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(54) **Method for processing silver halide color photographic light-sensitive material.**

(57) A method for processing a silver halide color photographic light-sensitive material comprising the steps of:

treating the silver halide color photographic material with a solution capable of fixing the material; and

treating said silver halide color photographic light-sensitive material treated with said solution, with a stabilizing solution, and

wherein at least a part of said stabilizing solution is dialystically treated by a dialysis means containing therein a charge-mosaic membrane.

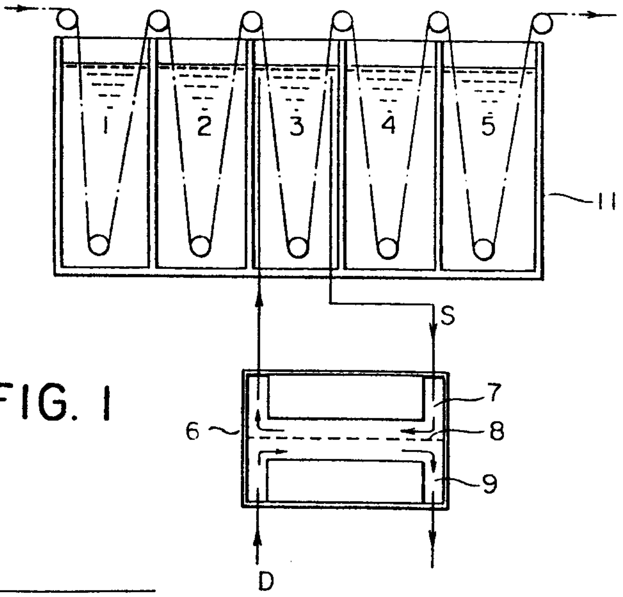

FIG. 1

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METHOD FOR PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

FIELD OF THE INVENTION

The present invention relates to a method for processing a silver halide light-sensitive material (hereinafter referred to as "the light-sensitive material") and more particularly to a method for processing the light-sensitive material in a stabilized state, subsequent to a desilverization process.

BACKGROUND OF THE INVENTION

Recently, in the case of a photo-finisher which develops a light-sensitive material automatically and continuously, the problems regarding environmental protection and water resources have been deemed important and it is desired to reduce the large amount of washing water used in the rinsing step following the fixing or bleach-fixing process or to eliminate the use of such water at all. For this purpose, there have been proposed techniques directly stabilizing the light-sensitive material with a stabilizing solution containing an isothiazoline derivative, benzisothiazoline derivative, soluble iron complex salt, polycarbonic acid and organic phosphoric acid as described in the Japanese Patent Publication Open to Public Inspection (hereinafter referred to as Japanese Patent O.P.I. Publication) Nos. 8542/1982, 132146/1982, 14834/1982 and 18631/1983. Further, as described in the Japanese Patent O.P.I. Publication No. 134636/1983, the replenishing amount of a stabilizing solution is in the order of about 2.5ℓ ∿ 25 mℓ per 1 m^2 of the light-sensitive material and more preferably in the order of 200 mℓ ∿ 50 mℓ.

These techniques relate to methods for controlling or preventing problems resulting from the fixing and bleach-fixing components introduced into the stabilizing solution but any of them has not been put into practice in case the fixing and bleach-fixing components have an amount higher than a predetermined value and the replenishment of a predetermined amount of stabilizing solution has been required. Especially, there has been a disadvantage that when the amount of the fixing and bleach-fixing components in the stabilizing solution in the final tank increases, there is an increase in yellow stains as a result of the unexposed portion of the light-sensitive material being stored for a long time.

Further, apart from the above problems, it has been found that there is an increase in generation of stains after processing the unexposed portion of the light-sensitive material irrespective of the mixing amount of the fixing and bleach-fixing components for which the stabilizing solution are required to be used continuously for a long time.

SUMMARY OF THE INVENTION

Accordingly, a first object of the present invention is to provide a color stabilization method which does not involve any problem by reducing the concentration of fixing and bleach-fixing components in a stabilizing solution.

A second object of the present invention is to provide a color stabilization method which does not increase the generation of yellow stains immediately after processing an unexposed portion of a light-sensitive material even when the material is continuously processed for a prolonged period of time.

A third object of the present invention is to provide a method for reducing the replenishing amount of the stabilizing solution or for re-using the solution by removing harmful components contained in the solution.

