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[54] **COSMETIC COMPOSITION FOR THERMAL DISPENSING**

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[63] Continuation-in-part of Ser. No. 834,144, June 17, 1969, abandoned.

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[58] **Field of Search** 252/90, 105, 188; 424/73

[56] **References Cited**

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[57] **ABSTRACT**

An aqueous cosmetic composition for thermal dispensing containing (a) a compound capable of exothermic oxidation-reduction reaction with hydrogen peroxide selected from the group consisting of ascorbic acid, its salts and esters and (b) a metal salt catalyst to accelerate the reaction. The composition may be pressurized in one compartment of a two compartment container provided with a co-dispensing valve with hydrogen peroxide in the other compartment so that, upon actuation of valve, the liquids from the two compartments are thoroughly mixed as they are discharged, react and release the heat of reaction to warm the discharged product.

2 Claims, No Drawings

COSMETIC COMPOSITION FOR THERMAL DISPENSING

This is a continuation-in-part of application Ser. No. 834,144, now abandoned, filed June 17, 1969.

The present invention relates to a cosmetic composition for thermal dispensing. It is intended that the composition will be placed in one compartment of a two compartment container provided with a co-dispensing valve and the hydrogen peroxide will be placed in the other compartment. The composition contains a compound capable of an exothermic oxidation-reduction reaction with the hydrogen peroxide and a metal salt catalyst to accelerate the reaction. When the valve is actuated the two liquids are thoroughly mixed as they are discharged, which brings the compound, catalyst and hydrogen peroxide into intimate contact so that they react and release the heat of reaction to warm the discharged product. The materials from both chambers are discharged by suitable means such as a liquefied gaseous propellant which can be in both chambers, or, as when a flexible barrier of known type is used between chambers, then only in one chamber of the two compartment container. In some instances the liquefied gaseous material has a second function such as causing a product to foam. In such products, as in shave cream formulations, it is appropriate to include liquefied gaseous material in the chamber containing the material to be foamed.

Products of the general character are known in the dispensing art and have been described in the literature. An article entitled HOT SHAVE TECHNOLOGY in AEROSOL AGE, March 1968, pages 19–21 described an aerosol shave cream containing potassium sulfite which is pressurized in one compartment of a two compartment container provided with a co-dispensing valve and having hydrogen peroxide in the other compartment. When the valve is actuated to discharge the product, the shave cream liquid and the hydrogen peroxide are thoroughly mixed so that the hydrogen peroxide and potassium sulfite are brought into intimate contact and react. The heat of reaction which is released warms the shave cream. AEROSOL AGE, October 1968, page 97, describes a hot foam hair conditioner which is similarly packaged. Each of these articles also describes suitable propellants, containers and valves for a product of this type. Various other known systems can be used such as that described in U.S. Pat. No. 2,973,883 which discloses a container having a flexible tube therein with the propellant only in the space surrounding the tube. The pressure around the tube causes its collapse when the valve is opened, thereby forcing the ingredients from the tube as well as from the surrounding chamber. U.S. Pat. No. 3,451,593 discloses a package in which both compartments are pressurized. All of the above prior art is incorporated herein by reference.

The use of inorganic sulfites, e.g. sodium and potassium sulfites, in cosmetics emulsion systems creates problems of compatability which rather seriously limit the freedom to formulate these products as desired. Moreover the sulfites and their reaction products with

hydrogen peroxide may cause irritation to the skin of many users of the products.

The present invention is based upon the discovery that ascorbic acid, its salts and esters, together wih a metal salt catalyst to accelerate the reaction with hydrogen peroxide, can be used in cosmetic compositions for thermal dispensing. The organic ascorbic acid, its salts and esters, have better compatability in emulsion systems used in cosmetics than inorganic alkali metal sulfites so that freedom of formulation is greatly expanded as compared with composition containing potassium or sodium sulfite. These organic compounds, moreover, also have the distinct advantage of being much less irritating to the skin than the inorganic compounds.

