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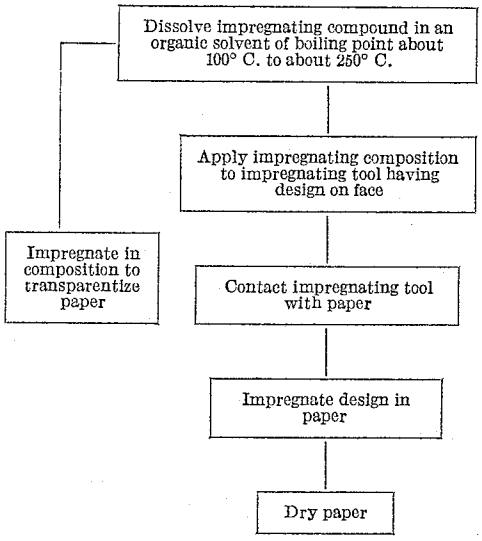
# 3,085,898
# PAPER PRODUCT WITH WATERMARK AND PROCESS THEREFOR

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This invention relates to a paper product having a watermark therein and means for making same. More in particular this invention relates to means for forming a watermark in otherwise finished paper products.

A simplified flow diagram of the method is as follows:




Particularly in office operations of commercial enterprises it is often desirable to have writing stationery and other forms of business and professional papers watermarked. Oftentimes business trademarks are watermarked for identity and protective purposes and such watermarking serves as an additional means of distinctivity associated with a particular business enterprise.

The present practice of watermarking is usually performed during the paper-making process by providing embossed rolls interposed usually at a point before the wet paper web enters the dryers. The fibres in the web are displaced in horizontal position and the paper is thus rendered thinner and consequently more transparent at the area of the watermark. Thus the embossed rolls form the mark in the damp or wet paper which upon drying remains permanent. After the paper making and watermarking process is complete the finished paper is cut into sheets of various sizes, such as those established for stationery and the like.

Another known method of forming a watermark involves the employment of a band fitted about a roll and carrying the design of the watermark in relief. The design is brought into contact with the wet paper web at the wet presses beyond the Fourdrinier or wet end. At that point the paper is still plastic and compresses readily. The resulting compression of fibres, reducing entrapped air and light refraction, increases the transparency of the area of the watermark.

Watermarked paper made as above described has several disadvantages. First, the commercial paper making machines are very large and produce paper at a high volume rate. Thus for economical reasons a customer desiring stationery bearing a private watermark such as a trademark must purchase a large amount of each kind



of paper needed. This of course limits such privately watermarked papers to a few but relatively large industrial users or governmental departments as it is obvious that smaller enterprises could not economically purchase and stock a supply sufficient for several years. Second, the cost of the embossed or banded rolls for the paper making machine is obviously extremely high and could therefore not be afforded by smaller industrial users. Third, the cost of setting up the embossed or banded rolls involves both labor as well as loss of production on the paper making machinery which must be taken into account in the net cost to the purchaser. Furthermore, among other disadvantages, the purchaser finds that his private watermark is not positioned uniformly in the finished cut stationery unless he assumes the additional labor cost and paper waste involved in constantly positioning relatively the rolled paper and cut-off knife. While private watermarks may be formed by presently known methods, it is thus clear that orders for paper products so marked must be large if the cost thereof is to be economically justified and orders in small quantities are of such cost as to be rarely justified.

The present invention contemplates the elimination of the above mentioned disadvantages. It is therefore one object of this invention to convert blank paper into a paper product having a uniformly positioned watermark therein.

Another object of this invention is to form in a blank cut sheet paper product a visible watermark.

A further object of this invention is to form by impregnation of blank paper an effective watermark.

A still further object of this invention is to provide blank paper intended for use as paper sheet products with a satisfactory watermark, according to the preceding objects, wherein the watermark may be positioned uniformly on all sheets.

A yet further object of this invention is to provide such paper products, according to the preceding objects, in small quantieties at low cost.

Another important object of this invention is to provide a particular means for converting opaque or translucent paper into a substantially more transparent paper.

Another object is to provide a method of forming a watermark in paper involving the adequate displacement of entrained air.

Another purpose is to provide a method of forming a watermark by replacing air in a paper product with a material having an index of refraction similar to that of cellulose.

Another purpose is to provide a method of forming a watermarked paper product by impregnation thereof to replace entrapped air in a localized area.

These and other desirable objects inherent in and encompassed by the invention will be more readily understood from the ensuing description and the appended claims.

