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(54) **Light-sensitive silver halide color photographic material.**

(57) There is disclosed a light-sensitive silver halide color photographic material, which comprises on a support photographic constituent layers including at least respective emulsion layers which are blue-sensitive, green-sensitive and red-sensitive, and an antihalation layer containing black colloidal silver positioned between the emulsion layers and the support, wherein the photographic constituent layers are provided by the coating and drying step which is substantially once.

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Light-sensitive silver halide color photographic material

BACKGROUND OF THE INVENTION

This invention relates to a light-sensitive silver halide color photographic material suitable for full color photographing, particularly to a negative-type light-sensitive silver halide color photographic material excellent in production efficiency and improved in fog during prolonged storage.

Presently, color photography widely spread is the so-called negative-positive system in which photographing is done with a color negative film and a color print is made by enlarging onto a color paper.

In recent years, for color negative films, users in general are becoming to have demands which are increasingly diversified, and color negative films with various sensitivities, those with different sizes, and also those with differnt photographic performances such as gradation have been used.

In order to respond to such demands, color negative film makers are obliged to produce many kinds in small amounts.

Since production of many kinds in small amounts is very poor in production efficiency, it has been desired to develop a color negative film with excellent production efficienty.

On the other hand, a color negative film has an antihalation layer containing black colloidal silver provided by coating, which is essential for phtographic light-sensitive material for improvement of sharpness.

However, it has been clarified that such a light-sensitive silver halide color photographic material is high in fog during prolonged storage.

SUMMARY OF THE INVENTION

An object of the present invention is to provide a negative-type light-sensitive silver halide color photographic material excellent in production efficiency and also improved in fog during prolonged storage.

We have extensively investigated about the constitution of the light-sensitive photographic material and the method for preparation thereof in order to achieve the above object, and consequently accomplished the present invention.

The object of the present invention has been accomplished by a light-sensitive silver halide color photographic material having the following constitution.

A light-sensitive silver halide color photographic material, comprising on a support photographic constituent layers including at least respective emulsion layers which are blue-sensitive, green-sensitive and red-sensitive, and an antihalation layer containing black colloidal silver positioned between said emulsion layers and said support, wherein said photographic constituent layers are provided by the coating and drying step which is substantially once.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The above-mentioned photographic constituent layers may include, other than the silver halide emulsions and the antihalation layer as mentioned above, for example, intermediate layers, protective layers, filter layers and anti-irradiation layers.

The number of the photographic constituent layers provided by coating on a support is not particularly limited, but may be preferably 12 or less, more preferably 9 or less, particularly preferably 7 or less.

Of the photographic constituent layers, for the silver halide emulsion layers, the layers with the same color sensitivity may be constituted of a plurality of layers such as 3 layers of high sensitivity layer, medium sensitivity layer and low sensitivity layer, or 2 layers of high sensitivity layer and low sensitivity layer, but at least one color-sensitive layer is preferably a single layer constitution.

The constitution that the color sensitive layer is a single layer is also inclusive of the case when a plurality of emulsion layers which are the same in color sensitivity, being the same in the kind of the couplers contained in the emulsion layers, grain sizes of the silver halide grains, the halogen compositions and crystal habits, and also the ratio of the coupler to the silver halide, are arranged as continuous layers.

Here, "the same in color sensitivity" or "the same color sensitivity" may be the same in the point of, for example, blue light-sensitivity, green light-sensitivity or red light-sensitivity, and is not required to be totally the same in spectral sensitivity characteristics.

In the present invention, the blue light-sensitive layer is preferably a single layer, and further preferably, both the blue light-sensitive layer and the green light-sensitive layer are single layers. Particularly, all of the blue light-sensitive, green light-sensitive and red light-sensitive silver halide emulsion layers are preferably single layers, respectively.

When the same color sensitive layer has a single layer constitution, the number of the layers coated of the light-sensitive layer can be reduced as compared with the overlaid constitution of the prior art, whereby the film can be made thinner. Therefore, production efficiency and sharpness are improved, and graininess is also improved.

The film thickness is preferably 20 to 3 μm, particularly 15 to 5 μm, after drying.

The exposure latitude is the width of light received at which the exposure effect with a significant difference can be exhibited, particularly the exposure region from the highlight to the deep shadow in the characteristic curve, and is determined by the method defined in "Shashin no Kagaku" (Chemistry of Photography), p. 393 (published by Shashin Kogyo Shuppansha, Japan, 1982).

More specifically, it is the difference in log H's between the two points where the slope of the tangential line at the leg portion and the shoulder portion of the characteristic curve represented with log H as the axis of abscissa and the transmission density as the axis of ordinate becomes 0.2.

The light-sensitive material of the present invention is preferably one having an exposure latitude measured according to the method as described above of 3.0 or more, particularly 3.0 to 8.0.

As the means for making the exposure latitude of the silver halide emulsion layer which is a single layer 3.0 or more, it is possible to use the method in which silver halide grains with different sensitivities are used as a mixture. Specifically, there may be included, for example, the method in which silver halide grains with different grain sizes are used as a mixture, and the method in which the desensitizer is contained in at least a part of the silver halide grains.

For obtaining a broad exposure latitude, there is a method in which two kinds of monodispersed grains having different grain sizes and each sensitized are combinedly used. In this case, a mean grain size of the grains having larger grain size is preferably 0.2 to 2.0 μm and that of the grains having smaller grain size is preferably 0.05 to 1.0 μm, and the latter grains have smaller mean grain size than that of the former ones.

Also, the mean grain size of the silver halide grains with the maximum mean grain size should be preferably 1.5 to 40 times as that of the silver halide grains with the minimum mean grain size.

For obtaining a broad exposure latitude, silver halide grains with different mean grain sizes can be also used as a mixture, but by using silver halide grains containing a desensitizer in place of the low sensitivity silver halide grains with small grain sizes, the mean grain size difference can be made smaller without changing the sensitivity of the silver halide grains, and further it becomes possible to use silver halide grains with equal mean grain size and different sensitivities as a mixture.

Thus, by use of silver halide grains containing a desensitizer, the exposure latitude can be obtained even if the fluctuation coefficient of the grains as a whole may be made smaller.

Therefore, these silver halide grains with small fluctuation coefficient exposed to the same environment are preferably stabilized in photographic performances relative to changes with lapse of time and fluctuations in developing processing. Further, in aspect of production technique, it becomes also possible to chemically sensitize a mixed system of silver halide grains with different sensitivities in the same batch.

As the desensitizer, in addition to metal ions, various ones such as antifoggants, stabilizers and densitizing dyes can be used.

In the present invention, the metal ion doping method is preferred. As the metal ion to be used for doping, there may be included the metal ions of the groups Ib, IIb, IIIa, IIIb, IVb, Va and VIII in the periodic table of elements. Preferred metal ions may include Au, Zn, Cd, Tl, Sc, Y, Bi, Fe, Ru, Os, Rh, Ir, Pd, Pr, Sm and Yb. Particularly, Rh, Ru, Os and Ir are preferred.

These metal ions can be used as, for example, halogeno complexes, and the pH of the AgX suspended system during doping is preferably 5 or lower.

The amount of these metal ions doped will differ variously depending on the kind of the metal ion, the grain size of the silver halide grains, the doping position of the metal ion, the desired sensitivity, etc., but may be preferably 10^{-17} to 10^{-2} mole, further 10^{-12} to 10^{-3} mole, particularly 10^{-9} to 10^{-4} mole, per mole of AgX.

Further, by selection of the kind of the metal ion, the doping position and the doping amount, various different sensitivities and qualities can be given to the silver halide grains.

With a doping amount of 10^{-2} mole/AgX or less, great influence will be scarcely given to the growth of

the grains, and hence silver halide grains with small grain size distribution can be prepared under the same grain growth conditions, even by growth in the same batch.

After the silver halide grains with different doping conditions are adjusted in conditions to be provided for practical application, these can be also made up in the same batch by mixing at a predetermined ratio and subjected to chemical sensitization. The respective silver halide gains receive the sensitizing effects based on their qualities, whereby an emulsion having a broad exposure latitude depending on the sensitivity difference and the mixing ratio can be obtained.

As the above-mentioned antifoggants or stabilizers, there may be included azoles (e.g. benzthiazolium salt, indazoles, triazoles, benztriazoles and benzimidazoles), heterocyclic mercapto compounds (e.g. mercaptotetrazoles, mercaptothiazoles, mercaptothiadiazoles, mercaptobenzthiazoles, mercaptobenzimidazoles and mercaptopyrimidines), azaindenes (e.g. tetraazaindenes and pentaazaindenes), nucleic acid decomposed products (e.g. adenine and guanine), benzenethiosulfonates and thioketo compounds.

As the desensitizing dyes, there may be included cyanine dyes, merocyanine dyes, complex cyanine dyes, complex merocyanine dyes, holopolar cyanine dyes, hemicyanine dyes, styryl dyes and hemioxonol dyes.

As the position where the desensitizer exists, it is preferably mixed internally of the silver halide grains in the points of preservability of the light-sensitive material and standing stability of the coating solution, and its distribution may be either uniform, localized at the central portion of grain or the intermediate positions, or also gradually reduced from the central portion of grain toward outside.

From the standpoint of production efficiency, the case where the desensitizer exists as localized at the central portion of the grain is preferred, and by use of the system in which seed grains with small fluctuation coefficient are used, the steps of grain growth *et seq* can be proceeded in the same batch.

The light-sensitive material of the present invention desirably has at least one color sensitive layer (e.g. blue light-sensitive layer) containing AgX grains which contain a desensitizer. Preferably, it is the case when the blue light-sensitive layer contains AgX grains which contain a desensitizer, more preferably when the blue light-sensitive layer and the green light-sensitive layer contain them, most preferably when all of the color light-sensitive layers contain them.

Also, the fluctuation coefficient defined by the ratio $S/\bar{r}$ of the standard deviation of grain size (S) as the silver halide grains contained in the respective silver halide emulsion layers and the mean grain size ($\bar{r}$) is preferably 0.4 or less, more preferably 0.33 or less, further preferably 0.25 or less, particularly preferably 0.20 or less.

$$S = \sqrt{\frac{\Sigma\ (\bar{r} - r_i)^2 n_i}{\Sigma\ n_i}}$$

The mean grain size ($\bar{r}$) is defined by the following formula when the number of grains with a grain size r_i - (in the case of a cubic silver halide grain, its length of one side, or in the case of a grain with other shape than cubic, the length of one side of the cube calculated to have the same volume) is n_i:

$$\bar{r} = \frac{\Sigma\ n_i \cdot r_i}{\Sigma\ n_i}$$

The relationship of grain size distribution can be determined according to the method described in the essay of Tribel and Smith in "Empirical Relationship between Sensitometry Distribution and Grain Size Distribution in Photography", The Photographic Journal, Vol. LXXIX (1949), pp. 330 - 338.

