8-107 SR SEARCH ROOM
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BRIGHTENING OF FIBER MATERIAL BY COATING WITH 1,3-DIARYL- AND 1,3,5-TRIARYL PYRAZOLINE DERIVATIVES

Annemarie Wagner and Siegfried Petersen, both of Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany, a corporation of Germany

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Claims priority, application Germany Aug. 12, 1960
6 Claims. (Cl. 117—33.5)

The present invention relates to brightening agents of the di- and tri-arylpyrazoline series; more particularly it concerns di- or triarylpyrazoline compounds containing a quaternary ammonium group.

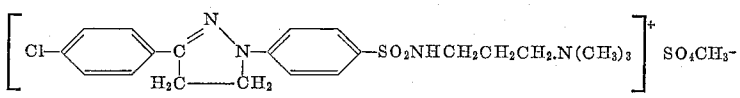
Especially suitable brightening agents are 1,3-diphenyl- and 1,3,5-triphenylpyrazoline compounds which contain a quaternary ammonium group bound to the phenyl radical in the 1-position or in the 5-position directly or via a bridge member, such as an alkylene group, an —O-alkylene group, a —SO_2-alkylene group or a —SO_2—NH-alkylene group. The phenyl radicals of the 1,3-diphenyl- or 1,3,5-triphenylpyrazoline compounds may carry further substituents, for example alkyl groups, substituted alkyl groups or halogen.

With the aid of the proposed compounds it is possible to brighten in an outstanding manner fibre materials of the most varied type such as those of wool, cellulose acetate, polyamides or acrylonitrile polymerisates. The application of the brightening agents is performed in conventional manner.

The following examples serve to illustrate the invention without, however, limiting the scope thereof.

Example 1

0.005 g. of (1-p-trimethyl ammonium propylamido-sulfonylphenyl - 3 - p - chlorophenyl-pyrazoline)-methyl sulfate of the formula



are dissolved in 20 cc. of hot water and diluted with 180 cc. of cold water. 5 g. of a polyacrylonitrile fabric are introduced into this bath. The bath is heated to 95–98° C. for 20–30 minutes and the fabric is treated at boiling temperature for 30 minutes, then rinsed and dried. The fabric thus treated shows a strong brightening effect with a neutral white shade and good fastness to light.

The brightener used above is prepared by quaternizing the 1-p-dimethyl-aminopropyl-amido-sulfonyl - phenyl-3-p-chlorophenyl-pyrazoline (described in copending U.S. patent application Ser. No. 642,356, now abandoned, filed February 26, 1957, and assigned to the same assignee and in the continuation thereof, co-pending application Serial No. 194,999, filed May 15, 1962) with dimethyl sulfate in a chlorobenzene solution at 80–95° C. The product has a melting point of about 200° C.

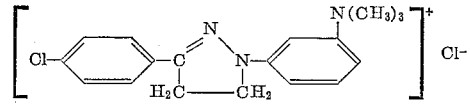
Example 2

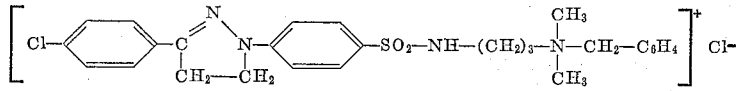
5 g. of a polyamide fabric are introduced into 200 cc. of a bath containing 0.01 g. of (1-p-trimethyl-ammonium-propyl - amido - sulphonyl - phenyl - 3 - p - chlorophenyl-pyrazoline)-methyl sulfate. The bath is slowly heated to 95–98° C. and the fabric is treated at this temperature for 20 minutes. It is then rinsed and dried. The material thus treated shows a strong neutral white effect.

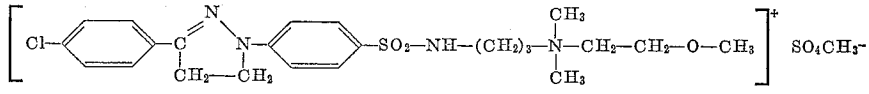
Example 3

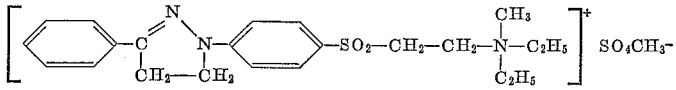
Into 150 cc. of a bath containing 0.005 g. of (1-p-trimethyl - ammonium - propyl - amido - sulfonyl - phenyl-3 - p - chlorophenyl-pyrazoline)-methyl sulfate, there are introduced 5 g. of acetate fibres. The bath is slowly heated to 60° C. The fibres are treated at 60° C. for 30 minutes, then rinsed and dried. The acetate fibres show a strong bluish fluorescence.

