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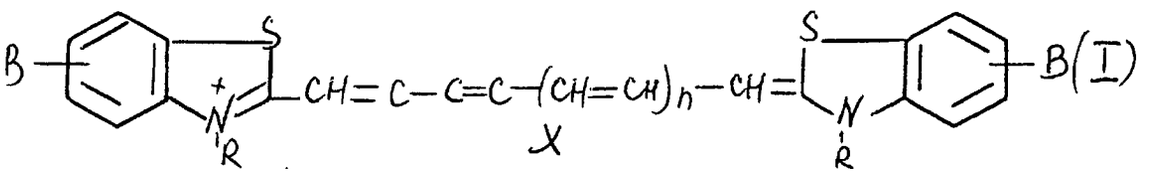
(54) COLORED SPECTROZONAL SILVER-HALIDE PHOTOGRAPHIC MATERIAL

(57) The invention relates to area of colour photographic materials for registration of a colour image in visible and infra-red area.

The material comprises an antihalo backing layer on the one side of a polymer support and at least two light-sensitive layers prepared from silver halide emulsion, including colour forming couplers and sensitizing dyes, auxiliary and protective gelatin layers on the other side of the polymer support, said light-sensitive layers are prepared from silver bromide-iodide emulsion with octahedral or flattened microcrystals with an average size of the grain 0,5-1,5 μm or from their mixture and one light-sensitive layer contains as infra-red sensitizing dye one or more compounds of the formula



(I)

where A = H, A^1 = $OCH_2CH_2CH_2SO_3^-$, O - lower alkyl, A and A^2 together = CH_2C-$(CH_3)_2CH_2^-$, A^2 = H, lower alkyl, B = H, 5,5 '-di-OCH_3, 6,6'-di-SCH_3, R = lower alkyl, $(CH_2)_3SO_3^-$, n = 0,1; X = $CH_3C_6H_4SO_3^-$, J,-$CH_3SO_3^-$, the alkaline metal or is absent; the second light-sensitive layer contains as orthochromatic sensitizing dye more than one compounds of the formula

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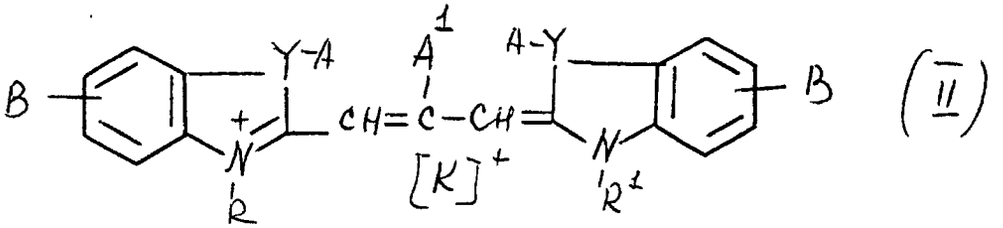
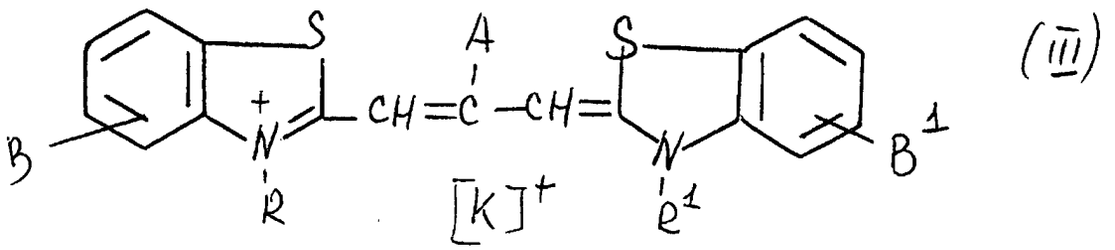


(II)

where Y = 0, N, A = lower alkyl or is absent, A^1 = H, lower alkyl, B = 5,5'-$COOC_2H_5$, 5,5'-C_6H_5, R, R' = lower alkyl, $(CH_2)_3SO_3^-$, $[K]^+ = NHC_5H_5$ or is absent

and /or the third light-sensitive layer contains as panchromatic sensitizing of dye one or more compounds of the formula



(III)

where A= lower alkyl, B = 4,5-benzo, 4,5-thieno, B^1 = 5-OCH_3, 5-C_6H_5, 4',5'-benzo, 5-Cl, 5-CH_3 ; R, R^1 = lower alkyl, $(CH_2)_3SO_3^-$, $[K]^+$ = HN $(C_2H_5)_3$, $HN(C_4H_9)_3$, C_5H_5-NH, the alkaline metal, 3,3'-diethylthiazolynecarbocyanine, or is absent, and between light-sensitive layers auxiliary gelatin layers including hardener are coated.

In addition the light-sensitive layers can contain activators of spectral sensitization.

The auxiliary gelatin layers can include derivatives of triazine-1,3,5 as a hardener.

It is desirable to add into light-sensitive layers a mixture of silver bromide-iodide photographic emulsions with octahedral microcrystals and with flattened microcrystals in the ratio 1:9-9:1.

The material according to the invention has a high resolving power (R = 110-160 mm^{-1}), i.e. in 1,6-2,3 times higher, than prototype, and more high light sensitivity.

Description

[0001] This invention relates to a light-sensitive silver halide colour photographic materials for registration of objects in visible and infra-red area of a spectrum.

[0002] It is known the colour photographic material consisting from triacetate support coated thereon silver halide emulsion layers sensitive to various zones of a spectrum (TU 6-17-688-85 "Aerial photographic film, type SN-6M, NPO "Svema").

[0003] The indicated photographic material has a low resolving power $R_{k=1,0}$ = 58 mm^{-1}.

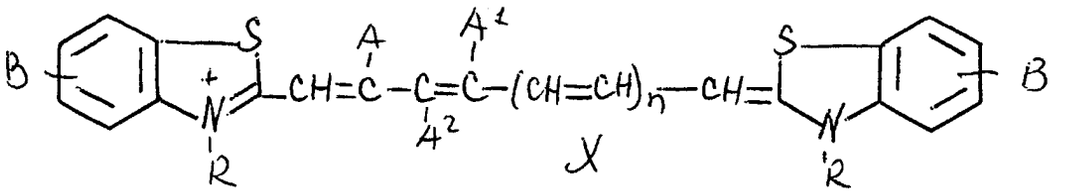
[0004] It is known also a false colour silver halide photographic material consisting from a nitrate cellulose sublayered support having coated thereon on the one side a green anti-halo backing and on other side sequentially the first silver halide emulsion layer comprised silver bromide-iodide emulsion with the grain average size d=1,2μm and the contents of AgJ of 3 Mole %, containing 5-methyl-7-oxy-1,3,4-triazoindolizine (F-1) as a stabilizer, pyrocatechin, 3,3,9-triethyl-5,5'-diphenyloxacarbocyanine nitrate and 3,3'-diethyl-5-phenyl-5,6,9-trimethyloxathiacarbocyanine perchlorate as sensitizers, a yellow colour coupler (Zh-4) [4-stearoylaminobenzoyl acetic acid 2'-(3',5'-dicarboxyphenoxy)-5'-carboxyanylide, sodium salt of di-2-ethylhexyl ether of sulfosuccinic acid as a surfactant; the second silver halide layer prepared from same emulsion as the first layer and containing the same stabilizer F-1, pyrocatechin, sensitizer trietylamine salt of 3-ethyl-3'-γ-sulfopropyl-4-keto-4',5'-diphenyl-5-(3"-y-sulfopropyl-4",5"-diphenylthiazolidene-2"-ethylidene) thiazolinothiazolcyanine betaine and 3,3'1,9-triethyl-4,5,4',5'-dibenzothiacarbocyanine bromide as a sensitizer, as well as magenta colour coupler 1'-(4'-diphenoxy-3'-sulfophenyl)-3-heptadecylpyrazole-5-one, dipotassium salt of diether of a mixture of polyglycerides of alkenyl succinic acids as a surfactant; the third silver halide emulsion layer prepared from ammoniac silver bromide-iodide photographic emulsion with 3 Mole % of AgI and with the grain average size d = 1,0 μm containing stabilizer F-1, pyrocatechin, 3,3'-diethyl-10-methyl-5,5'-dimethoxy-6,6'-di-(methylmercapto) thiadicarbocyanine-n-tolusulfonate as a sensitizer, a cyan colour coupler 2'-methylotadecylamino-5'-sulfoanylide of 1-oxy-2-naphtoic acid (G-2), dipotassium salt of diether of mixture of polyglycerides of alkenyl succinic acids as a surfactant; protective layer containing gelatin, emulgate of 2,5-ditret-amylhydrochinone, phenol, surfactant (A. N. Iordanski "New false colour negative films", Journal of a Scientific and Applied Photography and Cinematography, volume 9, page 210-211, 1964). This material has a sensitivity $S_{0,85}$ = 50 GOST, contrast coefficient 1.7-2.4, D_{max} > 2,5 for all layers, D_o = 0,11, resolving power $R_{c=1,0}$ = 68 mm^{-1} (GOST 9160-59).

