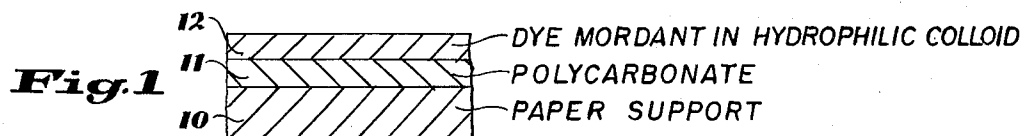
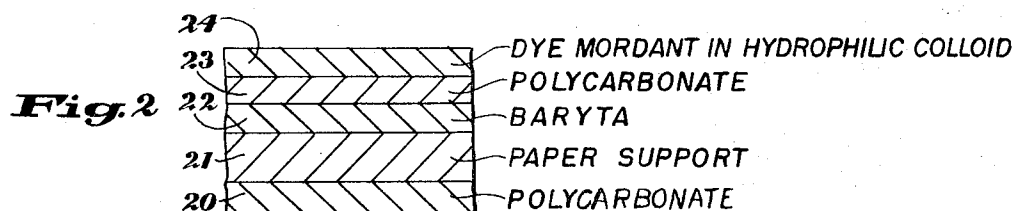
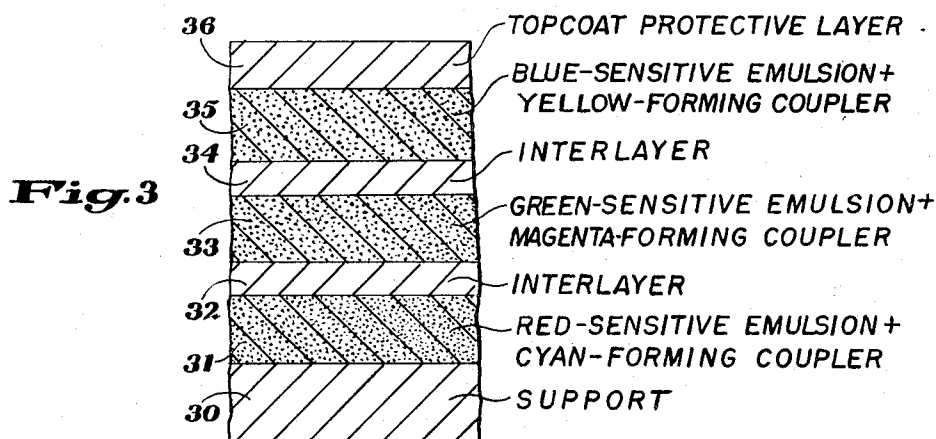
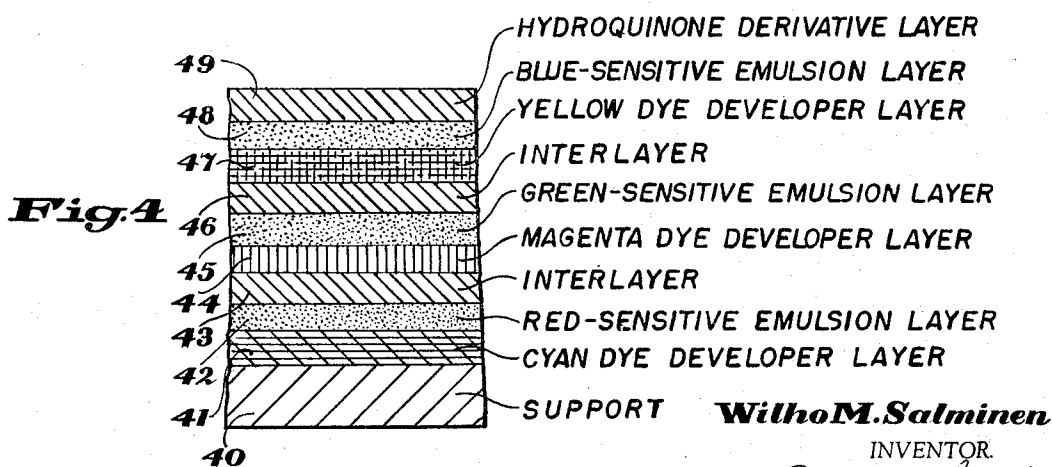


Nov. 14, 1967

W. M. SALMINEN  
PHOTOGRAPHIC ELEMENT COMPRISING POLYCARBONATE  
RESIN COATED PAPER  
Filed Oct. 9, 1963

3,352,679



**With M. Salminen**  
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ATTORNEYS

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3,352,679

## PHOTOGRAPHIC ELEMENT COMPRISING POLY-CARBONATE RESIN COATED PAPER

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Filed Oct. 9, 1963, Ser. No. 314,940

18 Claims. (Cl. 96--77)

This invention relates to photographic elements, and more particularly to receiving sheets for photographic dyes.

