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CREAMING COMPOSITION

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My invention concerns a new opacifier or creaming agent for use in aqueous cosmetic preparations, particularly such preparations which are alkaline in reaction. Since the composition is considered of greatest utility as employed in hair waving solutions, especially solutions of the type capable of the impartation of a "cold wave," it will be specifically described in that connection.

In U. S. Patent 2,464,281 there is described a hair waving solution in which the opacifier, as included in the solution, consists of an aqueous mixture of fully polymerized acrylic acid copolymers and an aryloxy poly alkaline ether sulfonate. While such mixture initially provides a pleasing creamed effect, the resin component is prone to settle out and is extremely difficult to redisperse. Once separation has started, the lotion assumes a most unsightly appearance. Another disadvantage of this prior opacifier resides in the fact that in the bottling of the hair waving lotion the resin tends to plug the capillaries of the filling machine, greatly complicating the filling operation.

My invention aims to provide a creaming agent or opacifier which is not subject to either of the indicated faults. It further aims to provide an opacifier which is fully compatible with components normally found in cold wave lotions.

Generally described, the composition herein comprises a mineral oil, a sulfonated vegetable oil and an ester of an aliphatic di- or tri-hydroxy alcohol, as ethylene glycol, propylene alcohol, glycerol, etc., and a high molecular fatty aliphatic acid, e. g., lauric, stearic, oleic, palmitic and the like. Additionally, the composition generally comprises lanolin or a lanolin derivative such as "lanogene," which is described as a mixture of the more volatile constituents of lanolin.

When the composition is to be included in a hair waving preparation, the ester component, which functions as an emulsifier with respect to the mineral oil, is most preferably diglycol oleate. I have found that this material is remarkably effective in the emulsification of mineral oil in aqueous alkaline solutions containing a high proportion of electrolytes, and this is generally true of hair waving solutions. The lanolin, when included, also performs an emulsifying function, but acts primarily as a skin or hair conditioner, as the case may be. The sulfonated vegetable oil serves as an emulsion stabilizer. I have found sulfonated castor oil to be quite effective, and consequently I normally use it as the sulfonated vegetable oil component.

The relative proportions of the several materials making up my composition may vary within the limits below:

	Percent
Mineral oil	59–80
Sulfonated vegetable oil	2.5–15
Lanolin or lanolin derivative	0–30
Ester emulsifier	9–26

It is not necessary that the sulfonated vegetable oil be completely sulfonated. Thus, I have found that sulfonated castor oil which is only 50% sulfonated can be employed with good effect.

Mineral oils applicable to the invention have Saybolt viscosities at 100° F. of from about 50 to about 150 seconds.

The most preferred mineral oils have Saybolt viscosities at the temperature just indicated within the range 125 to 135 seconds. Using such an oil with the preferred sulfonated vegetable oil and the preferred ester emulsifier, which may contain appreciable amounts of free fatty acid soap, the relative proportions of the several ingredients may, with advantage, be as follows:

	Percent
Mineral oil (125/135 Saybolt viscosity)	59–75
Sulfonated castor oil (Tri-ol)	2.5–15
Lanolin	0–25
Diglycol oleate	10–26

For hair waving solutions the concentrations considered optimal are:

	Percent
Mineral oil (125/135 Saybolt viscosity)	67.0
Sulfonated castor oil (Tri-ol)	6.0
Lanolin	10.0
Diglycol oleate	17.0

Using a light mineral oil, e. g., one having a Saybolt viscosity at 100° F. of from 50 to 60 seconds, the following limits are generally best observed:

	Percent
Mineral oil	70–77.5
Sulfonated vegetable oil	2.5–10
Ester emulsifier	9–13
Lanogene	0–30

As indicated, lanogene rather than lanolin is preferred for employment with a light mineral oil.

The most preferred light mineral oil composition for use in hair waving solutions combines 74% of the light oil, 5% sulfonated castor oil, 11% diglycol oleate (containing about 2–5% of oleic acid soap), and 10% lanogene.

Waving lotions of the type to which I consider my invention particularly applicable comprise as their active component a compound, usually referred to as a "reducing agent," which acts to convert the disulfide or cystine bonds of the hair keratin to sulfhydryl groups. This conversion, which is ordinarily effected with the hair wound on curlers or otherwise fixed in a curled condition, is marked by plasticization of the hair with consequent "detensioning" thereof, so that upon subsequent rebuilding of the disulfide linkages with the hair still in a wound condition, the hair takes a positive curled set. The rebuilding of the linkages is brought about either by natural oxidative processes alone or, more usually, through the use of so-called "neutralizer" solutions, which in general are solutions of oxidizing agents such as hydrogen peroxide, potassium bromate, alkaline perborate and the like.

