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(54) Title: CONDITIONING SHAMPOOS CONTAINING POLYALKYLENE GLYCOL

(57) Abstract

Disclosed are hair conditioning shampoo compositions comprising from about 5 % to about 50 % by weight of a detersive surfactant, from about 0.05 % to about 10 % by weight of a silicone hair conditioning agent, from about 0.1 % to about 10 % by weight of a suspending agent, from about 0.025 % to about 1.5 % by weight of selected polyalkylene glycols, preferably polyethylene glycols having from about 1,500 to about 25,000 degrees of ethoxylation, and water, and optionally one or more additional materials known for use in shampoo or conditioning compositions, which compositions provide excellent cleansing and conditioning benefits, and further provide enhanced conditioning impression by way of enhanced spreadability through hair, and denser, thicker lather.

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CONDITIONING SHAMPOOS CONTAINING POLYALKYLENE GLYCOL

FIELD OF THE INVENTION

This invention relates to shampoo compositions containing silicone hair conditioning agents and selected polyalkylene glycols which provide improved spreadability through hair and thicker, denser lather feel.

BACKGROUND OF THE INVENTION

Shampoo compositions comprising various combinations of detersive surfactant and silicone conditioning agents are known. Many of these compositions have been found to provide excellent hair cleansing and conditioning performance all from a single composition.

An important feature of most shampoo compositions, conditioning or otherwise, is lather performance. Consumers often associate high lathering with effective cleansing, and low lathering with less effective cleansing. In shampoo compositions containing silicone hair conditioning agents, this high lathering is especially important to impress upon consumers that hair cleansing efficacy has not been compromised in favor of conditioning performance. It has therefore become conventional practice to enhance the lathering performance of silicone-containing shampoo compositions by increasing the level of, or adding, ingredients that promote high lathering, examples of which include increased levels of detersive surfactants such as alkyl sulfate surfactants, or the addition of fatty ester (e.g. C_{10}-C_{22}) mono- and di (C_1-C_3) alkanol amide foam boosters.

High lathering silicone-containing shampoos, however, often produce a light, foamy lather which consumers often associate with good cleansing performance but with poor or less effective conditioning performance. Moreover, these silicone-containing shampoos as well as other shampoos typically contain higher concentrations of detersive surfactant to enhance lather performance, which higher concentrations are more expensive and are unnecessary for providing acceptable hair cleansing performance.

Given the foregoing, there remains a need to provide conditioning shampoo compositions containing silicone conditioning agents which deliver improved lather performance, wherein the improved lather performance conveys an impression during use of effective cleansing and conditioning performance. Accordingly, it is an object of the present invention to provide a silicone-containing shampoo composition with improved lather performance, and further to provide such a

composition with enhanced spreadability through hair thus further enhancing conditioning impression among consumers. It is yet a further object of the present to provide such a composition with acceptable cleansing and conditioning performance, but with lower concentrations of detersive surfactant.

SUMMARY OF THE INVENTION

The present invention is directed to hair conditioning shampoo compositions comprising from about 5% to about 50% by weight of a detersive surfactant, from about 0.05% to about 10% by weight of a silicone hair conditioning agent, from about 0.1% to about 10% by weight of a suspending agent, from about 20% to about 94.8% by weight of water, and from about 0.025% to about 1.5% by weight of selected polyalkylene glycols having the general formula:

$$H(OCH_2\underset{\displaystyle R}{\underset{|}{C}}H)_n—OH$$

wherein R is hydrogen, methyl or mixtures thereof, and n is an integer from about 1,500 to about 25,000; and water, and optionally one or more additional materials known for use in shampoo compositions. The conditioning shampoo compositions of the present invention provide improved spreadability of the composition through hair, and also provide denser, thicker lather feel which correlates with consumer perception of hair conditioning performance. The present invention is also directed to methods for cleansing and conditioning the hair or skin by using the shampoo compositions described herein.

DETAILED DESCRIPTION OF THE INVENTION

The shampoo compositions and corresponding methods of the present invention can comprise, consist of, or consist essentially of the essential elements and limitations of the invention described herein, as well any of the additional ingredients, components, or limitations described herein. All documents referred to herein are incorporated by reference herein in their entirety.

As used herein, "water soluble" refers to any material that is sufficiently soluble in water to form a substantially clear solution to the naked eye at a concentration of 0.1% in water, i.e. distilled or equivalent, at 25°C.

All percentages, parts and ratios are based upon the total weight of the shampoo compositions of the present invention unless otherwise specified.

Detersive Surfactant

The shampoo compositions of the present invention comprise one or more detersive surfactants selected from the group consisting of anionic surfactant, nonionic surfactant, amphoteric surfactant, zwitterionic surfactants, and mixtures thereof. The shampoo compositions preferably comprise an anionic surfactant. Surfactant concentrations range from about 5% to about 50%, preferably from about 8% to about 30%, more preferably from about 10% to about 25%, by weight of the compositions.

Anionic surfactant

The shampoo compositions preferably comprise an anionic surfactant, and preferably at concentrations of from about 5% to about 30%, more preferably from about 7% to about 25%, even more preferably from about 8% to about 20%, and most preferably from about 9% to about 18%, by weight of the composition.

Anionic surfactants for use in the shampoo compositions include alkyl and alkyl ether sulfates. These materials have the respective formulae $ROSO_3M$ and $RO(C_2H_4O)_xSO_3M$, wherein R is alkyl or alkenyl of from about 8 to about 30 carbon atoms, x is 1 to 10, and M is a cation such as ammonium, alkanolamines, such as triethanolamine, monovalent metals, such as sodium and potassium, and polyvalent metal cations, such as magnesium, and calcium. The cation M, of the anionic surfactant should be chosen such that the anionic surfactant component is water soluble. Solubility will depend upon the particular anionic surfactants and cations chosen.

Preferably, R has from about 12 to about 18 carbon atoms in both the alkyl and alkyl ether sulfates. The alkyl ether sulfates are typically made as condensation products of ethylene oxide and monohydric alcohols having from about 8 to about 24 carbon atoms. The alcohols can be derived from fats, e.g., coconut oil or tallow, or can be synthetic. Lauryl alcohol and straight chain alcohols derived from coconut oil are preferred herein. Such alcohols are reacted with between about 0 and about 10, and especially about 3, molar proportions of ethylene oxide and the resulting mixture of molecular species having, for example, an average of 3 moles of ethylene oxide per mole of alcohol, is sulfated and neutralized.

Specific examples of alkyl ether sulfates which may be used in the shampoo compositions of the present invention are sodium and ammonium salts of coconut alkyl triethylene glycol ether sulfate; tallow alkyl triethylene glycol ether sulfate, and tallow alkyl hexaoxyethylene sulfate. Highly preferred alkyl ether sulfates are those comprising a mixture of individual compounds, said mixture having an

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