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PRODUCTION OF FAST DYEINGS ON TEXTILE FIBERS

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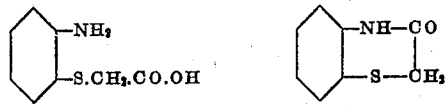
No Drawing. Application April 22, 1932, Serial No. 607,008. In Great Britain April 29, 1931

14 Claims. (Cl. 8—5)

The present invention relates to the production of fast dyeings on textile fibers.

By condensing an anthraquinone derivative having a primary amino group and a mercapto group adjacent to one another with a halogeno-acetic acid there is formed an aminoanthraquinonylthioglycollic acid.

It is known that o-aminophenylthioglycollic acids readily undergo dehydration when submitted to the action of dilute acids, there being formed a lactam. This change is represented, for instance, by the following formulæ:



but the only described method for lactamizing the o-aminoanthraquinonylthioglycollic acids is by heating them in nitrobenzene solution with or without the addition of dehydrating agents, such as phosphorus trichloride, that is to say, in the absence of water (see German Patent No. 232,076) and it was not supposed that these bodies could be lactamized in aqueous solution.

We have discovered that not only can the above o-aminoanthraquinonylthioglycollic acids be lactamized in presence of water, but the lactamization can be advantageously effected on the fiber leading to the production of dyeings of outstanding fastness. The invention therefore marks a noteworthy technical advance.

Products which may be used as initial materials for the preparation of lactams according to the present invention may be obtained for instance according to British specification No. 252,646, but we do not confine ourselves to the use of the bodies there described.

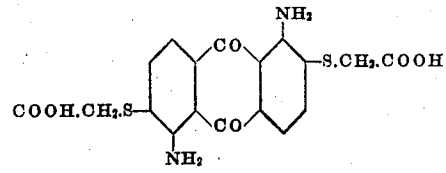
The invention is illustrated but not limited by the following example in which the parts are by weight.

Example

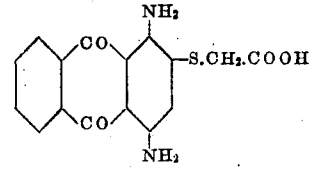
The sodium salt of 1-amino-4-anilidoanthraquinonyl-2-thioglycollic acid obtained by treating 2-bromo-1-amino-4-anilidoanthraquinone with sodium sulphide and condensing the thus obtained mercapto body with chloroacetic acid is applied to wool in the following manner.

0.08 part of the product is dissolved in 400 parts of boiling water. 8 parts of 10% solution of Glauber's salt, and 8 parts of a 1% solution of acetic acid are added followed by 8 parts of wool. The solution is boiled and at ¼ hour intervals two portions of 8 parts of 1% acetic acid are added. The fiber is now rinsed in cold water and entered into a solution of 200 parts of water and 10 parts of 7% aqueous hydrochloric acid at 90° C. After 15 minutes the lactamization is complete, and the fiber is rinsed in dilute sodium carbonate and dried. The wool is dyed a greyish blue.

In a similar manner there may be applied products of the constitutions



and



The former dyes the fiber direct bluish red which in lactamizing becomes yellower, the latter dyes a reddish violet which on lactamizing also becomes yellower. Any other dilute mineral acid, e. g. sulphuric, hydrobromic, nitric acids may be used in place of the hydrochloric acid.

As many apparently widely different embodiments of this invention may be made without departing from the spirit and scope thereof, it is to be understood that we do not limit ourselves to the specific embodiments thereof except as defined in the appended claims.

We claim:

1. Process for the production of fast dyeings on textile fiber by applying to the fiber an o-amino-anthraquinonylthioglycollic acid and lactamizing this by treatment with dilute mineral acid at an elevated temperature.

2. The process of dyeing animal fiber which comprises dyeing the fiber with an ortho-amino-anthraquinone-thioglycollic acid and ring closing the dyestuff upon the fiber to the corresponding lactam.

3. The process of dyeing animal fiber which comprises applying to the fiber an aqueous solution of an ortho-amino-anthraquinone-thioglycollic acid, and developing the color upon the fiber by heating in aqueous medium in the presence of mineral acid.

4. The process of dyeing animal fiber which

comprises applying to the fiber an aqueous solution of an ortho-amino-anthraquinone-thioglycollic acid, and developing the color upon the fiber by heating to 90° C. in aqueous medium containing less than 1% of hydrochloric acid.

5. The process of dyeing wool, which comprises treating the same with an aqueous solution of a 1-amino-anthraquinone-2-thioglycollic acid containing further Glauber's salt and acetic acid, rinsing the fiber with water, and further heating the same in water containing a fraction of 1% of hydrochloric acid.

6. The process of dyeing wool which comprises applying thereto an aqueous solution of 1-amino-4-anilido-anthraquinone-2-thioglycollic acid, and ring closing the latter compound on the fiber to form the corresponding lactam.

7. The process of dyeing wool which comprises applying thereto an aqueous solution of 1,4-diamino-anthraquinone-2-thioglycollic acid, and ring closing the latter compound on the fiber to form the corresponding lactam.

8. The process of dyeing wool which comprises applying thereto an aqueous solution of 1,5-diamino-anthraquinone-2,6-dithioglycollic acid, and ring closing the latter compound on the fiber to form the corresponding lactam.

9. The process of dyeing wool, which comprises boiling substantially 8 parts of wool in a solution containing substantially 400 parts of water, 0.08 part of 1-amino-4-anilido-anthraquinone-2-thioglycollic acid, 0.8 part of Glauber's salt and 0.08 to 0.24 part of acetic acid, rinsing the fiber in cold water, and further heating the same at about 90° C. in substantially 200 parts of water, containing substantially 0.7 parts of hydrochloric acid.

10. Animal fiber dyed with the unsulfonated lactam obtainable by ring closing on the fiber an o-amino-anthraquinone-thioglycollic acid.

11. Animal fiber dyed with the unsulfonated lactam obtainable by ring closing on the fiber a 1,2-amino-anthraquinone-thioglycollic acid.

12. Wool dyed with the unsulfonated lactam corresponding to 1-amino-4-anilido-anthraquinonyl-thioglycollic acid.

13. Wool dyed with the unsulfonated lactam corresponding to 1,4-diamino-anthraquinone-2-thioglycollic acid.

14. Wool dyed with the unsulfonated lactam corresponding to 1,5-diamino-anthraquinone-2,6-dithioglycollic acid.

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