Photographic color diffusion transfer systems for transferring dye images to receiving sheets are well known in the art. Previously the support for the receiving sheets has comprised a baryta coated paper. Such paper supports have not been entirely satisfactory because of support staining by processing solution components, mottled color images, dull colors and other undesirable features. Because of the economy of paper supports, it appears desirable to treat the paper support in some manner so as to avoid the undesirable features which have been encountered in its use heretofore.

One object of my invention is to provide receiving sheets for photographic dyes.

Another object of my invention is to provide receiving sheets for photographic dyes, which receiving sheets are particularly adapted for use in photographic color diffusion transfer processes.

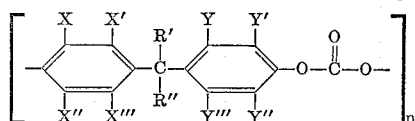
A further object of my invention is to provide receiving sheets for photographic dyes which are capable of receiving dye images without mottling of the images or staining of the support by processing solution components.

A still further object of my invention is to provide receiving sheets for photographic dyes which result in improved brightness of the colors. Other objects of my invention will appear herein.

These and other objects of my invention are accomplished with receiving sheets for photographic dyes comprising paper support having thereon a polycarbonate coating, and a hydrophilic organic colloid coating thereover containing a mordant for dyes. I have found that dye images on the receiving sheets of our invention are free from mottling and result in improved brightness of the colors.

The paper support employed in my invention may be of the conventional high  $\alpha$ -cellulose supports including those prepared from cotton, linen and wood (e.g. sulfate and sulfite pulped), and which supports are typically about 5 to 60 pounds per 1000 sq. ft. papers.

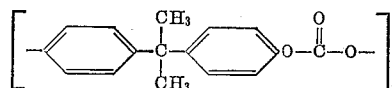
Any polycarbonate resin may be employed in the practice of my invention to provide highly satisfactory supports for receiving sheets. Typical useful polycarbonate resins which may be employed in accordance with my invention are those having the following formula:



R' and R'' may be hydrogen or alkyl groups of 1-8 carbon atoms, aralkyl groups of 7 carbon atoms, an aryl group of 6 to 12 carbon atoms, heterocyclic rings, or R' and R'' may be part of a homocyclic group of 6 to 11 carbon atoms; X, X', X'', X''', Y, Y', Y'' and Y''' are selected from the group consisting of hydrogen, chlorine, bromine, alkyl having 1-6 carbon atoms, alkoxy having 1-6 carbon atoms, but not carboxy, hydroxy, or amino groups, and n is a whole number preferably greater than about 20. The preferred polycarbonate is poly-2,2-bis(4-

2

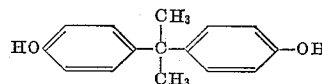
hydroxy-phenyl) propane carbonate, having the following structure:



The polycarbonate resins used in my invention may be prepared in any convenient manner, such as by reacting diphenyl carbonate or phosgene with a di-(monohydroxy-aryl)-alkane, or by reacting such alkane with its bis-chlorocarbonic acid ester.

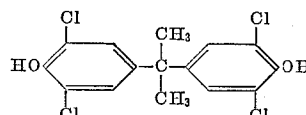
The polymers which are useful in my invention also include the homopolymers or copolymers derived from the bisphenols described below. A special type of copolymer is that where two homopolymeric bisphenol polycarbonate sequences are combined in a single polymeric chain. The types of copolymers which may be used include those derived from combinations of bisphenol 1 and 2, bisphenol 2 and 4, bisphenol 2 and 5 and bisphenol 1 and 3.

1.



