Example 2.—A discharge paste has the following composition:

	Parts
Indigo pure BASF 20 per cent paste (Schultz, Farbstofftabellen, 1301, VII Edition)	7.5
Glycerine	5
Gum thickening (1:1)	50
Potassium carbonate	7.5
Sodium formaldehyde-sulfoxylate	20
Sodium aminoacetate of 50 per cent strength	5
Water	5
	100

With this printing paste woollen goods which have been dyed with 4 per cent of the dye described in Example 1 of German Specification No. 538,668 may be printed and the goods then finished. There is produced a colored discharge, such that the effect color corresponds in its properties of fastness with those of the ground color, a result which hitherto has not been achieved in this degree of fastness.

In quite analogous manner other printing or discharge pastes can be made from other vat dyes, such as from those of the indanthrene, algol or hydron series, which in an alkaline vat show an affinity for animal fiber.

Example 3.—Woollen goods dyed with 6 per cent of naphthol blue-black S (Schultz, Farbstofftabellen, No. 299, VII Edition) are printed with a paste of the following composition:

	Parts
Hydron-orange R Paste (Schultz, Farbstofftabellen, 1349, VII Edition)	2.5
Glycerine	5
Gum thickening (1:1)	50
Potassium carbonate	7.5
Sodium formaldehyde-sulfoxylate	20
Sodium aminoacetate of 50 per cent strength	5
Water	10
	100

and then finished.

The surprising new effect of the use of the pastes made according to our invention is exhibited by the following example of the tensile strengths:—

Example 4.—Zephyr wool yarn is printed with a paste according to Example 1 and finished. It gives the following tensile strengths (mean of 10 experiments in each case):—

Unprinted yarn	946
Yarn printed without the addition of a salt of aminoacetic acid	604
Yarn printed with addition of a salt of aminoacetic acid	1009

What we claim is:—

1. Alkaline pastes for printing or discharging on wool containing an alkali metal salt of amino acetic acid.

2. Alkaline pastes for printing or discharging on wool containing a discharging agent and an alkali metal salt of amino acetic acid.

3. Alkaline pastes for printing or discharging on wool containing the leuco compound of a vat dye and an alkali metal salt of amino acetic acid.

4. Alkaline pastes for printing or discharging on wool containing a discharging agent, the leuco compound of a vat dye and an alkali metal salt of amino acetic acid.

5. The process for producing fast prints or colored discharges on wool by means of a vat dye which comprises adding to the alkaline printing paste an alkali metal salt of amino acetic acid.

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