Sept. 19, 1961 A. E. LANDAU ET AL 3,000,782

MATERIALS FOR EMBALMING HUMAN CORPSES

Filed April 18, 1958 3 Sheets-Sheet 1

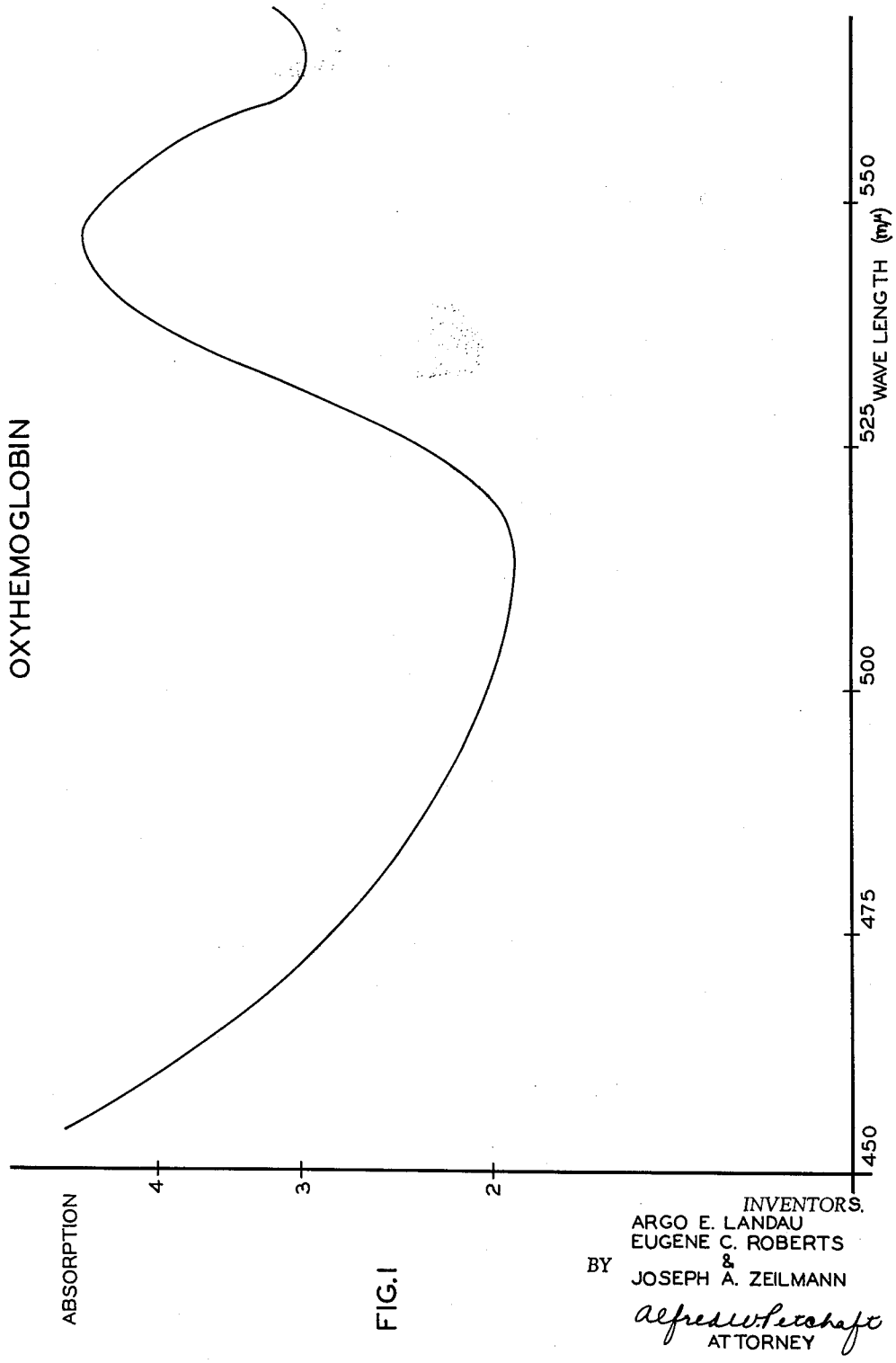


FIG. 1

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MATERIALS FOR EMBALMING HUMAN CORPSES