The pH of cosmetic compositions may vary from about 5 to about 10. Many cleansing compositions, skin creams and the like, are formulated on the slightly acid side, e.g. at a pH within the range of about 5 to 7, so as to approximate the natural pH of normal skin which is on the slightly acid side. Compositions containing anionic surfactants, such as many shave creams contain, are formulated on the alkaline side, e.g. within a pH range of about 9–10.5. Shave creams and other cosmetic compositions containing non-ionic surfactants have a greater range of possible latitude of pH and may be formulated to have a pH on the slightly acid side, or they may be approximately neutral having a pH of about 7 or they may be on the alkaline side within a pH range from 7 to about 10.

The ascorbic acid esters may be used in cosmetic compositions within the entire pH range from about 5 to 10. If the cosmetic composition is formulated on the slightly acid side, ascorbic acid may also be used. On the other hand if the formulation has a pH on the alkaline side, ascorbic acid salts may be used as well as the esters.

Any compatible metal salt catalyst capable of accelarating the reaction between ascorbic acid, its salts and esters, and hydrogen peroxide may be used. Platinum metal halides, e.g., palladium chloride, are satisfactory catalysts in many applications but in general it has been found preferable to use molybdenum salts. Among the preferred salts are ammonium 6-molybdoferrate, -nickelate and -cobaltate. Alkali metal molybdates, such as sodium and potassium molybdate, are also among the preferred catalyst salts. Other include alkanol amine molybdates, such as triethanolamine molybdate.

The ascorbic acid esters that may be used with particular advantage include ascorbyl palmitate, myristate, stearate and the like.

The cosmetic composition used in the present invention may be formulated in general as heretofore with the mere addition of the ascorbic acid compound and the catalyst. Preferred cosmetic compositions include shaving cream, hot facials, hair conditioners, hair waving and straightening compositions and the like.

The effectiveness of the ascorbic acid compounds to increase the temperature of a cosmetic composition formulated in accordance with the present invention is illustrated in the following table:

TABLE

GRAMS TEA ASCORBATE	GRAMS MOLYBDIC ACID	GRAMS H_2O_2	TEMPERATURES °F. INITIAL	AFTER	TIME
6	0	10	77	78	3 min.
6	1	10	77	120	88 sec.

TABLE – Continued

GRAMS TEA ASCORBATE	GRAMS MOLYBDIC ACID	GRAMS H_2O_2	TEMPERATURES °F. INITIAL	AFTER	TIME
9	1	10	77	137	70 sec.
15	1	10	77	141	45 sec.
21	1	10	76	145	30 sec.
31	1	10	78	146	20 sec.

The following specific examples illustrates complete cosmetic formulations illustrative of the present invention:

EXAMPLE I

Foaming cosmetic composition of the nonionic surfactant type are formulated within the indicated ranges and as exemplified in the two specific products:

INGREDIENTS	RANGE %	SHAVE CREAM %	CLEANSING PRODUCT %
Non-ionic (1)	5–15	10.0	10.0
LMDEA (2)	0–1	0.5	0.5
Stearic Acid	0–5	0.5	0.5
Glycerine	5–15	10.0	10.0
Silicone Fluid (3)	0–2	1.0	1.0
Lanolin (4)	0–1	0.5	0.5
Fatty Alcohol (5)	0–1	0.5	0.5
Mineral Oil	0–20		10.0
Ascorbic Acid	5–25	10.0	10.0
Perfume	0–1		0.5
Water	Balance	Balance	Balance

(1) Polyoxyethylene (4) sorbitan monostearate (Atlas Tween 61)
(2) Lauric myristic diethanolamine
(3) Dow Corning 472 hydrophilic polyglycols copolymerized with hydrophobic polydimethylsiloxane chains
(4) Ethoxylated lanolin, a natural hydroxy ester of lanolin reacted with ethylene oxide (Croda Solan)
(5) Self emulsifying stearyl/cetyl alcohol (Croda Polawax A-31)

EXAMPLE II

A shave cream of the anionic surfactant type is formulated within the indicated ranges and as exemplified in the specific product as follows:

INGREDIENTS	RANGE %	PREFERRED RANGE %	PREFERRED COMPOSITION %
Stearic Acid	5–15	8–10	8.60
Coconut oil fatty acids	0–5	1–5	1.20
LMDEA	0–4	0.5–3.5	1.20
Tween 61	0–3	0.5–3	1.00
Glycerine	0–10	1–10	5.00
KOH (33.01%)	QS	QS	3.77
NaOH (19.1% Na_2O)	QS	QS	1.12
Coconut Oil	0–3	0.1–3	0.30
Perfume	0–2	.5–1	0.75
TEA ASCORBATE (70%) (Ratio TEA:Acid 4:5)	QS	QS	15.00
Water	Balance	Balance	Balance

The fatty acids react with the bases to form a sodium potassium soap.

EXAMPLE III

A hot cleansing cream is formulated within the indicated range and as exemplified in the specific product as follows:

INGREDIENTS	RANGE %	PREFERRED COMPOSITION %
Mineral Oil (light)	10–40	30.00
Fatty Acid (1)	3–9	5.00
TEA	QS	2.50
Cetyl Alcohol	0–3	1.00
Methyl parasept	0–.5	0.20
Propyl parasept	0–.1	0.05
TEA Ascorbate (2)	5–15	10.00
Water	Balance	Balance

(1) C_{16}–C_{18}, preferably triple pressed stearic acid
(2) Same as used in Example II

The fatty acid reacts with TEA to form a tri-ethanol amine soap.

In each case the formulation is packaged in one compartment of a two compartment container provided

with a co-dispensing valve and having hydrogen peroxide in the other compartment. Any suitable propellant may be used to dispense the liquid composition and hydrogen peroxide including lower hydrocarbons, e.g. propane and butane, and lower chlorinated and fluorinated alkanes particularly those having up to 2 carbon atoms per molecule such as propellants 11 (trichlorofluoromethane), 12 (dichlorodifluoromethane), 113 (trichlorotrifluoroethane), 114 (dichlorotetrafluoroethane, symmetrical), etc. The proportion of propellant to aqueous liquid may vary from about 2 percent for propane up to 15 percent for propellants 12 and 114 in suitable proportions to give the desired pressure. In general the foam of the products becomes drier or less moist as the proportion of propellant increases.

In compositions of the nonionic surfactant type, as illustrated in Example I, the surfactant is one which is capable of forming a foaming product on discharge from the container in which it is pressurized as just described. The polyoxyethylene adducts of polylydric alcohol esters of fatty acids, and particularly the one having 4 molecules of ethylene oxide condensed with sorbitan monooleate, are excellent nonionic surfactants for such products. A humectant should be present in these compositions to prevent a drying effect on the skin. In these compositions LMDEA serves as a foam stabilizer and is a desirable, but not essential ingredient. The higher fatty acid exemplified by stearic acid serves as a superfatting agent and gives an emollient feel to the product when applied to the skin. It or an equivalent superfatting agent is preferred but not essential. The glycerine serves to control viscosity, solubilities of other ingredients and as a humectant. It or an equivalent solubilizer is essential. The silicone fluid, which serves as a spreading agent in such compositions and contributes lubricity to a shave cream, also is a desirable but not essential ingredient. The fatty alcohol (Polawax A-31) promotes foaming, foam stability and foam body. It is also a desirable but not essential ingredient.

In compositions of the anionic surfactant type, as exemplified in Examples II and III, the proportion of anionic surfactant present in the aqueous composition may vary from about 3 to 20 percent by weight. In general it is preferred to have a slight excess of fatty acid over base (potassium and sodium hydroxide in Example II and triethanol amine (TEA) in Example III) to give the lather an emollient effect and this may be enhanced by a small proportion of an oil such as coconut oil which is not saponified by the base. Glycerine is a desirable ingredient to impart humectant properties to the composition but is not essential. The Tween **61** (polyoxyethylene sorbitan monooleate) and the LMDEA, which serve as foam improving additives, giving the product on dispensing greater stability and body, are also desirable ingredients but may be omitted if the particular properties they add are not considered necessary by the formulator. Cetyl alcohol serves as an emollient and may be used or not as the formulator chooses. The parasepts are preservatives, used optionally as desired.