The above objects have been attained by a method for processing a silver halide photographic light-sensitive material comprising the steps of treating the silver halide photographic light-sensitive material with a solution capable of fixing the material and then treating it with a stabilizing solution with a part of the stabilizing solution being dialytically treated by a dialysis means including a charge-mosaic membrane.

Further for a preferable embodiment of this invention the stabilizing solution contains a chelating agent whose stability constant with respect to ferric ion is not less than 6.

BRIEF DESCRIPTION OF THE DRAWING

Fig. 1 is a conceptual view of a dialyzing tank using a charge mosaic membrane and attached to a photographic processing apparatus and Figs. 2 and 3 are conceptual views of one embodiment of a dialyzing tank using a charge-mosaic membrane.

DETAILED DESCRIPTION OF THE INVENTION

The present invention will now be described in further detail.

In a process including the usual rinsing step, the fixing and bleach-fixing components in the stabilizing solution, an eluent from the light-sensitive material and fatigued components in the stabilizing solution are all washed out by the rinsing step but if the material is subjected to a direct stabilization process without the rinsing step, all of the components will accumulate in the stabilizing solution so that yellow stains generate on the light-sensitive material immediately after the processing thereof or due to the storage thereof.

However, it is possible to prevent the generation of yellow stians on the light-sensitive material by the method of the present invention in which the stabilizing solution is dialyzed by using a charge mosaic-membrane.

The dialysis through a dialyzing means using a charge mosaic membrane according to the present invention is a processing method comprising the steps of introducing a stabilizing solution into a demineralization chamber which is separated from a dialysis chamber through a charge mosaic-membrane within a processing tank and introducing a dialyzing solution into the dialysis chamber.

The charge-mosaic membrane referred to in the present invention is such type of membrane in which anion exchange zones and cation exchange zones are alternately separated by neutral zones and preferably, the anion exchange zones and cation exchange zones on one of the surface of the membrane extend through the other surface.

Assuming that the charge mosaic membrane and the demineralization chamber constitute one cell, to provide a plurality of such cells is effective in view of reducing the area of installation of the processing apparatus and the number of cells may be determined by the amount of the stabilizing solution to be processed and the area of installation of the processing apparatus.

The dialyzing solution may be water or water added with salt in a desired amount. Further, it is preferable to recover silver from the dialyzing solution but the stabilizing solution after the recovery of silver may be used for the process according to the present invention. As a method of collecting silver from the dialyzing solution, an electrodialysis method, electrolysis method or ion exchange method may be used. Further, it is preferable to perform demineralization by the dialyzing solution and in this case, the dialysis method, a method for bringing silver into contact with ion exchange resin, activated carbon or zeolite or a method for precipitating by adding to the dialyzing solution such type of salt that is liable to become insoluble may be used solely or in combinations of more than two of them. At the same time, the stabilizing solution to be introduced into the demineralization chamber may be pretreated by ion exchange resin, chelating exchange resin, activated carbon and zeolite solely or in combinations of more than two of them thereby improving the durability of the charge-mosaic membrane.

The charge-mosaic membrane used in the present invention may include anion exchange zones and cation exchange zones in a polka-dotted fashion or may include anion exchange zones, neutral zones and cation exchange zones in the form of stripes when the horizontal surface of the membrane is viewed from above. For example, the charge mosaic membrane given in J. Memb. Sci., Vol. 20, P313, 1984 may be used.

It is preferable that the stabilizing solution of the present invention contains a chelating agent whose chelating stability constant with respect to ferric ion is not less than

6. The term "chelating stability constant" referred to herein is used in the meaning generally known from L.G. Sillen and A. E. Martell's "Stability Constants of Metal-ion Complexes" published by the Chemical Society, London (1964) and S. Chaberek and A. E. Martell's "Organic Sequestering Agents" published by Wiley (1959).

As chelating agents whose chelating stability constant with respect to ferric ion is not less than 6, there are an organic carbonic acid chelating agent, organic phosphoric acid chelating agent, condensed phosphoric acid chelating agent and polyhydroxylic compound. What is more preferable in the present invention is the use of chelating agents whose chelating stability constant with respect to ferric ion is not less than 13 among which there are ethylenediamine diorthohydroxyphenyl acetate, nitrilotriacetic acid, hydroxyethylenediamine triacetate, diethylenetriamine pentaacetate, hydroxyethylimino diacetate, diaminopropanol tetraacetate, transcyclohexenediamine tetraacetate, ethylenediamine tetrakismethylene phosphonic acid, nitrilotrimethylene phosphonic acid, 1- hydroxyethylidene-1, 1-diphosphonic acid, 1, 1- diphosphonoethane- 2-carboxylic acid, 2- phosphonobutane-1, 2, 4-tricarboxylic acid, 1- hydroxy- 1- phosphonopropane- 1, 2, 3-tricarboxylic acid, catechol- 3, 5- disulphonic acid, sodium pyrophosphate, sodium tetrapolyphosphate and sodium hexapethaphosphate and especially preferable in the present invention is the use of diethylenetriamine pentaacetic acid, 1- hydroxyethylidene- 1, 1-diphosphonic acid and their salts.