Filed April 18, 1958 3 Sheets-Sheet 2

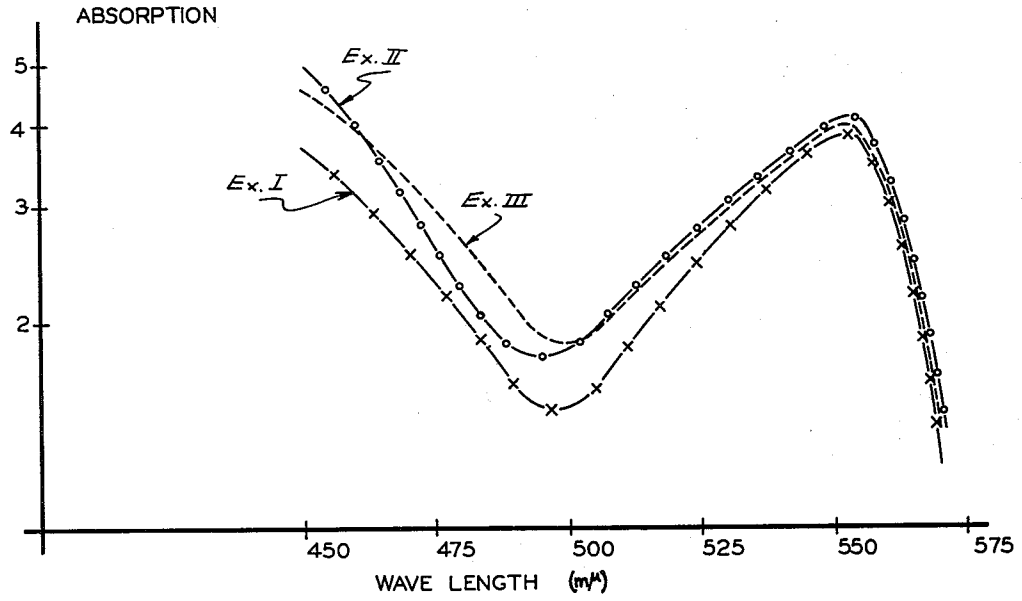


FIG. 2

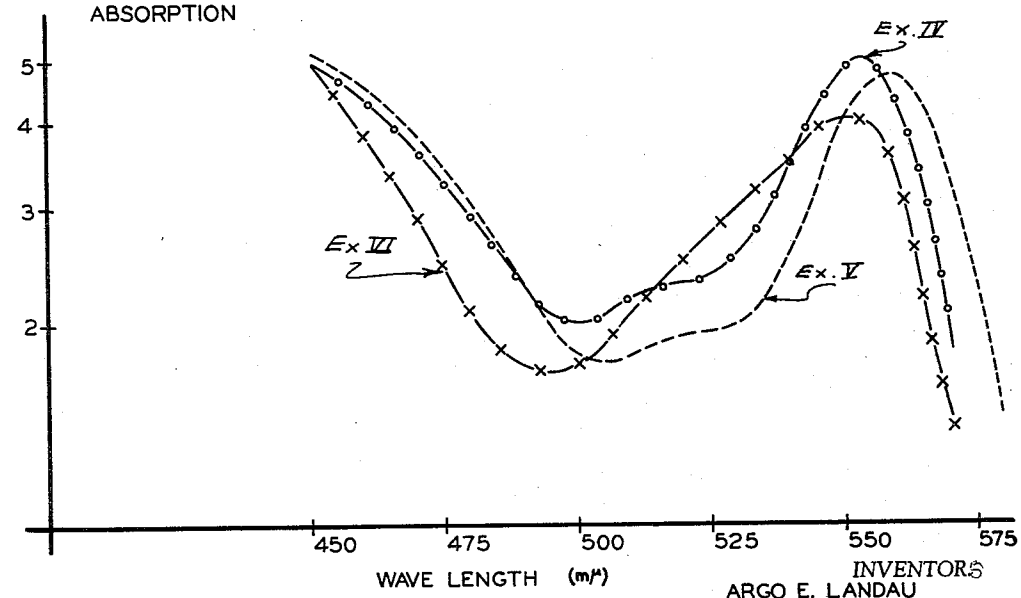


FIG. 3

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MATERIALS FOR EMBALMING HUMAN CORPSES