[0005] It should be refer to defects of this material an insufficient level of a resolving power and photographic sensitivity not allowing to decode reliably small objects on photographies shot from large altitudes and from space, as well as a possibility of processing only at low temperatures.

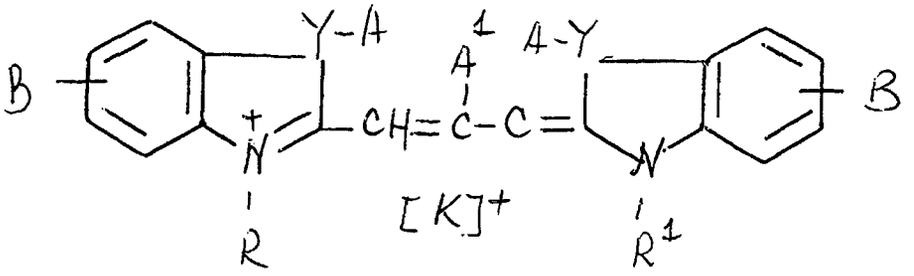
[0006] An object of this invention is to provide an extension of a range of high sensitive false colour photographic materials with a sufficient level of a resolving power.

Detailed description of the invention

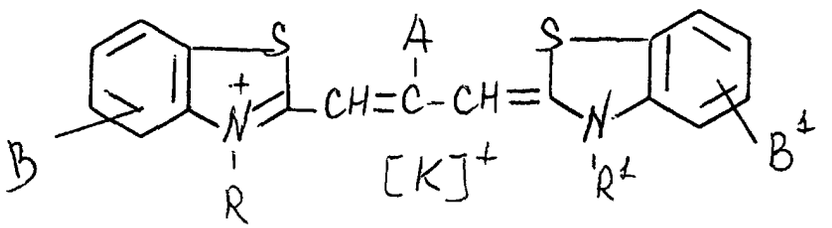
[0007] The object of the present inventions accomplished with the false colour silver halide photographic material which comprises a polymeric support having coated thereon on the one side antihalo backing layer, on the other side at least two light-sensitive layers prepared from silver halide photographic emulsion, containing colour couplers and infrared, orthochromatic and/or panchromatic sensitizing dyes; auxiliary and protective gelatin layers; all sensitive layers are prepared from the silver bromide-iodide emulsion with octahedral or flattened microcrystals with a grain average size 0,5-1,5 microns, or from their mixture; one of the sensitive layers contains as infrachromatic sensitizing dye one or more one compounds represented by the general formula (I)



wherein A represents H; A^1 represents $OCH_2CH_2CH_2SO_3$; O=lower alkyl; A and A^1 together represent $CH_2C(CH_3)_2CH_2$; A^2 represents H, lower alkyl; B represents H, 5,5'-di-OCH_3, 6,6'-di-SCH_3; R represents lower alkyl, $(CH_2)_3SO_3^-$; n = 0,1; X represents $CH_3SO_3C_6H_4SO_3^-$, J, CH_3SO_3 -, the alkaline metal or is absent; other light-sensitive layer contains as an orthochromatic sensitizing dye more than one compounds of the formula (II)



wherein Y represents 0, N; A represents lower alkyl or is absent; A^1 represents H, lower alkyl; B represents 5,5'-$COOC_2H_5$, 5,5 '-C_6H_5 ; R, R^1represent lower alkyl, $(CH_2)_3SO_3^-$; $[K]^+$ represents NHC_5H_5 or is absent, and/or the third light-sensitive layer contains as a panchromatic sensitizing dye one or more compounds of the formula (III)



wherein A represents lower alkyl; B represents 4,5-benzo, 4,5-tieno; B^1 represents 5-OCH_3, 5-C_6H_5, 4,'5' -benzo, 5-CH_3, 5-Cl; R, R^1 represent lower alkyl, $(CH_2)_3SO_3^-$; $[K]^+$ represents $HN(C_2H_5)_3$, $HN(C_4H_9)_3$, C_5H_5-NH, the alkaline metal, 3,3'-diethylthiazolinocarbocyanine or is absent, and between light-sensitive layers auxiliary gelatin layers including hardener are coated.

[0008] In addition the light-sensitive layers can contain 3,3'-[1",2"bis(ethoxy)-ethyl]-bis-(1-ethylbenzimidazolium) diperchlorate, or disodium salt of 4,4'-bis(4",6-diphenoxy-1,3,5-triazynil-2-amino)stilbene-2,2'-disulfonic acid or monosodium salt of 2-mercaptobenzoxazole-5-sulfonic acid as an activator of the spectral sensitization.

[0009] As a hardener it is desirable to apply derivatives of triazine-1,3,5, namely: 1,3,5-triacryloylhexahydrotriazine or sodium salt of 2,4-dichloro-6-oxytriazine-1,3,5.

[0010] It is desirable to introduce in the light-sensitive layers mixtures of silver bromide-iodide emulsion with octahedral microcrystals and silver bromide-iodide emulsion with flattened microcrystals in the ratio 1:9-9:1.

[0011] As magenta colour couplers preferably derivatives of pyrazolone-5 and/or aminobenzenesulfamino-1,2-xylene are used: 1-(4-phenoxy-3-sulfophenyl)-3-stearoylamino-pyrazolone-5 (P-6), 3,5-di(2-methyl-5-octadecenyl-succinoylaminobenzenesulfamino)-1,2-xylene [P-8], 1-(2,4,6-trichlorophenyl)-3 [2,4-di-tret-amyl-phenoxy-acetylamido)-benzamido]-pyrazolone-5 (ZP-24), 1-(4'-phenoxy-3'-sulfophenyl) -3 -heptadecylpyrazolone-5 (P-1), 1-(2',4',6'-trichlorophenyl)-3[2"chloro-5"-octadecylsuccinoyliminophenyl]aminopyrazolone (N-651).

[0012] As cyan colour couplers preferably derivatives of 1-oxy-2-naphtoyl acid are used. Among such compounds are the following: 2-methyl-octadecylamino-5-sulfanilide of 1-oxy-2-naphtoyl acid (G-2), (2,4-di-tret-amylphenoxy)-bulylamide of 1-oxy-2-naphtoyl acid (ZG-97), octadecylamide of 1-oxy-4-sulfo-2-naphtoyl acid (G-3).