Further, as compounds desired to be added to the stabilizing solution of the present invention, there are a pH adjuster, sodium benzoate, butyl hydroxybenzoic acid, antibiotic substances, an anti-molding agent, a preservative, a dispersant, a hardening agent and an optical brightening agent.

The most effective additive is the ammonium compounds described in the specification of the Japanese Patent Application No. 58693/1983.

It is desirable to adjust the pH of the stabilizing solution of the present invention to 0.1 ∿ 10, preferably to 2 ∿ 9, and more preferably to 4 ∿ 8.5 as a suitable range.

The processing temperature for the stabilization process is in the order of 15°C ∿ 60°C, preferably 20°C ∿ 45°C. Further, it is preferable that the processing time be as short as possible in view of speedy processing and it is usually in the order of 20 sec ∿ 10 min with the range of 45 sec ∿ 5 min being the most preferable. In the case of a stabilization process using a plurality of tanks, the processing time by the first-stage tank may be made the same as that by the last-stage tank or the time by the latter tank may be made shorter than that by the former tank but in this case, it is preferable that the processing time by the last-stage tank be made longer. Especially, the processing time by the last-stage tank is preferably made longer by 20 ∿ 50% than that by the first-stage tank and further, it is preferable that the stabilization processing be performed by multi-stage tanks and a reverse flow system in which the replenisher is supplied from the last-stage tank so as to make it overflow the first-stage tank in sequence be employed. Although, in the present invention, it is not necessary to perform rinsing after the completion of the stabilization process, the rinsing and surface washing of the light-sensitive material with a small amount of water for a short time can be performed at choice as occasion demands.

In the present invention, the processing solutions having a fixing capability are those which are adopted for desilverization and among them are included a fixing solution and a bleach fixing solution. The generally used fixing agent is thiosulfate.

Further, by the expression that a light-sensitive material is processed by the processing solution having a fixing capabilty and subsequently processed with the stabilizing solution, it is meant that a silver recovering bath and a rinsing means may be provided between the processing by the fixing solution (bath) or bleach-fixing solution (bath) and the processing by the stabilizing solution.

The method for bringing the stabilizing solution into contact with a light-sensitive material according to the present invention is favorably performed by dipping the light-sensitive material in the solution as in the case of the general processing solutions but the stabilizing solution may be applied to the emulsion coated surface of the light-sensitive material, both surfaces of the carriage leader and the transfer belt by means of a sponge or synthetic resin cloth, or sprayed by means of a sprayer.

In the present invention, there are two methods for dialyzing the stabilizing solution which has been used for treating the light-sensitive material. One of the methods is such that a tank having a charge mosaic membrane and a dialyzing solution is provided in a stabilizing bath so as to continuously treat the stabilizing solution and the other is that an overflowed waste solution from the stabilizing bath is treated by a dialyzing tank using a charge-mosaic membrane and then returned to the stabilizing bath but the second method is more preferable than the first method.

In case the stabilizing solution is treated by the tank including the charge-mosaic membrane and the dialyzing solution, it is preferable that the dialyzing solution be circulated constantly. Further, in case the overflowed solution from the stabilizing bath is introduced into the dialyzing tank, the stabilizing solution to be introduced into the demineralization chamber in the dialyzing tank and the dialyzing solution to be introduced into the dialyzing chamber are constantly circulated.

The stabilizing process of the present invention is performed in one or more than two stabilization tanks. In the case of using more than two stabilizing tanks, a dialyzing device using a charge-mosaic membrane may be provided in each of the tanks but in that case, it is desirable to connect it to the stabilizing tank adjacent a processing bath having a fixing capacity. Further, even in case an overflow from the bath is processed by the dialyzing device using the charge mosaic membrane, it is possible to process the overflow from the stabilizing tank adjacent the processing tank having a fixing capacity and such overflow may be reused as another stabilizing solution after processing. In this case, it is desirable to add the components of the stabilizing solution to the overflow and to make it recycled from the stabilizing tank located farther from the processing tank having a fixing capacity.