According to this invention blank paper (i.e. having no watermark) is impregnated with a watermark by employing a novel chemical composition whereby after drying transparent areas are created in the paper sheet conforming to the desired configuration of the watermark. The resulting watermark possesses for all practical purposes the same general characteristics in use as that of a watermark formed by the earlier, known processes above described.

A chemical composition suitable for forming a watermark as above mentioned must have the ability to mark the paper in a manner to render it more translucent or substantially transparent in the impregnated area. Further the chemical composition should not alter the sur-

face of the paper adversely. For example, it must not render the surface glossy in the impregnated area and must not alter the erasability characteristic of the paper. In addition the chemical composition must withstand aging without discoloration and must not become indistinct through migration of the chemicals or otherwise. And of course, aside from low cost, the watermarked area must accept typing, penciling, printing and writing inks without adverse effects such as feathering or skipping. Certain chemical compositions of this invention have been successfully employed in the formation of watermarks which conform to the above mentioned requirements as hereinafter described.

A watermark, from a fundamental viewpoint, possesses a translucency of higher degree of transparency in the marked area than that possessed by the paper in the unmarked areas. The most common type of watermark appears more transparent than the surrounding unmarked paper.

After considerable experimental work four organic compounds were discovered which, when properly applied to or impregnated into the paper, imparted to the paper sheet a watermark which was more translucent than the surrounding paper. These four organic compounds are defined as follows:

(1) Sodium dioctyl sulfosuccinate
(2) Sucrose acetate isobutyrate
(3) Sodium dihexyl sulfosuccinate
(4) Sodium diamyl sulfosuccinate

Although sodium dioctyl sulfosuccinate, sodium dihexyl sulfosuccinate and sodium diamyl sulfosuccinate were found to be excellent for the purpose of this invention it appears that corresponding salts of other alkai metals are equally applicable for the same purpose. Likewise in the case of sucrose acetate isobutyrate, the isobutyrate radicals may well be substituted with normal butyrate radicals, the chemical and physical analogy between these two radicals being substantially the same. Sucrose acetate isobutyrate may be prepared by the procedure set out in U.S. 2,931,802. Furthermore it appears that none of these organic chemicals enter into chemical reaction with the constituents of the paper. Rather it appears to be a matter of obtaining proper displacement of entrained air with these organic compounds to create a satisfactory mark in the paper.

In order to obtain the necessary degree of impregnation or coating with the above described organic compounds certain fundamental characteristics of the paper sheet must be considered. For example, the thickness, composition and weight (density) of the paper sheet are variables and must be considered. Surprisingly, however, it was found that such variables were largely overcome by adjusting the concentration of the above described chemicals in selected organic solvents. The selection of the organic solvent as a carrier is important for if the solvent evaporates at an excessive rate the penetration of the paper is insufficient to result in proper impregnation by the organic solutes employed. On the other hand if the solvent evaporates too slowly, the organic solutes tend to migrate in the paper resulting in an indistinct watermark. In this respect it was found that inert organic solvents having boiling points at atmospheric pressure in the range of 100° C. to 250° C. possessed vapor pressures at room temperatures suitable for this invention. The term "inert" in the present discussion is intended to mean that the solvent enters no chemical reaction under the conditions of this invention.

Broadly speaking, the composition employed for forming a watermark in paper according to this invention is a liquid solution consisting of about 30% to 70% by weight of at least one organic salt selected from the group consisting of sucrose acetate butyrate, sucrose acetate isobutyrate and alkali metal salts of an alkyl sulfosuccinate, and the balance of 70% to 30% by weight being an organic solvent therefor having a boiling point in the range of 100° C. to 250° C. Concentrations of the compounds in solvents above about 70% by weight were found to produce indistinct watermarks due to insufficient penetration of the paper while concentrations below about 30% by weight produced watermarks of insufficient visibility in reflected or transmitted light.

Some of the solvents successfully employed in compositions according to this invention included diethylene glycol monoethyl ether (Carbitol), ethylene glycol monomethyl ether, ethylene glycol diethyl ether, benzyl alcohol, 2-(2-methoxyethoxy) ethanol, ethylene glycol monophenyl ether and ethylene glycol monoethyl ether.

In order to evaluate the various compositions of this invention, watermarks of excellent quality were obtained in the laboratory by hand impregnation. The hand impregnation was accomplished by depositing a small metered amount of the composition on the surface of a foot-square piece of one-quarter inch thick plate glass. The composition was spread uniformly over the glass surface with a handproofer consisting of an engraved roll bearing 75 depressions per inch and fitted with a handle. A die or hand stamp of rubber-like material having inscribed on the face thereof a typical watermark design was first pressed against the wet film of the composition on the glass and then stamped on the paper sheet. The watermarked paper sheet was allowed to dry and then examined.