[0013] As yellow colour couplers preferably anylides of acylacetic, pivaylacetic or benzoic acids are used: 3,5-dicarboxyanylide of n-stearoylaminobenzoylacetic acid (Zh-2), 2-chloro-5 [γ-2,4-di-tret-anilid(phenoxy)-butyroylamino)-anilide]-α-n-carboxyphenyloxypivaylacetic acid (N-596), 2-chloro-5 [γ-2,4-di-tret-amyl(phenoxy)-butyroylamino)-anilide] of α-n-carbomethoxyphenoxypivaylacetic acid (N-574), 2'-methyloctadecylamino-5'-sulfanilide of benzoylacetic acid (Zh-8), 2'-chloro-5' (3", 5"-dicarboxyphenylsulfamydo)anilide of 2-octadecyloxybenzoylacetic acid (N-353), 2-chloro-5 [(γ-2',4'-di-tret-amylphenoxy) (butyroylamino)anilide of α-benzylhydantoylpivaylacetic acid (Y-488), 2"-chloro-5" (3", 5'"-dicarbmethoxyphenylsulfamido)anilide of α-(3', 5'-dicarbmethoxyphenoxy)2-octadecyloxybenzoylacetic acid (N-609).

[0014] The false colour photographic material according to this invention expands essentially a range of high sensitive ($S_{0,85}$ = GOST 200-700) materials with adequately high level of a resolving power (R = 100-145 mm^{-1}).

[0015] The following examples illustrate this invention, but do not limit it.

Example 1 (the prototype).

[0016] False colour silver halide photographic material is prepared by coating on the undercoated nitrate cellulose base an emulsion and auxiliary layers of a following structure:

- Green antihalo sublayer from a mixture of isobutanol, propanol, novamal, BRO-721 dye and dimethylphtalate;
- Gelatin sublayer containing per 1 L of desalinated water 40 g of gelatin, 30 ml of the 4% solution of sodium salt of di-2-ethylhexyl ether of sulfosuccinic acid as a surfactant;
- The first silver halide emulsion layer containing silver bromide-iodide emulsion with an average grain size of 1,2 μm and AgJ content 3,08 %. The emulsion contains per 1 kg 40 ml of the 1% solution of F-1 5-methyl-7-oxy-1,3,4-triazoindolyzine as a stabilizer; 6 ml of the 1% solution of pyrocatechin, 40 ml of the 0,05% alcohol solution of 3,3', 9-triethyl-5,5'-diphenyloxacarbocyanine nitrate and 25 ml of the 0,05% alcohol solution of perchlorate 3,3'-diethyl-5-phenyl-5',6,9-trimethyloxathiacarbocyanine; 30 ml of the 5% solution of a yellow coupler (Zh-4) (2-(3,'5-di-carboxy-phenoxy-5'-carboxyanilide of 4-stearoylaminobenzoylacetic acid), 6 ml of the 4% solution of surfactant, dipotassium salt of diether of a mixture of polyglycerides of alcenylsuccinic acids;
- The second silver halide emulsion layer from the same emulsion as the first layer but containing per 1 kg of emulsion 40 ml of 0,05% alcohol solution triethylamine salt of 3-ethyl-3'-γ-sulfopropyl-4-keto-4',5'-diphenyl-5 (3"-γ-sulfopro-pyl-4",5"-diphenylthiazolynylydene-2"-ethylydene)thiazolinothiazolocyanine betaine and 30 ml of 0,1% alcohol solution of 3,3",9-triethyl-4,5,4",5'-dibenzothiacarbocyanine bromide as the spectral sensitizers and 200 ml of the 5% water solution of (P-1) 1-(4'-phenoxy-3"-sulfophenyl)-3-heptadezylpyrazolone-5 as a magenta coupler and 6 ml of the 4% solution dipotassium salt of a mixture of polyglycerides of alkenylsuccinic acids as surfactant;
- The third silver halide emulsion layer from silver bromide-iodide emulsion with an average grain size d=1,0 μm and contents of AgJ of 3 Mol. %, containing 40 ml of the 1% solution of a stabilizer F-1, 6 ml of the 1% solution of pyrocatechin, but including per 1 kg of emulsion 30 ml of 0,01% alcohol solution of 3,3'-diethyl-10-methyl-5,5'-dimethoxy-6,6-di-(methylmercapto- thiadicarbocyanine-*para*-tolusulfonate as a spectral sensitizer, 500 ml of the 3% solution of 2'-methyl-octadecylamino-5'-sulfoanilide of 1-oxy-2-naphthoic acid (G-2) as a a cyan coupler, 6 ml of the 4% solution of dipotassium salt of diether of a mixture of polyglycerides of alkenylsuccinic acids as a surfactant;
- a protective layer from the following composition: per 1 L of desalinated water 20 g of a gelatin, 20 g of 2,5-di-tret-amylhydrochinone, 8 ml of 4% solution of sodium salt of di-2-ethylhexyl ether of sulfosuccinic acid as a surfactant.

[0017] A film is exposed according to GOST 9160-91 at colour temperatures 3200 K and 5500K behind the filter ZhS-18, and processed according to TU 6-17-1372-89.

Mode of processing			
No.	Processing stage	Duration time, min	Solution temperature, °C
1	Colour development	5-10	25±3
2	Bleaching-fixing	10	23±1.0
3	Washing	5	25±1.0
4	Drying	-	no less than 60 at the speed 100 m/h

Colour developer, g/L:	
Trilon B	2,0
Hydroxylamine hydrochloride (sulfate)	2,0
Ethyloxyethyl-paraphenylene diamine	4,5
K_2CO_3	75
Na_2SO_3 anhydrous	2,0
KBr	2,0
Benzotriazole	0,02
Water	up to 1 L.
pH	10,7±0,1

Bleaching-fixing solution	
Trilon B	10,0
Na_2SO_3 anhydrous	30,0
KH_2PO_4	5,8
$NaHPO_4$	4,3
Na_2CO_3 anhydrous	6,0
Trilon B, iron salt	60,0
Thiosemicarbazide sulfate	10,0
Water	- up to 1 L.

[0018] Photographic sensitivity is determined on a criterion $S_{0,85}$ over a fog density on the formula S = K/H with a factor K = 20; a resolving power is determined according to GOST 2819-84.

[0019] The results of tests of this and all following examples are indicated in the table.

Example 2 (comparative)

[0020] False colour photographic material is prepared by coating on two-side subcoated polyethylene terephtalate support of emulsion and auxiliary layers of the following structure:

- blue antihalo sublayer consisting from suspension of colloid silver, containing per kg 13.5 g of metal silver; 133 g of gelatin; 140 g of 2,5-ditret-octylhydrochinone; 150 ml of 4% solution of a mixture of sodium salt of diisobutyl-naphtaline sulfonic acid and 30 ml of 4% water solution of disodium salt of diethyl ether of N-γ-dodecyloxypropyl (sulfosuccinoyl)aspartic acid as surfactants; 60 ml of the 3% solution of sodium salt of 2,4-dichloro-6-oxytriazine-1,3,5 as a hardener;
- gelatin sublayer containing per 1 L of desalinated water 40 g of and 30 ml of the 4% solution of sodium salt of di-2-ethylhaxyl ether of sulfosuccinic acid as a surfactant;
- the first silver halide emulsion layer prepared from polydispersional silver bromide-iodide emulsion (average grain size 0,5 μm, variation factor, Cγ = 35 %, metal silver 54 g/kg, AgJ 3 mole %, gelatin 7 %). It is added per 1 kg of emulsion: 40 ml of the 1% solution of F-1 5-methyl-7-oxy-1,3,4-triazoindolyzine as a stabilizer, 6 ml of the 1% solution of pyrocatechin, 60 ml of 0,1% alcohol solution of a spectral sensitizer of the formula (II) (Y = N, A = C_2H_5, A^1 = H, B = 5,5 '-$COOC_2H_5$, R-= $(CH)^2SO_3$, R^1 = C_2H_5, $[K]^+$ - is absent); spectral sensitizer of the formula (II) (Y = O, A^1 = C_2H_5, B = 5,5'-C_6H_5, R, R^1 = $(CH_2)_3SO_3$, $[K]^+$ = NHC_5H_5) in an amount of 30 ml of 0,1% alcohol solution; then it is added 160 ml of the 5% solution of 2'-methyloctadecylamino-5'-sulfoanilide of benzoylacetic acid (Zh-8) and 250 ml of 3% solution of 2'-chloro-5'-(3",5"-dicarboxyphenylsulfamido)anilide of 2-octadecyl-oxybenzoylacetic acid (N-353) as yellow couplers (ratio Zh8:N-353 = 1:1) and 10 ml of diluted nitric acid (1:30). Then it is added 40 ml of the 4% solution of sodium salt of di-2-ethylhexyl ether of sulfosuccinic acid and 10 ml of 0,1% solution of dipotassium salt of diether of a mixture of polyglycerides of alkenylsuccinic acids as surfactants and 20 ml of 3% solution of sodium salt of 2,4-dichloro-6-oxy-triazine-1,3,5 a hardener.