The number of a protective layer provided at outside of the silver halide emulsion layer which is positioned at furthest from the support may preferably 1 or 2, and the case where it is 1 is particularly preferred.

Also, between the antihalation layer containing black colloidal silver and the silver halide emulsion layer, an intermediate layer may be formed but in the present invention, it is preferably not formed.

A core/shell type silver halide emulsion to be used in the present invention preferably has a grain structure comprising two or more phases different in silver iodide content and comprises silver halide grains in which a phase containing a maximum silver iodide content (referred to as "core") is other than the

outermost surface layer (referred to as "shell").

The content of silver iodide in an inner phase (core) having the maximum silver iodide content is preferably 6 to 40 mole %, more preferably 8 to 40 mole %, particularly preferably 10 to 40 mole %. The content of silver iodide in the outermost surface layer is preferably less than 6 mole %, more preferably 0 to 4.0 mole %.

A ratio of the shell portion in the core/shell type silver halide grains is preferably 10 to 80 %, more preferably 15 to 70 %, particularly preferably 20 to 60 % in terms of volume.

Also, a ratio of the core portion is preferably, in terms of volume, 10 to 80 %, more preferably 20 to 50 % based on the whole grains.

Difference of silver iodide content between the core portion having higher silver iodide content and the shell portion having less silver iodide content of the silver halide grains may be clear with sharp boundary or may be hazy where boundary is not clear and the content continuously changes. Also, those having an intermediate phase with silver iodide content between those of the core portion and the shell portion, between the core and the shell, may be preferably used.

In case of the core/shell type silver halide grains having the above intermediate phase, a volume of the intermediate phase is preferably 5 to 60 %, more preferably 20 to 55 % based on the whole grain. Differences of the silver iodide content between the shell and the intermediate phase, and between the intermediate phase and the core are each preferably 3 mole % or more and the difference of the silver iodide content between the shell and the core is preferably 6 mole % or more.

The core/shell type silver halide emulsion can be prepared according to the known methods as disclosed in Japanese Provisional Patent Publications No. 177535/1984, No. 138538/1985, No. 52238/1984, No. 143331/1985, No. 35726/1985 and No. 258536/1985.

For producing silver iodobromide or silver bromide, soluble silver salt and soluble halide are generally used, but as clear from the following Examples, iodide salts are preferably used in the form of silver iodide fine crystals in the point of preservability and processing stability of the light-sensitive material.

Also, silver iodobromide fine crystals having high AgI content are similarly and preferably used as the silver iodide fine crystals.

Distribution condition of the silver iodide in the above core/shell type silver halide grains can be determined by various physical measuring method and, for example, it can be examined by the measurement of luminescence at low temperature or X-ray diffraction method as described in Lecture Summary of Annual Meeting, Japanese Photographic Association, 1981.

The core/shell type silver halide grain may be any shape of normal crystal such as cubic, tetradecahedral and octahedral, or twinned crystal, or mixtures thereof, but preferably normal crystal grains.

As the silver halide emulsion to be used in the light-sensitive material of the present invention, any of conventional silver halide emulsions can be used, but a silver halide containing substantially iodine in the halogen composition (e.g. silver iodobromide, silver iodochlorobromide) may be preferred, particularly preferably silver iodobromide with respect to sensitivity. The amount of iodine may be preferably 1 mole % to 20 mole %, particularly 3.5 mole % to 12 mole %.

Said emulsion can be chemically sensitized in the conventional manner, and optically sensitized to a desired wavelength region by use of a sensitizing dye.

In the silver halide emulsion, antifoggants and stabilizers can be added. As the binder for said emulsion, gelatin can be advantageously used.

The emulsion layer and other hydrophilic colloid layers can be hardened, and also a plasticizer, a dispersion (latex) of a water-insoluble or difficultly soluble synthetic polymer can be contained therein.

In the emulsion layer of a light-sensitive material for color photography, couplers are used.

Further, there can be used colored couplers having the effect of color correction, competitive couplers and compounds releasing photographically useful fragments such as developer, silver halide solvent, toning agents, hardeners, antifoggants, chemical sensitizers, spectral sensitizers and desensitizers through the coupling reaction with the oxidized product of the developing agent.

Also, a DIR compound may be used in the light-sensitive material of the present invention and is a compound which eliminates a developing inhibitor or a compound capable of releasing a developing inhibitor through the reaction with an oxidized product of a color developing agent.

The above-mentioned compound capable of releasing a developing inhibitor may be one which releases the developing inhibitor either imagewise or non-imagewise.

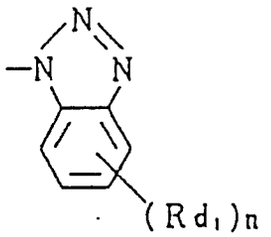
Those which release developing inhibitors imagewise may include, for example, those through the reaction with the oxidized product of color developing agents. Examples of those which release developing inhibitors non-imagewise may include those which utilize the TIME groups as described below.

The DIR compounds to be used in the present invention are represented by the following formulae.

$A\{Y)_m$ (D-1)

wherein A represents a coupler residue, m represents 1 or 2, Y represents a group bonded to the coupling position of the coupler residue A and eliminatable through the reaction with the oxidized product of the color developing agent, which is a developing inhibitor group or a group capable of releasing a developing inhibitor.

In the formula (D-1), Y may be typically represented by the formulae (D-2) to (D-20) set forth below.



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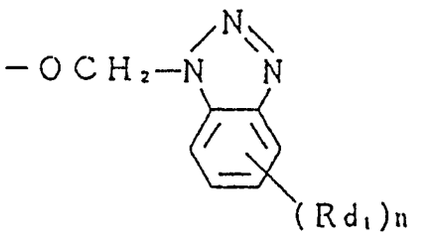

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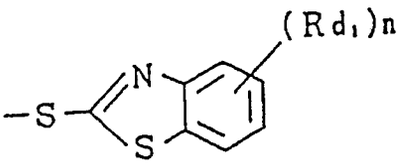

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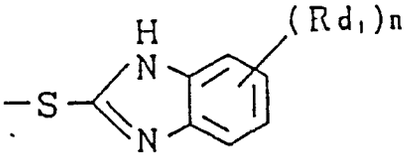

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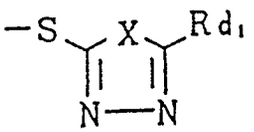

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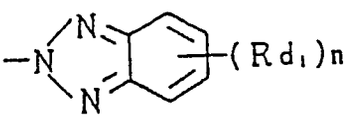

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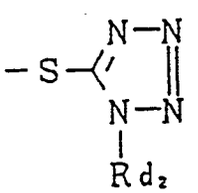

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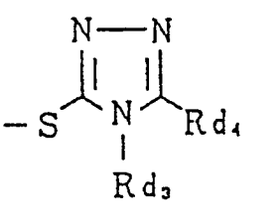


(D-9)

In the formulae (D-2) to (D-7), Rd_1 represents a hydrogen atom, a halogen atom or an alkyl, alkoxy, acylamino, alkoxycarbonyl, thiazolidinylideneamino, aryloxycarbonyl, acyloxy, carbamoyl, N-alkylcarbamoyl, N,N-dialkylcarbamoyl, nitro, amino, N-arylcarbamoyloxy, sulfamoyl, N-alkylcarbamoyloxy, hydroxy, alkoxycarbonylamino, alkylthio, arylthio, aryl, heterocyclic, cyano, alkylsulfonyl or aryloxycarbonylamino group. n represents 0, 1 or 2, and when n is 2, the respective Rd_1's may be either the same or different. The total carbon atoms contained in n Rd_1's may be 0 to 10. On the other hand, the carbon atoms contained in Rd_1 in the formula (D-6) may be 0 to 15.

In the above formula (D-6), X represents an oxygen atom or a sulfur atom.

In the formula (D-8), Rd_2 represents an alkyl group, an aryl group or a heterocyclic group.

In the formula (D-9), Rd_3 represents a hydrogen atom, an alkyl, cycloalkyl, aryl or heterocyclic group, Rd_4 represents a hydrogen atom, a halogen atom or an alkyl, cycloalkyl, aryl, acylamino, alkoxycarbonylamino, aryloxycarbonylamino, alkanesulfonamide, cyano, heterocyclic, alkylthio or amino group.

When Rd_1, Rd_2, Rd_3 or Rd_4 represents an alkyl group, the alkyl group includes those having substituents, and may be either straight or branched.

When Rd_1, Rd_2, Rd_3 or Rd_4 represents an aryl group, the aryl group includes those having substituents.

When Rd_1, Rd_2, Rd_3 or Rd_4 represents a heterocyclic group, the heterocyclic group includes those having substituents, preferably 5- or 6-membered monocyclic or fused rings containing at least one selected from nitrogen atom, oxygen atom and sulfur atom as the hetero atom, and may be selected from the groups of, for example, pyridyl, quinolyl, furyl, benzothiazolyl, oxazolyl, imidazolyl, thiazolyl, triazolyl, benzotriazolyl, imide or oxazine group.

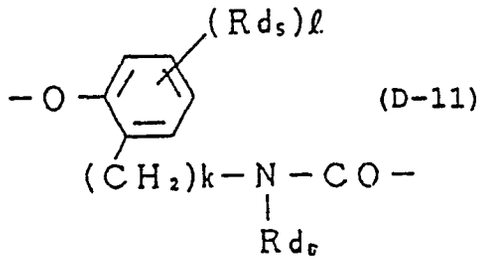
The carbon atoms contained in Rd_2 in the formula (D-8) may be 0 to 15.

In the above formula (D-9), the total carbon atoms contained in Rd_3 and Rd_4 may be 0 to 15.