Filed April 18, 1958 3 Sheets-Sheet 3

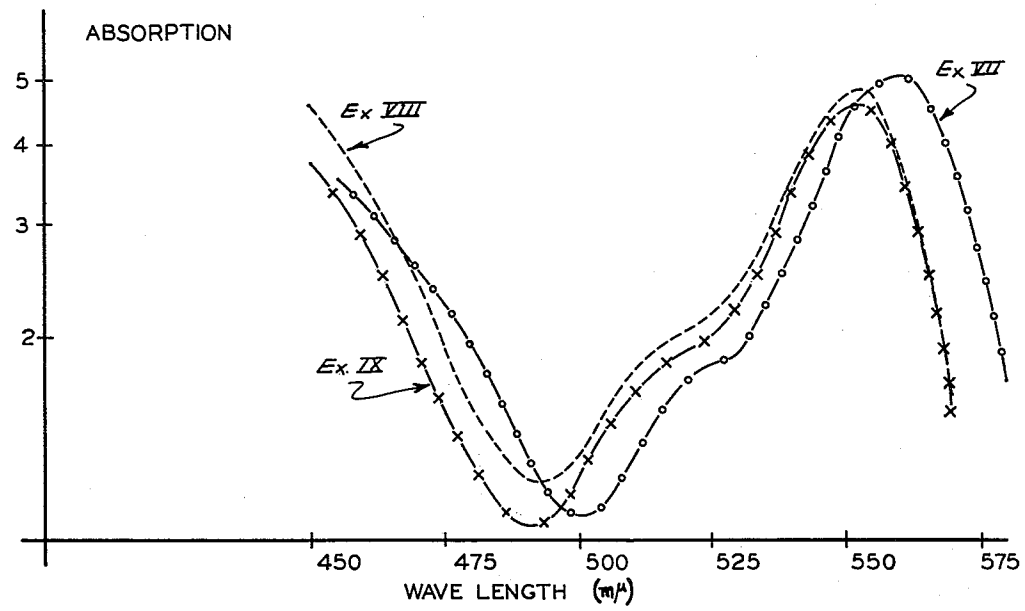


FIG. 4

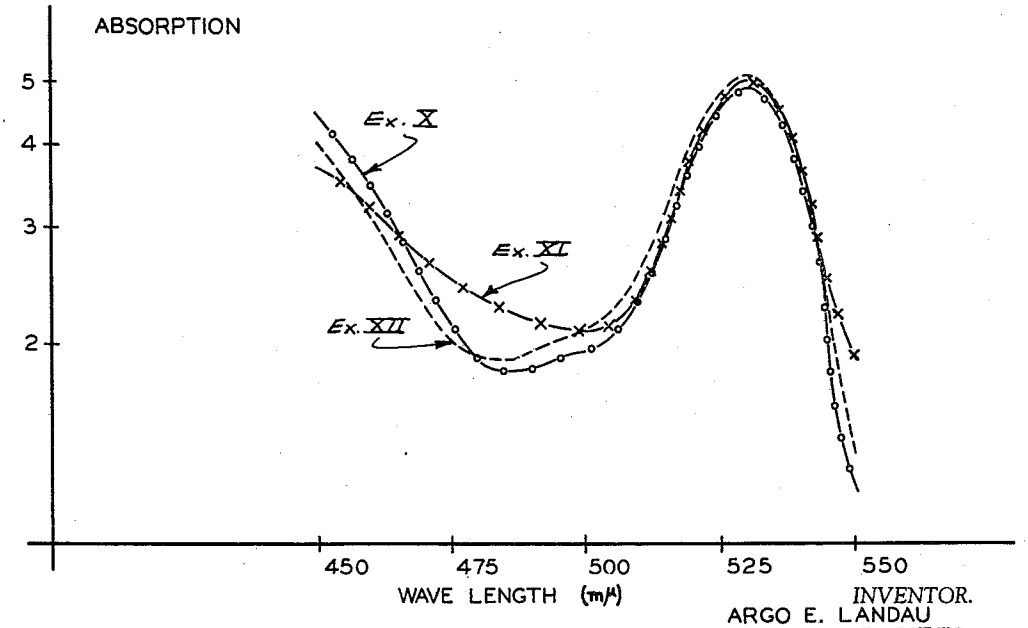


FIG. 5

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3,000,782

MATERIALS FOR EMBALMING HUMAN CORPSES

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Filed Apr. 18, 1958, Ser. No. 729,445

23 Claims. (Cl. 167—49.5)

This invention relates in general to certain new and useful improvements in methods and materials for embalming human corpses.

In embalming a body, it is conventional and, in fact, essential to replace the blood and body fluid, as completely as possible, with an embalming fluid, containing powerful preservatives. Accordingly, embalming fluid is pumped into the arteries, veins, and infused into the tissues. Obviously, it is desirable, when the embalming process is concluded, that the body have a natural life-like appearance, but the removal of blood and body fluids from the tissue materially changes the color and tone of the flesh. Consequently, cosmetics are frequently applied to offset or hide these color changes, but cosmetics, such as face powder, pancake make-up, rouge, lipstick, and the like, are easily detected even when most skillfully applied and, particularly in the case of male corpses, lend a more unnatural, rather than more natural, appearance to the body. This fact has led manufacturers of embalming fluid to add various red dyes, such as eosin and the like, to embalming fluids, with the result that most embalming fluids currently on the market have a pink or reddish tinge. This expedient, however, has not been successful to any marked degree. Bodies embalmed with such fluids still have a waxy pallid appearance and undertakers still must rely heavily upon the use of cosmetics. Furthermore, the artificial colorations thus induced vary widely with different skin textures and pigmentation. Embalming fluids which produce somewhat beneficial results in blond people may produce wholly unnatural or off-color effects in brunette people and nothing seems to help colored people. The bodies of Negroes and Orientals seem to take on a greyish pallor that cannot be dissipated by any presently available means.