[0021] Gelatin sublayer has a following composition: per 1 L of desalinated water 40 g of gelatin, 120 ml of the 3% solution of a yellow coupler N-353, 20 ml of the 4% solution of sodium salt of di-2-ethylhexyl ether of sulfosuccinic acid and 10 ml of 0,1 M solution of dipotassium salt of diether of a mixture of polyglycerides of alkenylsuccinic acids as surfactants and 10 ml of the 3% solution of sodium salt of 2,4-dichloro-6-oxy-triazine-1,3,5 (DU-679) as a hardener.

[0022] The second silver halide emulsion layer is prepared from same emulsion, as a first layer. It is added peri kg of emulsion 40 ml of the 1% solution of a stabilizer F-1, 6 ml of 1% pyrocatechin, 30 ml of the 0,2% solution of diperchorate 3,3-[1",2"-bis(ethoxy)-ethyl]-bis-(1-ethylbenzimidazolium) as an activator of spectral sensitization, 80ml of 0,05% alcohol solution of spectral sensitizer of the formula III (A = C_2H_5, B = 4,5-benzo, B^1 = 5-OCH_3, R = $(CH_2)_3SO_3^-$, R^1 =C_2H_5, [K $^+$] is absent), 600 ml of the 3% solution of 2-methyloctadecylamino-5-sulfoanilide-1-oxy-2-naphtoic acid (G-2) as a cyan coupler, 40 ml of the 4% solution of a sodium salt of di-2-ethyloxyl ether of a mixture of polyglycerides of alkenylsuccinic acids as a surfactant, 18 ml of the 3% solution of sodium salt of 2,4-dichloro-6-oxy-triazine-1,3,5 as a hardener. Gelatin interlayer is coated containing per 1 L of desalinated water 40 g of the 2% gelatin solution, 50 ml of the 4% solution of sodium salt of di-2-ethylhexyl ether of sulfosuccinic acid and 15 ml of 0,1 Mole solution of dipotassium salt of diether of a mixture of polyglycerides of alkenylsuccinic acids as surfactants and 10 ml of the 3% solution of sodium salt of 2,4 dichloro-6-oxytriazine-1,3,5 as a hardener.

[0023] The third silver halide emulsion layer is prepared from the same emulsion, as the other layers, but it is added

per 1 kg of emulsion 40 ml of the 1% stabilizer F-1, 6 ml of 1% pyrocatechin, 75% of 1% alcohol solution of disodium salt of 4,4'-bis(5,6-diphenoxy-1,3,5-triazinile-2-aminostilbene-2,2'-disulfonic acid as an activator of sensitization; 45 ml of 0,02% alcohol solution of sensitizing dye of the formula I (A, A^1 together $-CH_2C(CH_3)_2CH_2$, $A^2 = CH_3$, B = 5,5'-di-OCH_3, 6,6'-di-SCH_3, R = C_2H_5, X = $CH_3C_6H_4SO_3^-$, n = 0); 15 ml of 0,03% alcohol solution of sensitizing dye of the formula I (A, A^2 = H, $A^1 = OCH_2CH_2CH_2CH_2SO_3^-$, B = H, R = C_2H_5, n = 1, X - is absent), 5 ml 0,5% solution of 2-heptyl-5-methyl-7-oxy-1,3,4-triazine indazine, mixture of [1-(4-phenoxy-3-sulfophenyl)-3-stearoylaminopyrazolone-5] (P-6) and 3,5-di-(2-methyl)-5-octadecenylsuczinoylaminobenzenesulfamino)-1,2-xylene (P-8) as magenta couplers in the ratio of P-6:P-8 = 4:1, in amount of 350 ml of the 5% solution, 40 ml of 4% solution of sodium salt of di-2-ethylhexyl ether of sulfosuccinic acid and 10 ml of 0,1 Mole solution of dipotassium salt of diether of a mixture of monoglycerides of alkenylsuccinic acids as surfactants, 20 ml of the 3% solution of sodium salt of 2,4-dichloro-6-oxytriazine-1,3,5 as a hardener.

[0024] A protective layer is coated with the following composition: per 1 L of desalinated water it is added 40 g of gelatin, 20 ml of the 4% solution of sodium salt of di-2-ethylhexyl ether of sulfosuccinic acid and 10 ml of 0,1 Mole solution of dipotassium salt of diether of a mixture of polyglycerides of alkenylsuccinic acids as surfactants, 50 ml of 5 % solution of a mixture of magenta couplers P-6 and P-8 in the ratio P-6:P-8 = 4:1, 20 ml of the 3% solution of sodium salt of 2,4-dichloro-6-oxytriazine-1,3,5 as a hardener.

[0025] A film is exposed and processed as in an example 1. The properties are represented in the table.

Example 3.

[0026] False colour photographic material is prepared and processed similarly to the example 2, but all light-sensitive silver halide emulsions contain a mixture of two emulsions: silver bromide-iodide emulsion with octahedral microcrystals with average grain size 0,7 μm and silver bromide-iodide emulsion with flattened microcrystals (aspect ratio 1:5) with average grain size 1,2 μm; in protective and auxiliary gelatin layers the colour couplers are not added.

Example 4.

[0027] False colour photographic material is prepared and processed similarly to the example 2, but an interlayer is coated only on the first light sensitive silver halide emulsion layer; into the second layer 700 ml of the 3% solution of a cyan coupler G-2 and 25 ml of the 3 solution of sodium salt of 2,4-dichloro-6-oxytriazine-1,3,5 as the hardener are added; in the third light-sensitive layer 80 ml of 0,02% alcohol solution of a sensitizing dye of the formula I (A, A^1 together - $CH_2C(CH_3)_2CH_2$, $A^2 = CH_3$, B = 5,5'-di-OCH_3, 6,6'-di-SCH_3, R = C_2H_5, $X^- = CH_3C_6H_4SO_3^-$, n = 0), is added.