$\{TIME\}_n$—INHIBIT (D-10)

wherein the TIME group is a group bound to the coupling position of A which cleavable through the reaction with the oxidized product of the color developing agent, which is a group cleaved successively after cleavage from the coupler, until finally can release the INHIBIT groups with adequate control; n is 1 to 3, and when it is 2 or 3, the respective TIME groups may be either the same or different. The INHIBIT group is a group which becomes a developing inhibitor by the above-mentioned release (e.g. the group represented by the above formulae (D-2) to (D-9)).

In the formula (D-10), the -TIME group may be typically represented by the formulae (D-11) to (D-19) set forth below.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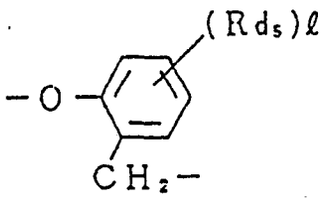
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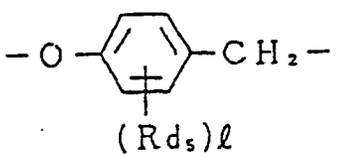
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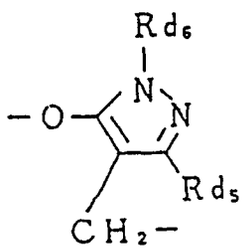
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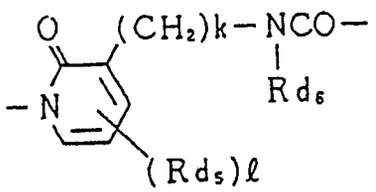
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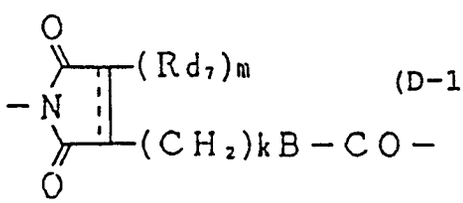
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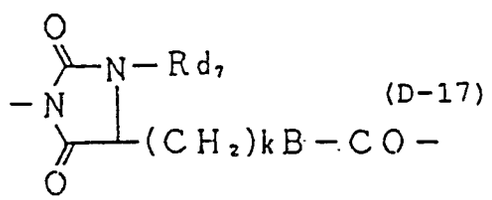
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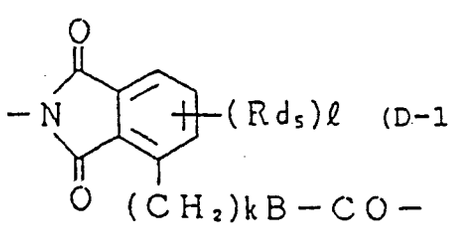
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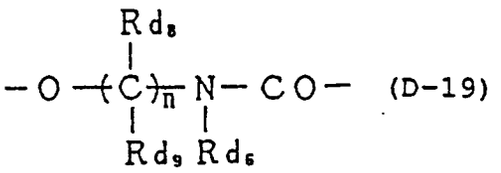
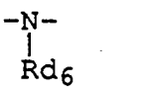


(D-19)

In the formulae (D-11) to (D-15) and (D-18), Rd_5 reprsents a hydrogen atom, a halogen atom or an alkyl, cycloalkyl, alkenyl, aralkyl, alkoxy, alkoxycarbonyl, anilino, acylamino, ureido, cyano, nitro, sulfonamide, sulfamoyl, carbamoyl, aryl, carboxy, sulfo, hydroxy or alkanesulfonyl group. In the formulae (D-11) to (D-13), (D-15) and (D-18), Rd_5's may be mutually bonded together to form a fused ring. In the formulae (D-11), (D-14), (D-15) and (D-19), Rd_6 represents an aralkyl, alkenyl, alkyl, cycloalkyl, heterocyclic or aryl group. In the formulae (D-16) and (D-17), Rd_7 represents a hydrogen atom or an alkyl, alkenyl, aralkyl, cycloalkyl, heterocyclic or aryl group. Each of Rd_8 and Rd_9 in the formulae (D-19) represents a hydrogen atom or an alkyl group (preferably an alkyl group having 1 to 4 carbon atoms), k in the formulae (D-11), (D-15) to (D-18) represents an integer of 0, 1 or 2, l in the formulae (D-11) to (D-13), (D-15) and (D-18) represents an integer of 1 to 4, m in the formula (D-16) represents an integer of 1 or 2. When l and m are 2 or more, the respective Rd_5 and Rd_7 may be either the same or different. n in the formula (D-19) represents an integer of 2 to 4, and Rd_8 and Rd_9 in number of n may be each the same or different. B in the formulae (D-16) to (D-18) represents an oxygen atom or



(Rd_6 represents the same meaning as already defined), and ===== in the formula (D-16) may be either a single bond or a double bond, and m is 2 in the case of the single bond or m is 1 in the case of the double bond.

$(T_1)_l$-SR-$(T_2)_m$-INHIBIT (D-20)

wherein T_1 represents a component which cleaves SR-$(T_2)_m$-INHIBIT, SR represents a component which forms $(T_2)_m$-INHIBIT through the reaction with the oxidized products of the developing agent after formation of SR-$(T_2)_m$-INHIBIT, T_2 represents a component which cleaves INHIBIT after formation of $(T_2)_m$-INHIBIT, INHIBIT represents a developing inhibitor and l and m each 0 or 1.

The component represented by SR may be one which can form the component as mentioned above through the reaction with the oxidized product of the developing agent, and may include, for example, a coupling component which undergoes the coupling reaction with the oxidized product of the developing agent or a redox component which undergoes the redox reaction with the oxidized product of the developing agent.

As the coupler component, there may be included yellow couplers, magenta couplers and cyan couplers such as acylacetanilides, 5-pyrazolones, pyrazoloazoles, phenols, naphthols, acetophenones, indanones, carbamoylacetanilides, 2(5H)-imidazolones, 5-isoxazolones, uracils, homophthalimides, oxazolones, 2,5-thiadiazoline-1,1-dioxides, triazolothiadiazines and indoles, and otherwise those which form various dyes or form no dye. The $(T_1)_l$-SR-$(T_2)_m$-INHIBIT should be preferably bonded to the active site of the component A of the formula (D-1).

When SR is a coupler component, SR is bonded to $(T_1)_l$ and $(T_2)_m$-INHIBIT so as to function for the first time as the coupler after cleavage from $(T_1)_l$.

For example, the oxygen atom of hydroxyl group when the coupler component is phenols or naphthols, the oxygen atom at the 5-position or the nitrogen atom at the 2-position of the enantiomer when it is 5-pyrazolones, and also the oxygen atom of hydroxyl group of the enantiomer when it is acetophenones or indanones, are preferably bonded to $(T_1)_l$, and $(T_2)_m$-INHIBIT to the active site of the coupler.

In the case when SR is a redox component, its examples may include hydroquinones, catechols, pyrogallols, aminophenols (e.g. p-aminophenols and o-aminophenols), naphthalenediols (e.g. 1,2-naphthalenediols, 1,4-naphthalenediols and 2,6-naphthalenediols) and aminonaphthols (e.g. 1,2-aminonaphthols, 1,4-aminonaphthols and 2,6-aminonaphthols).

In the case when SR is a redox component, SR is bonded to $(T_1)_l$, and $(T_2)_m$-INHIBIT so as to function for the first time as the redox component after cleavage from $(T_1)_l$.

Examples of the group represented by T_1 and T_2 may include those represented by the formulae (D-11) to (D-19) as described above.

As the developing inhibitor represented by INHIBIT, for example, those represented by the formulae (D-2) to (D-9) as described above may be included.

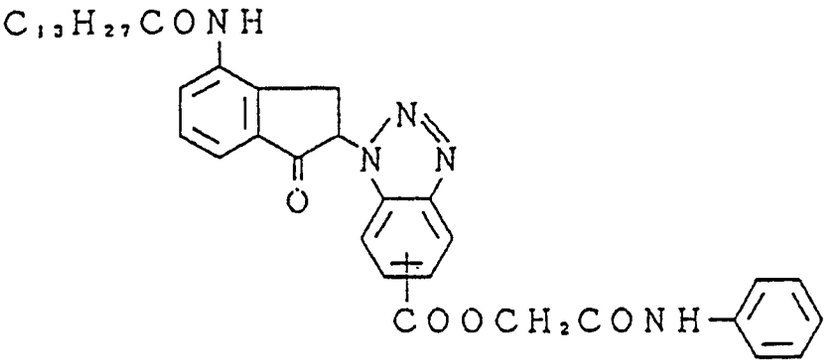
Among the DIR compounds, preferred are those wherein Y is represented by the formula (D-2), (D-3), (D-8), (D-10) or (D-20), and among (D-10) and (D-20), those wherein INHIBIT is represented by the formula (D-2), (D-3), (D-6) (particularly when X of the formula (D-6) is an oxygen atom), or (D-8) are preferred.

As the coupler component represented by A in the formula (D-1), yellow color image forming coupler residues, magenta color image forming coupler residues, cyan color image forming coupler residues and no color exhibiting coupler residues may be included.

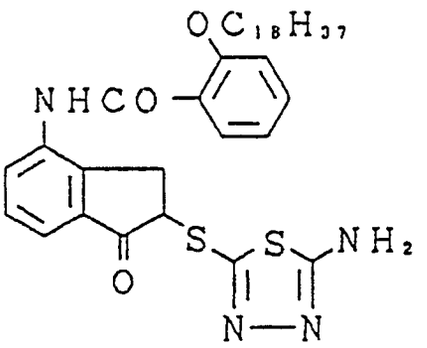
As preferred DIR compounds to be used in the present invention, the compounds as shown below may be included, but these are not limitative of the invention.