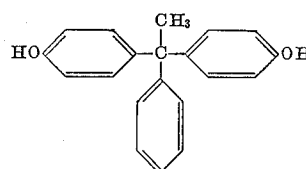
Bisphenol A, 2,2-bis(4-hydroxyphenyl)-propane

2.



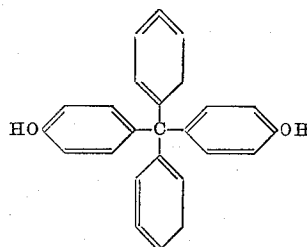
Tetrachlorobisphenol A, 2,2-bis(3,5-dichloro-4-hydroxyphenyl)-propane

3.



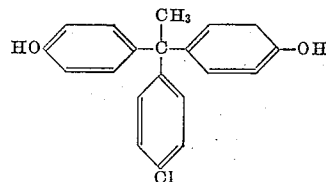
1,1-bis(4-hydroxyphenyl)-phenylethane

4.



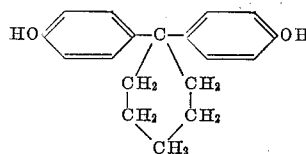
Bis(4-hydroxyphenyl)-bisphenyl-methane

5.



1,1-bis(4-hydroxyphenyl)-1-(4-chlorophenyl)-ethane

6.

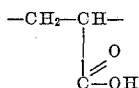


1,1-bis(4-hydroxyphenyl)-cyclohexane

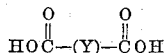
Over the polycarbonate coatings of the present receiving sheets are coated mordanting compositions. A wide variety of conventional mordants in hydrophilic organic colloids can be utilized. Typical hydrophilic colloidal materials useful as the substrate for dispersing the mordant include gelatin and its water-soluble derivatives, polyvinyl alcohol and its water-soluble derivatives and copolymers, polyacrylamide, imidized polyacrylamide, water-soluble cellulose derivatives such as ethanolamine cellulose acetate, and related water-soluble film-forming materials that form water-permeable coatings.

A wide variety of mordants for photographic dyes can be utilized in the present invention. Such materials are well known to those skilled in the art. Mordants that are opposite in charge to the dye being mordanted are utilized in accordance with usual practice. As most of the useful photographic dyes have acidic properties, we more generally utilize cationic mordants. Typical mordants are organic quaternary phosphonium salts, organic ternary sulfonium salts and organic quaternary ammonium salts. Suitable mordants include polymers of amino guanidine derivatives of vinyl methyl ketone described in U.S. Patent 2,882,156. Other suitable mordants include the polymer of 2-vinylpyridine quaternized with toluene sulfonate, poly 4-vinylpyridine, thorium salts and similar compounds described in Sprague et al., U.S. Patent 2,484,430.

A particularly useful class of mordanting compositions is disclosed in copending Bush application, U.S. Ser. No. 211,094 filed July 19, 1962, now U.S. Patent 3,271,147. The Bush mordanting compositions comprise at least one hydrophilic organic colloid containing a finely-divided uniform dispersion of particles of a salt of an organic acidic composition containing free acid moieties and a cationic, nonpolymeric, organic dye mordant for acid dyes. Generally, the salts in such dispersions are in particles less than about 30 microns in diameter. In preparing the Bush mordanting compositions containing such salts or coacervates, any of the conventional cationic mordant compounds, either water-soluble or water-insoluble, are combined with an organic acidic composition (e.g., having free acid groups such as carboxy and sulfonic acid groups) including gelatin that has been reacted with an  $\alpha$ -haloacetic acid or acylated with a dicarboxylic acid such as phthalic, malonic, succinic, maleic, glutaric, suberic, and the like acids. Other organic acidic compositions include polymers containing such moieties as



long-chain fatty acids such as stearic acid, and other ballasted compounds containing a carboxylic acid moiety such as di-n-amyloxybutyric acid, long-chain alkyl sulfates and sulfonates and the like organic acidic compounds. We prefer to utilize acylated gelatin for preparing the mordant salts of the invention wherein the dicarboxylic acid has the formula:



wherein Y is a divalent hydrocarbon radical such as phenylene and alkylene having 1 to 10 carbon atoms. The preparation of such acylated gelatin compositions is disclosed in Yutzy et al., U.S. Patent 2,525,753. The organic acid composition is sufficiently ballasted to render the resulting salt non-wandering in the protective hydrophilic colloid in which it is dispersed.