By way of illustration of the invention, excellent watermarks were obtained by laboratory hand impregnation, as above described, employing novel compositions of this invention in each of the following examples, the stated proportions being in terms of weight:

*Example I*

| | Percent |
|---|---|
| Sodium dioctyl sulfosuccinate | 50 |
| 2-methoxy ethanol | 50 |

*Example II*

| | |
|---|---|
| Sodium dioctyl sulfosuccinate | 50 |
| 2-methoxy ethanol | 25 |
| Diethylene glycol monoethyl ether | 25 |

*Example III*

| | |
|---|---|
| Sodium dioctyl sulfosuccinate | 50 |
| Diethylene glycol monoethyl ether | 50 |

*Example IV*

| | |
|---|---|
| Sucrose acetate isobutyrate | 50 |
| Ethylene glycol monomethyl ether | 50 |

*Example V*

| | |
|---|---|
| Sucrose acetate isobutyrate | 50 |
| Diethylene glycol monoethyl ether | 50 |

*Example VI*

| | |
|---|---|
| Sucrose acetate isobutyrate | 35 |
| Diethylene glycol monoethyl ether | 65 |

*Example VII*

| | |
|---|---|
| Sucrose acetate isobutyrate | 50 |
| Ethylene glycol monoethyl ether | 50 |

*Example VIII*

| | |
|---|---|
| Sodium dioctyl sulfosuccinate | 50 |
| Diethylene glycol monoethyl ether | 50 |

*Example IX*

| | |
|---|---|
| Sodium dioctyl sulfosuccinate | 40 |
| Sucrose acetate isobutyrate | 10 |
| Diethylene glycol monoethyl ether | 50 |

*Example X*

| | |
|---|---|
| Sodium dioctyl sulfosuccinate | 25 |
| Sucrose acetate isobutyrate | 25 |
| Diethylene glycol monoethyl ether | 50 |

*Example XI*

| | Percent |
|---|---|
| Sodium dioctyl sulfosuccinate | 10 |
| Sucrose acetate isobutyrate | 40 |
| Diethylene glycol monoethyl ether | 50 |

*Example XII*

| | |
|---|---|
| Sodium dihexyl sulfosuccinate | 50 |
| Diethylene glycol monoethyl ether | 50 |

*Example XIII*

| | |
|---|---|
| Sodium diamyl sulfosuccinate | 50 |
| Benzyl alcohol | 50 |

*Example XIV*

| | |
|---|---|
| Sodium diamyl sulfosuccinate | 50 |
| 2-(2-methoxyethoxy) ethanol | 50 |

*Example XV*

| | |
|---|---|
| Sodium dioctyl sulfosuccinate | 0.05 |
| Sucrose acetate isobutyrate | 49.95 |
| Diethylene glycol monoethyl ether | 50.00 |

*Example XVI*

| | |
|---|---|
| Sodium dioctyl sulfosuccinate | .25 |
| Sucrose acetate isobutyrate | 49.75 |
| Diethylene glycol monoethyl ether | 50.00 |

*Example XVII*

| | |
|---|---|
| Sodium dioctyl sulfosuccinate | .5 |
| Sucrose acetate isobutyrate | 49.5 |
| Diethylene glycol monoethyl ether | 50.0 |

*Example XVIII*

| | |
|---|---|
| Sodium dioctyl sulfosuccinate | 1.0 |
| Sucrose acetate isobutyrate | 49.0 |
| Diethylene glycol monoethyl ether | 50.0 |

*Example XIX*

| | |
|---|---|
| Sodium dihexyl sulfosuccinate | 2.5 |
| Sucrose acetate isobutyrate | 47.5 |
| Diethylene glycol monoethyl ether | 50.0 |

Accelerated aging of the watermarks in the above examples at 150° F. for 72 hours showed no discoloration.

In the above examples the blank paper product employed was of the bond grade consisting of 25% cotton and 75% chemical woodpulp. The apparent density of the blank paper stock was about 5.0 and its thickness about 4.0 mils. The resulting watermarks possessed a high degree of transparency.

In the paper industry the terms "opaque" and "semi-opaque" can refer to varying levels of opacity, depending on the specific type of paper under discussion. For purposes herein, more definite meanings can be given these terms by the following explanation.