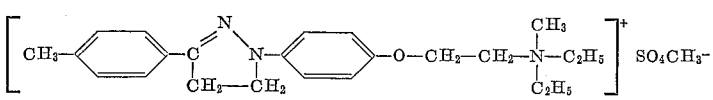
Instead of the brightening agent applied in the examples there may be used for instance also one of the following compounds:

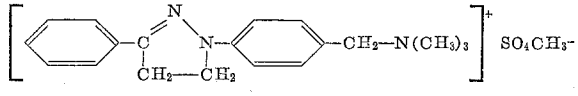


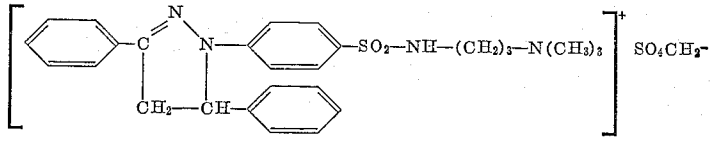


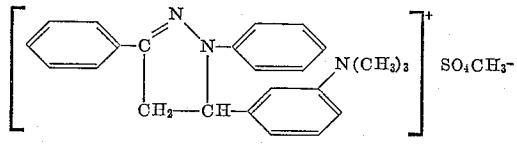






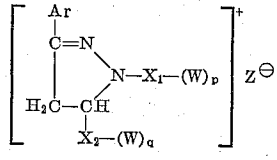




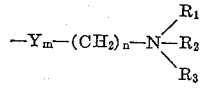


We claim:

1. A process for improving fibers which comprises applying thereto an aqueous solution of a fluorescent compound of the general formula

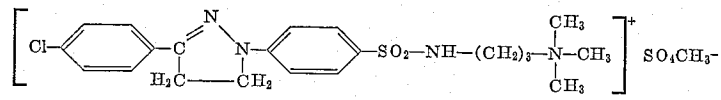


wherein X_1 stands for a phenyl; X_2 stands for a member selected from the group consisting of phenyl and hydrogen; W is a substituent of the phenyl ring having the formula

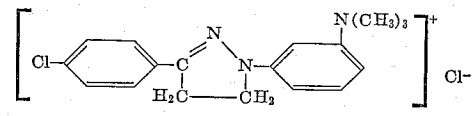


in which Y is a member selected from the group consisting of oxygen, sulfonyl, and sulfonylamido; R_1 and R_2 are lower alkyl groups; R_3 is a member selected from the group consisting of lower alkyl, lower alkoxy alkyl, and benzyl; Ar is a member selected from the group consisting of phenyl, phenyl substituted by halogen and phenyl substituted by lower alkyl; and Z is an anion group; wherein *p*, *q* and *m* are whole numbers within the range of 0–1 the sum of *p* plus *q* being 1–2; and *n* is a whole number within the range of 0–3.

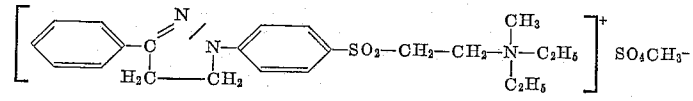
2. A process according to claim 1 wherein the fluorescent compound corresponds to the formula



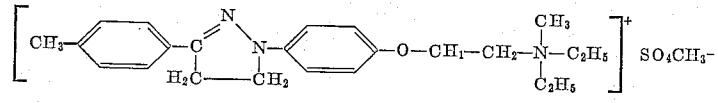
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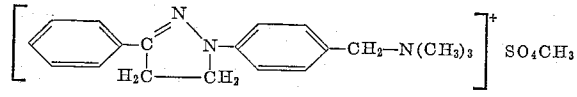
4. A process according to claim 1 wherein the fluorescent compound corresponds to the formula



5. A process according to claim 1 wherein the fluorescent compound corresponds to the formula



6. A process according to claim 1 wherein the fluorescent compound corresponds to the formula



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