Example 5 (comparative)

[0028] False colour silver halide photographic material is prepared by coating on two-side sublayered polyethylene terephtalate support of the emulsion and auxiliary layers of the following structure:

- blue antihalo backing layer from a colloid silver suspension containing per kG of emulsion 13,5 g of metal silver, 133 g of gelatin, 140 g of 2,5-di-tret-octylhydrochinone, 150 ml of the 4% solution mixture of sodium salts of di-isobutylnaphtalene sulfonic acid and 30 ml of the 4% solution of disodium salt of diethyl ether of N-γ-dodecyloxy-propyl-(sulfosuccinoyl)-asparagine acid as surfactants, 45 ml of the 3% solution of 1,3,5-triacryloylhexahydrotri-azine as a hardener, desalinated water up to 1 L;
- gelatin sublayer containing per 1 L of desalinated water 40 g of gelatin, 30 ml of 4% solution of sodium salt of di-2-ethylhexyl ether of sulfosuccinic acid as a surfactant;
- the first light-sensitive silver halide emulsion layer is prepared from polydispersional silver bromide-iodide emulsion (average size of microcrystals d = 0,7 μm, C_v = 30 %, contents of AgJ 3 Mole %) containing per 1 kg emulsion 40 ml of the 1% solution of 5-methyl-7-oxc$_и$-1,3,4-triazoindolizine, 6 ml of the 1% solution of pyrocatechin, 100 ml of 0,05% alcohol solution of 3,9-diethyl-3-γ-sulfopropyl-5-methoxy-4,5-benzothiacarbocyaninebetaine as a spectral sensitizing dye, 600 ml of the 3% solution of 2-methyloctadecylamino-5-sulfoanilide-1-oxy-2-naphtoic acid (G-2) as a cyan coupler, 150 ml of the 3% solution of 3,5-dicarboxyanilide-n-stearoylaminjbenzoylacetic acid(Zh-2) as a yellow coupler (G-2:Zh-2 ratio = 4:1); 10 ml of 5% solution of cyan dye - product of oxidation of 1,2-naphtyldiamine-5,7-disulfonic acid with a chloric iron; 10 ml of the diluted nitric acid (1:30); 40 ml of 4% solution of the sodium salt of di-2-ethylhexyl ether of sulfosuccinic acid and 10 ml of 0,1 M solution of the dipotassium salt of diether of a mixture of polyglycerides of alkenylsuccinic acids as surfactants;
- gelatin interlayer containing per 1 L of desalinated of water 40 g of gelatin, 120 ml of the 5% solution of octadecy-lamide of 1-oxy-4-sulfo-2-naphtoic acid(G-3) as a cyan coupler, 30 ml of the 4% solution of the sodium salt of di-2-ethylhexyl ether of sulfosuccinic acid and 10 ml of 0,1 Mole solution of the sodium salt of di-2-ethylhexyltetrae-

thylenglycol ether of sulfosuccinic acid as surfactants; and 15 ml of the 3% solution of 1,3,5-triacryloulhexahydrotriazine as the hardener.

[0029] The second light-sensitive silver halide emulsion layer is prepared from the same emulsion as the first layer, but it is added per 1 kg emulsion 110 ml of the 1% solution of disodium salt of 4,4'-bis-(4,6-diphenoxy-1,3,5-triazynil-2-amino)stilbene-2,2'-disulfonic acid as supersensitizer; 60 ml of 3,3'-diethyl-10-methyl-5,5'-dimethoxy-6,6'-di(methylmercapto)thiadicarbocyanine-n-tolusulfonate as a spectral sensitizer; mixture of magenta couplers P-6 and P-8 in a mass ratio 2:1 in an amount of 375 ml of the 5% solution; 20 ml of 4% solution of sodium salt of di-2-ethylhexyl ether of sulfosuccinic acid and 10 ml of 0,1 M solution of dipotassium salt of diether of a mixture of polyglycerides of alkenylsuccinic acids as surfactants.

[0030] The protective layer is coated from the next composition: per1 l of desalinated water 40 g of gelatin; 15ml of 4% solution of sodium salt of di-2-ethylhexyl ether of sulfosuccinic acid as the surfactant and 20 ml of the 3% solution of 1,3,5-triacroylhexahydrotriazine as the hardener.

[0031] The material is exposed and processed as in an example 1. The properties are indicated in the table.

Example 6.

[0032] False colour photographic material is prepared similarly to the example 5, but in one of the light-sensitive emulsion layers it is added 20 ml of the 0,2% solution of diperchlorate of 3,3'-[1",2"-bis(ethoxy)-ethyl]-bis-(1-ethylbenzimidazolium) as the activator of the spectral sensitization and 8 ml of the 0,05% solution of sensitizing dye of the formula III (A = C_2H_5, B = 4,5-benzo, B^1 = 5-OCH_3, R = $(CH_2)_3SO_3^-$, R^1 = (CH_2H_5, $[K]^+$ is absent), and 30 ml of the 3% solution of sodium salt of 2,4-dichloro-6-oxytriazine-1,3,5 as the hardener; in the gelatin interlayer a cyan coupler is not added.

[0033] In the other light-sensitive silver halide emulsion a layer it is added as a sensitizing dye a compound of the formula I (A, A^1 together = $CH_2C(CH_3)_2CH_2$, A^2 = CH_3, B = 5;5'-di-OCH_3, 6,6'-di-SCH_3, R = C_2H_5, X^- = $CH_3C_6H_4SO_3^-$, n = 0) in an amount of 80 ml of 0,02% alcohol solution, 75 ml of the 1% solution of disodium salt of 4,4'-bis-(4,6-diphenoxy-1,3,5-triazinile-2-amino)stilbene2,2'-disulfonic acid as the supersensitizer and 6 ml of the 0,5% solution of 2-heptyl-5-methyl-7-oxy-1,3,5-triazaindolizine; then 350 ml of the 5% solution of a mixture of magenta couplers P-6 and P-8 in a mass ratio 4:1; 40 ml of the 4 % solution of the sodium salt of di-2-ethylhexyl ether of sulfosuccinic acid and 10 ml of 0,1 M of a solution of dipotassium salt of diether of a mixture of polyglycerides of alkenylsuccinic acids as surfactants and 15 ml of the 3% solution of sodium salt of 2,4-dichloro-6-oxytriazine-1,3,5 as the hardener. In the protective layer magenta couplers are not added.

[0034] A material is exposed and processed as in an example 1. The properties are represented in the table.

Example 7.

[0035] False colour photographic material is prepared similarly to example 6, but all light-sensitive silver halide layers is prepared from a mixture of silver bromide-iodide emulsion with octahedral microcrystals with an average grain size 0,7 μm and silver bromide-iodide emulsion with flattened microcrystals with an average grain size 0,15 μm and aspect ratio 1:5 at emulsions ratio 9:1.

Example 8.

[0036] False colour photographic material is prepared similarly to example 6, but in one light-sensitive layer it is added sensitizing dye of the formula II (A - C_2H_5, B - 4,5-benzo, B^1 = 5-OCH_3, R = $(CH_2)_3SO_3^-$, R^1= C_2H_5, $[K]^+$ - is absent) in an amount of 120 ml of the 0,05% solution, then 800 ml of the 3% solution of G-2 cyan coupler, 200 ml of the 3% solution of Zh-2yellow coupler; 60 ml of the 4% solution of sodium salt of di-2-ethylhexyl ether of sulfosuccinic acid and 20 ml of 0,1 M of a solution of dipotassium salt of diether of a mixture of polyglycerides of alkenylsuccinic acids as surfactants.

[0037] In the other light-sensitive layers it is added as sensitizing dye a compound of the formula (I) (A, A^1 together = $CH_2C(CH_3)_2CH_2$, A^2 = CH_3, B = 5,5'-di-OCH_3, 6,6'-di-SCH_3, R = C_2H_5, X^- = $CH_3C_6H_4SO_3^-$, n = 0) in an amount of 100 ml 0,02% of alcohol solution and 8 ml of the 0,5% solution of 2-heptyl-5-methyl-7-oxy-1,3,4-triazaindolizine. A mixture of P-6 and P-8 magenta couplers (in a mass ratio 4:1) is added in an amount of 400 ml of the 5% solution.

Example 9.

[0038] False colour photographic material is prepared similarly to example 5, but in one light-sensitive silver halide emulsion layer a sensitizing dye of the formula III (A = C_2H_5, B = 4,5-benzo, B^1 = 4',5'-benzo, R = R^1-$(CH_2)_3SO_3^-$, $[K]^+$

= $C_5H_5N^+H$), in an amount 100 ml of 0,05% alcohol solution are introduced.