Exemplary compounds:

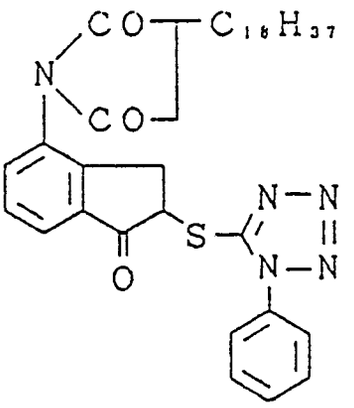
D-1

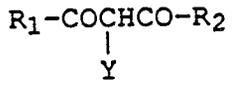


D-36

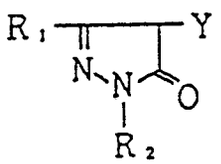


D-37

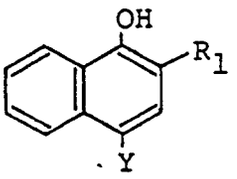




Exemplary compound No.	R_1	R_2	Y
D - 2	(1)	(1)	(30)
D - 3	(2)	(3)	(30)
D - 4	(2)	(4)	(30)
D - 5	(5)	(6)	(31)
D - 6	(2)	(4)	(32)
D - 7	(2)	(3)	(32)
D - 8	(7)	(8)	(33)
D - 33	(2)	(4)	(55)
D - 40	(2)	(4)	(56)
D - 43	(2)	(25)	(59)



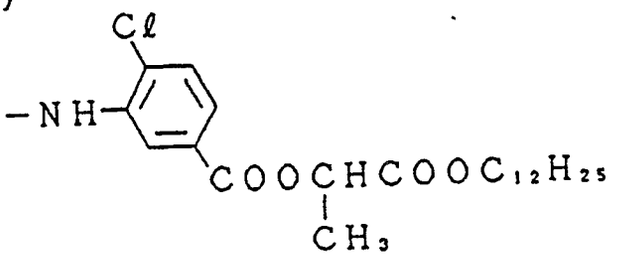
Exemplary compound No.	R_1	R_2	Y
D - 9	(9)	(10)	(30)
D - 10	(11)	(10)	(30)
D - 11	(12)	(7)	(34)
D - 12	(12)	(13)	(35)
D - 13	(9)	(14)	(36)
D - 14	(15)	(16)	(37)
D - 35	(56)	(24)	(23)



Exemplary compound No.	R_1	Y
D - 15	(17)	(38)
D - 16	(17)	(39)
D - 17	(18)	(40)
D - 18	(19)	(41)
D - 19	(18)	(42)
D - 20	(18)	(43)
D - 21	(18)	(44)
D - 22	(18)	(45)
D - 23	(18)	(46)
D - 24	(20)	(47)
D - 25	(20)	(48)
D - 26	(21)	(49)
D - 27	(21)	(50)
D - 28	(21)	(51)
D - 29	(22)	(52)
D - 30	(18)	(53)
D - 31	(18)	(54)
D - 32	(22)	(49)
D - 34	(18)	(56)
D - 38	(19)	(46)
D - 39	(18)	(57)
D - 41	(18)	(60)
D - 42	(18)	(48)
D - 44	(18)	(58)

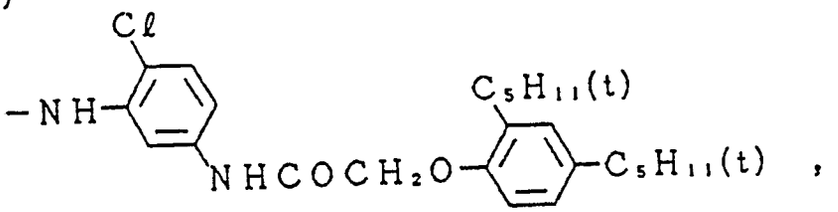
Groups of R_1, R_2 and Y

(1)



(2) $-C(CH_3)_3$,

(3)



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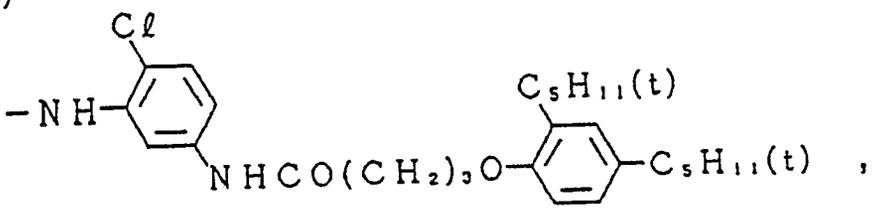
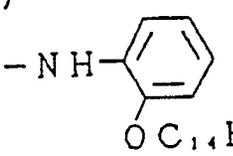


(5) $-OCH_3$,

(6)



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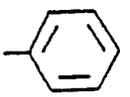

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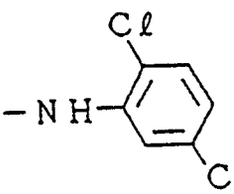

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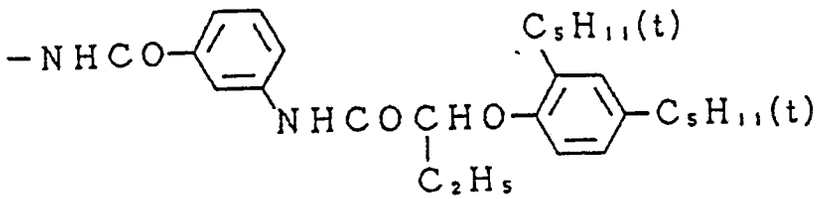

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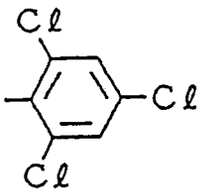

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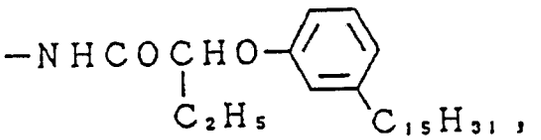

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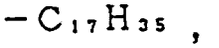

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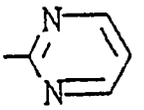

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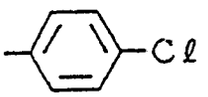

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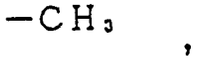

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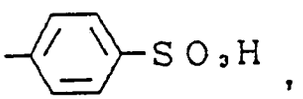

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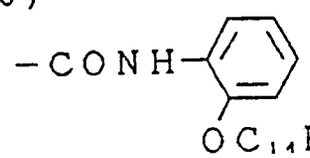
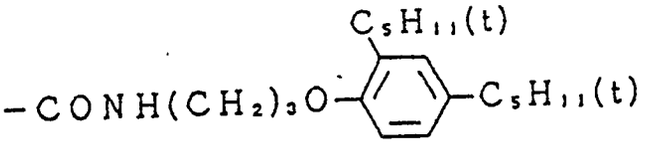
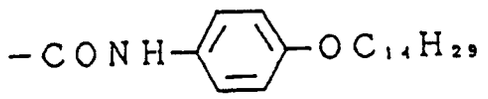
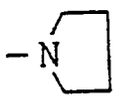


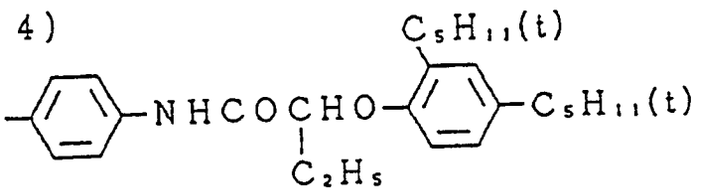
(19) 

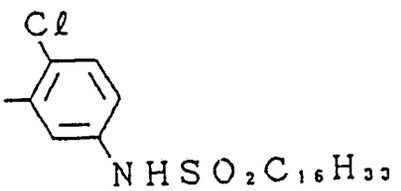
(20) 

(21) $-CONHCH_2CH_2COOH$,

(22) $-CONHCH_2CH_2COOCH_3$,

(23)  ,

(24)  ,

(25)  ,

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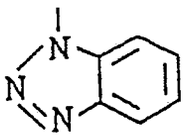

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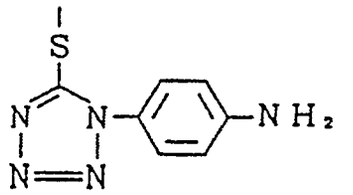

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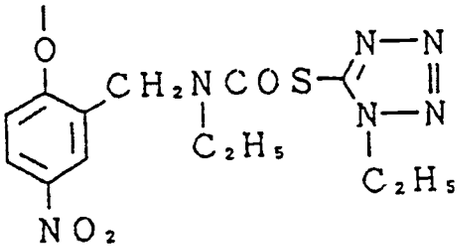

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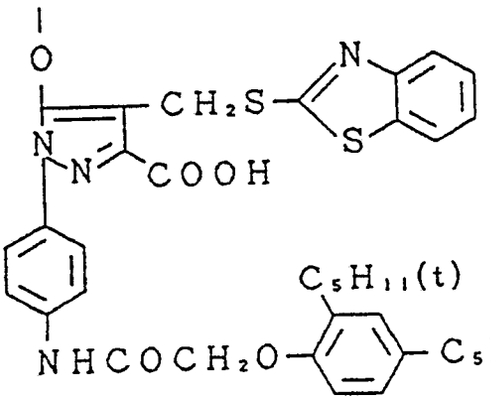

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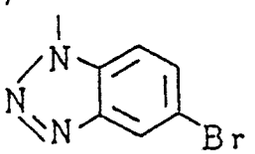

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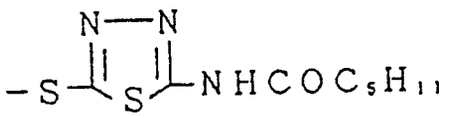

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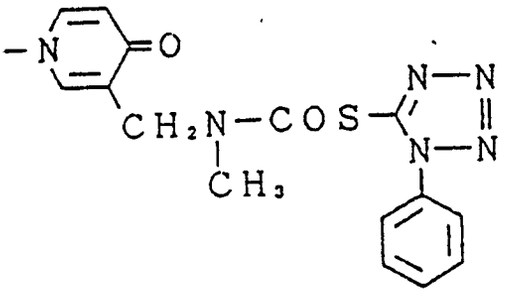

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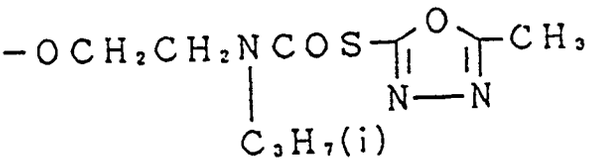

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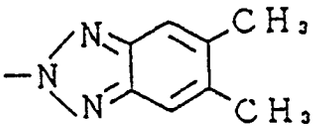

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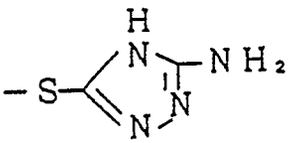

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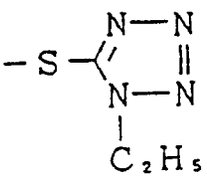

