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[54] **HAIR WAVING PRODUCTS AND PROCESS**

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[51] **Int. Cl.**..... **A61k 7/00**

[58] **Field of Search**..... 424/71, 72, DIG. 2; 132/39, 43 R, 43 A; 13/2–7

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[57] **ABSTRACT**

This invention relates to hair waving products comprising a film formed of a water-soluble film-former and containing a composition capable of waving hair and of being released from the film when water is applied thereto, and to the process of treating hair using such products.

8 Claims, No Drawings

HAIR WAVING PRODUCTS AND PROCESS

BACKGROUND OF THE INVENTION

Many of the compositions used to wave hair, such as permanent waving and regular waving preparations, contain as their active ingredients compounds, such as the salts of thioglycollic acid, which are hazardous for use. Heretofore, a great degree of care has been required for safe dispensing and use of these preparations in order to insure that no injury is done either to the skin or to the eyes of the user. The need for such care has required careful and cautious use of these preparations and the packaging thereof in a manner that they are inconvenient to use. Even in such forms, however, hazards involved in spilling, dripping or wet contact with these materials have not been eliminated. In addition, it is difficult, if not impossible, to apply the composition just to the area desired to be treated when the preparations are in liquid form since they tend to flow into other areas.

SUMMARY OF THE INVENTION

Safe hair-waving products have now been found in which the active ingredients are in relatively anhydrous form up until the moment of use, which enables them to be safely handled without fear of spillage, dripping or inadvertent application to sensitive areas, such as the eyes.

The present invention comprises hair-waving products comprising a film formed of a water-soluble film-former safe for human use containing a composition used in waving hair, which water-soluble film-former is inert with respect to said composition and said composition is capable of being released from the film when water is applied thereto. The invention also comprises the process of waving hair with such products comprising the steps of applying the film to the hair and adding water thereto to release the hair-waving composition in situ.

DETAILED DESCRIPTION

In accordance with the present invention, the two essential components of the products are the film-former and the hair-waving composition.

As to the film-former, any can be used which forms a water-soluble film, is safe to human use, and will not react with or be decomposed by the hair-waving composition, i.e., inert with respect thereto. Examples are the cellulose ethers (such as methyl cellulose, sodium carboxy methyl cellulose), the cellulose esters (such as cellulose acetate), sodium alginate, polyvinyl alcohols, alkoxylated polyvinyl alcohols (such as ethoxylated polyvinyl alcohol), gelatins, dextrans, polyvinyl pyrrolidone, and mixtures thereof. Of these, the cellulose ethers are preferred, but the particular film-former used can be varied dependent upon the hair-waving composition to be contained in the film and the rate of release of the composition desired. Thus, if it is desired to have a slower release of the hair treatment composition, a less readily soluble film-former, such as warm water soluble gelatin, can be used.

The hair-waving composition used can be any known to wave the hair. Examples of hair-waving materials are the salts of thioglycolic acid, such as calcium thioglycollate, dithiothreitol, dithioerythritol, the mercaptans, and the other known sulfur-containing compounds used in waving hair, and mixtures thereof. Compounds

that wave hair are well known to those skilled in this art.

Other materials can be added in making films. For example, known pH adjusters such as bases usually used can be added to adjust the pH of a hair-waving composition to the range required for its most effective use. Specifically, ammonium hydroxide or alkanolamines are used to adjust ammonium thioglycolate to a pH of about 9.0 to 9.5. In addition, coloring materials, perfumes, and plasticizing materials can also be added in order to give their intended effect. In the case of plasticizing materials, these are used to make a more flexible film.

As to proportions, there must be, for each 100 parts by weight of the mixture to be cast as a film, from about 3 to about 20 parts by weight of the film-former. The amount of waving composition added is not critical. The proportion used is dependent only on the amount required to wave the hair.

The method of making the products comprises first forming a solution of the film-former, adding the hair-waving composition and other materials thereto, and then forming a film of the desired thickness as by casting or other conventional technique, followed by drying of the film. The thickness of the film can vary depending upon the use, although for most uses a thickness of from 5 to 10 mils is adequate. The shape of the film, whether in the form of strips, squares or continuous rolls can be varied, again dependent upon the use desired. For example, in the preparation of a permanent hair-waving product, it can be formed into strips of a size meant to be rolled in with the hair by the user. The dry films are packaged and dispensed without fear of spillage or irritation due to handling and are not activated until the user having applied the film to the hair then adds water to the film.

