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COLORED PHOTOGRAPHIC LAYERS

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5 Claims. (Cl. 95—8)

1

This invention relates to colored photographic layers, especially anti-halation and filter layers.

There are some qualities required for usable colored photographic layers: Their absorption range must be adapted to the optical sensitization of the emulsion; they must decolorize very quickly, completely and irreversibly in weak alkaline developing baths. In addition, their decomposition products should not influence the development or photographic properties of the emulsion. Nor should mechanic influences detach the dyestuff itself or injure the thin layer. Fingers, when touching and even when wet, shall not become colored. It is desirable that the absorption of the colored layer be sufficiently high so that the effect in view may be obtained with a thin color layer.

The prior colored photographic layers, however, do not show all of the above indicated properties. For instance, diphenyl methane dyestuffs were employed heretofore.

It has also been suggested to use basic azomethine dyestuffs wherein the methine group forms part of a heterocyclic ring, and to react these dyestuffs with organic acids containing at least one COOH or OH group suitable for salt formation. Such methods are disclosed in the co-pending application of René Adriaan Stevens, Laurent Aloys Van der Auwera, and Désiré Maria Aloysius Van Goethem, Serial No. 741,684, filed April 15, 1947; and in the co-pending application of Jacob Joseph Jennen, Serial No. 747,845, filed May 13, 1947.

It is among the objects of our present invention to generally improve colored photographic layers and to provide a new process for the manufacture of same.

An important object of this invention is to provide colored photographic layers meeting the above requirements.

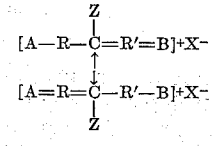
Another object of our invention is to provide photographic material containing at least one of said new photographic layers.

To accomplish the foregoing objects and others which will hereinafter appear, our invention resides in the product and the method of producing same, as are more particularly described in the following specification and sought to be defined in the appended claims.

In accordance with our invention, we produce

2

colored photographic layers by using dyestuffs corresponding to the following general mesomeric formula



wherein R and R′ are an aromatic residue,
A and B are an auxochrome,
X^- is an organic acid residue, and
Z is —H, —CN, —$CONH_2$, —COOH, —SH, either substituted or not.

These dyesalts may be prepared by mixing a solution of a base according to the general formula A—R—CZOH—R′—B with a solution of an acid HX in a solvent which is miscible with the solvent of the base. In this way intensely colored solutions are obtained.

Bases according to the formula

A—R—CZOH—R′—B

are, for instance, benzhydrols substituted by auxochromes, such as, for instance dialkylamino, diarylamino, alkoxy, etc. These benzhydrols may also bear other substituents, for instance, salt-forming groups, such as —COOH, —SO_3H and so on.

The absorption range of the colored layer may be adapted to the optical sensitization of the photographic material by an appropriated choice of the auxochromes.

The preparation of these bases is already known in the literature, for instance: Dialkylaminobenzhydrol (Ber. 35(1902) 360); alkoxy benzhydrols (Rec. Trav. Chim. Pays Bas 58(1939) 1064); dialkylamino diphenyl glycolic acid nitrile (Ber. 27(1894) 3294); dialkylamino diphenyl glycolic acid amide (id.); dialkylamino diphenyl glycolic acid (id.); dialkylamino thiobenzophenone (J. Am. Chem. Soc. 55(1933) 2518); bases substituted by salt-forming groups, such as sulphonic groups, for instance, (Ber. 39(1906) 3773).

For the salt formation, among others, methylene disalicylic acid, methylene digallic acid, benzoic acid, oxybenzoic acid, phthalic acid may be used.

With a suitable choice of X^-, these dyestuffs can form resinous layers without addition of a

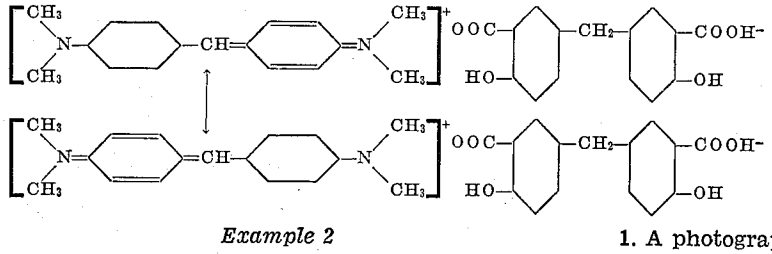
binding agent, for instance, when X^- is methylenedisalicylate or methylenedigallate. According to this invention, it is possible to disperse a dyesalt in an appropriate binding agent, for instance, a borax shellac solution, a phenol condensation product of gelatine, and to coat therewith.