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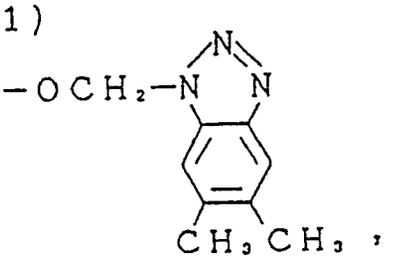

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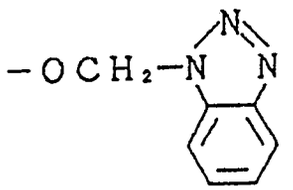

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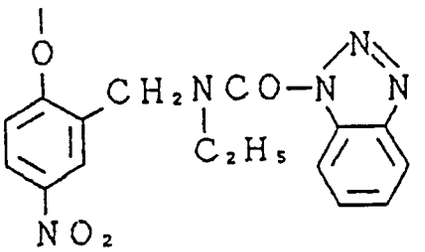

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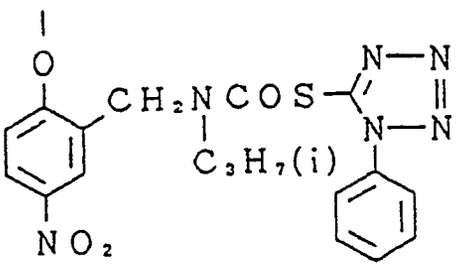

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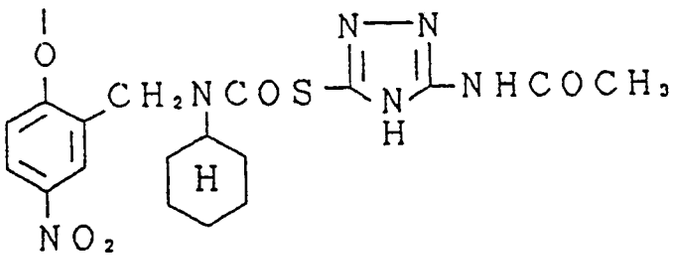

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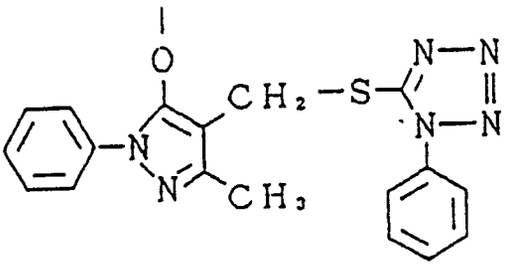

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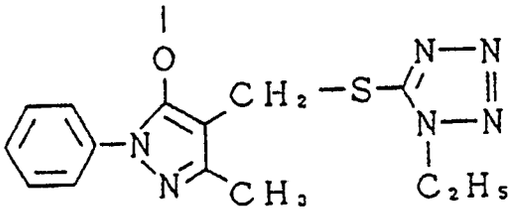

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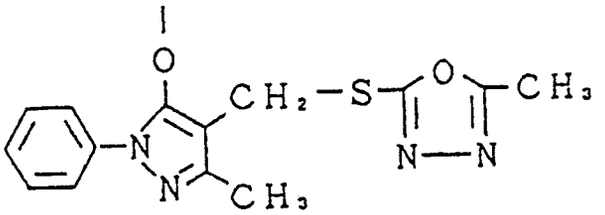

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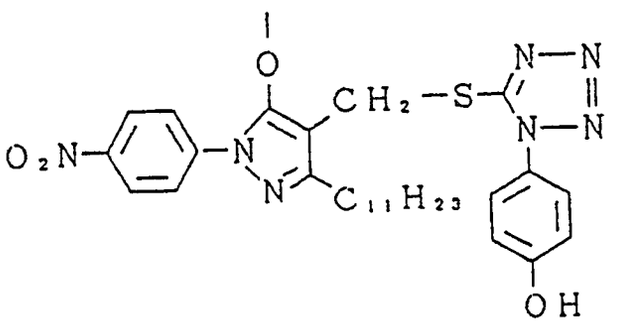

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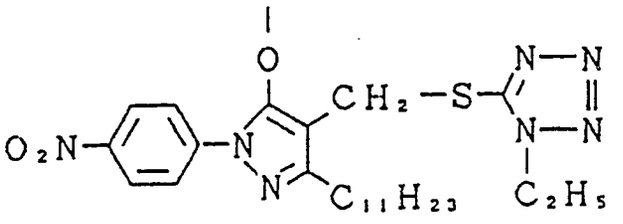

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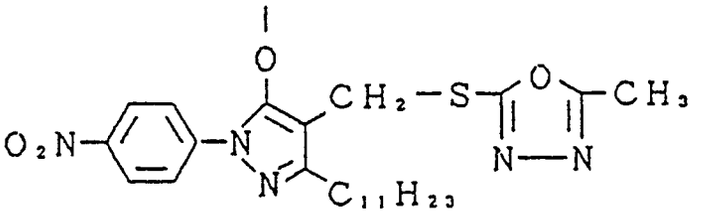

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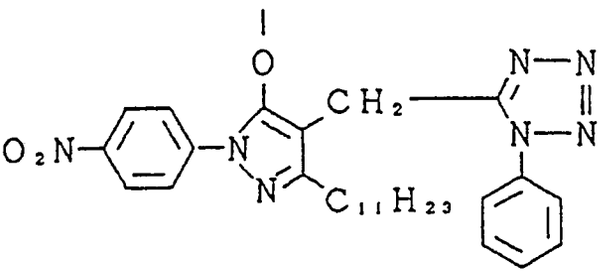

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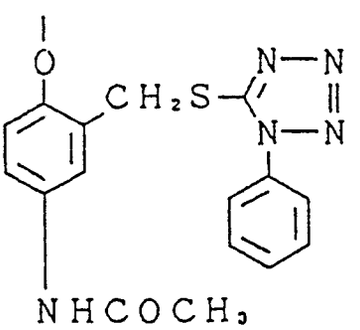

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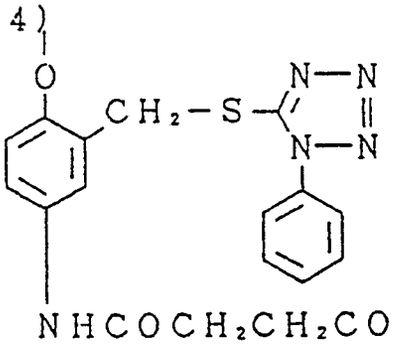

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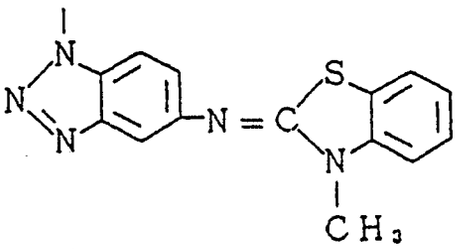

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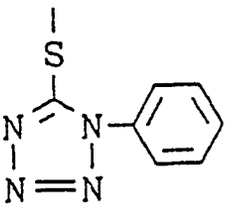

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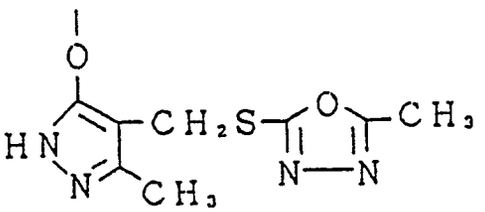

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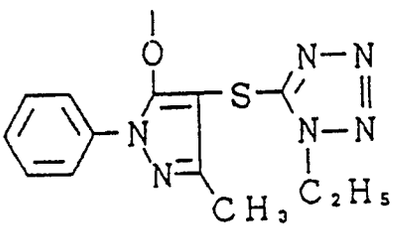

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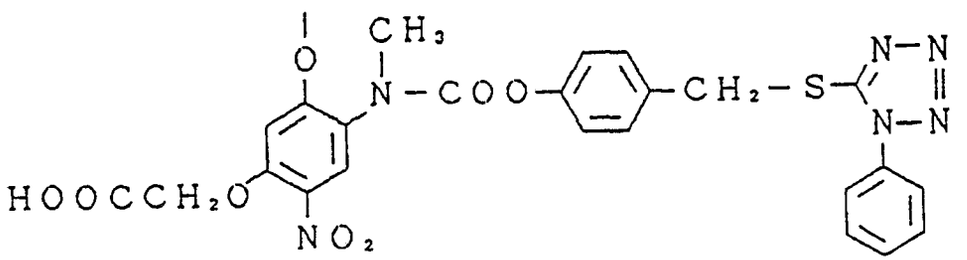

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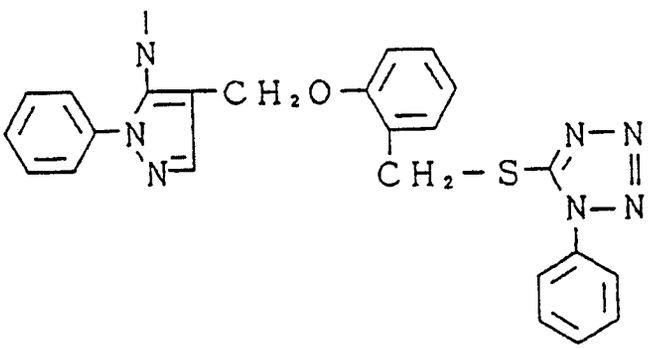


Specific examples of the DIR compounds which can be used in the present invention, including these are described in U.S. Patents No. 4,234,678, No. 3,227,554, No. 3,617,291, No. 3,958,993, No. 4,149,886 and No. 3,933,500; Japanese Provisional Patent Publications No. 56837/1982 and No. 13239/1976; U.S. Patents No. 2,072,363 and No. 2,070,266; and Research Disclosure No. 21228, December, 1981.

The DIR compound is preferably used in an amount of 0.0001 to 0.1 mole, particularly 0.001 to 0.05 mole, per mole of silver halide.

The place in which the DIR compound to be used in the present invention is added may be any place which can affect developing of the silver halide in the emulsion layer which is single layer constitution as described below, preferably a silver halide emulsion layer, more preferably an emulsion layer which is

single layer constitution.

In the light-sensitive material, auxiliary layers such as filter layer, antihalation layer and anti-irradiation layer can be provided. In these layers and/or emulsion layers, a dye which flows out from the light-sensitive material or bleached during developing processing may be also contained.

In the light-sensitive material, formalin scavenger, fluorescent brightener, matte agent, lubricant, image stabilizer, surfactant, anti-color foggant, developing accelerator, developing retarder or bleaching accelerator can be added.