It is, therefore, the primary object of the present invention to provide an embalming fluid which, when injected into a corpse, will impart to the flesh a warm roseate appearance practically identical with that of a living person.

It is another object of the present invention to provide an embalming fluid which will restore natural life-like color to the embalmed body regardless of skin texture, skin pigmentation, or racial color characteristics thereof.

It is a further object of the present invention to provide an embalming fluid of the type stated which is relatively economical and easy to use, requiring no unusual or unfamiliar equipment equipment or mortuary techniques.

With the above and other objects in view, our invention resides in the novel means and processes presently described and pointed out in the claims.

In the accompanying drawing—

FIG. 1 is an absorption spectrum curve typical of hemoglobin; and

FIGS. 2, 3, 4, and 5 are graphs showing various absorption spectrum curves characteristic of embalming fluids.

Broadly speaking, the present invention resides in the discovery that natural human blood and, more particularly, hemoglobin has a compound color characteristic which is shown by a unique form of absorption spectrum

curve. In other words, by plotting the amounts of various wave lengths of light which are absorbed by hemoglobin within the visible range (disregarding the extreme reds and violet wave lengths as to which the absorption by hemoglobin is neglible), as shown in FIG. 1, it is possible to arrive at a curve which has a unique and unexpected configuration in that it follows a sinuous form rather than the form of an inverted parabola common to most dyestuffs. Consequently, the present invention resides in introducing into the arterial, venous, and capillary system of a corpse an embalming fluid having an absorption spectrum curve closely matching that of hemoglobin.