The colored layers prepared in accordance with our invention excel in that they are quickly, completely and irreversibly discolored in an alkaline or acid medium, for instance, an ordinary photographic developer. They are proof against contact with fingers and other mechanical contacts, are usable either with or without a binding agent and they produce harmless decomposition products and possess an extraordinary density.

Some examples, which illustrate the present invention without limiting, however, in any way its scope, are given hereinafter.

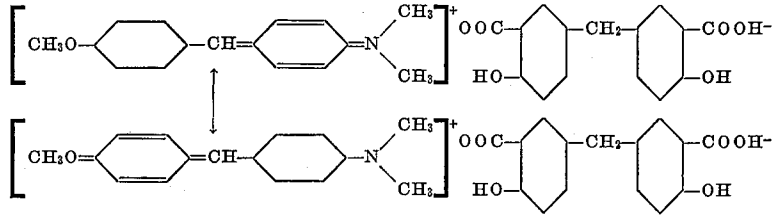
Example 1

72 g. methylene disalicylic acid and 83 g. p-p'-tetra-methyl diamino benzhydrol are dissolved in 2 litres warm ethyl alcohol. After cooling and spreading out on a glass plate, an intense-blue colored resinous anti-halation layer according to the following probable general formula is obtained



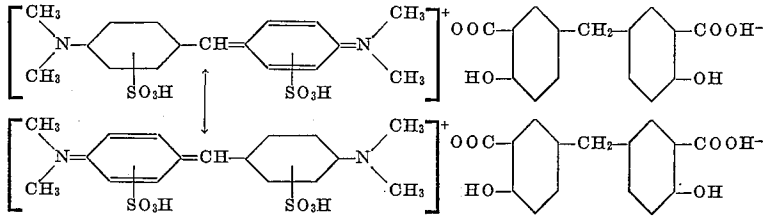
Example 2

144 g. methylene disalicylic acid and 128 g. p-methoxy-p'-dimethylamino benzhydrol are dissolved in 6,8 litres warm ethyl alcohol. An intense-red colored solution is obtained which, after cooling and spreading out on a glass plate, produces a resinous anti-halation layer of the probable general formula



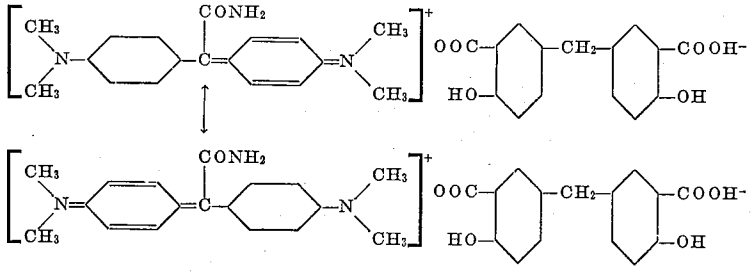
Example 3

112 g. p-p'-tetramethyldiamino benzhydrol disulphonic acid and 72 g. methylene disalicylic acid are dissolved in 4.6 litres ethyl alcohol. The solution produces a blue anti-halation layer of the probable general formula



Example 4

30 g. p-p'-tetramethyl diamino diphenyl glycolic acid amide and 30 g. methylene disalicylic acid are dissolved in 1.8 litres of ethyl alcohol. The solution obtained produces, after cooling and spreading out on a glass plate, a green anti-halation layer of the probable general formula

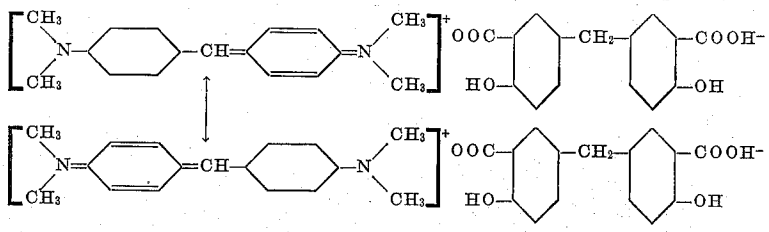


The above dyestuffs are suited for all photographic purposes wherein colored layers are required, as filter layers, anti-halation layers, back layers and layers sensitive to light. These dyestuffs may as well be added to a light-sensitive emulsion. One can also use a mixture of these dyestuffs with other dyestuffs already known and used for the same purpose.