For the support, papers laminated with polyethylene, etc., polyethylene terephthalate film, baryta film, cellulose triacetate, etc. can be used.

The light-sensitive material of the present invention is particularly useful as the negative-type light-sensitive material.

For obtaining a dye image by use of the light-sensitive material of the present invention, after exposure, color photographic processings generally known in the art can be performed.

In the present specification, "the photographic constituent layers are provided by the coating and drying step which is substantially once" means that all the photographic constituent layers of a light-sensitive silver halide photographic material of the present invention are coated simultaneously or within an extremely short time without via a drying step, i.e. all the photographic constituent layers are provided in wet state, and then dried in the drying step.

The method for coating at the same time a plurality of layers is not particularly limited, but, for example, there may be included slide hopper coating, extrusion coating and curtain coating. The coating speed may be preferably 50 m/min or more from the standpoint of productivity.

In the drying step subsequent to coating, the air stream drying method blown out from an air nozzle is particularly useful. Drying conditions may be set under various conditions from immediately after coating to completion of drying, but the air stream temperature may be preferably 20 to 60 °C. As the conveying method, air supporting conveying with little problem such as charging, contamination, scraping damage, wrinkle and tension loss, may be preferably used.

In the coating composition, surfactants and thickeners may be generally used as the coating aid.

As the surfactant, anionic, cationic, nonionic and amphoteric surfactants may be suitably selected and used.

As the anionic surfactant, those disclosed in U.S. Patents No. 2,527,260, No. 2,211,347, No. 2,600,831, No. 2,944,900, No. 2,823,123, No. 3,026,202 and No. 3,514,346, Japanese Patent Publications No. 31191/1971 and No. 1617/1981 are preferred; as the cationic surfactant, those disclosed in Japanese Patent Publication No. 34116/1973 are preferred; as the nonionic surfactant, those disclosed in Japanese Provisional Patent Publication No. 151127/1976 and U.K. Patent No. 1,022,878 are preferred; and as the amphoteric surfactant, those disclosed in Japanese Patent Publication No. 378/1965 and U.S. Patent No. 3,133,816 are preferred.

As the thickener, those disclosed in Japanese Patent Publication No. 12820/1970, U.S. Patents No. 2,956,883 and 3,767,410 and U.K. Patent No. 1,351,767 are preferred.

EXAMPLES

In the following, the present invention is described in more detail by referring to Examples, but the present invention is not limited by these descriptions.

The silver halide emulsions to be used in Examples were prepared.

Preparation of seed emulsion

Into a reaction kettle in which an aqueous gelatin had been thrown, while controlling the pAg and the pH in the reaction kettle and also controlling the addition time, were added at the same time an aqueous silver nitrate solution, an aqueous potassium iodide solution and an aqueous potassium bromide solution, and then precipitation and desalting were practiced by use of a pH coagulatable gelatin, followed by addition of gelatin to prepare a seed emulsion.

The emulsion obtained is called NE-1. Also, a seed emulsion NE-2 was prepared in the same manner as described above except for adding K_3RhCl_6 in the reaction kettle.

The emulsions and their contents are shown in Table 1.

Table 1

Seed emulsion No.	Kind of additive	Amount added mole/mole silver	Grain size (μm)
NE-1	-	-	0.093
NE-2	K_3RhCl_6	5×10^{-5}	0.093

In a reaction kettle in which the above seed emulsion and an aqueous gelatin had been thrown, while controlling the pAg and the pH in the reaction kettle, were added an aqueous ammoniacal silver ntirate solution, an aqueous potassium iodide solution and an aqueous potassium bromide solution in proportion to the surface area during the grain growth, followed by subsequent addition in place of the aqueous potassium bromide solution at an adequate grain size. After precipitation and desalting were practiced similarly as in the case of the seed emulsion, gelatin was added to effect re-dispersion to give an emulsion having a pAg of 7.8 and a pH of 6.0.

Thus, silver iodobromide emulsions EM-1 to EM-3 with high iodine contents internally of grains were prepared.

The emulsions and their contents are shown in Table 2.

Table 2

Emulsion No.	Mean grain size (μm)	Mean Ag content (mole %)	Seed emulsion	Variation coefficient
EM - 1	0.65	6.5	NE - 1	0.17
EM - 2	0.35	8.5	NE - 1	0.18
EM - 3	0.65	6.5	NE - 1*1	0.17
			NE - 2	

*1 Equal amounts of NE - 1 and NE - 2 were employed.

Example 1

Preparation of Sample No. 101 (Comparative)

On a cellulose acetate support applied with subbing treatment was prepared a multi-layer color light-sensitive material No. 101 was prepared as shown below.

The amounts coated are indicated in the amount represented in g/m^2 unit calculated on silver for silver halide and colloidal silver, the amount represented in g/m^2 unit for the additives and gelatin, and further in moles per mole of silver halide within the same layer for the sensitizing dye, coupler and DIR compound.

The emulsion contained in each color sensitive emulsion layer was applied with optimum sensitization with sodium thiosulfate and chloroauric acid.

The coated samples of the first to the fifth layers having the following compositions were prepared by the coating and drying step for the first time.

Coating was performed by slide hopper coating and drying was carried out at 37 °C for 40 minutes.

Layer	Main composition	Amount used
First layer (HC) (halation preventive layer)	Black colloidal silver	0.20
	Gelatin	1.5
	UV-ray absorber UV-1	0.1
	UV-ray absorber UV-2	0.2
	Dioctyl phthalate (abbreviated as DOP)	0.03
Second layer (IL-1) (Intermediate layer)	Gelatin	2.0
	Antistaining agent (AS-1)	0.1
	DOP	0.1
Third layer (R-1) (First red-sensitive emulsion layer)	EM-2	1.2
	Gelatin	1.1
	Sensitizing dye I	6×10^{-4}
	Sensitizing dye II	1×10^{-4}
	Coupler (C-1)	0.085
	Coupler (CC-1)	0.005
	DIR compound (D-23)	0.0015
	DIR compound (D-42)	0.002
	DOP	0.6
Fourth layer (R-2) (Second red-sensitive emulsion layer)	EM-1	1.3
	Gelatin	1.1
	Sensitizing dye I	3×10^{-4}
	Sensitizing dye II	1×10^{-4}
	Coupler (C-2)	0.007
	Coupler (C-3)	0.027
	Coupler (CC-1)	0.0015
	DIR compound (D-42)	0.001
	DOP	0.2

Fifth layer (IL-2) (Intermediate layer)	Gelatin	0.8
	AS-1	0.03
	DOP	0.1
	Polymethyl methacrylate particles (diameter 1.5 μm)	0.2
	Hardener (H-1)	0.1

In the coating compositions of the respective layers, carboxyalkyldextran sulfate was added as the thickener, and the following compound as the surfactant:

$$NaO_3S-\underset{\displaystyle CH_2COOCH_2(CF_2CF_2)_nH}{\overset{\displaystyle CHCOOCH_2(CF_2CF_2)_mH}{|}}$$

(a (2 : 1) mixture of (m=2, n=2) : (m=2, n=3))

Next, by the coating and drying step for the second time, the sixth layers to the twelfth layers having the following compositions were provided by coating on the coated samples for the first time to prepare Sample No. 101.

Coating was performed by slide hopper coating, and after drying at 40 °C for 60 minutes, the sample was left to stand at room temperature for 8 hours.

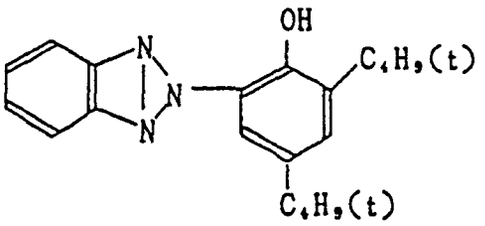
Sixth layer (G-1) (First green-sensitive emulsion layer)	EM-2	1.3
	Gelatin	1.2
	Sensitizing dye III	2.5×10^{-4}
	Sensitizing dye IV	1.2×10^{-4}
	Coupler (M-2)	0.09
	Coupler (CM-1)	0.004
	DIR compound (D-23)	0.001
	DIR compound (D-26)	0.003
	Tricresyl phosphate (abbreviated as TCP)	0.5

Seventh layer (G-2) (Second green-sensitive emulsion layer)	EM-1	1.4
	Gelatin	0.8
	Sensitizing dye III	1.5×10^{-4}
	Sensitizing dye IV	1.0×10^{-4}
	Coupler (M-1)	0.03
	Coupler (CM-1)	0.002
	DIR compound (D-26)	0.001
	TCP	0.3
Eighth layer (YC) (Yellow filter layer)	Gelatin	0.6
	Yellow colloidal silver	0.08
	AS-1	0.1
	DOP	0.3
Ninth layer (B-1) (First blue-sensitive emulsion layer)	EM-2	0.5
	Gelatin	1.1
	Sensitizing dye V	1.3×10^{-4}
	Coupler (Y-1)	0.29
	TCP	0.2
Tenth layer (B-2) (Second blue-sensitive emulsion layer)	EM-1	0.5
	Gelatin	1.2
	Sensitizing dye V	1 x 10-4
	Coupler (Y-1)	0.08
	DIR compound (D-42)	0.003
	TCP	0.1
Eleventh layer (Pro-1) (First protective layer)	Gelatin	0.55
	UV-ray absorber UV-1	0.1
	UV-ray absorber UV-2	0.2
	DOP	0.03
	Silver iodobromide AgI 1 mol% mean grain size 0.07 μm	0.5
Twelfth layer (Pro-2)	Gelatin	0.5
	Polymethyl methacrylate	0.2

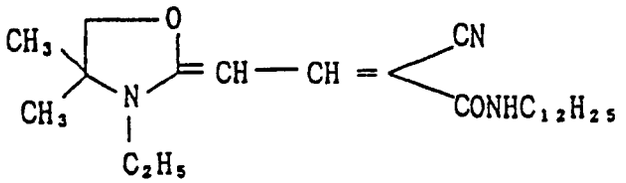
(Second protective layer)	particles (diameter 1.5 μm)	
	Formalin scavenger (HS-1)	1.0
	Hardener (H-1)	0.4

In the respective layers, other than the above components, thickeners and surfactants were added as the coating aid.

