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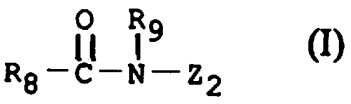
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(57) Abstract

A personal cleansing comprising: (a) from about 1.5 % to about 10 % by weight of an oil dispersing nonionic surfactant selected from C12-C18 polyhydroxy fatty acid amide surfactants having general formula (I), wherein R_9 is C_{1-4} alkyl, and R_8 is C_7-C_{19} alkyl or alkenyl, or mixture thereof; and Z_2 is a polyhydroxyhydrocarbyl having a linear hydrocarbyl chain with at least 3 hydroxyls directly connected to the chain, or an alkoxylated derivative thereof; (b) from about 0.1 % to about 5 % by weight of auxiliary surfactant selected from other nonionic, anionic, zwitterionic and/or amphoteric surfactants and mixtures thereof; (c) from about 4.5 % to about 30 % by weight of a perfume or cosmetic oil wherein the perfume or cosmetic oil is dispersible in the oil dispersing nonionic surfactant; and (d) water; and wherein the ratio of auxiliary surfactant to oil dispersing nonionic surfactant is in the range of from 1:100 to about 1:1 and the ratio of oil dispersing nonionic surfactant to perfume or cosmetic oil is from about 1:20 to about 3:2. The cleansing products demonstrate excellent mildness, in-use and after-use conditioning benefits, stability, lathering and rinsibility.



(I)

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CLEANSING COMPOSITIONS

TECHNICAL FIELD

The present invention relates to cleansing compositions. In particular it relates to mild personal cleansing compositions with good skin feel attributes and foaming properties suitable for simultaneously cleansing and conditioning the skin and/or the hair and which may be used, for example, in the form of foam bath preparations, shower products, skin cleansers, hand, face and body cleansers, shampoos, etc.

BACKGROUND OF THE INVENTION

Mild cosmetic compositions must satisfy a number of criteria including cleansing power, foaming properties and mildness/low irritancy/good feel with respect to the skin, hair and the ocular mucosae. Skin is made up of several layers of cells which coat and protect the keratin and collagen fibrous proteins that form the skeleton of its structure. The outermost of these layers, referred to as the stratum corneum, is known to be composed of 250 A protein bundles surrounded by 80 Å thick layers. Hair similarly has a protective outer coating enclosing the hair fibre which is called the cuticle. Anionic surfactants can penetrate the stratum corneum membrane and the cuticle and, by delipidization destroy membrane integrity. This interference with skin and hair protective membranes can lead to a rough skin feel and eye irritation and may eventually permit the surfactant to interact with the keratin and hair proteins creating irritation and loss of barrier and water retention functions.

Ideal cosmetic cleansers should cleanse the skin or hair gently, without defatting and/or drying the hair and skin and without irritating the ocular mucosae or leaving skin taut after frequent use. Most lathering soaps, shower and bath products, shampoos and bars fail in this respect.

Certain synthetic surfactants are known to be mild. However, a major drawback of most mild synthetic surfactant systems when formulated for shampooing or personal cleansing is poor lather performance compared to the highest shampoo and bar soap standards. Thus, surfactants that are among the mildest, such as sodium lauryl glyceryl ether sulfonate, (AGS), are marginal in lather. The use of known high sudsing anionic surfactants with lather boosters, on the other hand, can yield acceptable lather volume and quality but at the expense of clinical skin mildness. These two facts make the surfactant selection, the lather and mildness benefit formulation process a delicate balancing act.

Despite the many years of research that have been expended by the toiletries industry on personal cleansing, the broad mass of consumers remain dissatisfied by the mildness of present day cleansing compositions, finding, for example, that they have to apply a separate cosmetic lotion or cream moisturizer to the skin after using a shower or bath preparation in order to maintain skin suppleness and hydration and to counteract the delipidizing effect of the cleanser.

