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PHOTOGRAPHIC PROCESSES FOR PRODUCING PRINTS BY TRANSFER AND PRODUCTS USEFUL IN CONNECTION THEREWITH

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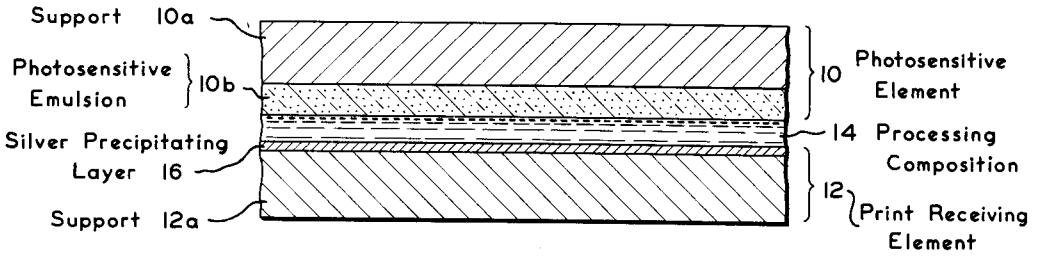

FIG. 1

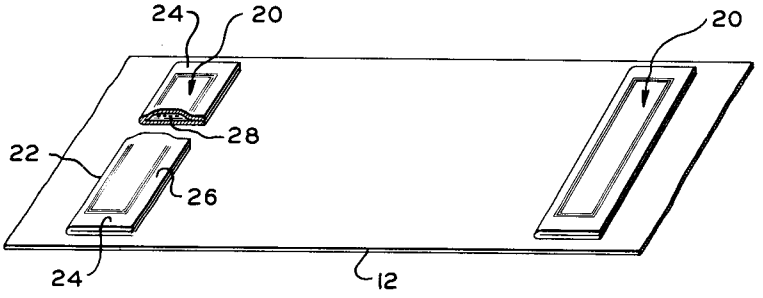

FIG. 2

INVENTOR

Edwin H. Land

BY Brown and Mikulka

ATTORNEYS

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2,740,715

PHOTOGRAPHIC PROCESSES FOR PRODUCING PRINTS BY TRANSFER AND PRODUCTS USEFUL IN CONNECTION THEREWITH

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass., a corporation of Delaware

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25 Claims. (Cl. 95—8)

This invention relates to photographic products and processes and more particularly to transfer processes which involve the development of a latent image in a silver halide emulsion and the transfer of components from said emulsion to another layer to effect the formation of a print of said latent image in said other layer, and to products useful in the performance of said transfer processes.

It has been proposed to carry out transfer processes with a photosensitive element comprising a silver halide emulsion layer by distributing a processing composition in a thin layer between said element and another element, the latter element preferably serving to receive the transfer print. Processes of this type are characterized by the fact that the processing composition which is distributed layerwise constitutes the sole source of liquid for the processing operation and is essentially confined between the outer surfaces of the superposed elements throughout the processing.

In the performance of these processes, the processing composition either contains the developing agent prior to its distribution or dissolves such an agent after it is distributed, and, in either event, the processing composition renders the developing agent effective for developing the silver halide emulsion. When using most developing agents, it must be relatively highly alkaline to perform this function. A highly alkaline environment is thus produced in the print-receiving layer, and this environment, if permitted to exist, sometimes introduces several sources of instability which adversely affect the pictorial quality of the print with the passage of time. A principal source of this instability is the oxidation of the unexhausted residue developer which may stain the highlights of the print-receiving layer. The occurrence of this instability is reduced to negligible proportions if the alkalinity of the print-receiving layer can be effectively lowered within a relatively short time after the formation of the transfer print therein.

It is accordingly one object of the present invention to provide an improved process for forming prints, by transfer, wherein a developing composition of relatively high alkalinity may be used during the print formation but which gives a finished transfer print whose ultimate alkalinity is low enough to substantially eliminate the possibility of the aforementioned print instability. This object is achieved by providing, preferably on or adjacent to the surfaces of the elements permeated by the processing liquid, compounds which will react with the hydroxyl ions of an alkaline solution to produce a volatile reaction product which itself is alkaline. As a result, during the creation of the transfer print, the processing composition remains alkaline despite the formation of the said reaction product. However, when the two superposed elements are stripped apart, the volatile reaction product becomes free to evaporate from the positive print, thereby effectively reducing the alkalinity of the positive print. It is more convenient to have the alkali

present initially in the composition in a nonvolatile condition and to avoid any volatilization of the alkaline component until after the final print is obtained and both these desirable objectives are achieved by the aforementioned arrangement.