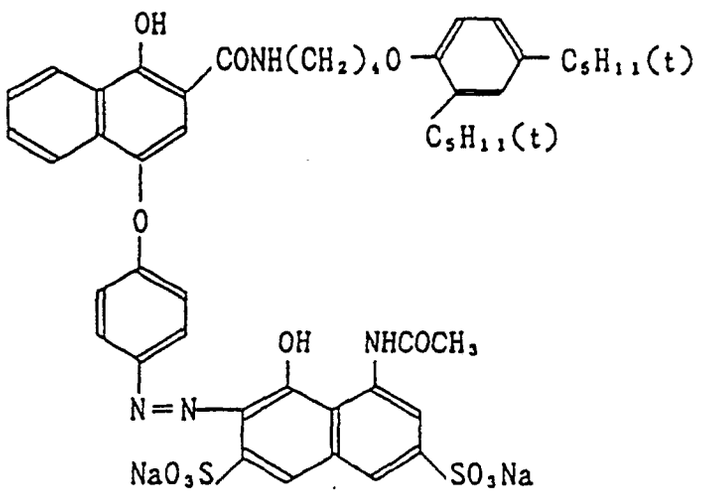
U V - 1



U V - 2



C C - 1



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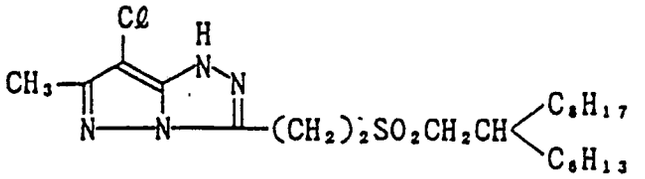

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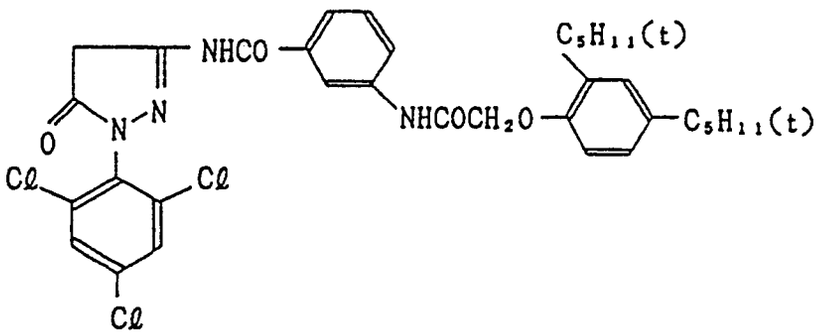
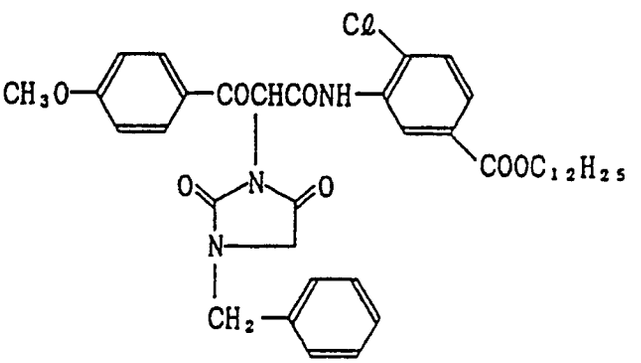


Y − 1



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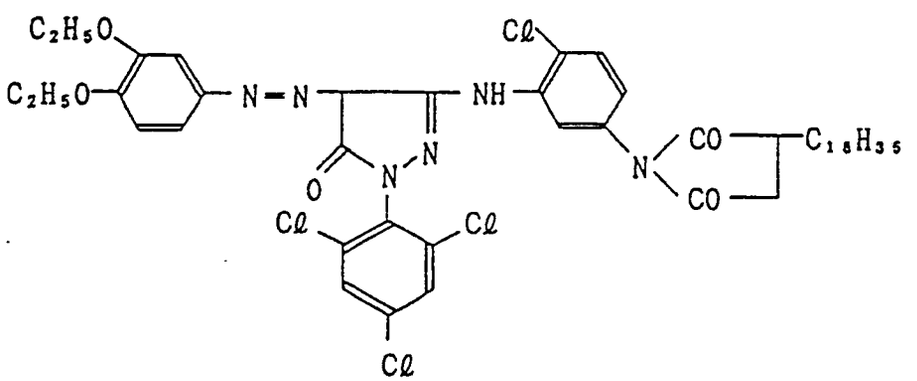

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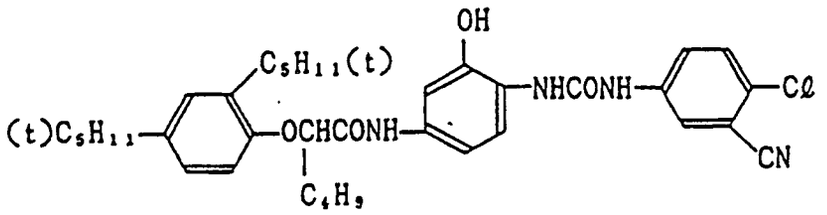

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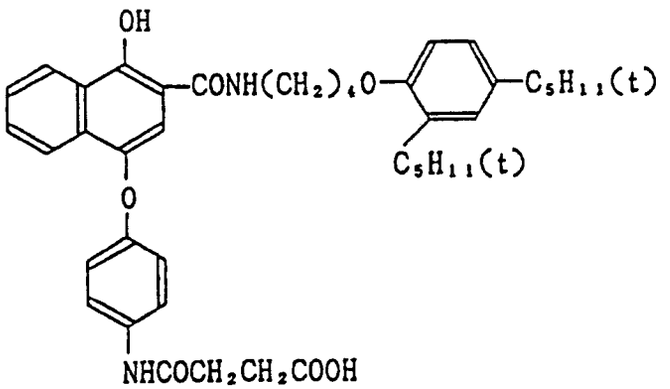
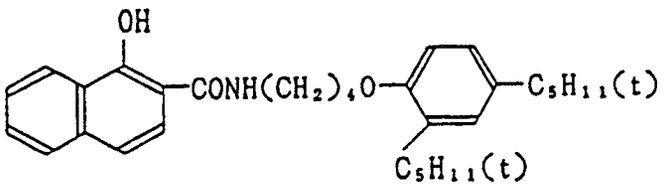
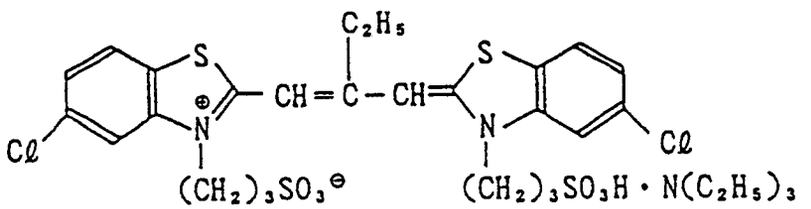


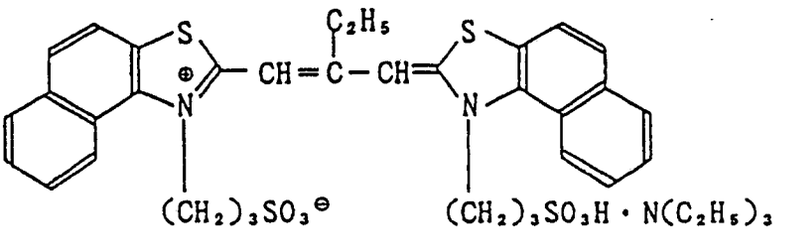
C - 3



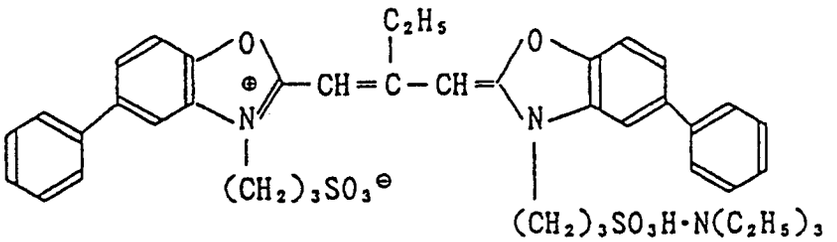
Sensitizing dye I



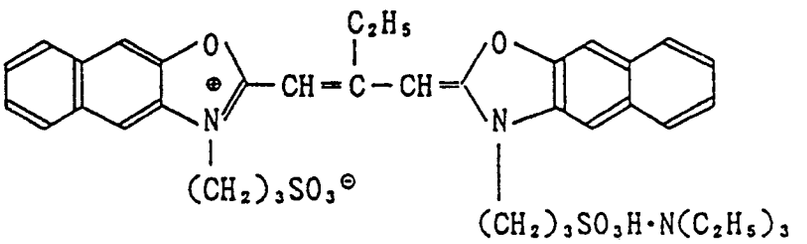
Sensitizing dye II



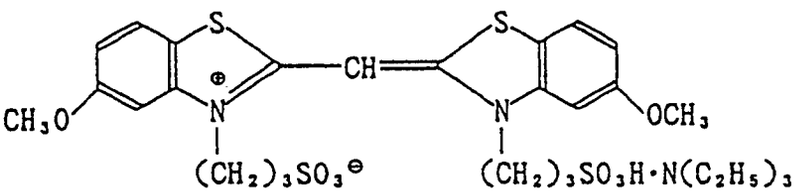
Sensitizing dye III



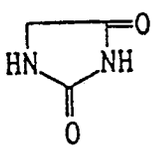
Sensitizing dye IV



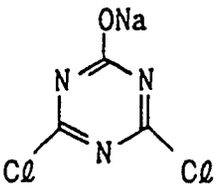
Sensitizing dye V



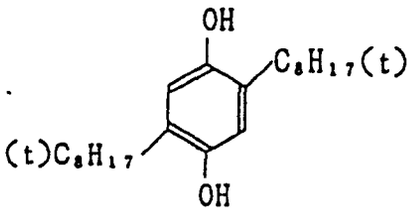
HS - 1



H - 1



A S - 1



Preparation of Sample No. 102 (This invention)

Coating solutions with the same compositions as in Sample No. 101 except for removing polymethyl methacrylate particles and H-1 contained in IL-2 of Sample No. 101 (thickeners and surfactants as mentioned above were added in the respective solutions) were prepared, and the first layer to the twelfth layer were provided by coating according to the coating and drying step for once by way of slide hopper coating. Drying was performed at 40 °C for 70 minutes, and then the sample was left to stand at room temperature for 8 hours.