It is known from the art that inclusion of oils in bathing compositions can provide post-use skin feel benefits. However incorporation of oils at levels sufficient to deliver consumer noticeable benefits has until now proved to be a challenge, particularly with respect to maintaining good lather characteristics in the presence of oil and avoiding unpleasant 'slimey'/'greasy' water feel or appearance during use while still delivering a desirable after-use soft skin feel. A further difficulty associated with combining high levels of oil with conventional detergent systems has been the acheivement of a stable system in which the oil can be released into the water during use It has now been found that personal cleansing compositions having improved skin feel attributes both for in use feel and after use feel and excellent lather and stability can be formed by the use of

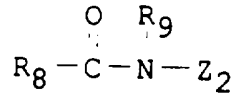
certain nonionic surfactants with auxiliary surfactants and dispersible oils in particular levels and ratios.

Thus a need exists for personal cleansing products which will not dehydrate the skin or result in loss of skin suppleness, which will provide a level of skin conditioning performance which previously has only been provided by a separate post-cleansing cosmetic moisturizer and which will produce a foam which is stable and of high quality, which are effective hair and skin cleansers, which have good in-use aesthetics, rinsibility characteristics, and which at the same time have stable product and viscosity characteristics and remain fully stable under long term and stressed temperature storage conditions.

SUMMARY OF THE INVENTION

The subject of the present invention is a mild, foam-producing cleansing product suitable for personal cleansing of the skin or hair and which may be used as foam bath and shower products, skin cleansers and shampoos etc. According to one aspect of the invention, there is provided a detergent, personal cleansing or cosmetic composition comprising:

(a) from about 1.5% to about 10 % by weight of an oil dispersing nonionic surfactant selected from C12-C18 polyhydroxy fatty acid amide surfactants having the general formula (I);



wherein R_9 is C_{1-4} alkyl, and R_8 is C_7-C_{19} alkyl or alkenyl, or mixture thereof; and Z_2 is a polyhydroxyhydrocarbyl having a linear hydrocarbyl chain with at least 3 hydroxyls directly connected to the chain, or an alkoxylated derivative thereof,

(b) from about 0.1% to about 5% by weight of auxiliary surfactant selected from other nonionic, anionic, zwitterionic and/or amphoteric surfactants and mixtures thereof;

(c) from about 4.5% to about 30% by weight of a perfume or cosmetic oil; and,

(d) water,

and wherein the ratio of auxiliary surfactant to oil dispersing nonionic surfactant is in the range of from 1:100 to about 1:1, preferably from about 1:8 to about 1:2 and the ratio of oil dispersing nonionic surfactant to perfume or cosmetic oil is from about 1:20 to about 3:2, preferably from about 1:6 about 1:3, more preferably from about 1:4 to about 1:2.

In a highly preferred embodiment, the invention takes the form of a foam producing cleansing composition with superior skin feel characteristics, improved perceived dryness and assessed tightness and expertly graded dryness, combined with excellent lathering, good stability, cleansing ability and conditioning performance.

All concentrations and ratios herein are by weight of the cleansing composition, unless otherwise specified. Surfactant chain lengths are also on a weight average chain length basis, unless otherwise specified.

The cleansing compositions herein are based on a combination of particular oil dispersing nonionic surfactant , perfume or cosmetic oil and mild auxiliary surfactants , which in general terms can be selected from other nonionic, anionic, amphoteric and zwitterionic surfactants and mixtures thereof. The total level of surfactant, inclusive of anionic, nonionic, zwitterionic, amphoteric and other surfactant components is preferably from about 1.6% to about 15%, more preferably from about 2% to about 12%, and especially from about 5% to about 10% by weight. The compositions preferably comprise a mixture of oil dispersing nonionic and anionic optionally with auxiliary nonionic, zwitterionic and/or amphoteric surfactants. The total level of auxiliary surfactant is in the range from about 0.1% to about 5%, and especially from about 0.5% to about 4%, more preferably from about 1% to about 3.5%, most preferably from about 1.5% to about 2.5% by weight of the composition, while the level of oil dispersing nonionic surfactant is preferably from about 2% to about 9%,