To achieve this result, it was found necessary to utilize a blend of dyestuffs which produced such a curve in the wave band of 4500 to 5700 A.° and, moreover, were chemically compatible with each other and with conventional embalming reagents, such as formaldehyde and the like. Furthermore, the dyes used must of necessity be highly stable, insensitive to light, and resistant to oxidation. Accordingly, it has been found that an embalming fluid containing a blend of certain reds and yellow dyes will have an absorption spectrum curve closely matching that of natural hemoglobin as shown in FIG. 2.

By way of illustration and not by way of limitation, the following are examples of the present invention:

Example I

Formalin	pounds	67.5
Propylene glycol	do	6.0
Sodium borate	do	2.0
Versene "67"	do	1.0
Antarox A–200	do	1.0
Water	do	22.5
Rose bengale	grams	10.5
Erythrosine	do	2.6
Tartrazine	do	26.4

The absorption spectrum curve for this embalming fluid is graphically represented in FIG. 2.

Example II

Formalin	pounds	67.5
Propylene glycol	do	6.0
Sodium borate	do	2.0
Versene "67"	do	1.0
Antarox A–200	do	1.0
Water	do	22.5
Rose bengale	grams	10.5
Erythrosine	do	2.6
Sunset yellow	do	19.8
Metanil yellow	do	3.5

The absorption spectrum curve for this embalming fluid is graphically represented in FIG. 2.

Example III

Formalin	pounds	67.5
Propylene glycol	do	6.0
Sodium borate	do	2.0
Antarox A–200	do	1.0
Versene "67"	do	1.0
Water	do	22.5
Rose bengale	grams	10.5
Erythrosine	do	2.6
Tartrazine	do	26.4
Metanil yellow	do	3.5

The absorption spectrum curve for this embalming fluid is graphically represented in FIG. 2.

Example IV

Formalin	pounds	67.5
Propylene glycol	do	6.0
Sodium borate	do	2.0
Versene "67"	do	1.0
Antarox A–200	do	1.0
Water	do	22.5
Rose bengale	grams	13.2
Tartrazine	do	13.2
Metanil yellow	do	8.8

The absorption spectrum curve for this embalming fluid is graphically represented in FIG. 3.

Example V

Formalin	pounds	67.5
Propylene glycol	do	6.0
Sodium borate	do	2.0
Versene "67"	do	1.0
Antarox A–200	do	1.0
Water	do	22.5
Rhodamine B	grams	5.2
Tartrazine	do	13.2
Metanil yellow	do	14

The absorption spectrum curve for this embalming fluid is graphically represented in FIG. 3.

Example VI

Formalin	pounds	67.5
Propylene glycol	do	6.0
Sodium borate	do	2.0
Versene "67"	do	1.0
Antarox A–200	do	1.0
Water	do	22.5
Rose bengale	grams	10.5
Erythrosine	do	2.6
Naphthol yellow	do	22.8
Metanil yellow	do	3.5

The absorption spectrum curve for this embalming fluid is graphically represented in FIG. 3.

Example VII

Formalin	pounds	67.5
Propylene glycol	do	6.0
Sodium borate	do	2.0
Versene "67"	do	1.0
Antarox A–200	do	1.0
Water	do	22.5
Rhodamine B	grams	4.4
Tartrazine	do	26.4

The absorption spectrum curve for this embalming fluid is graphically represented in FIG. 4.

Example VIII

Formalin	pounds	67.5
Propylene glycol	do	6.0
Sodium borate	do	2.0
Versene "67"	do	1.0
Antarox A–200	do	1.0
Water	do	22.5
Rose bengale	grams	13.2
Naphthol yellow	do	26.2

The absorption spectrum curve for this embalming fluid is graphically represented in FIG. 4.