The process of using the products will be specifically described in connection with hair waving. The film containing the hair-waving composition is rolled into the hair to form the shape curl desired. Water is then applied to the combined film and hair. The film, being water-soluble, starts to dissolve, and as it dissolves releases the hair-waving composition which acts on the hair. After the prescribed treatment time, the hair is rinsed in the usual manner to remove the waving composition, which rinsing also acts to remove the film-former. Thus, all that is required by the user is the wrapping or affixing of the film about or to the hair and addition of water to release the active hair treatment composition. With some of the film-formers, such as polyvinyl pyrrolidone, complete removal by washing is not required since any amount left behind acts to give the hair a bodying effect.

In such cases where it is not desired to add the pH adjuster to the film, the adjuster can be added to the water used to dissolve the film.

The invention will be further described in connection with the following examples which are set forth for purposes of illustration only and in which proportions are by weight unless specifically stated to the contrary.

EXAMPLE 1

A 12 percent aqueous solution of sodium carboxy methyl cellulose is formed to which is added approximately 6 percent ammonium thioglycolate. An amount of ammonium hydroxide sufficient to adjust the pH to about 9.3 is added and the film cast to a thickness of

5 mils. The film is air dried, cut into strips, and packaged.

The strips are rolled into the hair to the form curl desired and then water added to the hair and paper. This results in release of the thioglycolate from the dissolving cellulose ether and the permanent waving of the hair after the usual rinsing and drying of the hair.

EXAMPLE 2

Strips of film are made as set forth in Example 1, except that the ammonium hydroxide is omitted.

When the strips are to be used, the water to be used is adjusted to the proper pH by the use of sodium hydroxide. In separate batches ammonium hydroxide and an ethanol amine are used. In each case the hair is waved as desired.

EXAMPLE 3

A series of strips are made using the formulation and procedure of Example 1, except that the sodium carboxy methyl cellulose used therein is replaced, separately and in turn, by an equal weight of sodium alginate, polyvinyl alcohol, ethoxylated polyvinyl alcohol, gelatin, dextran, polyvinyl pyrrolidone, a mixture of polyvinyl alcohol and ethoxylated polyvinyl alcohol, and methyl cellulose. In each case, suitable strips are formed which can be used to wave hair.

It will be understood that it is intended to cover all changes and modifications of the examples of the invention herein chosen for the purpose of illustration which do not constitute departures from the spirit and scope of the invention.

What is claimed is:

1. A hair-waving product comprising a water soluble film in the form of strips, squares, or continuous rolls having a thickness of about 5 to about 10 mils formed from a solution of about 3 to about 20 parts by weight for each 100 parts by weight of water soluble film-former solution safe for human use and containing a cosmetically effective amount of a hair-waving composition of a sulfur-containing compound, said film being inert with respect to said composition and said film being capable of dissolving and depositing the composition on the hair when water is applied thereto.

2. The product of claim **1** wherein said film is a water soluble cellulose ether and said composition is a hair-waving salt of thioglycollic acid.

3. The product of claim **2** wherein said cellulose ether is sodium carboxy methyl cellulose and said salt is ammonium thioglycollate.

4. The product of claim **3** including a cosmetically acceptable base material added in amount to adjust the pH thereof to from about 9 to 9.5.

5. The method of hair waving comprising rolling the film product of claim **1** into the hair to form the curl shape desired, applying water to the combined curl film and hair in amounts sufficient to dissolve the film and to deposit the composition on the hair and rinsing the hair after sufficient hair-waving treatment time to remove the spent hair-waving composition and residual film therefrom.

6. The method of claim **5** including the step of first adding a base to the water to adjust the pH of the water to that required for satisfactory waving action by the hair-waving composition.

7. The method of waving hair comprising applying the film product of claim **3** to the hair and then adding sufficient water thereto to dissolve the film and deposit the ammonium thioglycollate to act on the hair.

8. The method of hair waving comprising applying the film product of claim **4** to the hair and then adding sufficient water thereto to dissolve the film and deposit pH adjusted ammonium thioglycollate to wave the hair.

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