[0039] In the other light-sensitive silver halide layer as a sensitizing dye a compound of the formula I (A, A^2 = H, A^1 = $OCH_2CH_2CH_2SO_3^-$, B = H, R = C_2H_5, n = 1, X is absent), in an amount of 30 ml of 0,03% alcohol solution and a compound of the formula I (A, A^2 together = $CH_2C(CH3)_2CH_2$, A^2 = CH_3, B = 5,5'-di-OCH_3, 6,6'-di-SCH_3, R = C_2H_5, X^- = $CH_3C_6H_4SO_3^-$, n = 0) in an amount of 20 ml of 0,02% alcohol solution are introduced.

Example 10.

[0040] False colour silver halide photographic material is prepared similarly to example 9, but all light-sensitive emulsion layers is prepared from silver bromide-iodide emulsion with flattened microcrystals with an average grain size 0,9 μm at the aspect ratio 1:5.

Example 11.

[0041] False colour silver halide photographic material is prepared similarly to example 6, but as colour couplers a dispersion of cyan hydrophobic coupler (ZG-97) 2,4-(di-tret-amylphenoxy)-butylamide-1-oxy-2-naphtoic acid introduced. A dispersion of a ZG-97 coupler is prepared in high pressure homogenizer according to the following prescription: ZG-97- 10 parts by weight, dibutylphtalate - 8 parts by weight, ethylacetate - 16 parts by weight, water solution of gelatin with a mass concentration 100 g/L - 65 parts by weight. An emulgator is used a water solution of sodium salt of dodecylbenzenesulfonic acid, 12 parts by weight and 0,3 parts by weight of oil-soluble surfactant;

a dispersion of a magenta coupler (ZP-24) 1-(2',4',6'-trichlorophenyl)-3-[(2",4"-di-tret-amylphenoxyacetamydo)-benzamido]-pyrazolone-5 is prepared on the next prescription: ZP-24 - 6 parts by weight, dibutylphtalate - 8 parts by weight, ethylacetate - 24 parts by weight, water solution of gelatin with mass concentration 60 g/L - 50 parts by weight, emulgator - 28 parts by weight;
yellow couplers N-596 (2-chloro-5-[(γ-2,4-di-tret-amylphenoxy)-butyroylamino)-anilide] of α-n-carboxyphenoxypyvaloylacetic acid) and N-574 (2-chloro-5 [(γ-2,4-di-tret-amylphenoxy)-butiroylamino)-anilide] of α-n-carbmethoxyphenoxypyvaloylacetic acid) is used as a joint dispersion, prepared in high pressure homogenizer on the following prescription: N-596 - 4 parts by weight, N-574 - 2 parts by weight, dibutylphtalate - 8 parts by weight, ethylacetate - 23 parts by weight, water solution of gelatin with mass concentration 80 g/L - 80 parts by weight, emulgator - 200 parts by weight;

[0042] In emulsion of one layer (per 1 kg of emulsion) is introduced 600 g of a dispersion of a coupler ZG-97 and 160 g of a joint dispersion of couplers N-596 and N-574(2:1).

[0043] In gelatin interlayer and protective layer a dispersion of a colour couplers is not added.

[0044] A material is exposed as in an example 1, but processed on the process of C-41 type, namely:

Mode of processing		
Processing stage	Processing stage duration, min	Temperature of solutions and washing water, °C
Development	5-7	30.0±0.03
Bleaching-fixing	6-7	30±1
Washing	3	30±2
Drying		40-60

Example 12.

[0045] False colour silver is prepared from a mixture in the ratio 7:3of silver bromide-iodide emulsion with octahedral microcrystals, d = 0,7, and silver bromide-iodide emulsion with flattened microcrystals with aspect ratio 1:5.

Example 13.

[0046] False colour silver halide photographic is prepared similarly to example 12, but in one emulsion layer it is added sensitizing dye of the formula (III) (A = C_2H_5, B = 4,5-thieno, B^1 = 6-OCH_3, 5-C_6H_5, R = R^1- $(CH_2)SO_3^-$ [K] $^+$ = $HN^+(C_2H_5)_3$) in an amount of 75,0 ml of 0,10% alcohol solution and monosodium salt of 2-mercapto-benzoxazole-5-sulfonic acid in an amount of 20 ml of the 0,05% solution as an activator of spectral sensitization.

[0047] In other emulsion layer as a sensitizing dye it is added compound of the formula I (A^2 -CH_3, A, A^1 together -$CH_2C(CH_3)_2CH_2$, B - 5,5'-di-OCH_3, 6,6 '-di-SCH_3, R - C_2H_5, X = $CH_3C_6H_4SO_3^-$, n = 0) in an amount of 60 ml of 0,02% alcohol solution and the compound of the formula I (A,A^2 = H, A^1 = $OCH_2CH_2CH_2SO_3^-$, B = H, R = C_2H_5, n = 1, X is absent)..

Example 14.

[0048] False colour silver halide photographic material is prepared similarly to example 13, but all light-sensitive layers are prepared from silver bromide-iodide photographic emulsion with an average size of flattened crystals 1,5 μm at aspect ratio 1:5.

Example 15.

[0049] False colour a photographic material is prepared similarly to example 13, but all light-sensitive silver halide emulsion layers are prepared from a mixture of silver bromide-iodide photographic emulsion with octahedral microcrystals with an average grain size d = 0,7 μm and silver bromide-iodide photographic emulsion with flattened microcrystals with d = 1.2 μm in the ratio 1:1.

Example 16.

[0050] False colour silver halide photographic material is prepared similarly to example 15, but in one light-sensitive layer it is added as a sensitizing dye a compound III (A = C_2H_5, B = 4,5-benzo, B^1 = 5'-OCH_3, R = R^1-$(CH_2)_3SO_3$, [K^+] = HN^+ $(C_4H_9)_3$), in an amount of 120 ml of 0,1% alcohol solution and as an activator of spectral sensitization diperchlorate of 3,3'-[1",2"-bis(ethoxy)-ethyl]-bis-(1-ethylbenzoimidazolium) in an amount 45 ml of the 0,2% solution. Then 375 g of (5,7%) dispersion of a cyan coupler ZG-97 ((2,4-di-tret-amylphenoxy)-butylamide of 1-oxy-2-naphtoic acid) obtained on high pressure homogenizer on the following prescription: ZG-97 - 57,2 g, dibutylphtalate - 55 g, ethylacetate - 260 g, gelatin solution with mass concentration 60 g/L - 790 g, solution of emulgator with mass concentration 40 g/l - 98 g.

[0051] Also it is added 75 g of 6.2% dispersion of a yellow coupler N-596 ([2-chloro-5-[γ-2,4-di-tret-amyl(phenoxy)-butiroylamino)anilide of α-n-carboxyphenoxypyvaloylacetic acid), prepared on high pressure homogenizer according to the prescription: N-596 - 62,3g, tricresylphosphate - 31,2 g, N-azoamylphtalimide - 31,1 g, ethylacetate - 250 g, gelatin solution with mass concentration - 80 g/L - 779 g, solution of emulgator with mass concentration 40 g/L - 96,4 g.. As a hardener 20 ml of the 3% solution of sodium salt of 2,4-dichloro-6-oxy-triazine-1,3,5 is added.

[0052] Gelatin interlayer is prepared from a following composition: per 1 L of desalinated water 50 g of gelatin, 30 ml of 4% sodium salt of di-2-ethylhexyl ether of sulfosuccinic acid and 10 ml of 0,1 M solution of dipotassium salt of diether of a mixture of polyglycerides of alkenylsuccinic acids as the surfactants and 35 ml of the 3% solution of a hardener 1,3,5-triacryloylhexahydrotriazine are added.