In the writing paper field, trade practice classifies an "opaque" sheet of bond paper as one of a standard weight (500 sheets, cut 17 inches by 22 inches, weighing between 19.5 lbs. and 20.5 lbs.) having a TAPPI opacity in excess of 87%. This percent is the reciprocal of the transmission of monochromatic light passing through the paper and photometrically measured.

The less commonly used term, "semi-opaque," is generally accepted by the trade as a standard weight sheet of bond paper having a TAPPI opacity somewhere between 87% and 65%.

Writing papers having a TAPPI opacity less than 65% are often referred to as "transparent." It will suffice to say that the lower the TAPPI opacity, the more often the trade refers to "transparency," and the closer the opacity is to 65%, the more often the trade uses the term "translucent." Translucent papers usually retain the more common characteristics of bond papers, such as formation and brightness, whereas transparent sheets most often have a more uniformly translucent fibre mass with considerably less brightness.



This explaantion holds true whether the paper under discussion is made entirely of chemical wood pulp, a blend of chemical wood pulp and cotton or linen fibres, or entirely of cotton and/or linen fibres.

Technically the term "translucent" usually implies that a ray of light passing through a material is diffused while the term "transparent" implies that a ray of light passing through is not diffused. Thus a translucent object may vary from opaque to true transparent according to the magnitude of diffusion of light passing therethrough. However, for purpose of this discussion the term transparent is used to denote that the magnitude of diffusion of light passing through the paper is not greater than that found in commercial tracing paper. Thus if a sheet of paper possesses a TAPPI opacity less than 65% it is termed herein as "transparent" and conversely if 65% or greater it is termed herein as "translucent."

In the foregoing examples the areas covered by the watermark on paper known commercially as "opaque" and "semi-opaque" were distinct and transparent. In the same manner, as described in the examples, it is obvious that the entire translucent blank paper known commercially as "opaque" and "semi-opaque" may be transparentized, that is to say, converted from a translucent paper to a transparent paper. Several successful tests were made in the transparentizing of entire sheets of translucent paper of the type used in the above examples employing the same compositions. The transparency of the products obtained was greater than that of some commercial tracing papers.

At this point it should be mentioned that in the transparentizing of a sheet of paper, the matter of migration of the chemical impregnant over a period of time becomes unimportant as distinguished from the process of forming watermarks. Migration of the chemical impregnant in the case of watermarks must necessarily not occur as such migration would tend to obliterate the mark over a period of time.

Transparentized paper has many commercial uses such as tracing paper and the like. Also there is a commercial demand for translucent paper having only a portion of the sheet transparentized such as the window type mailing envelopes wherein the address is printed on the contents of the envelope and positioned beneath the transparent window.

In order to confirm the laboratory hand impregnating technique employed in the above examples, the novel compositions of this invention were employed in forming watermarks on blank paper by means of a commercially usable process. The results of the commercial type application of the invention are illustrated in the following additional examples, the proportions all shown in the terms of weight.

*Example XX*

Composition A:

| | Percent |
|---|---|
| Sucrose acetate isobutyrate | 50 |
| Diethyl glycol monoethyl ether | 50 |

Paper: Bond grade, 25% cotton–75% chemical wood pulp, having a thickness of 4.0 mils and an apparent density of 5.0.

The rate of travel or production was 40 feet per minute. The resulting watermark was clear and distinct.

*Example XXI*

Composition B:

| | Percent |
|---|---|
| Sucrose acetate isobutyrate | 10 |
| Sodium dioctyl sulfosuccinate | 40 |
| Diethylene glycol monoethyl ether | 50 |

Composition A:

| | |
|---|---|
| Sucrose acetate isobutyrate | 50 |
| Diethylene glycol monoethyl ether | 50 |

Paper: Same as in Example XX.

The watermark was first applied on one side employing composition B and then, in register, the other side employing composition A. The rate of application on each side

was the same as that of Example XX. The resulting watermark was clear and distinct.

*Example XXII*

Same as Example XXI except the following composition C was substituted for Composition B.

| Composition C: | Percent |
|---|---|
| Sucrose acetate isobutyrate | 37.5 |
| Sodium dioctyl sulfosuccinate | 12.5 |
| Diethylene glycol monoethyl ether | 50.0 |

The resulting watermark was clear and distinct.

*Example XXIII*

Same as for Example XXI except that the paper employed had additional sizing. The resulting watermark was clear and distinct.

*Example XXIV*

Same as Example XXIII except that the rate of application was increased to 100 feet per minute. The resulting watermark was distinct.