Basic or cationic, nonpolymeric mordant compounds useful in preparing the dye mordanting compositions of the Bush application include quaternary ammonium, phosphonium, and ternary sulfonium compositions in which there is linked to the N, P or S onium atom at least one hydrophobic ballast group, such as long-chain alkyl or substituted alkyl groups. The onium atom can be part

of an open-chain or of a heterocyclic ring and there can be more than one onium ring in the molecule. When referring to the nonpolymeric nature of the mordant compounds of such mordanting compositions, we mean that the cationic or the basic mordant does not have regularly occurring units containing the cationic group beyond the dimer structures. However, the ballast group attached to the quaternary or ternary atom of the cation group can contain repeating groups such as tetraethoxy, polymethylene, etc.

Another useful class of mordanting compositions that can be coated over the polycarbonate-coated paper supports of the invention comprises at least one hydrophilic organic colloid containing a finely-divided uniform dispersion of droplets or globules of a high-boiling water-immiscible organic solvent in which is dissolved a high concentration of a cationic non-polymeric organic dye-mordanting compound for acid dyes. The droplets of the water-immiscible solvent are typically prepared to be less than 5 microns in size, and more generally in the range of .5 to 5 microns in size. Such mordanting compositions are disclosed in Whitmore copending application, U.S. Ser. No. 211,095, filed July 19, 1962, now U.S. Patent 3,271,148.

The cationic, nonpolymeric organic mordant compounds useful in the mordanting compositions described in the Whitmore application are of the type that are capable of entering into salt-forming reactions, e.g., quaternary ammonium group, and at least one ballast group which prevents wandering, such as a long chain aliphatic group e.g. those disclosed in the Bush application described above.

The solvent or carrier for the ionic nonpolymeric mordant compound in the dispersed phase of the Whitmore mordanting compositions is a high-boiling water-immiscible organic liquid having a boiling point above about 175° C. The high-boiling solvent can be used alone in forming the dispersion, or it can be admixed with some low-boiling organic solvent (e.g., boiling at least 25° C. below the boiling point of the high-boiling solvent), or a water-soluble organic solvent as an auxiliary solvent to facilitate the solution of the mordant material. Preferred ranges of proportions of high-boiling solvent to auxiliary solvent are 1/0 to 1/10 on a weight basis. Any of the high-boiling, water-immiscible solvents described on page 2, col. 2 and page 3, col. 1 of E. E. Jelley et al. U.S. Patent 2,322,027 can be utilized. Particularly useful solvents are organic carboxylic acid esters and organic phosphate esters.

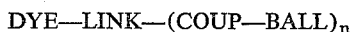
Also, of course, any of the conventional mordanting materials can be dispersed directly in the hydrophilic organic colloid in accordance with usual practice to form suitable mordanting compositions.

The receiving sheets of the invention can be utilized to receive and mordant a wide variety of photographic dyes, including dye images transferred directly to such receiving sheets in photographic color diffusion transfer processes.

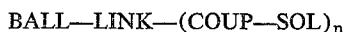
A typical diffusion transfer process in which the subject receiving sheets have particular utility is a diffusion transfer process utilizing dye developers (i.e., compounds which contain in the same molecule both the chromophoric system of a dye and also a silver halide developing function) which are released imagewise and diffuse to the receiving sheet which is superposed on the photographic element, such being disclosed in Rogers U.S. Patents 2,774,668 and 2,983,606 and Land U.S. Patent 2,647,049. In such color diffusion transfer processes, the element comprises a plurality of photosensitive silver halide emulsions, each of the emulsions being selectively sensitized to different regions of the spectrum. A dye developer is contiguous to the silver halide in each of such emulsions. The photoelement is processed with an alkaline solution and the latent image is developed in the negative image areas with the dye developer, this develop-

ment immobilizing the dye developer in such negative image areas, and the dye developer in the unexposed areas diffuses to the surface imagewise and is mordanted in the receiving sheet to form a positive color image. When the receiving sheets of the invention having a mordanting composition coated on a polycarbonate-coated paper are utilized high-color densities are obtained in the  $D_{\max}$  regions of the transferred image. Also, low-color densities in the  $D_{\min}$  regions of the transferred images result.