Although the invention is applicable to hair waving solutions generally, its effects are perhaps most pronounced as to alkaline hair waving solutions in which the hair-reducing agent is a thiol, i. e., an organic compound containing a sulfhydryl or mercaptan group. Perhaps the most commonly used thiol is ammonium thioglycolate. The corresponding sodium salt of thioglycolic acid can also be used with excellent results, as can be the sodium and ammonium salts of mercaptoethanesulfonic acid and 3-mercapto-2-hydroxypropanesulfonic acid, for example.

Apart from a creaming agent and a hair-reducing agent, home waving lotions ordinarily contain a material promoting wetting of the hair with the lotion. Using the composition herein as the creaming agent, I have found it highly advantageous to employ as the wetting agent in the lotion the material customarily sold under the name

"Maypon C." Such material is said to be derived from the treatment of scrap leather. Chemically, it is described as hydrolyzed protein condensed with fatty acid. It is of the general class of materials known as "lamepons," which are understood to have been developed in Germany prior to the late war. The lamepons are described in considerable detail in Schwartz-Perry "Surface Active Agents," Interscience Publishing Company, Inc., New York.

My researches indicate that the Maypon, in addition to exercising its primary function, acts to further stabilize the emulsified oil component of my composition as contained in the lotion. Surprisingly, while it is high foaming of itself, it foams but little when used in conjunction with my creaming composition.

Employing my novel creaming agent in combination with Maypon in a thiol lotion, I have found it advantageous to observe the limits below:

	Percent
Alakaline thiol	4–10
Creaming agent	2– 5
Maypon	1– 2
Water	83–93

In such a lotion, any separation which may occur takes place very slowly. For noticeable separation a period of weeks is required; for complete separation a period of months. Even with pronounced separation, the appearance of the lotion is not unsightly, since, unlike the situation with the previously employed resin, the oil moves to the top of the bottle, that is, there is no settling out of solid matter. Even a lotion in which complete separation has occurred can be restored to its original condition through light shaking of the bottle; indeed, the carrying of the bottle home from the drugstore or other point of purchase provides more than sufficient agitation to completely re-disperse the oil.

In making up the creaming agent, no special precautions need be observed except that it is advisable to add the lanolin component, if such component is included, last, because if added before the oil it may tend to stay at the bottom of the mixing vessel. When using the preferred heavier oil, it is further recommended that the oil be heated and that the lanolin be incorporated with agitation.

Having thus fully described my invention, what I claim is:

1. A composition adapted for use as a creaming agent in aqueous alkaline cosmetic preparations, which includes a mineral oil having a Saybolt viscosity at 100° F. of from about 50–150 seconds, an ester of a fatty acid having a molecular weight at least as high as lauric acid and an alcohol from the class consisting of di- and tri-hydroxy alcohols, a sulfonated vegetable oil and up to about 30% of lanolin, said composition in the respect of the mineral oil, sulfonated vegetable oil, and ester conforming to the limits below:

	Percent
Mineral oil	59–80
Sulfonated vegetable oil	2.5–15
Ester	9–26

2. A composition adapted for use as a creaming agent in aqueous alkaline cosmetic preparations, which includes a mineral oil having a Saybolt viscosity at 100° F. of from about 125 to about 135 seconds, diglycol oleate, sulfonated castor oil and up to about 25% anhydrous lanolin, said composition in the respect of the mineral oil, sulfonated castor oil and diglycol oleate conforming to the limits below:

	Percent
Mineral oil	59–75
Sulfonated castor oil	2.5–15
Diglycol oleate	10–26

3. A composition adapted for use as a creaming agent in aqueous alkaline cosmetic preparations, which includes a mineral oil having a Saybolt viscosity at 100° F. of from about 50 to about 60 seconds, diglycol oleate, up to 30% of a material comprising a mixture of the more volatile components of lanolin, and sulfonated castor oil, said composition in the respect of the mineral oil, sulfonated castor oil and diglycol oleate conforming to the limits below:

	Percent
Mineral oil	70–77.5
Sulfonated castor oil	2.5–10
Diglycol oleate	9–13

4. A composition adapted for use as a creaming agent in aqueous alkaline cosmetic preparations, which includes about 67% of a mineral oil having a Saybolt viscosity at 100° F. of from about 125 to about 135 seconds, about 6% sulfonated castor oil, about 10% anhydrous lanolin and about 17% diglycol oleate.