more preferably from about 4.5% to about 7% by weight. The weight ratio of anionic surfactant : auxiliary nonionic, zwitterionic and/or amphoteric surfactant is in the range from about 1:2 to about 6:1. The preferred compositions within the scope of the invention comprise mixtures of nonionic surfactants, dispersible perfume or cosmetic oils and auxiliary anionic, zwitterionic and/or amphoteric surfactants, wherein the level of dispersible perfume or cosmetic oil is from about 6% to about 25%, preferably from about 10% to about 20%, more preferably from about 15% to about 20% by weight of the composition and the weight ratio of oil dispersing nonionic surfactant: dispersible perfume or cosmetic oil is in the range of from 1:20 to about 3:2, preferably from about 1:6 to about 1:2, more preferably from about 1:4 to about 1:3.

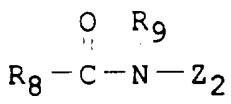
Oil dispersing nonionic surfactants suitable for inclusion in the compositions according to the present invention have excellent oil dispersing characteristics as demonstrated by microscopy and Immersion tests.

To demonstrate the suitability of a nonionic surfactant for incorporation in the compositions according to the present invention a test matrix including the test nonionic and all other composition ingredients is prepared. A portion of this prototype is then viewed under a microscope using a Nikon Optipot-2 Videomicrowatcher. Surfactants suitable for incorporation in the compositions according to the present invention typically produce homogeneous (opaque) product matrices in which the oil droplets have a diameter in the range of from about 5 microns to about 30 microns, preferably from about 10 microns to about 20 microns.

In the Immersion Test the in-use characteristics of prototype matrices are assessed. In essence, 6ml of prototype matrix is dispersed in 20 litres of water at 40°C. The physical appearance of the resulting solution is then assessed. Compositions which result in turbid (cloudy) solutions wherein no oil droplets are visible to the naked eye are regarded as demonstrating the desired behaviour, providing they additionally deliver the required skin feel.

While the reasons for the skin feel benefits associated with the compositions according to the present invention are not clearly understood it is believed that the particular nonionic surfactants specified herein are able to substantially disperse a significant amount of oil into the composition matrix which leads to the skin feel advantage possibly due to the release of the oils onto the skin surface during bathing or showering.

Oil dispersing nonionic surfactants suitable for inclusion in the compositions according to the present invention are selected from C12-C18 polyhydroxy fatty acid amide surfactants, preferably C12-C16 polyhydroxy fatty acid amide surfactants, more preferably C12-C14 polyhydroxy fatty acid amide surfactants having the general formula (I).



The preferred polyhydroxy fatty acid amide surfactants are those in which R_9 is C_{1-4} alkyl, preferably methyl, and R_8 is C_7-C_{19} alkyl or alkenyl, more preferably straight-chain C_9-C_{17} alkyl or alkenyl, or mixture thereof; and Z_2 is a polyhydroxyhydrocarbyl having a linear hydrocarbyl chain with at least 3 hydroxyls directly connected to the chain, or an alkoxylated derivative (preferably ethoxylated or propoxylated) thereof. Z_2 preferably will be derived from a reducing sugar in a reductive amination reaction; more preferably Z_2 is a glycityl. Suitable reducing sugars include glucose, fructose, maltose, lactose, galactose, mannose, and xylose. As raw materials, high dextrose corn syrup, high fructose corn syrup, and high maltose corn syrup can be utilized as well as the individual sugars listed above. These corn syrups may yield a mix of sugar components for Z_2. It should be understood that it is by no means intended to exclude other suitable raw materials. Z_2 preferably will be selected from the group consisting of $-CH_2(CHOH)_n-CH_2OH$,$-CH(CH_2OH)-(CHOH)_{n-1}-CH_2OH$, $-CH_2-(CHOH)_2(CHOR')(CHOH)-CH_2OH$, where n is an integer from 3 to 5, inclusive, and R' is H or a cyclic or aliphatic monosaccharide, and alkoxylated derivatives thereof. Most preferred are glycityls wherein n is 4, particularly $-CH_2-(CHOH)_4-CH_2OH$.