[0053] In the other light-sensitive silver halide layer per 1 kg of emulsion it is added as a sensitizing dye 33 ml of 0,02% alcohol solution of compound of the formula I (A,A^1 together = $CH_2C(CH_3)_2CH_2$, A^2 = CH_3, B = 5,5'-di-OCH_3, 6,6'-di-SCH_3, R = C_2H_5, X = $CH_3C_6H_4SO_3^-$, n = 0) and before than sensitizing dye it is added 75 ml of the 1% solution of disodium salt of 4,4'-bis(4,6-dihenoxy-1-3-5-triazinyl-2-amino)stilbene of 2,2-disulfonic acid as a supersensitizer and 5 ml of the 0,5% solution of 2-heptyl-5-methyl-7-oxytriazaindolycine. Then 500 g of a dispersion of a magenta coupler (ZP-24) (1-(2,4,6-trichlorophenyl)-3[2,4-ditret-amyl-phenoxyacetylamido)-benzoamido]-pyrazolone-5) is added obtained on high pressure homogenizer according to the prescription: ZP-24 - 56 g, tricresylphosphate - 28g, N-isoamylphtalimide - 28 g, gelatin solution with mass concentration 60 g/L - 773 g, solution of emulgator sodium salt of dodecylbenzensulfonic acid with mass concentration 40 g/L - 115 g.

[0054] A protective layer is prepared from the composition: per 1 L of desalinated water 50 g of gelatin and 30 ml of 4% solution of sodium salt of di-2-ethylhexyl ether of sulfosuccinic acid and 10 ml of 0,1 M solution of dipotassium salt of diether of a mixture of polyglycerides of alkenylsuccinic acids as the surfactants and 30 ml of the 3% solution of sodium salt of 2,4-dichloro-6-oxytriazine-1,3,5 as a hardener.

Example 17.

[0055] False colour silver halide photographic material is prepared similarly to example 16, but gelatin interlayer between light-sensitive layers is not introduced; in one light-sensitive layer it is added 490 g of a dispersion of cyan coupler ZG-97 and 145 g of a dispersion of a yellow coupler Y-488 (2-chloro-5-[(γ-2',4'-di-tret-amylphenoxy) butiroylamino)-anilide of α-benzylhydantoylpyvaloylacetic acid), obtained on high pressure homonizer according to the prescription: 69,7 g of a yellow coupler, 32 g of dibutylphtalate, 99 g of ethylacetate, 780 g of a gelatin solution with mass

concentration 60 g/l, 119 ml of the 4% solution of sodium salt of dodecylbenzenesulfonic acid as an emulgator.

Example 18.

[0056] False colour silver halide material is prepared similarly to example 16, but between light-sensitive layers a gelatin interlayer without colour couplers is coated. In other layer instead of a dispersion of a magenta coupler ZP-24 500 g a dispersion of a magenta couplers ZP-24 and N-651 is added, obtained as a joint dispersion prepared on high pressure homogenizer according to the prescription: 120 g of tricresylphosphate, 360 ml of ethylacetate, 2400 ml of a gelatin solution with mass concentration 60 g/L, 530 ml of an solution of a sodium salt of dodecylbenzensulfonic acid with mass concentration 40 g/L as an emulgator.

[0057] A protective layer contains per 1 L of desalinated water 55 g of gelatin, 30 ml of the 4% solution of sodium salt di-2-ethylhexyl ether of sulfosuccinic acid and 10 ml 0,1 M solution of dipotassium salt of diether of a mixture of polyglycerides of alkenylsuccinic acids as the surfactants and 34 ml of the 3% solution of the sodium salt of 2,4-dichloro-6-oxy-triazine-1,3,5 as a hardener.

Example 19.

[0058] False colour silver halide photographic material is prepared similarly to example 2, but after spectral sensitizers in one layer it is added 570 g of a dispersion of a yellow coupler N-609 (2"-chloro-5"(3",5"-dicarbomethoxyphenylsulfamido)anilide of α-(3',5'-dicarbomethoxyphenoxy-2-octadecyloxybenzoylacetic acid) obtained on high pressure homogenizer according to the prescription: 207,5 g of N-609, 45 g of 2,5-di-tret-octylhydrochinone, 45 ml of tricresylphosphate, 1650 ml of gelatin solution with mass concentration 60 g/L, 260 ml of the 4% solution of sodium salt of dodecylbenzenesulfonic acid as an emulgator and 370 ml of ethylacetate.

[0059] In the other layer after spectral sensitizers it is added 490 g of a dispersion of a cyan coupler ZG-97 ((2,4-di-tret-amylphenoxy)butylamide-1-oxy-2-naphtoic acid) obtained on high pressure homogenizer according to the prescription: ZG-97 - 10 parts by weight, dibutylphtalate - 8 parts by weight, ethylacetate - 16 parts by weight, gelatin water solution with mass concentration 100 g/L - 65 parts by weight, water solution of sodium salt of dodecylbenzensulfonic acid -12 parts by weight, oil-soluble surfactant - 0,3 parts by weight.

[0060] In the third light-sensitive layer it is added after spectral sensitizers 540g of a joint dispersion of magenta couplers ZP-24 and N-651 prepared in high pressure homogenizer according to the prescription: 120 g of ZP-24, 60 g of N-651, 180 ml of tricresylphosphate, 360 ml of ethylacetate, 2400 ml of a gelatin solution with the mass concentration 60 g/L and 530 ml of sodium salt of dodecylbenzensulfonic acid as an emulgator.

[0061] In gelatin interlayers and protective layer the colour couplers are not added. A material is exposed and processed on process C-41, as in an example 11. The properties are represented in the table.

Example 20.

[0062] False colour silver halide photographic material is prepared similarly to example 19, but all light-sensitive layers are prepared from a mixture of two emulsions: silver bromide-iodide emulsion with octahedral microcrystals with an average grain size d = 0,7 μm and silver bromide-iodide emulsion with flattened microcrystals (aspect ratio 1:5) with an average grain size 1,2 μm.

[0063] In the one light-sensitive layer it is added 660 g of a dispersion of a yellow coupler N-609, in the other light-sensitive layer 500 g of a dispersion of a cyan coupler ZG-97 and in the third light-sensitive layer 550 g of a dispersion of magenta couplers ZP-24 and N-651. The properties are represented in the table.

Example 21.

[0064] False colour silver halide photographic material is prepared similarly to example 16, but in the one light-sensitive layer as sensitizing dye the compound (III) (A = C_2H_5, B = 4,5-benzo, B^1 = 5-OCH_3, R = R^1-$(CH_2)_3SO_3$, $[K]^+$ = 3,3'-diethylthiazolyneocarbocyanine) in amount of 130 ml of 0,1 % alcohol solution is added and in the other layer the compound (I) (A = A^2-H, A^1 = O-i-C_3H_7, R = R^1 = C_2H_5, n = 1, X = J) in an amount of 35 ml of 0,02% alcohol solution is added.

Example 22.

[0065] False colour silver halide photographic material is prepared similarly to example 19, but before introduction of a dispersion of a yellow coupler in the one light-sensitive layer as a sensitizing dye a compound (III) (A = C_2H_5, B = 4,5-benzo, B^1 = 5-Cl, R = R^1 = $(CH_2)_3SO_3$), $[K^+]$ - $N^+H(C_2H_5)_3$) in an amount of 140 ml of 0,1% alcohol solution is

added and in the other layer as a sensitizing dye a compound (I) (A^2 = CH_3, A and A^1 together - $CH_2C(CH_3)_2CH_2$, R = R' = C_2H_5, B = 5,5'-di-OCH_3, 6,6'-di-SCH_3, X = $CH_3SO_3^-$) is added.

Example 23.

[0066] It is similar to an example 22, but in the one light-sensitive layer as a sensitizing dye it is added the compound (I) (A and A^1 = $CHC(CH_3)_2CH_2$, A^2 = H, R = R^1 = $(CH_2)_3SO_3^-$, X = Na) in an amount of 100 ml of 0,02 % alcohol solution, and in the other layer it is added the compound of the formula (III) (A = C_2H_5, B = 4,5 = benzo, B^1 = 5-CH_3, R = $(CH_2)_3SO_3^-$, R' = $CH_2CH(OH)CH_2SO_3$, $[K]^+$ = $HN^+(C_2H_5)_3$) in an amount of 50 ml of 0,05 % alcohol solution.