In all these compositions water is an essential ingredient since the products are aqueous cosmetic compositions which produce foam or discharge from a container in which they are pressurized as described above.

Ascorbic acid itself or an ester or salts thereof is essential. The proportion of ascorbic acid compound varies with the amount of hydrogen peroxide used and hence is given in the tables of ranges as QS, preferably being in slight excess so that all the hyrogen peroxide is consumed in the reaction to prevent bleaching of the skin. The temperature to which the product rises on discharge will vary with the proportions of these compounds used in each package. In general the proportion of ascorbic acid compound may vary from 5 to 25 percent. In all the formulations the percentages are by weight.

The foregoing products are illustrative only of aqueous cosmetic compositions that may be formulated for use in accordance with the present invention which fundamentally involves such a composition of any desired composition and properties which is to be dispensed in heated condition as a result of the presence therein of material or a compound selected from the group consisting of ascorbic acid, its salts and esters and a metal salt catalyst capable of accelerating the reaction thereof with hydrogen peroxide which is admixed therewith in the dispensing operation by a co-dispensing valve.

Although the invention has been described and illustrated in conjunction with certain specific formulations, these have been given by way of illustration and not limitation and it is to be understood that the invention is not limited thereto but is of the scope set forth in the following claims.

We claim:

1. A package comprising (a) a container having two compartments for a co-dispensing valve; (b) a shave cream composition for thermal dispensing which comprises 5 to 15 percent by weight of stearic acid, 5 to 25 percent by weight of an ascorbic acid compound selected from the group consisting of ascorbic acid, ascorbyl palmitate, ascorbyl myristate, ascorbyl stearate, and triethanolamine ascorbate, a metal salt catalyst selected from the group consisting of palladium chloride, ammonium 6-molybdoferrate, ammonium 6-molybdonickelate, ammonium 6-molybdocobaltate, and sodium, potassium, and triethanolamine molybdate, the ratio by weight of said metal salt catalyst to said ascorbic acid compound being 1:6 to 1:31, to pH of said shave cream composition being adjusted with sodium and potassium hydroxides to a pH ranging from 9 to 10.5, and a balance of water; (c) hydrogen peroxide; and (d) a propellant; said ascorbic acid compound being capable of an exothermic oxidation-reduction with said hydrogen peroxide, and said metal salt catalyst being capable of accelerating said reaction; said shave cream composition being in one compartment of said container, and said hydrogen peroxide being in the other; said propellant being present to dispense said shave cream composition and said hydrogen peroxide through said valve, whereby when said co-dispensing valve is actuated said hydrogen peroxide is mixed with the ingredients of the other compartment as they are discharged, and said ascorbic acid compound reacts with said hydrogen peroxide in the presence of said catalyst to release the heat of reaction to warm the shave cream composition being discharged.

2. A package comprising (a) container having two compartments and a co-dispensing valve; (b) a composition comprising a shaving cream; a compound capable of an exothermic oxidation-reduction reaction with hydrogen peroxide said compound being selected from the group consisting of ascorbic acid, ascorbyl palmitate, ascorbyl myristate, ascorbyl stearate, and triethanolamine ascorbate; a metal salt catalyst capable of ac-

celerating said reaction selected from the groups consisting of palladium chloride, ammonium 6-molybdoferrate, ammonium 6-molybdonickelate, ammonium 6-molybdocobaltate, and sodium potassium and triethanolamine molybdate; and water; (c) hydrogen peroxide; and (d) propellant; said shave cream composition being in one compartment, and said hydrogen peroxide being in the other compartment, with said propellant being present to dispense both said shave cream composition and the hydrogen peroxide, whereby when said co-dispensing valve is actuated, said hydrogen peroxide is mixed with the ingredients of the other compartment as they are discharged and said compound and hydrogen peroxide react in the presence of said catalyst and release the heat of reaction to warm the aqueous shaving composition being discharged.

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