One class of stabilizing agents comprehended by the present invention are the salts of the volatile amines and particularly of amines which are aliphatic and whose one normal solution has a pH in excess of 10. The salts of the more volatile amines, i. e., amines having a boiling point of the order of 175° C. or less, are of course preferred, and examples of such amines whose salts are satisfactory are diethylamine, triethylamine, diisopropylamine, allylamine and ethylamine. The hydrochlorides, sulfates, nitrates, oxalates, citrates and tartrates of these amines may be satisfactorily employed, and preferred species of salts are diethylamine hydrochloride, diethylamine sulfate, and diethylamine nitrate.

The reduction in the alkalinity in the print-receiving layer which is the result of the novel use of the aforementioned products may be supplemented by the use of acidifying agents, such as metallic salts or organic compounds which react in alkaline solution to consume alkali, or various mixtures thereof. Materials of this general type and useful for this purpose are disclosed in my United States Patent No. 2,584,030 issued January 29, 1952 for Light-Sensitive Silver Halide Photographic Product for Image Transfer and Process Utilizing the Same and in my copending application Serial No. 37,252, filed July 6, 1948, for Photographic Product and Process.

These and other objects of the invention will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises the product possessing the features, properties and the relation of components, and the process involving the several steps and the relation and order of one or more of such steps with respect to each of the others, which are exemplified in the following detailed disclosure, and the scope of the application of which will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawing wherein:

Figure 1 is a diagrammatic, enlarged, sectional view illustrating the association of elements during one stage of the performance of one form of the novel transfer process of the invention, the thicknesses of the various materials being exaggerated and not necessarily in correct relative proportion; and

Fig. 2 is a perspective view, with parts broken away, of one form of print-receiving element upon which containers of the processing agent are so positioned as to be capable of distributing their contents between the surface of the print-receiving element and a photosensitive element.

The present invention comprehends improved processes and products of the type whereby a positive print may be obtained in a single step by suitably treating a silver halide emulsion containing a latent image with a uniformly applied layer of processing liquid. Preferably, the processing composition is in a viscous condition and is spread in a liquid film **14** (Fig. 1) between the photosensitive element **10** and a print-receiving element **12**. The photosensitive element, as shown, comprises a support **10***a* and a silver halide emulsion **10***b* and the print-receiving element is preferably of a type suitable for receiving silver transfer prints and comprises a support **12***a* upon which is mounted a silver precipitating layer **16**. In this form of the process, the liquid composition develops the latent image in the emulsion and forms a soluble silver complex with undeveloped silver halide. This soluble silver complex is at least in part transported in the direction of

print-receiving element **12** and the silver thereof is largely precipitated in the silver precipitating layer **16** to form a positive image in silver.

The novel stabilizing agents comprehended by the present invention are carried by one or both of elements **10** and **12**, being dispersed in the portions of said elements which are permeated by the liquid of the processing composition. Where the support **12***a* of element **12** is permeable to the processing composition and is not separated from the silver precipitating layer **16** by an impermeable subcoat, it is preferable to have the stabilizing salts dispersed throughout the thickness of said support **12***a*. On the other hand, if support **12***a* is formed of a relatively impermeable material or has its surface coated with such a material, the stabilizing salts may be carried by a subcoat provided beneath silver precipitating layer **16**. The stabilizing agent may also be dispersed throughout the emulsion layer **10***b* or carried in a permeable subcoat located between said emulsion layer and its support. When provided in the photosensitive element either in layer **10***b* or in an adjacent layer, consideration should be given to the possible effect of the stabilizing agent upon the sensitivity of the emulsion. In this connection the amine sulfates are preferred to the corresponding hydrochlorides, especially when layer **10***b* is one of the relatively fast silver halide negative type emulsions. In all of the foregoing alternatives a sufficient excess of the stabilizing salt is preferably provided to assure reaction with the entire hydroxyl content of the processing composition.