Further, it is natural that prior to the processing method of the present invention, the light-sensitive material should be color-developed and a color image should be formed by coupling reactions between the oxide of the principal color developing ingredient and the color coupler and that in case "the processing solution having a fixing capacity" according to the present invention contains a fixing component without a bleaching component, the material should be subjected to bleaching after the color developing process. As regards such color development and bleaching, the generally known techniques can be used without any specific limitations and it is also possible to refer to the techniques described in the Japanese Patent O.P.I. Publication Nos. 14834/1983, 105145/1983, 134634/1983 and 18631/1983, and Japanese Patent Application No.2709/1983 all of which were filed by the subject applicant. Further, it is particularly preferable to make the stabilizing solution of the present invention contain as anti-molding agent and the descriptions in the above publications can also be referred to for obtaining techniques on, and other compositions or examples of, the anti-molding agent.

Fig. 1 is a conceptual view showing one example of a stabilizing solution processing step using a dialyzing means having a charge mosaic membrane according to the present invention. In the figure, reference numeral 11 designates a light-sensitive material processing apparatus which comprises a color developing tank 1, a bleach-fixing solution tank 2, a first stabilizing solution tank 3,a second stabilizing solutions tank 4 and a third stabilizing solution tank 5. An image-exposed light-sensitive material is transferred along a passage shown by the chain-line, stabilized through the first, second and third stabilizing solution tank after it is developed and bleach-fixed and then dried at a drying section (not shown). Reference numeral 6 designates a dialyzing tank the interior of which is divided into a demineralization chamber 7 and a dialysis chamber 9 by means of a charge-mosaic membrane 8. In the demineralization chamber 7 there is circulated a stabilizing solutions in the first stabilizing solution tank 3 and in the dialysis chamber 9 into which the dialyzing solution D is flowed. Further, the unnecessary components in the stabilyzing solution moves in the dialyzing solution through the charge-mosaic membrane so that the stabilizing solution is kept effective.

Fig. 2 is a diagrammatical view of a dialyzing tank in which a plurality of demineralization chambers 7 and a plurality of dialyzing chambers 9 are separated by a plurality of charge-mosaic membranes with the chambers 7 and 9 being arranged in an alternative fashion and Fig. 3 is an example of a dialyzing tank provided with spacers 10 in the vicinity of a charge-mosaic membrane 8 which spacers are adopted to generate a turbulent flow in a stabilyzing solutions or a dialyzing solution D. In any of the above two cases, it is possible to obtain a high dialyzing efficiency.

EXAMPLES

The present invention will now be described in detail with reference to several examples but it should be noted that the invention is not limited to these examples.

Example-1

As a light-sensitive material, SAKURA color papers (prepared by Konishiroku Photo Ind. Co., Ltd.) were used and as regards processing solutions and steps, experiments were conducted by the methods described hereiblow.

STANDARD PROCESSING STEPS

(1) Color Development	38°C	3.5 minutes
(2) Bleach-fixing	33°C	1.5 minutes
(3) Stabilization	25°C ∿ 30°C	3 minutes
(4) Drying	75°C ∿ 80°C	about 2 minutes

COMPOSITIONS OF PROCESSING SOLUTIONS

(1) A color developing tank solution

Benzil alcohol	15 mℓ
Ethylene glycol	15 mℓ
Potassium sulfite	2.0 g
Potassium bromide	1.3 g
Sodium chloride	0.2 g
Potassium carbonate	30.0 g
Hydroxylamine sulfate	3.0 g
Polyphosphoric acid (TPPS)	2.5 g
3- methyl- 4- amino- N-ethyl- N- (ß-methanesulfonamide ethyl)-aniline sulfite	5.5 g
optical brightening agent (4, 4'-diaminostilbene disulfonic acid derivative)	1.0 g
Catechol-3, 5-disulfonic acid	0.3 g
water to make	1 ℓ

and adjusted to pH 10.50 with KOH.

(2) A color developing replenisher solution

Benzil alcohol	22 mℓ
Ethylene glycol	20 mℓ
Potassium sulfite	3.0 g
Potassium carbonate	30.0 g
Hydroxylamine sulfate	4.0 g
Polyphosphoric acid (TPPS)	3.0 g
3- methyl- 4- amino- N-ethyl- N- (ß-methanesulfonamide ethyl)-aniline sulfite	7.5 g
optical brightening agent (4, 4'-diamino-stilbene disulfonic acid)	1.5 g
Catechol-3, 5-disulfonic acid	0.3 g
water to make	1 ℓ

and adjusted to pH 10.50 with KOH.