Another useful photographic color diffusion transfer process that can be efficaciously carried out utilizing the receiving sheets of the invention uses an element comprising a plurality of photosensitive silver halide emulsions wherein each of the emulsions are selectively sensitized to different regions of the spectrum, and wherein contiguous to the silver halide of each of these emulsions is a non-diffusible photographic color coupler which on color development in a photographic alkaline color developing solution containing a primary amino color developing agent forms a diffusible acid dye. This dye then diffuses imagewise and is transferred to the receiving sheet transposed on the photoelement. If conventional negative-type silver halide emulsions are utilized, a negative color image results. If direct-positive silver halide emulsions, such as those having silver halide grains with substantial internal sensitivity, are utilized, a direct-positive color image results. Such color diffusion transfer processes are disclosed in British Patent 840,731 and copending Whitmore et al. application U.S. Ser. No. 222,105 filed Sept. 7, 1962, now U.S. Patent 3,227,550. The dye-releasing couplers used in the photographic elements of such processes are initially nondiffusing in the layers of the element but form dyes diffusible in the layers of the element on reaction with oxidation product of aromatic primary amino silver halide photographic color developing agents. Such couplers include those having the formulas:



and



wherein:

- (1) DYE is a dye radical containing an acidic solubilizing radical;
- (2) LINK is a connecting or linkage radical such as azo ( $-\text{N}=\text{N}-$ ), azoxy



mercuri ( $-\text{Hg}-$ ), oxy ( $-\text{O}-$ ), alkylidene (includes both  $>\text{CH}-$  and  $=\text{CH}-$ ), monothio ( $-\text{S}-$ ), or dithio ( $-\text{S}-\text{S}-$ );

- (3) COUP is a photographic color coupler radical such as a 5-pyrazolone coupler radical, a phenolic coupler radical or an open-chain ketomethylene coupler radical, the coupler radical being substituted in the coupling position with the connecting or linkage radical;
- (4) BALL is a photographically inert organic radical of such molecular size and configuration as to render the coupler nondiffusing in the element in the alkaline color developing solution;
- (5) SOL is either a hydrogen atom or an acidic solubilizing group when the color developing agent contains an acidic solubilizing radical, SOL always being an acidic solubilizing radical when the color developing agent is free of an acidic solubilizing group; and
- (6)  $n$  is an integer of 1 or 2 when LINK is an alkylidene radical, and  $n$  is always 1 when LINK is one of the other aforementioned connecting radicals, namely, azo, azoxy, mercuri, oxy, monothio, or dithio.

Likewise, other photographic diffusion transfer processes wherein dyes derived from such couplers can be utilized in the present process such as disclosed in Williams et al. copending application, U.S. Ser. No. 780,710 filed Dec. 16, 1958, now abandoned, and Belgian Patent No.

585,686. When the polycarbonate-coated receiving sheets of the invention are utilized to receive the acid dye images resulting from such processes, good uniformity of dye images, as well as high  $D_{\max}$  and low  $D_{\min}$  of the dye images results.

FIG. 1 of the drawings illustrates a receiving sheet for photographic dyes of the invention. On paper support 10 is coated polycarbonate layer 11, over which is coated layer 12 comprising a mordant for dyes in a hydrophilic organic colloid.

FIG. 2 of the drawings illustrates another typical receiving sheet for photographic dyes of the invention. Paper support 21 has coated on one side polycarbonate layer 20 and on the other baryta layer 22 (barium sulfate particles, e.g., .5 to 1 micron, dispersed in gelatin). Over baryta layer 22 is coated polycarbonate layer 23, over which is coated layer 24 comprising a mordant for dyes in a hydrophilic organic colloid.

FIG. 3 of the drawings is a typical light-sensitive photographic element or color film that can be used in conjunction with the receiving sheets of the invention to prepare photographic dye images. In processing the element of FIG. 3, the light-sensitive element can be wetted with a photographic alkaline color developing solution containing an aromatic primary amino developing agent. The mordanting composition side of the receiving sheets of the invention are pressed in contact with the emulsion side of the light-sensitive element of FIG. 3 and an image transferred thereto. Thereafter, the receiving sheet can be stripped away from the light-sensitive element, leaving a mordanted dye image in the receiving sheet. In the light-sensitive element of FIG. 3, on support 30 is coated layer 31 comprising a red-sensitive silver halide emulsion containing a nondiffusible coupler that on color development forms a diffusible cyan dye. Over layer 31 is coated interlayer 32. Over layer 32 is coated layer 33 comprising a green-sensitive silver halide emulsion containing a nondiffusible coupler that on color development forms a diffusible magenta dye. Over layer 33 is coated interlayer 34. Over layer 34 is coated layer 35 comprising a blue-sensitive silver halide emulsion containing a nondiffusible coupler that on color development forms a diffusible yellow dye. Over layer 35 is coated top coat protective layer 36.