It has been proposed to use in the silver precipitating layer certain compounds and elements whose presence during the transfer process has a desirable effect on the amount and character of the silver precipitated during image formation. For this purpose such materials as, for example, metallic sulfides and selenides, thiooxalates and thioacetamides have been disclosed in my copending applications Serial No. 7795, filed February 12, 1948 for Photographic Process, Serial No. 164,908, filed May 29, 1950 for Photographic Silver Halide Transfer Product and Process and Serial No. 727,385, filed February 8, 1947 for Photographic Product and Process. Other precipitating agents have been proposed, such as the colloidal metals and specifically colloidal silver. It is also desirable, as disclosed in the said copending applications, to provide, as the vehicle for the silver precipitating agents in layer **16**, a macroscopically continuous film that consists of submacroscopic agglomerates of minute particles of a suitable, water-insoluble, inorganic, chemically inert, adsorbent, preferably siliceous, material, such, for example, as silica aerogel. The use of such a vehicle for the precipitating agents tends to aggregate the silver that is precipitated into its most effective form for print making.

As noted hereinabove, the processing composition is preferably viscous and has dispersed therein, usually in solution, a sufficient amount of solid film-forming thickening agent for imparting thereto its desired viscosity. By suitably selecting the film-forming thickening agent and treating the surfaces of the print-receiving element and/or the photosensitive element, it becomes possible to strip the essentially solid film, which is the residue of the processing composition, with either of said elements. In general, this solid residual film will adhere to the print-receiving element. However, there have been disclosed in my aforementioned copending application, Serial No. 7795, various types of processing compositions and methods of treating the surfaces of the print-receiving element and/or the photosensitive element so that said solid residual film adheres to the photosensitive element as the latter is stripped from the print-receiving element.

It is also possible to dispense with the silver precipitating layer **16** as such and to provide suitable silver precipitating agents in the processing composition so that the silver is essentially precipitated in said composition. This may be accomplished, for example, in the manner disclosed in my copending application, Serial No. 88,832, filed April 21, 1949, for Photographic Transfer Processes and Products and Compositions for the Practice of Said Processes. In the latter type of transfer process, it is preferable that the residual film, obtained from the processing composition and in which the transfer print is formed, adhere to support **12***a* as the latter is stripped from the photosensitive element **10**.

To provide the desired control of the alkalinity of the print-receiving element, subsequent to the formation thereon of the transfer print, there is preferably included in element **12** a compound such, for example, as the salt of a volatile amine which reacts with the hydroxyl groups in the processing composition to form the volatile amine. The latter is sufficiently alkaline to maintain the alkalinity of the processing composition at its desired high level so long as the concentration of the amine is not reduced. However, because of the volatlity of the amine, the latter will evaporate when the print-receiving element is stripped from the photosensitive element, thereby substantially reducing the alkalinity of the print-receiving element. As noted hereinabove, this stabilizing agent can be contained in the support for the print-receiving element, or in the emulsion layer, or in a separate layer provided either as a subcoat or overcoat for emulsion layer **10***b* or silver precipitating layer **16**.

Referring again to Fig. 1, liquid layer **14** may be obtained by spreading the processing composition, for example, in a manner disclosed in my said copending application Serial No. 7795. Preferably, the processing composition contains, in addition to the alkali, the silver halide developer and the material for forming the soluble silver complex with the undeveloped silver halide, i. e., a silver halide fixer. These materials are preferably in aqueous solution. It is to be understood, however, that the silver halide developer and/or the silver halide fixer may be, in part or wholly, added to the processing composition as or after it is spread between elements **10** or **12**, said reagents being so located in or adjacent the surface of one or both of said elements as to be dissolved by or otherwise interacted with the liquid composition when the latter contacts said surface.