5. A composition adapted for use as a creaming agent in aqueous alkaline cosmetic preparations, which includes about 74% of a mineral oil having a Saybolt viscosity at 100° F. of from about 50 to about 60 seconds, about 5% sulfonated castor oil, about 10% of a material comprising a mixture of the more volatile components of lanolin, and about 11% of diglycol oleate.

6. A thiol hair waving solution rendered opaque by the inclusion therein of a composition comprising a mineral oil having a Saybolt viscosity at 100° F. of from about 50–150 seconds, an ester of a fatty acid having a molecular weight at least as high as lauric acid and an alcohol from the class consisting of di- and tri-hydroxy alcohols, a sulfonated vegetable oil and up to about 30% of lanolin, said composition in the respect of the mineral oil, sulfonated vegetable oil, and ester conforming to the limits below:

	Percent
Mineral oil	59–80
Sulfonated vegetable oil	2.5–15
Ester	9–26

7. A thiol hair waving solution rendered opaque by the inclusion therein of a composition comprising a mineral oil having a Saybolt viscosity at 100° F. of from about 125 to about 135 seconds, diglycol oleate, sulfonated castor oil and up to about 25% anhydrous lanolin, said composition in the respect of the mineral oil, sulfonated castor oil and diglycol oleate conforming to the limits below:

	Percent
Mineral oil	59–75
Sulfonated castor oil	2.5–15
Diglycol oleate	10–26

8. A thiol hair waving solution rendered opaque by the inclusion therein of a composition comprising a mineral oil having a Saybolt viscosity at 100° F. of from about 50 to about 60 seconds, diglycol oleate, up to 30% of a material comprising a mixture of the more volatile components of lanolin, and sulfonated castor oil, said composition in the respect of the mineral oil, sulfonated castor oil and diglycol oleate conforming to the limits below:

	Percent
Mineral oil	70–77.5
Sulfonated castor oil	2.5–10
Diglycol oleate	9–13

9. A thiol hair waving solution rendered opaque by the inclusion therein of a composition comprising about 67% of a mineral oil having a Saybolt viscosity at 100° F. of from about 125 to about 135 seconds, about 6% sulfonated castor oil, about 10% anhydrous lanolin and about 17% diglycol oleate.

10. An alkaline hair waving solution rendered opaque by the inclusion therein of a composition comprising

59–80% of a mineral oil, 2.5–15% of a sulfonated vegetable oil and from 9–26% of an ester of a fatty acid having a molecular weight at least as high as lauric acid and an alcohol from the class consisting of di- and trihydroxy alcohols, said solution additionally containing, as a wetting agent and as an emulsion stabilizer, from 1–2% of a substance comprising hydrolyzed protein condensed with fatty acids.

11. An alkaline hair waving solution conforming to claim 10 which includes up to about 30% of lanolin.

12. A thiol hair waving solution incorporating an agent comprising hydrolyzed protein condensed with fatty acids, and rendered opaque by the inclusion therein of a composition comprising from 59–80% of a mineral oil having a Saybolt viscosity at 100° F. of from about 50–150 seconds, from 9–26% of an ester of a fatty acid having a molecular weight at least as high as lauric acid and an alcohol from the class consisting of di- and trihydroxy alcohols, from 2.5–15% of a sulfonated vegetable oil and up to about 30% of lanolin, said agent assisting in the wetting of the hair with the waving solution and further serving as a stabilizer with respect to the mineral oil component.

13. A thiol hair waving solution incorporating an agent comprising hydrolyzed protein condensed with fatty acids, and rendered opaque by the inclusion therein of a composition comprising from 59–75% of a mineral oil having a Saybolt viscosity at 100° F. of from about 125 to about 135 seconds, from 10–26% of diglycol oleate, from 2.5–15% of sulfonated castor oil and up to about 25% anhydrous lanolin, said agent assisting in the wetting of the hair with the waving solution and further serving as a stabilizer with respect to the mineral oil component.

14. A thiol hair waving solution incorporating an agent comprising hydrolyzed protein condensed with fatty acids, and rendered opaque by the inclusion therein of a composition comprising from 70–77.5% of a mineral oil

having a Saybolt viscosity at 100° F. of from about 50 to 60 seconds, from 9–13% of dyglycol oleate, up to 30% of a material consisting of a mixture of the more volatile components of lanolin, and from 2.5–10% of sulfonated castor oil, said agent assisting in the wetting of the hair with the waving solution and further serving as a stabilizer with respect to the mineral oil component.

15. A thiol hair waving solution according to claim 9 which includes an agent comprising hydrolyzed protein condensed with fatty acids, said agent assisting in the wetting of the hair with the waving solution and further serving as a stabilizer with respect to the mineral oil component.

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