FIG. 4 illustrates another typical light-sensitive photographic element or color film that can be utilized to produce dye images that can be transferred to the receiving sheets of the invention. The element illustrated in FIG. 4 can be utilized to prepare dye developer images of the type described above. In the photographic element of FIG. 4, on support 40 is coated layer 41 containing a cyan dye developer. Over layer 41 is coated layer 42 which is a red-sensitive silver halide emulsion layer. Over layer 42 is coated interlayer 43. Over layer 43 is coated layer 44 comprising a magenta dye developer. Over layer 44 is coated layer 45 comprising a green-sensitive silver halide emulsion. Over layer 45 is coated interlayer 46. Over layer 46 is coated layer 47 containing a yellow dye developer. Over layer 47 is coated layer 48 comprising a blue-sensitive silver halide emulsion. Over layer 48 is coated layer 49 comprising a colorless, water-insoluble hydroquinone.

Our invention will be further illustrated by the following example.

#### Example 1

A receiving sheet for photographic dyes of the type illustrated by FIG. 2 of the drawings was prepared. A baryta coated support of paper stock about 10 pounds per 1000 sq. ft. was coated on both sides with a viscous dope formed by dissolving 20 gms. of poly-2,2-bis(4-hydroxyphenol)-propane carbonate in 75 cc. of chloroform with a coating knife set to a clearance of .008 inch. After coating, the sheet was floated face down in a tray of acetone. After a few seconds the sheet was completely immersed, turned over and rocked in the tray for 30 to 40 seconds longer. The sheet was then removed, dried of excess acetone, and

surface dried with warm air. After complete drying, one surface of the paper was coated with the following solution:

|                            |       |       |
|----------------------------|-------|-------|
| Polyvinyl alcohol          | grams | 3.75  |
| Poly(4-vinylpyridine)      | do    | 5.0   |
| Benzothiazole methiodide   | mg    | 125   |
| Dimethylolurea             | g     | 0.375 |
| Distilled water to 250 cc. |       |       |

The receiving sheets thus prepared, and a conventional baryta coated paper support receiving sheet having the same mordant containing coating thereon as the polycarbonate support described above, were utilized to receive dye images in a diffusion transfer process. The color photographic film used to produce the color images on the test receiving sheets had substantially the structure shown in FIG. 3 of the drawings. The color photographic film had the following layers coated on a cellulose acetate film support:

(1) *Red-sensitive layer* (e.g., layer No. 31, FIG. 3).—To one mole of a melted, internal image, direct-positive, gelatino-silver bromoiodide emulsion of the type described in Davey et al., U.S. Patent 2,592,250 that had been red-sensitized, was added 108 g. of the cyan coupler, 1-hydroxy-4-(3-octadecylcarbamyphenylthio)-N-ethyl-3',5'-dicarboxy-2-naphthanilide, in 2500 ml. of water and enough photographic gelatin to make a total of 139 g. per mole of silver halide. This solution was then coated so as to obtain 193 mg. per square foot of gelatin, 150 mg. per square foot of coupler, and 150 mg. per square foot of silver.

(2) *Interlayer* (e.g., layer No. 32, FIG. 3).—To 4540 g. of a 10% photographic gelatin solution was added 250 g. of the antioxidant 2-octadecyl-4-sulfohydroquinone potassium salt, in 5,000 ml. of hot water. This was coated to obtain 91 mg. per square foot of gelatin and 50 mg. per square foot of the antioxidant.