(3) A bleach-fixing tank solution

Ferric ammonium ethylenediamine tetraacetate dihydrate	60 g
Ethylenediamine tetraacetate	3 g
Ammonium thiosulfate (70% solution)	100 mℓ
Ammonium sulfite (40% solution)	27.5 mℓ
water to make	1 ℓ

and adjusted to pH 7.1 with potassium carbonate or glacial acetic acid.

(4) A bleach-fixing replenisher A

Ferric ammonium ethylenediamine tetraacetate

dihydrate	260 g
Potassium carbonate	42 g
Water to make	1 ℓ

and adjusted to pH 6.7 ±0.1.

(5) A bleach-fixing replenisher B

Ammonium thiosulfate (70% solution)	500 mℓ
Ammonium sulfite (40% solution)	150 mℓ
Ethylenediamine tetraacetic acid	17 g
Glacial acetic acid	85 mℓ
Water to make	1 ℓ

and adjusted to pH 4.6 ±0.1.

(6) A stabilizing tank solution and a stabilizing replenisher

1- hydroxyethylidene- 1, 1- diphosphonic acid	2.0 g
5- chloro- 2- methyl- 4- isothiazoline-3-on	0.03 g
2-methyl-4-isothiazoline-3-on	0.03 g
Water to make	1 ℓ

and adjusted to pH 4.0.

Experiment-1

The above mentioned color development tank solution, bleach-fixing tank solution and stabilizing tank solution were filled into an automatic developing machine and an image-wise exposed color paper is continuously processed by replenishing the above-mentioned color developing replenisher solution, the bleach-fixing solutions A and B and the stabilizing solution every three minutes by using quantitative cups. The replenishing amounts of the solutions were that the amount of the color developing replenisher solution into the color developing tank was 170 mℓ, those of the bleach-fixing solutions A and B into the bleach-fixing tank were each 25 mℓ and the amounts of the replenisher into the stabilization processing tank in three cases were 100 mℓ, 300 mℓ and 1 ℓ, respectively.

The automatic developing machine was made to include a first tank, a second tank and a third tank arranged in that order in the direction of the flow of the light-sensitive material and a multistage counter-flow system was adopted in which an overflow from the last tank was flowed into the second tank and an overflow from the second tank was flowed into the first tank.

The above continuous processing was performed until the entire replenishing amount of the stabilizing solution became three times the volume of the stabilizing solution tank and the unexposed color paper was processed to make a sample. Further, a comparison or reference sample processed by replacing the stabilization process with rinsing by running water was prepared.

The reflectance of the samples were measured by a wavelength of 445 nm for examining the generation of yellow stains on the day of processing with the results shown in Table 1. Further, to test the generation of yellow stains after ageing, the samples were stored for 25 days at a temperature of 70°C and 80% RH and then the resultant yellow stains were measured with blue light by using an optical densitomer (PDA -65 of Konishiroku Photo Ind. Co.,Ltd.) with the results shown in Table 1.

Experiment-2

In the experiment-1, a dialyzing device using a charge mosaic membrane was directly connected to the first stabilizing tank shown in Fig. 1, a dialyzing process was performed by using city water as a dialyzing solution and the charge-mosaic membrane, desilverization and demineralization were performed with the dialyzing solution and the generation of yellow stains on a photographic material continuously processed in the same manner as the experiment-1 was measured, with the results shown in Table 1.

Table 1

			Yellow Stain					
			On the day of processing			After storage		
	Replenishing amount (per 1 m^2)		1ℓ	300 mℓ	100 mℓ	1ℓ	300 mℓ	100 mℓ
Reference	Experiment 1	Washing with running water	(More than 10 ℓ per 1 m^2) 0.09			(More than 10 ℓ per 1 m^2) 0.33		
		Stabilizing solution	0.09	0.10	0.15	0.34	0.34	0.42
Present invention	Experiment 2	Dialysis with charge mosaic membrane (1st tank)	0.08	0.08	0.08	0.26	0.27	0.26
	Experiment 3	Dialysis with charge mosaic membrane (3rd tank)	0.09	0.09	0.10	0.31	0.32	0.31

As will be clear from the Table 1, when the conventional stabilizing solution was used, the rate of generation of yellow stains was higher than in the case of water washing and the smaller the replenishing amount of stabilizing solution, the higher the rate of generation of yellow stains. Further, even the rate of generation of yellow stains after the storage of each sample was low as compared to that in the case of water-washing but when the replenishing amount was reduced further, there was an increase in the yellow stains. Therefore, in view of achieving a sharp reduction in the amount of water used and also a reduction in the amount of the waste solution, it is considered that the conventional stabilizing solution cannot be put into practical use.