The liquid processing composition may be provided for spreading as a layer **14** between elements **10** and **12** by being discharged from an elongated rupturable container **20** which, as shown in Fig. 2, has a length at least equal to the transverse dimension of the area of photosensitive element **10** to which the liquid processing agent is to be applied Individual containers may be manually or mechanically fed between the print-receiving and the photosensitive elements by mechanism of the type shown in my Patents Nos. 2,435,718 and 2,543,180. One or more containers **20** may also be attached to one of elements **10** or **12** and, in Fig. 2, two such containers are shown secured to the print-receiving surface of element **12**, being spaced apart, lengthwise of said element, a distance equal at least to the length of a single frame of the photosensitive element **10**. Said elements **10** and **12** may be connected together so that they can be superposed with the container so positioned that it can release its contents in a film therebetween. The container **20** is preferably inexpensive and disposable and so constructed as to be capable of retaining the liquid processing agent or composition therein for relatively long periods of time without vapor loss or oxidation. One example of a suitable container of this type is formed from a single multilayer sheet of material comprising three laminae. The inner lamina, which provides the inner surface of the container, is formed of a material which is chemically inert to the reagents in the processing agent and which is impervious to the liquid of the agent. One material suitable for this purpose is polyethylene. The intermediate lamina is preferably impervious to the vapor of the processing agent and is formed, for example, of a metallic foil such as lead, aluminum or silver foil. The outer or backing lamina is formed of a

strong, deformable, relatively inexpensive sheet material such as a kraft paper.

The container **20** is preferably formed by taking the single sheet of three-ply material and folding the same medially at **22**, and thereafter securing the end marginal portions **24** and the longitudinal portions **26** of the two folded faces to one another, providing a central space or cavity **28** for containing the processing liquid. The seal provided at the longitudinal portions **26** is preferably weaker than the end seals, providing a liquid-discharging lip which substantially parallels the long dimension of the container.

To fill the container it is possible to adhere together the opposite, longitudinally extending, marginal portions **26** and one of the end marginal portions **24**, the container being filled through the other end, which is thereafter sealed.

Photosensitive element **10** may be any of the commercially available photosensitive silver halide films, the term "films" being understood to include paper-backed emulsions. The products of the present invention are particularly useful in improving the results obtained when the transfer process is carried out with one of the high-speed photosensitive silver halide emulsions such as the emulsion of the relatively high-speed orthochromatic films, e. g., Eastman Kodak Verichrome film, having an A S A speed rating of 0200 and an A S A exposure index rating in the daylight of 50, and the extremely high-speed panchromatic emulsions, e. g., Eastman Kodak Super XX Pan having an A S A speed rating of 0400 and an A S A exposure index rating in the daylight of 100, and Ansco Triple S Pan.

Element **12** may be formed by applying to a suitable support **12***a*, for example of baryta paper, a coating of a suspension or sol of the silica containing the silver precipitating agent. This sol is permitted to dry and provides layer **16**. The suspension of silica may be obtained by dispersing the silica, for example, in water, and then adding the silver precipitating agent either directly or by introducing into the sol salts whose reaction product is the precipitating agent. The sol may also be applied to the sheet without the silver precipitating agent, and the sheet with the layer of silica thereon may then be dipped in a solution or mixture of the silver precipitating agent to deposit the latter in said layer.

To provide element **12** with the stabilizing salt, it is preferable to introduce, into the last bath into which said element is immersed during its preparation, a highly concentrated quantity of the stabilizing salt. This will permeate support **12***a* and provide a sufficient reservoir of the salt to convert essentially all the hydroxyl groups.

As has previously been noted, preferred stabilizing salts are the aliphatic salts of volatile amines. In general, it is important that the alkaline reaction product of the reaction between the said stabilizing salts and the hydroxyl groups in the processing composition give a slightly lower alkalinity than the alkalinity obtained from the material which introduces said hydroxyl groups into the alkaline solution. It is to be observed, in this respect, that the aliphatic amines, while sufficiently alkaline to maintain operative a developer composition, possess a slightly lower alkalinity than the alkalinity, for example, of the hydroxides of the alkali metals and the alkali earths.

In the event that the support **12***a* of the print-receiving element is substantially waterproof or is provided with a substantially waterproof coating adjacent the silver precipitating layer **16**, the stabilizing salt may be provided in a subcoat which is between layer **16** and support **12***a* and which is sufficiently thick to carry an adequate quantity of said stabilizing salt to obtain the desired result. It is possible, of course, to locate some of the stabilizing salt in the permeable portion of the photosensitive element and the remainder in the print-receiving element, in which event a subcoat for the stabilizing agent may be substantially thinner than if the print-receiving element carried all of the stabilizing salts.