*Example XXV*

Same as Example XXII except that onionskin paper was employed. The resulting watermark was clear and distinct.

*Example XXVI*

Same as Example XXII except that onionskin paper was employed and treated only on one side using composition C. The resulting watermark was clear and distinct.

*Example XXVII*

Same as Example XXII except that onionskin paper was employed and treated only on one side using Composition A. The resulting watermark was clear and distinct.

Satisfactory results were also achieved in the commercial type application of the invention in the following examples in which a clear and distinct watermark was achieved:

*Example XXVIII*

| | Percent |
|---|---|
| Sodium dioctyl sulfosuccinate | 1.6 |
| Sucrose acetate isobutyrate | 48.4 |
| Diethylene glycol monoethyl ether | 50.0 |

*Example XXIX*

| | |
|---|---|
| Sodium dioctyl sulfosuccinate | 20 |
| Sucrose acetate isobutyrate | 30 |
| Diethylene glycol monoethyl ether | 50 |

*Example XXX*

| | |
|---|---|
| Sodium dioctyl sulfosuccinate | 30 |
| Sucrose acetate isobutyrate | 20 |
| Diethylene glycol monoethyl ether | 50 |

*Example XXXI*

| | |
|---|---|
| Sodium dioctyl sulfosuccinate | 38.8 |
| Sucrose acetate isobutyrate | 12.2 |
| Diethylene glycol monoethyl ether | 50.0 |

Generally, it was found unnecessary to apply the watermark on both sides, but in some instances application of the watermark on both sides, in register, was advantageous, particularly on thick and dense papers. Forced drying, such as by radiant heat, generally was found to be unnecessary. However, where the design of the watermark is characterized by large areas it may be advantageous to force-dry the sheets to prevent migration of the chemical which may occur if drying is too slow.

It has thus been shown that ordinary grades of writing stationery can be provided with a watermark by chemical impregnation according to this invention by means of hand impregnating or commercially acceptable application methods. From this it can be readily appreciated that small quantities of paper may be provided with such marking at costs which meet the requirements of smaller volume customers and thereby making available, economically, a long sought paper product. Further, there has been shown a convenient means for transparentizing a translucent paper product, such as that commercially known as "opaque" and "semi-opaque," economically for manufacturing tracing papers and the like.

Based on the weight of the paper the amount of impregnating composition in terms of percent by weight may vary due to the type and density of the paper used. Therefore a sufficient amount effective to reduce the TAPPI opacity to below 65% is necessary to transparentize translucent paper. In the case of the bond paper used in the examples, an impregnation in the amount of 15% by weight of the impregnating composition based on the weight of the paper gave satisfactory results.

Having thus described several embodiments of the invention it can now be seen that the objects of the invention have been fully achieved and it must be understood that changes and modifications may be made which do not depart from the spirit of the invention nor from the scope thereof as defined in the appended claims.

What is claimed is:

1. The method of imparting a substantially permanent watermark of selected geometrical design to paper comprising the steps of impregnating a portion of said paper in the configuration of said design with a composition consisting of about 30 percent by weight to about 70 percent by weight of at least one organic compound selected from the group consisting of sucrose acetate butyrate sucrose acetate isobutyrate and an alkali metal salt of a dialkyl sulfosuccinate dissolved in an inert organic solvent, said solvent having a boiling point in the range of about 100° C. to about 250° C. in an amount of about 70 percent by weight to about 30 percent by weight.

2. The paper product having a substantially permanent watermark of selected geometrical design imparted thereto obtained in accordance with the method of claim 1.

3. The method of imparting a substantially permanent watermark of selected geometrical design to paper comprising the steps of impregnating a portion of said paper in the configuration of said design with a liquid composition consisting of about 30 percent by weight to about 70 percent by weight of sodium dioctyl sulfosuccinate dissolved in about 70 percent by weight to about 30 percent by weight of an inert organic solvent, said organic solvent having a boiling point in the range of about 100° C. to about 250° C.

4. The paper product obtained in accordance with claim 3.

5. The method of imparting a substantially permanent watermark of selected geometrical design to paper according to claim 3 wherein the solvent is selected from the group consisting of diethylene glycol monoethyl ether, ethylene glycol, ethylene glycol monomethyl ether, ethylene glycol diethyl ether, 2-(2-methoxy ethoxy) ethanol ethylene glycol monoethyl ether.