On the other hand, it will also be understood from the Table 1 that when the electrodialyzed stabilizing solutions of the present invention, especially those in the experiments 2 and 3, were used, the rate of generation of yellow stains on the day of processing was low and even after the storage tests, the rate was controlled to a considerable degree showing that the solutions were extremely effective.

Further, it will be understood that the dialysis in the experiment-2 in which a charge-mosaic membrane was used and which was performed in the first tank near a bath having a fixing capacity is extremely effective as compared to that in the experiment-3.

That is, it will be understood that the present invention is extremely effective because no problem occurs even when the replenishing amount of the stabilizing solution is reduced.

Example-2

COMPOSITIONS OF PROCESSING SOLUTIONS

(1) A stabilizing tank solution and a stabilizing replenisher

1- hydroxyethylidine- 1, 1- diphosphonic acid	0.5 g
Bismuth chloride (45% aqueous solution)	0.1 g
Magnecium sulfate	0.04 g
Ammoniam water (25% aqueous solution)	2.0 g

5- chloro- 2 methyl- 4- isothiazoline- 3- on	0.02 g
2- methyl- 4- isothiazoline- 3- on	0.02 g
2- octyl- 4- isothiazoline- 3- on	0.01 g
Orthophenylphenol sodium salt	0.03 g
Water to make	1 ℓ

and adjusted to pH 7.0 with sulfuric acid.

Experiment-4

The above stabilizing solution was used in place of the stabilizing solution and replenisher in the example-1 and a color paper was continuously processed in the same manner as the experiment-1 of the example-1 with a replenishing amount of 750 mℓ per 1 m^2 of the color paper. In the course of processing, a recycling system was adopted in which an overflow from the stabilizing both was used to solve the replenisher and the rate of generation of yellow stains was obtained by the same experiments as those of the example-1 with the results shown in the Table 2.

Experiment-5

A tank was used in place of the stabilizing bath in the experiments-2 and -3 of the example-1 in which a dialyzing device having a charge-mosaic membrane was used. In this experiment, an overflow of the stabilizing solution was filled into the tank and a dialyzing process was performed through the charge mosaic membrane. In this case, the stabilizing solution after processing was used to solve the replenisher according to the recycling system and the rate of generation of yellow stains on the color paper was obtained with the results shown in the Table 2.

Table 2

	Experiment-4 (Reference)	Experiment-5 (Present Inv.)
Optical density (blue light) of yellow stains on the day of processing	0.22	0.11
Optical density (blue light) of yellow stains after storage	0.55	0.28

As will be clear from the Table 2, in the case of the experiment-4 (Reference) in which the stabilizing solution was recycled, the rates of generation of yellow stains on the day of processing and after storage of the color paper were so high that the stabilizing solution could not be put into practical use while in the case of the experiment-5 (Present invention) in which the stabilizing solution was dialyzed through the charge-mosaic membrane, the rates of generation of yellow stains on the day of processing and after storage of the color paper were extremely favorable for re-use.

Example-3

The same processing solutions, steps and methods as those of the example-1 were used but two tanks were provided to sustitute the stabilizing bath and the stabilizing solutions

Nos. 6 through 12 given in the Table 3 were used.

Further, the dialyzing tank using the charge mosaic membrane shown in Fig. 1 was directly connected to the first tank as in the case of the experiment-2 of the example-1 and an unexposed color paper was continuously processed until the entire amount of the replenisher became three times the volume of the stabilizing bath tanks. Then an experiment same as the experiment-1 of the example-1 was conducted to obtain samples and the rates of generation of yellow stains on the samples on the day of processing and after storage thereof were obtained with the results shown in the Table 3.

The replenishing amount of the stabilizing solution was 100 mℓ per 1 m^2 of the light-sensitive material and to obtain a reference example, the same experiment was conducted by using the No. 3 stabilizing solution prescribed in the Table 3 and without performing a dialyzing process with the charge-mosaic membrane, with the results shown in the Table 3.

