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COMPOSITION FOR BLEACHING HAIR

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This invention relates to a composition of matter for use in bleaching living human hair, and more specifically, it relates to phthalocyanine containing powders admixed with a peroxide in aqueous solution, for application to the hair as a paste or cream.

The use of hydrogen peroxide for bleaching hair is very well known in the cosmetic art, and in one of the classical applications thereof for bleaching living hair, aqueous hydrogen peroxide is applied in association with adsorbent powders of the type generally known as "white henna" or modified "white henna" to form a paste or cream which, when applied to the living hair, possesses the advantage of "staying put" in relation to the strands of hair within the zone of application. The base of such adsorbent powders is generally magnesium carbonate or a mixture of magnesium carbonate and magnesium oxide, which sometimes has admixed therewith alkalizing agents, salts of peracids, surface active agents, thickeners and the like; the alkalizing agent generally is an ammonium salt, although ammonia may be added as such to the aqueous peroxide rather than being a part of the aforesaid powder.

Since in professional application a reasonably fast bleaching action is desirable, attempts have in the past been made to increase or intensify the bleaching action of such pastes or creams, or rather the peroxides therein, by the addition, as an element of the paste or cream, of various metal salts, such as the sulfates, acetates, and chlorides of iron, copper, and cobalt, or the like. The reactivity developed by a paste so constituted, instead of increasing, actually decreased the bleaching action; the effect of the aforesaid metal salts being rather to induce a rapid decomposition of the hydrogen peroxide with a development of oxygen. This latter factor has rendered such procedures ineffective and objectionable, since the oxygen so developed, in the nature of numerous progressively developing heterogeneously distributed large "bubbles" increases the puffiness of the paste or cream, causing the same to migrate to parts of the hair beyond the zone intended to be bleached, and in the end, the addition of metal salts aforesaid, has resulted in a lowering and unevenness of the bleaching effect imparted to the hair in the treatment zone, and has, more often than not, increased damage to the hair, both in the zone and contiguous to the zone of application; all of which has resulted in the abandonment of such procedures.

It is therefore an object of the present invention to provide for an increasingly effective and homogeneous bleaching action on the hair of the hydrogen peroxide in a paste or cream of the "white henna" or modified "white henna" type, which, in a reasonably fast reaction avoids any objectionable degree of peroxide decomposition and "bubble" evolution of oxygen, while, at the same time, and without damaging the hair, eliminates the formation of undesired yellow or red tinge to the hair normally developed in bleach as processes of the classical type, or known modifications thereof.

I have found that by adding to the "white henna" or modified "white henna" powder base of the classical type aforesaid, certain metal phthalocyanines in the category later defined, and of the extremely fine particle size within the range later defined, all in conjunction with a peroxide in solution that, by virtue of what I believe to be a

result of catalytic action of such metal phthalocyanines, a progressive and homogeneous bleaching effect is developed far beyond that attained in accordance with the classical methods, and this is accompanied by a substantial elimination of the yellow and red tinges in the treated hair, a minimization of liberation of oxygen in the form of bubbles, avoidance of migration of the paste from the zone of application, and minimization of hair damage.

I have found further that, by use of the metal phthalocyanines of the nature and in the size indicated that a pleasing substantially blue coloration is imparted to the paste or cream, upon the admixture of an aqueous hydrogen peroxide solution to the powder, and that the pleasing blue coloration remains substantially unchanged throughout the bleaching action.

Although there are numerous metal phthalocyanines, I have found that only those metal complexes of the metals with the atomic numbers **27** to **30** perform well; they have little or no catalase effect (i.e. do not substantially decompose hydrogen peroxide), they have sufficient stability to be formed into fine dispersions by the so-called "acid pasting" process, and they have the properties of effectively increasing the bleaching effect of the aqueous peroxide in the classical paste or cream aforementioned.

I have also found that in connection with such phthalocyanine complexes of the metals selected from the group copper, cobalt, nickel, and zinc, that the benzene nuclei thereof may be substituted by a small number of chlorine atoms to produce the same effect, the degree of substitution being such that it should not produce in any of the substituted complexes a pronounced green shade. The benzene nuclei may also be substituted by sulfonic acid derivatives, particularly since the salts of the same have a desirable solubility in aqueous solution.

Of the above phthalocyanines, and primarily because of its low cost and commercial availability copper phthalocyanine is preferred.