6. The method of imparting a substantially permanent watermark of selected geometrical design to paper comprising the steps of impregnating a portion of said paper in the configuration of said design with a liquid composition consisting of about 30 percent by weight to about 70 percent by weight of sodium diamyl sulfosuccinate dissolved in about 70 percent by weight to about 30 percent by weight of an inert organic solvent, said solvent having a boiling point in the range of about 100° C. to about 250° C.

7. The method of imparting a substantially permanent watermark of selected geometrical design to paper comprising the steps of impregnating a portion of said paper in the configuration of said design with a liquid composition consisting of about 30 percent by weight to about 70 percent by weight of sodium dihexyl sulfosuccinate dis-

solved in about 70 percent by weight to about 30 percent by weight of an inert organic solvent, said solvent having a boiling point in the range of about 100° C. to about 250° C.

8. The method of imparting a substantially permanent watermark of selected geometrical design to paper comprising the steps of impregnating a portion of said paper in the configuration of said design with a liquid composition consisting of about 30 percent by weight to about 70 percent by weight of sucrose acetate isobutyrate dissolved in about 70 percent by weight to about 30 percent by weight of an inert organic solvent, said organic solvent having a boiling point in the range of about 100° C. to about 250° C.

9. The method of imparting a substantially permanent watermark of selected geometrical design to a paper sheet according to claim 8, wherein the solvent is selected from the group consisting of diethylene glycol monoethyl ether, ethylene glycol, ethylene glycol monomethyl ether, ethylene glycol diethyl ether, 2-(2-methoxy ethoxy) ethanol ethylene glycol monoethyl ether.

10. The method of imparting a substantially permanent watermark of selected geometrical design to paper comprising the steps of impregnating a portion of said paper in the configuration of said design with a liquid composition consisting of from 0.3 percent by weight to 40 percent by weight of sodium dioctyl sulfosuccinate, from 10 percent by weight to 69 percent by weight of sucrose acetate isobutyrate, and at least 30 percent by weight and not more than 70 percent by weight of an inert organic solvent, said solvent having a boiling point in the range of about 100° C. to about 250° C.

11. The method of imparting a substantially permanent watermark of selected geometrical design to paper according to claim 10 wherein the solvent is selected from the group consisting of diethylene glycol monoethyl ether, ethylene glycol, ethylene glycol monomethyl ether, ethylene glycol diethyl ether, 2-(2-methoxyethoxy) ethanol and ethylene glycol monoethyl ether.

12. The method of imparting a substantially permanent watermark of selected geometrical design to paper comprising the steps of impregnating a portion of said paper in the configuration of said design with a liquid composition consisting of from 0.3 percent by weight to 40 percent by weight of sodium dihexyl sulfosuccinate, from 10 percent by weight to 69 percent by weight of sucrose acetate isobutyrate, and at least 30 percent by weight and not more than 70 percent by weight of an inert organic solvent, said solvent having a boiling point in the range of about 100° C. to about 250° C.

13. The method of imparting a substantially permanent watermark of selected geometrical design to paper according to claim 12 wherein the solvent is selected from the group consisting of diethylene glycol monoethyl ether, ethylene glycol, ethylene glycol monomethyl ether, ethylene glycol diethyl ether, 2-(2-methoxyethoxy)ethanol and ethylene glycol monoethyl ether.

14. The method of imparting a substantially permanent watermark of selected geometrical design to paper comprising the steps of impregnating a portion of said paper in the configuration of said design with a liquid composition consisting of about 12.5% by weight of sodium dioctyl sulfosuccinate, about 37.5% by weight of sucrose acetate isobutyrate and about 50% by weight of diethylene glycol monoethyl ether.

15. The method of imparting a substantially permanent watermark of selected geometrical design to paper comprising the steps of forming a liquid composition consisting of from 0.3 percent by weight to 40 percent by weight of sodium dioctyl sulfosuccinate, from 10 percent by weight to 69 percent by weight of sucrose acetate isobutyrate and from 30 percent by weight to 70 percent by weight of an inert inorganic solvent, and thereafter displacing entrapped air in a portion of said paper with said composition in an area conforming to the said design of said watermark.

16. The method of imparting a substantially permanent watermark of selected geometrical design to paper comprising the steps of forming a liquid composition consisting of from 0.3 percent by weight to 40 percent by weight of sodium dihexyl sulfosuccinate, from 10 percent by weight to 69 percent by weight of sucrose acetate isobutyrate and from 30 percent by weight to 70 percent by weight of an inert inorganic solvent, and thereafter displacing entrapped air in a portion of said paper with said composition in an area conforming to the said design of said watermark.

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