Table 3

Prescription No.		Stabilizing Solution & Replenisher (added with water to make 1ℓ and adjusted to pH 6.0 with KOH and H_2SO_4)	Yellow Stain on the day of Processing Reflectance (%) 455 nm	Yellow Stain after Storage Optical Density (Blue Light)
Preesnt Invetion	6	Anti-molding agent (Orthophenylphenol) 0.1 g	76	0.33
	7	Anti-molding agent 0.1 g 1-hydroxyethyledene-1, 1- diphosphoic acid 5 g	83	0.27
	8	Anti-molding agent 0.1 g Nitrilotrimethylene sulfonic acid 5 g	79	0.30
	9	Anti-molding agent 0.1 g Hydroxyethylideneamine triacetic acid 5 g	82	0.30
	10	Anti-molding agent 0.1 g Glycine 5 g	78	0.34
	11	Anti-molding agent 0.1 g Nitrilomethylene phosphonic acid 5 g Ammonia water (25%) 5 g	83	0.24
	12	Anti-molding agent 0.1 g 1-hydroxyethylidene-1, 1-diphosphoric acid 5 g Ammonia water (25%) 5 g $MgSO_4$ 1 g	83	0.18
Reference	13	Anti-molding agent 0.1 g 1-hydroxyethylidene-1, 1-diphosphonic acid 5 g	74	0.44

As will be clear from the Table 3, in case the stabilizing solutions according to the prescriptions Nos. 6 through 12 were dialyzed through the charge mosaic membrane, a high rate of reflectance was obtained by a wavelength of 445 nm on the day of processing of the samples in contrast to the reference sample processed by use of the stabilizing solution according to the prescription No. 13 and the rate of generation of yellow stains after the storage of the samples of the present invention was low showing that the stabilizing solutions of the present invention were extremely effective.

Further, it will also be understood that the effects of the present invention are outstanding when the stabilizing solutions which are added with the chelating agents Nos. 7 through 12, especially Nos. 7, 8 and 9 are used and the solution added with the chelating agent No. 7 (1- hydroxyethylidene- 1, 1-diphosphonic acid) is the most preferable. Further, it will be understood that the chelating agents Nos. 11 and 12 containing ammonia water are preferable with the latter (No. 12) containing both ammonia water and 1- hydroxyethylidene- 1, 1-phosphonic acid being particularly preferable.

Example-4

Of the three tanks in the stabilizing bath tank in Fig. 1, only the first tank was used by removing the remaining two. In this case, the processing time with the stabilizing bath tank was not changed. When the stabilizing solution in the first tank was processed by a dialyzing tank having a charge-mosaic membrane, the same results as those of the examples 2 and 3 were obtained. However, when the dialyzing tank with charge mosaic membrane was not used for the single stabilizing tank, it was found that the rate of generation of yellow stains became quite outstanding and this tendency was also observed after the sample was stored.

Example-5

When the dialyzing tank in Fig. 2 was used in place of the dialyzing tank (6) with a charge mosaic membrane shown in Fig. 1, it was possible to obtain the same results as those of the examples 2, 3 and 4 despite that the area of installation of the processing apparatus was reduced to one-tenth of the conventional area.

Exmaple-6

The dialyzing tank in Fig.2(b) was used. As a result, it was found that even when the dialyzing time was six hours, the rate of generation of yellow stains was substantially the same as a case when the dialyzing time was twenty hours with the use of the dialyzing tank in Fig. 1. This phenomenon is likely due to the fact that the dialyzing speed was increased as compared to that in the case of the dialyzing tank in Fig. 1.

Example-7

The following first stabilizing solution for a negative was processed by use of the dialyzing tank of the present invention and it was found that no yellow stain generated on the negative and the replenishing amount of the stabilizing solution could be reduced to a considerable degree.

(First stabilizing solution)

Consisting of 1ℓ of a mixture of:

5- chloro- 2- methyl- 4- isothiazoline- 3- on	0.03 g
2- methyl- 4- isothiazoline- 3- on	0.03 g
water to make	1 ℓ

and adjusted to pH 7.0 with NH_4OH and CH_3COOH.

WHAT IS CLAIMED IS:

1. A method for processing a silver halide color photographic light-sensitive material comprising the steps of:

treating the silver halide color photographic material with a solution capable of fixing the material; and

treating said silver halide color photographic light-sensitive material treated with said solution, with a stabilizing solution, and

wherein at least a part of said stabilizing solution is dialystically treated by a dialysis means containing therein a charge-mosaic membrane.