Examples of the novel processes and materials of the invention for forming positive transfer prints in silver are given below, but it is to be expressly understood that these examples are merely illustrative and that the invention is not limited to the materials or proportions set out therein.

Example 1

A processing composition is prepared by mixing together the following ingredients:

Water	cc	370
Sodium carboxymethyl cellulose (medium viscosity)	grams	34
Sodium hydroxide	do	15.0
Sodium sulfite	do	15.6
Sodium thiosulfate	do	2.9
Hydroquinone	do	10.4
Citric acid	do	7.7

A print-receiving element **12** is formed by immersing the baryta-coated surface of a sheet of baryta paper in a mixture comprising:

Silica aerogel (Santocel C)	grams	800
60% water solution of gum arabic	cc	135
½% solution of sodium sulfide	cc	3,200
Cadmium acetate	grams	19
Lead acetate	do	25
Water	cc	13,400

for approximately ten seconds. As the sheet is withdrawn from the mixture, the excess of the mixture is removed from the surface of the sheet by a buffer roll or squeegee. The sheet is then immersed in a bath comprising:

Water	cc	1,000
Diethylamine sulfate	grams	250

until said solution has permeated the support **12***a* of the image-receiving element. This same solution tends to wash out any excess soluble salts in the receiving sheet.

The processing composition is spread in a layer of approximately .002–.003 inch in thickness between the treated baryta surface of element **12** and the photosensitive silver halide emulsion **10***b* of photosensitive element **10**. Emulsion **10***b* is a relatively high speed orthochromatic emulsion like the emulsion of Eastman Kodak Verichrome film and has been exposed to predetermined subject matter so that it contains a latent image of this subject matter, and support **10***a* for said emulsion is a white paper. The lamination formed by the spreading of the processing agent in a layer **14** between elements **10** and **12** is kept intact for approximately one-half to one and one-half minutes, preferably one minute, and at the end of this time, element **12** is stripped from element **10**. Element **12**, when so stripped, carries a positive print in silver of the subject matter of the latent image of emulsion **10***b*. In this form of the process, the film of sodium carboxymethyl cellulose contained in the layer **14** of the processing composition adheres to the surface of element **12** and solidifies to form a film thereon.

The hydroxyl ions of the processing composition are converted to the volatile alkaline amine during the processing, and so much of this amine as remains in the print-receiving stratum begins to evaporate shortly after the stripping of said print-receiving element from the photosensitive element so that there is soon produced a sufficient diminution in the alkalinity of the print-receiving stratum to greatly minimize the creation of stains and other sources of instability.

Other materials may be substituted for those used in the foregoing process and the proportions may be varied to an appreciable extent. For example, the film-forming material in the processing agent which imparts the desired viscosity to the latter may be any of the high molecular weight polymers which are stable to alkalies and which are soluble in aqueous alkaline solutions. For example,

such other plastics as hydroxyethyl cellulose, carboxymethyl-hydroxyethyl cellulose, polyvinyl alcohol and the sodium salts of polymethacrylic acid and polyacrylic acid may be used. It is desirable that the plastic be contained in the agent in sufficient quantities to impart to the composition a viscosity in excess of 1000 centipoises at a temperature of approximately 24° C. Preferably the viscosities of the processing agent are of the order of 1,000 to 200,000 centipoises at a temperature of approximately 24° C.

Other developing agents may be used, for example one of the following: p-aminophenol hydrochloride; bromohydroquinone; chlorohydroquinone; diaminophenol hydrochloride; toluhydroquinone; monomethyl-p-aminophenol sulfate; a mixture consisting by weight of one-half hydroquinone and one-half p-hydroxyphenylaminoacetic acid; and a mixture consisting by weight of one-fourth hydroquinone and three-fourths p-hydroxyphenylaminoacetic acid.

To form the soluble silver complex, such other complex-forming substances as sodium thiocyanate, ammonium thiocyanate and ammonia may be employed.