The amount of the above phthalocyanines to be added to the adsorbent powder mix to form with the aqueous peroxide solution the desired effective paste or cream, may vary within relatively wide limits, but generally, rather small amounts thereof, such as .01% to 1% of the total weight of the other components of the powder mix is found to provide optimum results. However, larger amounts up to 10% by weight of the above phthalocyanines in the grouping hereinabove defined may be used, but it has been found that the performance and effectiveness of the paste is not improved sufficiently beyond that effectuated by the lower range in amount of the phthalocyanines to warrant the increase in material cost.

The degree of dispersion, i.e. the ultimate particle size of the phthalocyanines of the group herein involved is preferably that within the range of zero plus to about 5 microns for optimum bleaching effect, although I have found that the particle size up to 20 microns is satisfactory.

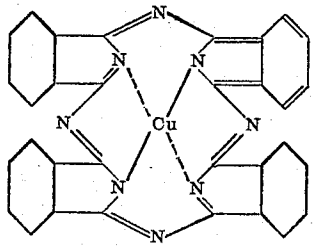
Upon addition of hydrogen peroxide in the form of a 3% to 12% by weight solution to the classical powder mix incorporating phthalocyanines of the group and of the particle size indicated, there is formed a blue colored paste or cream which retains its coloration during and throughout the application thereof to the hair. Compared to a paste or cream of the classical type, the presence of the phthalocyanine of the group specified in the particle size indicated produces a much stronger and even bleaching action without damaging the hair and without leaving a yellow or red tinge thereon.

While a very slow decomposition of hydrogen peroxide can never be entirely avoided, the composition incorpo-

rating the phthalocyanines herein utilized develop only a minute amount of fine bubbles with absence of puffiness and migration of the paste or cream.

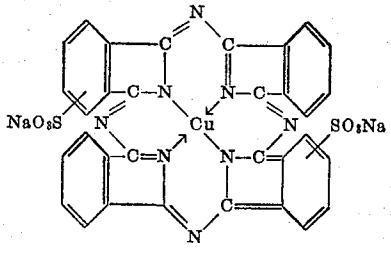
The chemical formula of certain phthalocyanines referred to in the illustrative examples are as follows:

Copper phthalocyanine (Heliogen Blue BWSN)



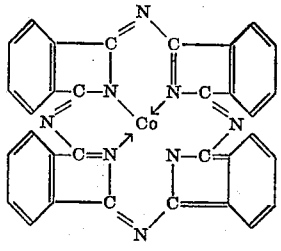
referred to in Venkataraman, The Chemistry of Synthetic Dyes (1952), Academic Press Inc., volume 2, on page 1120; and in Color Index, second edition, a joint publication of Society of Dyers and Colorists of England and American Association of Textile Chemists and Colorists, copyrighted in the United States, 1956, volume 3, page 3570 under C174160 (CI Pigment Blue 15), and is further quoted under its trademark Heliogen Blue BWSN in volume 2, page 2773 of the same publication.

Disulphonate copper phthalocyanine (Heliogen Blue SBLA)



referred to in volume 3, page 3570 of Color Index under #74180 and is called CI Direct Blue 86 and quoted at the right under the trademark Heliogen Blue SBLA where the letter "A" means American source.

Sulphonated cobalt phthalocyanine (Veranthrene Brilliant Blue 4G)



referred to in Color Index as 74140, volume 3, page 3570. It is a trademark product of the Bayer Company of Germany.

The invention is illustrated by the following examples, in which parts are given by weight.

Example 1

The adsorbent powder mix used consisted of 100 parts of magnesium carbonate U.S.P. light, 200 parts magnesium oxide U.S.P. light, 100 parts potassium persulfate and 35 parts ammonium sulfate. To 100 parts of this mixture, there was added 0.5 part of copper phthalocyanine, particle size up to 5 micron, known in the trade as Heliogen Blue BWSN. One part of this powder was mixed with 3 parts 6% by weight hydrogen peroxide to form a blue pigmented paste or cream. The bleaching action on human grey hair and also permanently waved hair was observed after ½ hour, 1 hour and 2 hours, and compared with the bleaching action of the same paste prepared without addition of the phthalocyanine, the bleaching action of the phthalocyanine containing cream was conspicuously greater, no migration of the paste occurred, and no yellow or red tinge was evident in the treated hair.

In the above procedure nickel or zinc phthalocyanine or a monochloro-copper phthalocyanine may be substituted for the copper phthalocyanine with the same effect.

Example 2

The procedure of Example 1 was followed substituting for the finely divided water dispersible copper phthalocyanine aforesaid, a partially sulfonated cobalt phthalocyanine known in the trade as "Veranthrene Brilliant Blue 4G." The bleaching results were similar to those above specified in Example 1.