(3) *Green-sensitive layer* (e.g., layer No. 33, FIG. 3).—To one mole of a melted, internal image, direct-positive emulsion of the type described in Davey et al., U.S. Patent 2,592,250, that had been green-sensitized, was added 81 g. of the magenta coupler, 1-(4-sulfoanilino)-4-(2-hydroxy-4-pentadecylphenylazo)-5-pyrazolone dipotassium salt, in 3000 ml. of water and enough photographic gelatin to have a total of 162 g. per mole of silver halide. This solution was coated so as to obtain 180 mg. per square foot of gelatin, 90 mg. per square foot of coupler, and 120 mg. per square foot of silver.

(4) *Interlayer* (e.g., layer No. 34, FIG. 3).—To 4540 g. of 10% photographic gelatin solution was added 250 g. of the antioxidant used in layer 2 (layer No. 32, FIG. 3) in 5000 ml. of hot water and 4.0 g. of yellow Carey Lea silver as a dispersion. This solution was then coated to obtain 91 mg. per square foot of gelatin, 50 mg. per square foot of antioxidant, and 8 mg. per square foot of Carey Lea silver.

(5) *Blue-sensitive layer* (e.g., layer No. 35, FIG. 3).—To one mole of a melted, internal image, direct-positive emulsion of the type described in Davey et al., U.S. Patent 2,592,250, that was inherently blue light-sensitive, was added 144 g. of the yellow coupler,  $\alpha$ -pivalyl- $\alpha$ -(3-octadecylcarbamyphenylthio)-4-sulfoacetanilide potassium salt, that had been dissolved in 750 ml. of ethyl alcohol and 3,000 ml. of water and enough photographic gelatin to have a total of 118 g. per mole of silver halide. This solution was coated so as to obtain 161 mg. per square foot of gelatin, 200 mg. per square foot of coupler, and 150 mg. per square foot of silver.

(6) *Topcoat layer* (e.g., layer No. 36, FIG. 3).—To 4540 g. of a 10% photographic gelatin solution was added 250 g. of ultraviolet absorbing compound, 5-(4-methoxy-3-sulfa)benzylidene-2-phenylimino-3-octylthiazolidone sodium salt in 5,000 ml. of water. This solution was coated to obtain 91 mg. per square foot of gela-

tin and 50 mg. per square foot of the ultraviolet absorbing compound.

The samples of photographic color film were exposed in an Eastman IB sensitometer using a multicolor step wedge, and the samples were then squeezed to the test receiving sheets with the following viscous color developers:

|                                                                   |    |       |
|-------------------------------------------------------------------|----|-------|
| Ascorbic acid                                                     | g  | 0.4   |
| 4-amino-N-ethyl-N-( $\beta$ -hydroxyethyl)aniline                 | g  | 10.0  |
| Benzotriazole                                                     | g  | 0.1   |
| 4-( $\beta$ -methylsulfonamidoethyl)phenylhydrazine hydrochloride | g  | 0.3   |
| Sodium hydroxide                                                  | g  | 14.0  |
| Water                                                             | ml | 300.0 |

(The developer ingredients were dissolved in the water, then the whole added to 700 g. of a 4% aqueous solution of alkali-soluble carboxymethylcellulose.)

Development and transfer were allowed to proceed 2 minutes at room temperature. The negatives were stripped from the mordanted receivers which had thereon a color image. The color image transfers on the polycarbonate coated paper support showed no mottle whereas mottle appeared on the images formed on the baryta coated paper supports. The density and brilliance of the colors on the polycarbonate coated support were excellent.

In carrying out our invention, the polycarbonate resin may be advantageously coated on suitable paper supports by dissolving the polycarbonate resin in a solvent such as chloroform until a suitable coating composition is obtained. A number of coating methods may be employed with satisfactory results, such as hopper coating, air knife coating, blade knife coating, dip coating and the like.

The present invention provides a useful class of receiving sheets for photographic dyes, which receiving sheets have particular utility for receiving dyes in color photographic color diffusion transfer processes.

Although the invention has been described in considerable detail with reference to certain preferred embodiments thereof, it will be understood that variations and modifications can be effected without departing from the spirit and scope of the invention as described hereinabove and as defined in the appended claims.

I claim:

1. A sheet for receiving photographic dyes comprising a paper support having thereon a polycarbonate resin coating, and a hydrophilic organic colloid layer containing a mordant for said dyes over the polycarbonate resin coating.