Example IX

Formalin	pounds	67.5
Propylene glycol	do	6.0
Sodium borate	do	2.0
Versene "67"	do	1.0
Antarox A–200	do	1.0
Water	do	22.5
Rose bengale	grams	13.2
Sunset yellow	do	19.8

The absorption spectrum curve for this embalming fluid is graphically represented in FIG. 4.

Example X

Formalin	pounds	67.5
Propylene glycol	do	6.0
Sodium borate	do	2.0
Versene "67"	do	1.0
Antarox A–200	do	1.0
Water	do	22.5
Erythrosine	grams	13.2
Naphthol yellow	do	26.4

The absorption spectrum curve for this embalming fluid is graphically represented in FIG. 5.

Example XI

Formalin	pounds	67.5
Propylene glycol	do	6.0
Sodium borate	do	2.0
Versene "67"	do	1.0
Antarox A–200	do	1.0
Water	do	22.5
Erythrosine	grams	13.2
Tartrazine	do	26.4

The absorption spectrum curve for this embalming fluid is graphically represented in FIG. 5.

Example XII

Formalin	pounds	67.5
Propylene glycol	do	6.0
Sodium borate	do	2.0
Versene "67"	do	1.0
Antarox A–200	do	1.0
Water	do	22.5
Erythrosine	grams	13.2
Sunset yellow	do	19.8

The absorption spectrum curve for this embalming fluid is graphically represented in FIG. 5.

Other embalming fluids coming within the scope of, and illustrating, the present invention are as follows:

Example XIII

Formalin	pounds	67.5
Propylene glycol	do	6.0
Sodium borate	do	2.0
Versene "67"	do	1.0
Antarox A–200	do	1.0
Water	do	22.5
Rose bengale	grams	13.2
Tartrazine	do	26.4

Example XIV

Formalin	pounds	67.5
Propylene glycol	do	6.0
Sodium borate	do	2.0
Versene "67"	do	1.0
Antarox A–200	do	1.0
Water	do	22.5
Rose bengale	grams	13.2
Sunset yellow	do	8.8
Metanil yellow	do	14

Example XV

Formalin	pounds	67.5
Propylene glycol	do	6.0
Sodium borate	do	2.0
Versene "67"	do	1.0
Antarox A–200	do	1.0
Water	do	22.5
Erythrosine	grams	13.2
Metanil yellow	do	17.6

Example XVI

Formalin	pounds	67.5
Propylene glycol	do	6.0
Sodium borate	do	2.0
Versene "67"	do	1.0
Antarox A–200	do	1.0
Water	do	22.5
Rhodamine B	grams	4.4
Azosol yellow	do	24.2

Example XVII

Formalin	pounds	67.5
Propylene glycol	do	6.0
Sodium borate	do	2.0
Versene "67"	do	1.0
Antarox A–200	do	1.0
Water	do	22.5
Rose bengale	grams	13.2
Metanil yellow	do	17.6

Example XVIII

Formalin	pounds	67.5
Propylene glycol	do	6.0
Sodium borate	do	2.0
Versene "67"	do	1.0
Antarox A–200	do	1.0
Water	do	22.5
Rhodamine B	grams	3.5
Erythrosine	do	2.6
Metanil yellow	do	17.6

Example XIX

Formalin	pounds	67.5
Propylene glycol	do	6.0
Sodium borate	do	2.0
Versene "67"	do	1.0
Antarox A–200	do	1.0
Water	do	22.5
Rhodamine B	grams	3.5
Erythrosine	do	2.6
Azosol yellow	do	24.2

Example XX

Formalin	pounds	67.5
Propylene glycol	do	6.0
Sodium borate	do	2.0
Versene "67"	do	1.0
Antarox A–200	do	1.0
Water	do	22.5
Rhodamine B	grams	4.4
Metanil yellow	do	17.6

Example XXI

Formalin	pounds	67.5
Propylene glycol	do	6.0
Sodium borate	do	2.0
Versene "67"	do	1.0
Antarox A–200	do	1.0
Water	do	22.5
Rose bengale	grams	13.2
Azosol yellow	do	24.2