[0067] As it follows from the table, the false colour material according to the invention has a high resolving power (R = 140-145 MM^{-1}), i.e. higher than material according to the prototype (R = 68 MM^{-1}) and higher light sensitivity. This effect is achieved by application in a material of special silver halide emulsions or their mixtures, spectral sensitizers and/or their compositions, ensuring a variation of sensitization zone as well as application of appropriate activators of spectral sensitization and stabilizers.

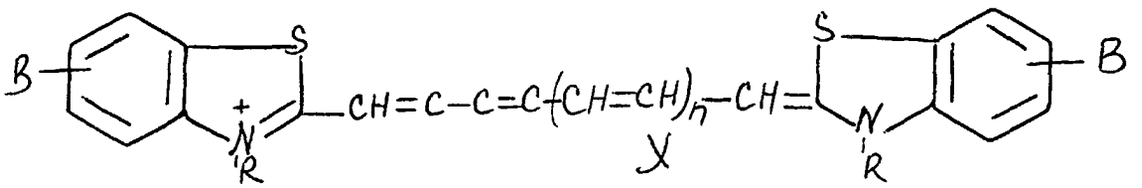
[0068] This invention can be applied in a photographic industry for production of colour photographic materials used for registration of objects in visible and infra-red area of a spectrum.

Table

Example	Sensitometric properties			Resolving power, R, mm^{-1}
	Sensitivity, $S_{0.85}$	Contrast coefficient, γ	Fog density, D_o	
1	30	1.6	0.30	68
2	130	2.4	0.25	110
3	200	2.0	0.20	100
4	200	2.2	0.20	110
5	250	2.0	0.20	145
6	270	2.2	0.15	145
7	310	2.8	0.25	120
8	250	2.0	0.15	145
9	300	2.3	0.18	145
10	400	2.2	0.25	100
11	320	1.9	0.17	120
12	500	2.1	0.21	110
13	480	2.0	0.16	110
14	700	1.7	0.25	100
15	600	2.3	0.20	110
16	600	1.8	0.21	110
17	600	1.95	0.20	110
18	600	1.95	0.20	110
19	200	1.9	0.20	120
20	250	1.9	0.23	110
21	550	1.9	0.20	110
22	250	1.9	0.20	120
23	300	2.0	0.18	135

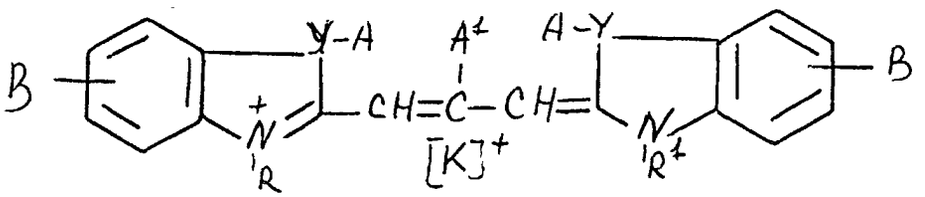
Claims

1. False colour silver halide photographic material consisting of a polymeric support on which on the one side antihalo backing layer is coated, on the other side at least two light-sensitive layers prepared from the silver halide photographic emulsion, containing colour forming couplers and infra-red, orthochromatic and/or panchromatic sensitizing dyes, auxiliary and protective gelatin layers are coated distinctive by that all light-sensitive layers are prepared from silver bromide-iodide emulsion with octahedral or flattened microcrystals with an average grain size 0,5-1,5 μm or their mixture and one of the light-sensitive layers contains as an infrared sensitizing dye one or more one compounds of the formula (1)



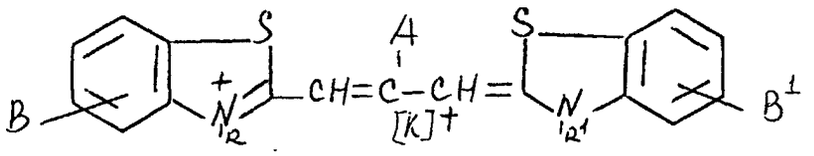
where A = H; $A^1 = OCH_2CH_2CH_2SO_3^-$; R = lower alkyl; A and A^1 together = $CH_2C(CH_3)_2CH_2^-$; A^2 = H, lower alkyl; B = H, 5,5'-di-OCH_3, 6,6'-di-SCH_3 ; R = lower alcyl, $(CH_2)_3SO_3^-$; n = 0,1; X = $CH_3C_6H_4SO_3^-$,J^-, $CH_3SO_3^-$, alkaline metal or is absent;

the second light-sensitive layer contains as an orthochromatic sensitizing dye more than one compounds of the formula (II):



where Y = 0, N; A = lower alkyl or is absent; A^1 = H, lower alkyl, B = 5,5'--$COOC_2H_5$, 5,5 '-C_6H_5; R, R^1 = lower alkyl, $(CH_2)_3SO_3^-$; $[K]^+ = NHC_5H_5$ or is absent,

and/or the third light-sensitive layer contains as panchromatic sensitizing dye one or more compounds of the formula (III):



where A = lower alkyl; B = 4,5-benzo, 4,5-tieno; B^1 = 5-OCH_3, 5-C_6H_5, 4'5'-benzo,5-Cl, 5-CH_3 ; R, R^1 = lower alkyl, $(CH_2)_3SO_3^-$; $[K]^+ = HN^+(C_2H_5)_3$, $HN^+(C_4H_9)_3$, C_5H_5-N^+H, the alkaline metal, 3,3'-diethylthiazolinocarbocyanine, or is absent, and between light-sensitive layers auxiliary gelatin layers containing hardener are coated.

2. False colour silver halide photographic material on p.1 distinctive by that the light-sensitive layers contain as activators of spectral sensitization diperchporate of 3,3'-[1",2"-bis(ethoxy)-ethyl]-bis-(1-ethylbenzoimidazolium), or disodium salt of 4,4'-bis(4",6-ди phenoxy-1,3,5-triazinyl-2-amino)stilbene-2,2'-disulfonic acid or monosodium salt of 2-mercaptobenzoxazole-5-sulfonic acid.

3. False colour silver halide photographic material on p. 1 distinctive by that auxiliary gelatin layers contain as a hardener derivatives of triazine-1,3,5.

4. False colour silver halide photographic material on p. 1 distinctive by that the light-sensitive layers contain a mixture of silver bromide-iodide photographic emulsion with octahedral microcrystals and silver bromide-iodide photographic emulsion with flattened microcrystals in the ratio 1:9-9:1.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/RU 00/00103

A. CLASSIFICATION OF SUBJECT MATTER
IPC7 G03C 7/20, 1/26

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC7 G03C 7/20, 1/12- 1/26

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A.P	RU 2146829 C1 (ZAKRYTOE AKTIONERNOE OBSCHESTVO NAUCHNO-PROIZVODSTVENNOE OBIEDINENIE «FOMOS») 20 March 2000 (20.03.00), the abstract	1-4
A	US 5252444 A (KONICA CORPORATION) 12 October 1993 (12.10.93)	1-4
A	EP 0083377 A1 (KONISHIROKU PHOTO INDUSTRY CO LTD.), the abstract, the claims	1-4
A	DE 2123456 C2 (LOHMER, Karl) 23 November 1972 (23.11.72)	1-4
A	US 5154995 A (FUJI PHOTO FILM CO LTD.) 13 October 1992 (13.10.92)	1-4

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier document but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
03 October 2000 (03.10.00)	05 October 2000 (05.10.00)
Name and mailing address of the ISA/ RU	Authorized officer
Facsimile No.	Telephone No.

Form PCT/ISA/210 (second sheet) (July 1992)