The most preferred polyhydroxy fatty acid amide has the formula $R_8(CO)N(CH_3)CH_2(CHOH)_4CH_2OH$ wherein R_8 is a C11-C17 straight chain alkyl or alkenyl group.

The compositions of the invention additionally include a dispersible perfume or cosmetic oil or a mixture thereof at levels of from about 4.5% to about 30%, preferably from about 10% to about 25%, more preferably from about 15% to about 20% by weight. Addition of such oils or waxes can provide emolliency, mildness and rinsibility characteristics to personal cleansing compositions according to the invention. It is a feature of the invention, however, that such oil based compositions have excellent in-use and post-use skin feel in combination with good emolliency and mildness together with desirable physical attributes possibly due to the release of the oil moieties into the cleansing water. Physically, preferred compositions of this type take the form of an opaque solution which becomes turbid upon dispersion in water. In compositions according to the invention including a perfume or cosmetic oil , preferably the weight ratio of nonionic surfactant to oil is from about 1:20 to about 3:2, more preferably from about 1:6 to about 1:2 and especially from about 1:4 to about 1:3.

Suitable cosmetic oils for use herein can be selected from water-insoluble silicones inclusive of non-volatile polyalkyl and polyaryl siloxane gums and fluids, volatile cyclic and linear polyalkylsiloxanes, polyalkoxylated silicones, amino and quaternary ammonium modified silicones, rigid cross-linked and reinforced silicones and mixtures thereof, C_1-C_{24} esters of C_8-C_{30} fatty acids such as isopropyl myristate and cetyl ricinoleate, beeswax, saturated and unsaturated fatty alcohols such as behenyl alcohol, hydrocarbons such as mineral oils, petrolatum and squalene, fatty sorbitan esters (see US-A-3988255, Seiden, issued October 26th 1976), lanolin and oil-like lanolin derivatives, animal and vegetable triglycerides such as almond oil, peanut oil, wheat germ oil, linseed oil, jojoba oil, oil of apricot pits, walnuts, palm nuts, pistachio nuts, sesame seeds, rapeseed, cade oil, corn oil, peach pit oil, poppyseed oil, pine oil, castor oil, soybean oil, avocado oil, safflower oil, coconut oil, hazelnut oil, olive oil, grapeseed oil, and sunflower seed oil, and C_1-C_{24} esters of dimer and trimer acids

such as diisopropyl dimerate, diisostearylmalate, diisostearyldimerate and triisostearyltrimerate and mixtures thereof.

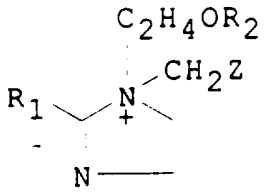
The most preferred perfume or cosmetic oil is mineral oil.

Anionic surfactants suitable for inclusion in the compositions of the invention can generally be described as mild synthetic detergent surfactants and include ethoxylated alkyl sulfates, alkyl glyceryl ether sulfonates, methyl acyl taurates, fatty acyl glycinates, N-acyl glutamates, acyl isethionates, alkyl sulfosuccinates, alpha-sulfonated fatty acids, their salts and/or their esters, alkyl ethoxy carboxylates, alkyl phosphate esters, ethoxylated alkyl phosphate esters, acyl sarcosinates and fatty acid/protein condensates, and mixtures thereof. Alkyl and/or acyl chain lengths for these surfactants are C_8-C_{22}, preferably C_{10}-C_{18}.