Example 3

The procedure of Example 1 was followed substituting for the finely divided, water dispersible copper phthalocyanine, a sulfonated copper phthalocyanine known in the trade as "Heliogen Blue SBLA." Again the bleaching results were similar to those above specified for Example 1.

Example 4

The procedures of Examples 1, 2 and 3 were followed substituting for the powder mix disclosed in Example 1 a commercial powder mix of a modified "white henna" the gravimetric proportion of the constituents of which were not ascertained, except that qualitatively essentially the magnesium carbonate and magnesium oxide were present, together with variations in the additives aforementioned as being applied in the classical formulation outlined in the introduction to the specification. Also in this case the bleaching action was increased to the same degree as in Examples 1, 2 and 3.

Although no specific illustration has ben given for derivatives substituted in the benzene nuclei by chlorine instead of by sulfonic group, such compositions are well known in the art.

While specific embodiments of this invention have been described in detail, to illustrate, the application of the invention principle, it will be understod that the invention may be embodied otherwise without departing from such principles.

What is claimed is:

1. As a composition of matter a powder for use in conjunction with aqueous hydrogen peroxide to form a paste with increased bleaching action on living human hair, said powder containing at least one of the group consisting of insoluble magnesium oxide and magnesium carbonate in preponderance and between .01% and 10% of a phthalocyanine of ultimate particle size from 0+ and 20 microns selected from the group of phthalocyanine complexes of the metals copper, cobalt, nickel, zinc, and their derivatives substituted in the benzene nuclei by sulfonic groups, and their derivatives substituted in the benzene nuclei by chlorine.

2. As a composition of matter a powder for use in conjunction with aqueous hydrogen peroxide to form a paste with increased bleaching action on living human hair, said powder containing at least one of the group consisting of insoluble magnesium oxide and magnesium carbonate in preponderance and between .01% and 1% of a phthalocyanine selected from the group of phthalocyanine complexes of the metals copper, cobalt, nickel, zinc, and their derivatives substituted in the benzene nuclei by sulfonic groups, and their derivatives substituted in the benzene nuclei by chlorine, said phthalocyanine complex being present as particles of size 0+ to 20 microns

3. As a composition of matter a powder for use in conjunction with aqueous hydrogen peroxide to form a paste with increased bleaching action on living human hair, said powder containing at least one of the group consisting of insoluble magnesium oxide and magnesium carbonate in preponderance and between .01% and 1% of copper phthalocyanine of ultimate particle size from 0+ and 20 microns.

4. As a composition of matter a powder for use in conjunction with aqueous hydrogen peroxide to form a

paste with increased bleaching action on living human hair, said powder containing at least one of the group consisting of insoluble magnesium oxide and magnesium carbonate in preponderance and between .01% and 1% of a copper phthalocyanine sulfonic acid as particles of size 0+ to 20 microns.

5. As a composition of matter a powder for use in conjunction with aqueous hydrogen peroxide to form a blue pigmented paste with increased bleaching action on living human hair, said powder containing at least one of the group consisting of insoluble magnesium oxide and magnesium carbonate in preponderance and between .01% and 10% of copper phthalocyanine as particles of size 0+ to 20 microns, the blue color of the pigmented paste remaining substantially unchanged during the bleaching of the hair.

6. As a composition of matter a powder for use in conjunction with aqueous hydrogen peroxide to form a paste with increased bleaching action on living human hair, said powder containing at least one of the group consisting of insoluble magnesium oxide and magnesium carbonate in preponderance and between .01% and 1% of a partialy sulfonated cobalt phthalocyanine as particles of size 0+ to 20 microns.

7. A method of increasing the bleaching action on human hair of aqueous hydrogen peroxide which comprises intermixing with the aqueous hydrogen peroxide to form a paste, a powder composition containing a preponderance

of at least one of the group consisting of water insoluble magnesium carbonate and magnesium oxide and between 1% to 10% of phthalocyanine of particle size 0+ to 20 microns selected from the group of phthalocyanine complexes of the metals copper, cobalt, nickel, and zinc, and their derivatives substituted in the benzene nuclei by sulfonic groups, and their derivatives substituted in the benzene nuclei by chlorine.

8. A method in accordance with claim 7, wherein the phthalocyanine is copper phthalocyanine in the proportion of .01% to 1% of the powder composition.

9. A method in accordance with claim 8 wherein the powder composition additionally incorporates potassium persulphate and ammonium sulphate.

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