2. The method of Claim 1 wherein said stabilizing solution contains a chelating agent whose chelating stability constant with respect to ferric ion is not less than 6.

FIG. 1

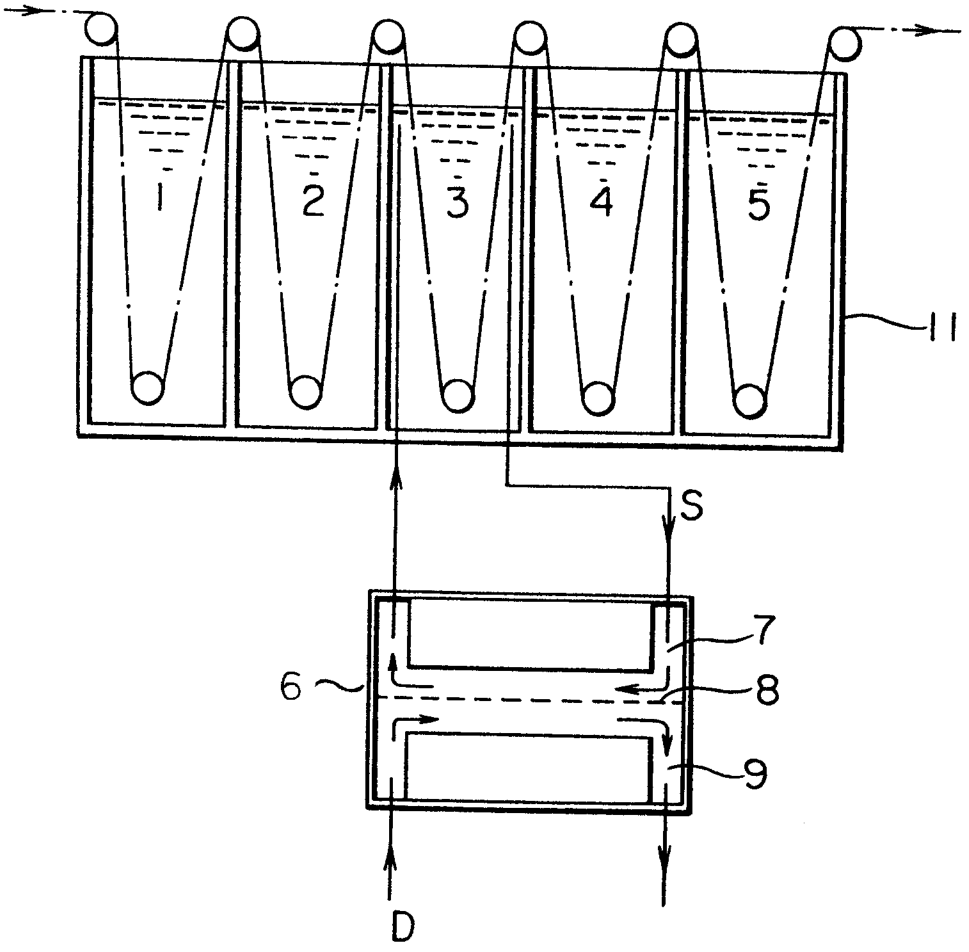

FIG. 2

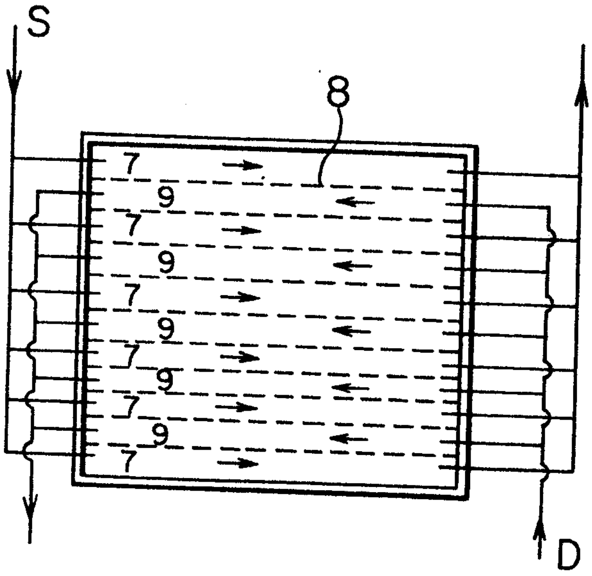

FIG. 3