Support **12***a* of element **12** may consist of gelatine, cellophane, polyvinyl alcohol, sodium alginate, and cellulose ethers such as methyl cellulose and their derivatives such as hydroxyethyl cellulose.

Other stabilizing salts, such for example as diethylamine hydrochloride or methylamine hydrochloride, may be used in essentially the same quantity as the diethylamine sulfate of this example.

Example 2

The residual film of carboxymethyl cellulose may be stripped with the photosensitive element instead of with the print-receiving element by providing a stripping layer on the surface of the print-receiving element. This is accomplished by roll-coating on the processed print-receiving element of Fig. 1 a 5% aqueous solution of polyvinyl alcohol in a layer whose thickness is of the order of .001 inch. An equivalent amount of hydroxyethyl cellulose or polymethacrylic acid may be substituted for the polyvinyl alcohol of this example.

As noted hereinabove, the silver precipitating agents which aid in the reduction and precipitation of the metallic silver of the positive print may be contained in the developer composition. One example of a composition which can be usefully employed in this manner to thereby avoid the need for a special silver precipitating layer upon the print-receiving element is the following:

Example 3

A composition is formed consisting of:

Water	cc	415
Sodium carboxymethyl cellulose (medium viscosity)	grams	11
Sodium sulfite	do	25.6
Sodium thiosulfate	do	15.6
Hydroquinone	do	17.1
Metol	do	2.25
Sodium hydroxide	do	13.6
Sodium sulfide (1% solution)	cc	14.0
Lead acetate	gram	.11
Cadmium acetate	do	.08

This composition is spread, as in Example 1, between a photosensitive emulsion of the Verichrome type and the baryta-coated surface of a plain baryta sheet. At the end of approximately a minute, the baryta sheet is stripped from the emulsion and carries with it the solid residue of the spread composition. This solid residue provides the print-receiving stratum. The silver precipitate which produces the positive is formed largely in this stratum and gives a positive print of good quality, high resolving power and excellent stability.

It is also possible in any of the foregoing examples to have the stabilizing salt provided in part or in whole in the photosensitive emulsion. One example of an emulsion so constituted is the following:

Example 4

A photosensitive silver halide element comprising a paper base and a Verichrome type emulsion is dipped into a 5% aqueous solution of diethylamine sulfate for five minutes. This photosensitive element is thereafter used in conjunction with a print-receiving element which is formed in the same manner as the print-receiving element of Example 1 except that the last dipping operation involving diethylamine sulfate is omitted. These two sheets are processed, as described in Example 1, with the processing composition of that example to give a transfer print of good quality and stability.

Since certain changes may be made in the above product and process without departing from the scope of the invention herein involved, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. A photographic process for forming, by transfer, a print of a latent image contained in the silver halide emulsion of a photosensitive element wherein a single application of liquid to said element is effective to give a finished print of improved stability, which process comprises the steps of bringing an alkaline processing composition containing a relatively nonvolatile alkali into contact with the photosensitive element so as to permeate said emulsion with the liquid of said composition; providing another element in superposed relation with the photosensitive element so that the said composition is confined between the outer surfaces of said elements, said processing composition, upon permeation of said silver halide emulsion, containing reagents for developing said latent image and for forming a transfer print thereof in a print-receiving stratum of the superposed assembly formed by said elements and said layer of liquid, said reagents including a silver halide developer which is characterized by its propensity for oxidizing in an alkaline environment and for adversely affecting the transfer print when so oxidized in the print-receiving stratum, at least one of said elements containing, in the portion thereof permeated by said processing composition, a salt of an organic amine capable of reacting with the hydroxyl content of said composition to give, as a reaction product, an organic amine which is alkaline but less alkaline than the said nonvolatile alkali and which is volatile; retaining said photosensitive element and said other element in superposed relation until the latent image in the sliver halide emulsion is developed and a print of said latent image is formed in said print-receiving stratum; and stripping said two elements from one another to permit volatilization of the volatile reaction product from said stratum.

2. The process of claim 1 wherein the salt for reacting with the hydroxyl content of the processing composition is a salt of an aliphatic amine.