2. A receiving sheet for photographic dyes comprising a paper support having thereon a polycarbonate resin coating, and having thereon a hydrophilic organic colloid layer containing substantially uniformly dispersed therein a mordant for said dyes selected from the group consisting of poly(vinylpyridine) polymers, quaternary ammonium mordants, quaternary phosphonium mordants and ternary sulfonium mordants.

3. A receiving sheet for photographic dyes comprising a paper support having thereon a polycarbonate resin coating and a layer thereover comprising polyvinyl alcohol having uniformly dispersed therein poly 4-vinylpyridine.

4. A sheet for receiving photographic dyes comprising a baryta coated paper support having over the baryta coating a polycarbonate resin coating, and a hydrophilic organic colloid layer containing a mordant for said dyes over the polycarbonate resin coating.

5. A receiving sheet for photographic dyes comprising a baryta coated paper support having over the baryta coating a polycarbonate resin coating, and having thereon a hydrophilic organic colloid layer containing substantially uniformly dispersed therein a mordant for said dyes selected from the group consisting of poly(vinylpyridine) polymers, quaternary ammonium mordants, quaternary phosphonium mordants and ternary sulfonium mordants.

6. A receiving sheet for photographic dyes comprising

a baryta coated paper support having coated over the baryta coating a polycarbonate resin coating and a layer thereover comprising polyvinyl alcohol having uniformly dispersed therein poly-4-vinylpyridine.

7. A sheet containing a photographic dye images comprising a paper support having thereon a polycarbonate resin coating, and a hydrophilic organic colloid layer over the polycarbonate resin coating containing (1) photographic dye images and (2) a mordant for said photographic dye images.

8. A sheet containing photographic dye images comprising a paper support having thereon a polycarbonate resin coating, and having a hydrophilic organic colloid layer over the polycarbonate resin coating, said hydrophilic organic colloid layer having substantially uniformly dispersed therein acid photographic dyes and a mordant for said dyes selected from the group consisting of poly(vinylpyridine) polymers, quaternary ammonium mordants, quaternary phosphonium mordants and ternary sulfonium mordants.

9. A sheet containing photographic dye images as defined in claim 8 wherein said hydrophilic organic colloid layer comprises polyvinyl alcohol and said mordant is poly-4-vinyl pyridine.

10. A sheet containing photographic dye images in accordance with claim 7 wherein said photographic dye images are acid dyes with said mordant is a cationic mordant.

11. A sheet containing photographic dye images in accordance with claim 7 wherein said paper support has a baryta coating thereon, and said polycarbonate resin coating is over said baryta coating.

12. A sheet containing photographic dye images as defined in claim 8 wherein said paper support is a baryta coated paper support and said polycarbonate resin coating is coated over said baryta coating.

13. A sheet containing photographic dye images as defined in claim 10 wherein said paper support is a baryta

coated paper support and said polycarbonate resin coating is applied over said baryta coating.

14. In the process of transferring photographically produced dye images to a mordanted receiving sheet, the improvement which comprises utilizing a receiving sheet comprising a paper support having thereon a polycarbonate resin coating, and a hydrophilic organic colloid layer containing a mordant for said dyes over the polycarbonate resin coating.

15. The process of transferring photographically produced dye images as defined in claim 14 wherein said photographic dyes are acid dyes and said mordant is a cationic mordant.

16. A process of transferring photographically produced dye images as defined in claim 15 wherein said paper support is a baryta coated paper support and said polycarbonate resin coating is over said baryta coating.

17. A process of transferring photographically produced dye images as defined in claim 16 wherein said mordant is selected from the group consisting of poly(vinylpyridine) polymers, quaternary ammonium mordants, quaternary phosphonium mordants and ternary sulfonium mordants.

18. A process of transferring photographically produced dye images as defined in claim 16 wherein said hydrophilic organic colloid layer is polyvinyl alcohol and said mordant is poly-4-vinylpyridine.

#### References Cited

##### UNITED STATES PATENTS

|           |        |                     |         |
|-----------|--------|---------------------|---------|
| 3,079,837 | 3/1963 | Theilemann          | 161—183 |
| 3,148,985 | 9/1964 | Ossenbrunner et al. | 96—87   |
| 3,208,964 | 9/1965 | Valle               | 96—290  |
| 3,266,894 | 8/1966 | Weyerts et al.      | 96—290  |
| 3,117,046 | 1/1964 | Klockgether et al.  | 161—183 |

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