Each sample was divided in to two, one of which was left to stand in a refrigerator (5 °C), and the other under compulsory deterioration conditions of 40 °C and a relative humidity of 80 % for 7 days.

Subsequently, wedge exposure was effected in the conventional manner, and then color developing was performed with the processing solutions and processing steps shown below.

Processing steps (38 °C)	
Color developing	3 min. 15 sec.
Bleaching	6 min. 30 sec.
Washing	3 min. 15 sec.
Fixing	6 min. 30 sec.
Washing	3 min. 15 sec.
Stabilizing	1 min. 30 sec.
Drying	

Compositions of the processing solutions used in the respective processing steps are shown below.

Color developing solution	
4-Amino-3-methyl-N-ethyl-N-(β-hydroxyethyl)aniline•sulfate	4.75 g
Anhydrous sodium sulfite	4.25 g
Hydroxylamine 1/2 sulfate	2.0 g
Anhydrous potassium carbonate	37.5 g
Potassium bromide	1.3 g
Nitrilotriacetic acid•trisodium salt (monohydrate)	2.5 g
Potassium hydroxide	1.0 g
Made up to one liter with addition of water.	

Bleaching solution	
Iron (III) ammonium ethylenediaminetetraacetate	100.0 g
Diammonium ethylenediaminetetraacetate	10.0 g
Ammonium bromide	150.0 g
Glacial acetic acid	10.0 g
Made up to one liter with addition of water, and adjusted to pH 6.0 with aqueous ammonia.	

Fixing solution	
Ammonium thiosulfate	175.0 g
Anhydrous ammonium sulfite	8.6 g
Sodium metasulfite	2.3 g
Made up to one liter with addition of water, and adjusted to pH 6.0 with acetic acid.	

Stabilizing solution	
Formalin (37 % aqueous solution)	1.5 ml
Konidax (manufactured by Konica Corp.)	7.5 ml
Made up to one lither with addition of water.	

The results of measurement of elevation of fog by storage for the treated samples are shown in Table 3.

Table 3

Sample	Elevation of fog by storage*1		
	B	G	R
101 (Comparative)	0.11	0.14	0.18
102 (This invention)	0.09	0.10	0.11

*1 Elevation of fog by storage: difference between the fog density of the sample after storage under compulsory deterioration conditions and the fog density of the sample after storage in refrigerator
B: blue-sensitive emulsion layer
G: green-sensitive emulsion layer
R: red-sensitive emulsion layer

As is apparent from Table 3, it can be understood that the sample of the present invention is markdely improved in elevation of fog by storage. The improvement effect of fog is the greatest in the red-sensitive emulsion layer. Also, the sample of the present invention can be prepared by the coating and drying step for one time, and therefore high in production efficiency.

Example 2

Preparation of Sample No. 201 (Comparative)

In preparation of Sample No. 101, on the coated sample having from the first layer and the fifth layer prepared in the coating and drying step for the first time, coating solutions for the sixth layer to the ninth layer comprising the following compositions were coated by slide hopper coating to prepare Sample No. 201. It was dried in the same manner as Sample No. 101.

Layer	Main composition	Amount used
Sixth layer (green-sensitive emulsion layer)	EM-1 and EM-2 (equimolar mixture)	1.7
	Gelatin	1.55
	Sensitizing dye III	2.5×10^{-4}
	Sensitizing dye IV	1.2×10^{-4}
	Coupler (M-1)	0.09
	Coupler (CM-1)	0.004
	DIR compound (D-1)	0.001
	DIR compound (D-3)	0.003
	TCP	0.65
Seventh layer (intermediate layer)	the same as YC in Sample No. 101	
Eighth layer (blue-sensitive emulsion layer)	EM-1 and EM-2 (equimolar mixture)	0.6
	Gelatin	1.3
	Sensitizing dye V	1.3×10^{-4}
	Coupler (Y-1)	0.29
	DIR compound (D-2)	0.003
	TCP	0.23
Ninth layer (protective layer)	Gelatin	1.0
	UV-absorber (UV-1)	0.1
	UV-absorber (UV-2)	0.2
	DOP	0.03
	Silver iodobromide AgI 1 mole %, mean grain size 0.07 μm	0.5
	Polymethyl methacrylate particles (diameter 1.5 μm)	0.2
	Formalin scavenger (HS-1)	1.0
	Hardener (H-1)	0.4

Preparation of Sample No. 202 (This invention)

The coating solutions for the first to the ningh layer of Sample No. 201 comprising the same compositions except for removing the polymethyl methacrylate and the hardener contained in the fifth layer in Sample No. 201 were prepared, and all the 9 layers were provided by the coating and drying step for one time by slide hopper coating. This sample was dried in the same manner as Sample No. 102.

Preparation of Sample No. 203 (Comparative)

As the coating and drying step for one time, the first layer to the third layer comprising the following compositions were provided by silde hopper coating. After coating, drying was conducted at 37 °C for 40 minutes.

Layer	Main composition	Amount used
First layer	the same as HC in Sample No. 101	
Second layer (red-sensitive emulsion layer)	EM-1 and EM-2 (equimolar mixture)	1.5
	Gelatin	1.3
	Sensitizing dye I	6.0×10^{-4}
	Sensitizing dye II	1.0×10^{-4}
	Coupler (C-1)	0.085
	Coupler (CC-1)	0.005
	DIR compound (D-1)	0.0015
	DIR compound (D-2)	0.002
	DOP	0.7
Third layer (protective layer)	Gelatin	0.8
	AS-1	0.03
	DOP	0.1
	Polymethyl methacrylate particles (diameter 1.5 μm)	0.2
	Hardener (H-1)	0.1

Next, as the coating and drying step for the second time, the same layers as the sixth layer to the ninth layer as Sample No. 201 were provided by slide hopper coating, to prepare Sample No. 203 of 7 layers in all was prepared. This sample was dried similarly as Sample No. 101.

Preparation of Sample No. 204 (This invention)

Coating solutions with the same compositions as Sample No. 203 except for removing the polymethyl methacrylate particles and the hardener contained in the third layer in Sample No. 203, and the photographic constituent layers with 7 layers in all were provided by slide hopper coating according to the coating and drying step for one time. This sample was dried similarly as Sample No. 102.

Preparation of Sample No. 205 (This invention)

This sample was prepared similarly as Sample No. 204 except for using EM-3 in place of EM-1 and EM-2 in Sample No. 204.

In preparation of Samples No. 201 to No. 205, surfactants and thickeners as described above were added in the respective layers as the coating aid.

By use of the respective samples, elevation of fog was evaluated by storage according to the same method. The results are shown in table 4.

Table 4

Sample No.	Number of photographic constituent layers	Number of coating and drying	Fog elevation by storage		
			B	G	R
201 (Comparative)	9	2	0.12	0.15	0.18
202 (This invention)	9	1	0.09	0.10	0.10
203 (Comparative)	7	2	0.14	0.16	0.20
204 (This invention)	7	1	0.08	0.09	0.09
205 (This invention)	7	1	0.05	0.06	0.06

As is apparent from Table 4, the samples of the present invention are markedly improved in elevation of fog by storage.

Of the samples of the present invention, the effect of making the coating and drying step once is greater as the number of photographic constituent layer is smaller.

Also, Samples No. 204 and No. 205 with smaller number of photographic constituent layers are preferably increased in production efficincy. Further, Sample No. 205, as compared with Sample No. 204, is further preferred in the point of production efficiency, because physical ripening and chemical ripening can be each effected once.

Sample No. 205 is also improved by about 30 % in stability of photographic performances to fluctuations in temperature and pH of developing processing as compared with Sample No. 204, and therefore particularly preferred.

With respect to shrpness, it is better as the number of photographic constituent layers is smaller, and Sample No. 202 of Example 2 was found to be better and Samples No. 204 and No. 205 further better than Sample No. 102 of Example 1.

Further, in the samples by use of seed emulsions prepared by addition of $RuCl_3$, $OsCl_3$ or $PbCl_3$ in place of K_3RhCl_6 in EM-3 as substitute for EM-3 in Sample No. 205, the effects of the present invention could be recognized.

Claims

1. A light-sensitive silver halide color photographic material, comprising on a support photographic constituent layers including at least respective emulsion layers which are blue-sensitive, green-sensitive and red-sensitive, and an antihalation layer containing black colloidal silver positioned between said emulsion layers and said support, wherein said photographic constituent layers are provided by the coating and drying step which is substantially once.

2. A light-sensitive silver halide color photographic material according to Claim 1, wherein said coating step is carried out by slide hopper coating, extrusion coating or curtain coating.

3. A light-sensitive silver halide color photographic material according to Claim 2, wherein said coating step is carried out by slide hopper coating.

4. A light-sensitive silver halide color photographic material according to Claim 2, wherein a coating speed of said coating step is 50 m/min or more.

5. A light-sensitive silver halide color photographic material according to Claim 1, wherein said drying step is carried out by an air stream drying method blown out from an air nozzle.

6. A light-sensitive silver halide color photographic material according to Claim 1, wherein said drying step is carried out under conditions of an air stream temperature being 20 to 60 °C.

7. A light-sensitive silver halide color photographic material according to Claim 1, wherein at least one color-sensitive layer is a single layer constitution.

8. A light-sensitive silver halide color photographic material according to Claim 7, wherein said single layer constitution is the case when a plurality of emulsion layers which are the same in color sensitivity, being the same in the kind of the couplers contained in the emulsion layers, grain sizes of the silver halide grains, the halogen compositions and crystal habits, and the ratio of the coupler to the silver halide, are arranged as continuous layers.

9. A light-sensitive silver halide color photographic material according to Claim 7, wherein said blue-sensitive layer is a single layer.

10. A light-sensitive silver halide color photographic material according to Claim 7, wherein said blue-sensitive layer and said green-sensitive layer are single layers.

11. A light-sensitive silver halide color photographic material according to Claim 7, wherein said all of the blue-sensitive, green-sensitive and red-sensitive silver halide emulsion layers are single layers.

12. A light-sensitive silver halide color photographic material according to Claim 1, wherein said layer having single layer constitution contains at least two kinds of silver halide grains having different mean grain sizes.

13. A light-sensitive silver halide color photographic material according to Claim 1, wherein said layer having single layer constitution contains silver halide grains containing desensitizer and silver halide grains not containing desensitizer.