3. The process of claim 2 wherein the said amine gives a pH in excess of 10 in a one normal solution and has a boiling point lower than approximately 175° C.

4. The process of claim 1 wherein the processing composition contains a thickening agent and is spread between said elements and, when so spread, tends to form a solid layer of said thickening agent, said layer of thickening agent providing the print-receiving stratum.

5. The process of claim 1 wherein the processing composition contains a thickening agent and is spread between said elements and, when so spread, tends to form a layer of the thickening agent, said layer of thickening agent adhering to the photosensitive element when the latter is stripped from the other element and a surface

portion of said other element providing the print-receiving stratum.

6. A photographic process for forming, by transfer, a positive print of a latent image contained in the silver halide emulsion of a photosensitive element wherein a single application of liquid to said element is effective to give a finished print of improved stability, which process comprises the steps of bringing a relatively uniform layerwise distribution of an alkaline processing composition containing a relatively nonvolatile alkali into contact with the photosensitive element so as to permeate said emulsion with the liquid of said composition; providing a print-receiving element in superposed relation with the photosensltive element so that the layerwise distribution of the processing composition is essentially confined to said superposed elements, said processing composition containing, after permeation of said silver halide emulsion, all of the reagents, including a silver halide developer, for developing the latent image in the silver halide emulsion and for forming a positive print of the subject matter of said latent image upon said print-receiving element, said developer being characterized by its propensity for oxidizing in an alkaline environment to form stains; reacting the hydroxyl content of said processing composition with a salt of an organic amine provided by a permeated portion of one of said elements to form a volatile amine; retaining said photosensitive element and said print-receiving element in superposed relation until the latent image in the silver halide emulsion is developed and a positive print of the subject matter of said latent image is formed in said print-receiving element; and stripping said print-receiving element with the positive print thereon from said photosensitive element, thereby permitting the said volatile amine to evaporate.

7. The process of claim 6 wherein the salt for reacting with the hydroxyl content of the processing composition is a salt of a volatile, aliphatic amine, and the reaction product is the amine.

8. The process of claim 7 wherein the said amine gives a pH in excess of 10 in a one normal solution and has a boiling point lower than approximately 175° C.

9. A photographic process for forming by transfer a positive print of a latent image contained in the silver halide emulsion of a photosensitive element wherein a single application of liquid to said element is effective to give a finished print sufficiently stable to require no subsequent stabilizing treatments for ordinary use, which process comprises the steps of spreading in a layer between the photosensitive element and another element a processing liquid which includes, in solution, a silver halide developer characterized by its propensity for oxidizing in an alkaline environment to produce stain, a silver halide solvent, a film-forming thickening agent and, as its principal alkali, a relatively nonvolatile hydroxide; reacting the hydroxyl content of said composition with a salt of a volatile, organic amine to form an amine whose one normal solution has a pH in excess of 10 and whose boiling point is lower than approximately 175° C.; developing the latent image in said emulsion and forming a positive print in silver in a print-receiving stratum provided by one of said elements and said layer of processing liquid; and stripping said elements from one another after the formation of a silver transfer print in said print-receiving stratum, thereby exposing to the atmosphere the surface portion of said print-receiving stratum which contains said volatile, organic amine to permit said amine to volatilize.

10. The process of claim 9 wherein the processing liquid, when spread between said elements, tends to form a solid layer of the thickening agent and said layer of thickening agent provides the print-receiving stratum.

11. The proceess of claim 10 wherein the processing liquid, when spread between said elements, tends to form a solid layer of the thickening agent and said layer of thickening agent adheres to the photosensitive element when the latter is stripped from the other element, a surface portion of said other element providing the print-receiving stratum.

12. A photographic product comprising, in combination, a photosensitive silver halide layer, another layer, and a container carrying an alkaline processing liquid comprising a relatively nonvolatile hydroxide as its alkali, means holding said layers and said container together so that said container is capable of releasing its contents to permeate superposed portions of said layers, said product containing reagents, including a silver halide developer, which are rendered operable upon the release of said contents to develop a latent image in said photosensitive layer and to form in a stratum of said product other than said photosensitive layer a transfer print of said latent image, at least one of said layers carrying, in the portions thereof adapted to be permeated by said liquid, a salt of a volatile, organic amine capable of reacting with said hydroxide to give a volatile, organic amine.