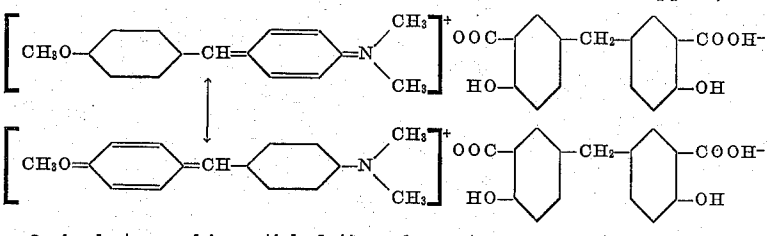
We claim:

1. A photographic anti-halation element comprising a glass support, a light-sensitive layer on one face thereof, and a layer on the other face of the support, said second layer consisting of a dye-

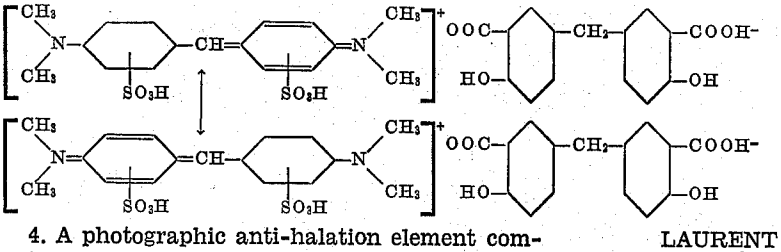
stuff according to one of the following mesomeric formulae:



2. A photographic anti-halation element comprising a glass support, a light-sensitive layer on one face thereof, and a layer on the other face of the support, said second layer consisting of a dyestuff according to one of the following mesomeric formulae:

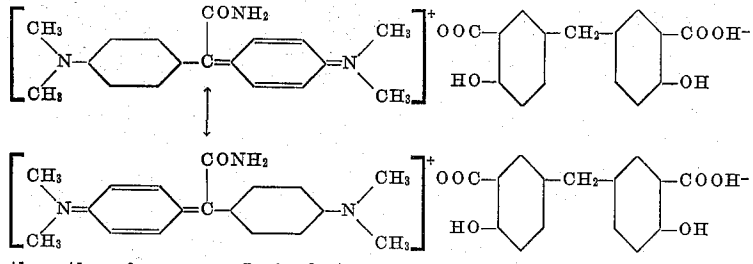


3. A photographic anti-halation element comprising a glass support, a light-sensitive layer on one face thereof, and a layer on the other face of the support, said second layer consisting of a dyestuff according to one of the following mesomeric formulae:

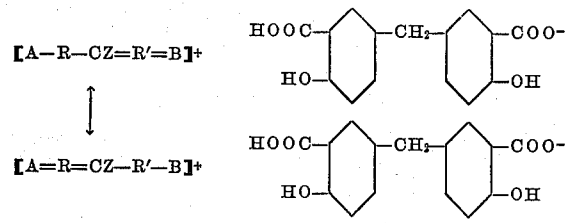


4. A photographic anti-halation element comprising a glass support, a light-sensitive layer on

one face thereof, and a layer on the other face of the support, said second layer consisting of a dyestuff according to one of the following mesomeric formulae:



5. A photographic anti-halation element comprising a glass support, a light-sensitive layer on one face thereof, and a layer on the other face of the support, said second layer consisting of a dyestuff according to one of the following mesomeric formulae:



wherein R and R′ represent phenylene, A and B represent a member selected from the group consisting of dialkylamino and alkoxy, and Z represents a member selected from the group consisting of H and $CONH_2$.

LAURENT ALOYS VAN DER AUWERA.
ANDRÉ EMILE VAN DORMAEL.

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The following references are of record in the file of this patent:

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