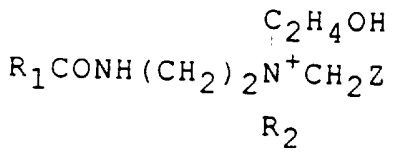
Preferred for use herein from the viewpoint of optimum mildness and lathering characteristics are the salts of sulfuric acid esters of the reaction product of 1 mole of a higher fatty alcohol and from about 1 to about 12 moles of ethylene oxide, with sodium and magnesium being the preferred counterions. Particularly preferred are the alkyl sulfates containing from about 2 to 6, preferably 2 to 4 moles of ethylene oxide, such as sodium laureth-2 sulfate, sodium laureth-3 sulfate and magnesium sodium laureth-3.6 sulfate. In preferred embodiments, the anionic surfactant contains at least about 50%, especially at least about 75% by weight of ethoxylated alkyl sulfate.

The compositions for use herein suitably also contain an amphoteric surfactant. Amphoteric surfactants suitable for use in the compositions of the invention include:

(a) imidazolinium surfactants of formula (II)



wherein R_1 is C_7-C_{22} alkyl or alkenyl, R_2 is hydrogen or CH_2Z, each Z is independently CO_2M or CH_2CO_2M, and M is H, alkali metal, alkaline earth metal, ammonium or alkanolammonium; and/or ammonium derivatives of formula (III)



wherein R_1, R_2 and Z are as defined above;

(b) aminoalkanoates of formula (IV)

$$R_1NH(CH_2)_nCO_2M$$

and iminodialkanoates of formula (V)

$$R_1N[(CH_2)_mCO_2M]_2$$

wherein n and m are numbers from 1 to 4, and R_1 and M are independently selected from the groups specified above; and

(c) mixtures thereof.

Suitable amphoteric surfactants of type (a) are marketed under the trade name Miranol and Empigen and are understood to comprise a complex mixture of species. Traditionally, the Miranols have been described as having the general formula II, although the CTFA Cosmetic Ingredient Dictionary, 4th Edition indicates the non-cyclic structure III. In practice, a complex mixture of cyclic and non-cyclic species is likely to exist and both definitions are given here for sake of completeness. Preferred for use herein, however, are the non-cyclic species.

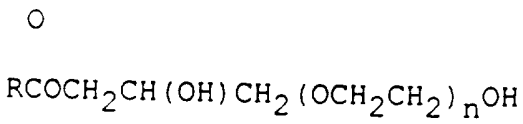
Examples of suitable amphoteric surfactants of type (a) include compounds of formula II and/or III in which R_1 is C_8H_{17} (especially iso-capryl), C_9H_{19} and $C_{11}H_{23}$ alkyl. Especially preferred are the compounds in which R_1 is C_9H_{19}, Z is CO_2M and R_2 is H; the compounds in which R_1 is $C_{11}H_{23}$, Z is CO_2M and R_2 is CH_2CO_2M; and the compounds in which R_1 is $C_{11}H_{23}$, Z is CO_2M and R_2 is H.

In CTFA nomenclature, materials preferred for use in the present invention include cocoamphocarboxypropionate, cocoamphocarboxy propionic acid, and especially cocoamphoacetate and cocoamphodiacetate (otherwise referred to as cocoamphocarboxyglycinate). Specific commercial products include those sold under the trade names of Empigen CDL60 and CDR 60 (Albright & Wilson), Miranol H2M Conc. Miranol C2M Conc. N.P., Miranol C2M Conc. O.P., Miranol C2M SF, Miranol CM Special (Rhône-Poulenc); Alkateric 2CIB (Alkaril Chemicals); Amphoterge W-2 (Lonza, Inc.); Monateric CDX-38, Monateric CSH-32 (Mona Industries); Rewoteric AM-2C (Rewo Chemical Group); and Schercotic MS-2 (Scher Chemicals).