13. The product of claim 12 wherein the salt is a salt of an organic amine having a pH in excess of 10 in one normal solution and having a boiling point lower than approximately 175° C.

14. The product of claim 12 wherein the said salt is carried, at least in part, by said other layer, and the latter provides the stratum for receiving the positive print.

15. The product of claim 12 wherein the processing liquid in the container comprises a thickening agent capable of providing the print-receiving stratum when the container contents are released.

16. The product of claim 12 wherein said salt is contained in the photosensitive layer.

17. A photographic product comprising, in combination, a photosensitive silver halide layer, another layer, and a container carrying an alkaline processing liquid comprising a relatively nonvolatile alkali, means holding said layers and said container together so that said container is capable of releasing its contents to permeate superposed portions of said layers, said product containing reagents, including a silver halide developer, which are rendered operable upon the release of said contents to develop a latent image in said photosensitive layer and to form in a stratum of said product other than said photosensitive layer a transfer print of said latent image, at least one of said layers carrying, in the portions thereof adapted to be permeated by said liquid, a salt of an organic amine capable of reacting with the hydroxyl content of said liquid to form a volatile, organic amine.

18. A photographic product for use in the formation of transfer prints, said product comprising a rupturable containing means holding a photographic processing liquid and a sheet support upon which said containing means is mounted, said sheet support providing an image-receiving area adjacent said containing means onto which said liquid is spreadable in a thin layer directly from said containing means, said liquid being highly alkaline and comprising as its principal alkal-imparting component a relatively nonvolatile alkali, said support carrying, distributed over said image-receiving area, a salt of an organic amine capable of reacting with the hydroxyl content of the liquid in said containing means to form a volatile, organic amine.

19. The product of claim 18 wherein the said sheet support includes a photosensitive silver halide emulsion as a stratum thereof.

20. The product of claim 18 wherein the liquid in the containing means includes at least one substance from the class consisting of the silver halide developers and the silver halide solvents.

21. The product of claim 18 wherein the salt is a salt of an amine having a pH in excess of 10 in one normal solution and having a boiling point lower than approximately 175°C.

22. A photographic product capable of forming transfer prints in conjunction with a photosensitive silver halide

element, said product comprising a rupturable containing means holding a liquid and a sheet support upon which said containing means is mounted, said sheet support providing an image-receiving area adjacent said containing means and onto which said liquid is spreadable in a thin layer directly from said containing means, said product carrying all of the reagents, including a stain-forming silver halide developer and an alkali, for forming a transfer print of a latent image in a silver halide emulsion, said reagents being so located in relation to said image-receiving area that the spreading of said liquid over said area disperses the silver halide developer and the other reagents throughout said area in adequate quantity to form a transfer print of a latent image in an area of a contiguous silver halide element equivalent to said image-receiving area, said support carrying, distributed over said image-receiving layer and in addition to said reagents, a salt of an organic amine capable of reacting with the hydroxyl content of said liquid to form a volatile, organic amine.

23. The product of claim 22 wherein the salt is a salt of an amine having a pH in excess of 10 in one normal solution and having a boiling point lower than approximately 175° C.

24. A print-receiving element for having transfer prints formed thereon by reducing the silver of a soluble silver complex brought into contact therewith, said element being substantially inert to light and comprising a support and a silver precipitation layer, one surface portion of said element including said layer being permeable to

the ionic content of an aqueous solution of a soluble silver complex, said layer comprising a macroscopically continuous matrix of particles of a water-insoluble, inorganic, chemically inert, adsorbent, siliceous substance, said matrix having dispersed therethrough solid colloidal particles of a silver precipitation agent for aiding the reduction and the precipitation of metallic silver from silver complex ions in the presence of a developing agent, said surface portion having distributed therethrough a stabilizing agent, said stabilizing agent being a salt of an organic amine capable of reacting with the hydroxyl content of an alkaline liquid to form a volatile, organic amine.

25. The product of claim 24 wherein the salt is a salt of an amine having a pH in excess of 10 in a one normal solution and having a boiling point lower than approximately 175° C.

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