Example XXII

Formalin	pounds	67.5
Propylene glycol	do	6.0
Sodium borate	do	2.0
Versene "67"	do	1.0
Antarox A–200	do	1.0
Water	do	22.5
Rose bengale	grams	10.5
Erythrosine	do	2.6
Metanil yellow	do	17.6

Example XXIII

Formalin	pounds	67.5
Propylene glycol	do	6.0
Sodium borate	do	2.0
Versene "67"	do	1.0
Antarox A–200	do	1.0
Water	do	22.5
Rhodamine B	grams	3.5
Erythrosine	do	2.6
Naphthol yellow	do	26.4

Experimentation with the foregoing Examples XIII to XXIII, inclusive, has shown that such embalming fluids have optical properties comparable with those of the examples illustrated in FIGS. 2 to 5, inclusive.

In the foregoing examples, Versene "67" is a trademark for tetra sodium salt of ethylene diamine tetra acetic acid which is a commonly used sequestering agent. Similarly, Antarox A–200 is a trademark for an aromatic polyglycol ether and is a commonly used non-ionic detergent or surfactant. A number of commercially available sequestering agents and non-ionic detergents were tested and found to produce equally satisfactory results. For instance, sodium lauryl sulphate may be used instead of Antarox A–200. There seems to be nothing critical about the sequestering agent and non-ionic detergent used.

Embalming fluids made in accordance with the present invention may be introduced into the corpse in any conventional manner with standard mortuary instruments and techniques. Furthermore, it has been found that embalming fluids made in accordance with the present invention are virtually universal in that such fluids can be used for bodies of all different types and racial color characteristics with equally beneficial effect. No matter whether the deceased was of the Caucasian, Negro, red, or yellow race, the appearance of the flesh after embalming will be warm-colored and life-like and there will be no waxy or greyish death-pallor.

It should be understood that changes in the methods, compositions, and combinations above set forth may be made without departing from the nature and principle of our invention.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

1. An embalming fluid containing a tissue preservative agent and approximately 40 grams of a blood-simulative coloring material per 100 pounds of fluid, said coloring material consisting of a blend of approximately 10 grams of rose bengale, 3 grams of erythosine, and 26 grams of tartrazine.

2. An emblaming fluid containing a tissue preservative agent and approximately 37 grams of a blood-simulative coloring material per 100 pounds of fluid, said coloring material consisting of a blend of approximately 3 grams of erythrosine, 20 grams of sunset yellow, and 4 grams of metanil yellow.

3. An embalming fluid containing a tissue preservative agent and approximately 44 grams of a blood-simulative coloring material per 100 pounds of fluid, said coloring material consisting of a blend of approximately 11 grams of rose bengale, 3 grams of erythrosine, 26 grams of tartrazine, and 4 grams of metanil yellow.

4. An embalming fluid containing a tissue preservative agent and approximately 35 grams of a blood-simulative coloring material per 100 pounds of fluid, said coloring material consisting of a blend of approximately 13 grams of rose bengale, 13 grams of tartrazine, and 9 grams of metanil yellow.

5. An embalming fluid containing a tissue preservative agent and approximately 32 grams of a blood-simulative coloring material per 100 pounds of fluid, said coloring material consisting of a blend of approximately 5 grams of rhodamine B, 13 grams of tartrazine, and 14 grams of metanil yellow.

6. An embalming fluid containing a tissue preservative agent and approximately 41 grams of a blood-simulative coloring material per 100 pounds of fluid, said coloring material consisting of a blend of approximately 11 grams of rose bengale, 3 grams of erythrosine, 23 grams of naphthol yellow, and 4 grams of metanil yellow.

7. An embalming fluid containing a tissue preservative agent and approximately 30 grams of a blood-simulative coloring material per 100 pounds of fluid, said coloring material consisting of a blend of approximately 4 grams of rhodamine B and 26 grams of tartrazine.

8. An embalming fluid containing a tissue preservative agent and approximately 39 grams of a blood-simulative coloring material per 100 pounds of fluid, said coloring material consisting of a blend of approximately 13 grams of rose bengale and 26 grams of naphthol yellow.

9. An embalming fluid containing a tissue preservative agent and approximately 33 grams of a blood-simulative coloring material per 100 pounds of fluid, said coloring material consisting of a blend of approximately 13 grams of rose bengale and 20 grams of sunset yellow.

10. An embalming fluid containing a tissue preservative agent and approximately 40 grams of a blood-simulative coloring material per 100 pounds of fluid, said coloring material consisting of a blend of approximately 13 grams of erythrosine and 27 grams of naphthol yellow.

11. An embalming fluid containing a tissue preservative agent and approximately 39 grams of a blood-simulative coloring material per 100 pounds of fluid, said coloring material consisting of a blend of approximately 13 grams of erythrosine and 26 grams of tartrazine.

12. An embalming fluid containing a tissue preservative agent and approximately 33 grams of a blood-simulative coloring material per 100 pounds of fluid, said coloring material consisting of a blend of approximately 13 grams of erythrosine and 20 grams of sunset yellow.

13. An embalming fluid containing a tissue preservative agent and approximately 40 grams of a blood-simulative coloring material per 100 pounds of fluid, said coloring material consisting of a blend of approximately 13 grams of rose bengale and 26 grams of tartrazine.

14. An embalming fluid containing a tissue preservative agent and approximately 36 grams of a blood-simulative coloring material per 100 pounds of fluid, said coloring material consisting of a blend of approximately 13 grams of rose bengale, 9 grams of sunset yellow and 14 grams of metanil yellow.

15. An embalming fluid containing a tissue preservative agent and approximately 30 grams of a blood-simulative coloring material per 100 pounds of fluid, said coloring material consisting of a blend of approximately 13 grams of erythrosine and 17 grams of metanil yellow.

16. An embalming fluid containing a tissue preservative agent and approximately 28 grams of a blood-simulative coloring material per 100 pounds of fluid, said coloring material consisting of a blend of approximately 4 grams of rhodamnie B and 24 grams of azosol yellow.

17. An embalming fluid containing a tissue preservative agent and approximately 31 grams of a blood-simulative coloring material per 100 pounds of fluid, said coloring material consisting of a blend of approximately 13 grams of rose bengale and 18 grams of metanil yellow.

18. An embalming fluid containing a tissue preservative agent and approximately 24 grams of a blood-simulative coloring material per 100 pound of fluid, said coloring material consisting of a blend of approximately 3 grams of rhodamine B, 3 grams of erythrosine and 18 grams of metanil yellow.

19. An embalming fluid containing a tissue preservative agent and approximately 30 grams of a blood-simulative coloring material per 100 pounds of fluid, said coloring material consisting of a blend of approximately 3 grams of rhodamine B, 3 grams of erythrosine and 24 grams of azosol yellow.

20. An embalming fluid containing a tissue preservative agent and approximately 22 grams of a blood-simulative coloring material per 100 pounds of fluid, said coloring material consisting of a blend of approximately 4 grams of rhodamine B and 18 grams of metanil yellow.

21. An embalming fluid containing a tissue preservative agent and approximately 37 grams of a blood-simulative coloring material per 100 pounds of fluid, said coloring matereial consisting of a blend of approximately 13 grams of rose bengale and 24 grams of azosol yellow.

22. An embalming fluid containing a tissue preservative agent and approximately 31 grams of a blood-simulative coloring material per 100 pounds of fluid, said coloring material consisting of a blend of approximately 10 grams of rose bengale, 3 grams of erythrosine and 18 grams of metanil yellow.

23. An embalming fluid containing a tissue preservative agent and approximately 32 grams of a blood-simulative coloring material per 100 pounds of fluid, said coloring material consisting of a blend of approximately 3 grams of rhodamine B, 3 grams of erythrosine and 26 grams of naphthol yellow.

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