It will be understood that a number of commercially-available amphoteric surfactants of this type are manufactured and sold in the form of electroneutral complexes with, for example, hydroxide counterions or with anionic sulfate or sulfonate surfactants, especially those of the sulfated C_8-C_{18} alcohol, C_8-C_{18} ethoxylated alcohol or C_8-C_{18} acyl glyceride types. Preferred from the viewpoint of mildness and product stability, however, are compositions which are essentially free of (non-ethoxylated) sulfated alcohol surfactants. Note also that the concentrations and weight ratios of the amphoteric surfactants are based herein on the uncomplexed forms of the surfactants, any anionic surfactant counterions being considered as part of the overall anionic surfactant component content.

Examples of suitable amphoteric surfactants of type (b) include salts, especially the triethanolammonium salts and salts of N-lauryl-beta-amino propionic acid and N-lauryl-imino-dipropionic acid. Such materials are sold under the trade name Deriphat by Henkel and Mirataine by Rhône-Poulenc. Amphoterics preferred for use herein, however, are those of formula II and/or III.

The compositions of the invention may also include auxiliary nonionic surfactant. Suitable auxiliary nonionic surfactants for use herein can be selected from C12-C14 fatty acid mono-and diethanolamides and sucrose polyester surfactants, water soluble vegetable and animal-derived emollients (oil derived) such as triglycerides with a polyglycol chain inserted; ethoxylated mono and di-glycerides, polyethoxylated lanolins and shea butter derivatives and mixtures thereof. One preferred class of oil-derived auxiliary nonionic surfactants for use herein have the general formula (VI)



wherein n is from about 5 to about 200, preferably from about 20 to about 100, more preferably from about 30 to about 85, and wherein R comprises an aliphatic radical having on average from about 5 to 20 carbon atoms, preferably from about 9 to 18 carbon atoms.

Suitable ethoxylated oils and fats of this class include polyethyleneglycol derivatives of glyceryl cocoate, glyceryl caproate, glyceryl caprylate, glyceryl tallowate, glyceryl palmate, glyceryl stearate, glyceryl laurate, glyceryl oleate, glyceryl ricinoleate, and glyceryl fatty esters derived from triglycerides, such as palm oil, almond oil, and corn oil, preferably glyceryl tallowate and glyceryl cocoate.

Suitable oil derived auxiliary nonionic surfactants of this class are available from Croda Inc. (New York, USA) under their Crovol line of materials such as Crovol EP40 (PEG 20 evening primrose glyceride), Crovol EP 70 (PEG 60 evening primrose glyceride) Crovol A-40 (PEG 20 almond glyceride), Crovol A-70 (PEG 60 almond glyceride), Crovol M-40 (PEG 20 maize glyceride), Crovol M-70 (PEG 60 maize glyceride), Crovol PK-40 (PEG 12 palm kernel glyceride), and Crovol PK-70 (PEG 45 palm kernel glyceride) and under their Solan range of materials such as Solan E, E50 and X polyethoxylated lanolins. Further suitable surfactants of this class are commercially available from Sherex Chemical Co. (Dublin, Ohio,

USA) under their Varonic LI line of surfactants. These include, for example, Varonic LI 48 (polyethylene glycol (n=80) glyceryl tallowate, alternatively referred to as PEG 80 glyceryl tallowate), Varonic LI 2 (PEG 28 glyceryl tallowate), Varonic LI 420 (PEG 200 glyceryl tallowate), and Varonic LI 63 and 67 (PEG 30 and PEG 80 glyceryl cocoates). Other water soluble vegetable-derived emollients suitable for use are PEG derivatives of corn, avocado and babassu oil.

Also suitable for use herein are auxiliary nonionic surfactants derived from composite vegetable fats extracted from the fruit of the Shea Tree (Butyrospermum Karkii Kotschy) and derivatives thereof. This vegetable fat, known as Shea Butter is widely used in Central Africa for a variety of means such as soap making and as a barrier cream, it is marketed by Sederma (78610 Le Perray En Yvelines, France). Also of interest are ethoxylated derivatives of Shea butter available from Karlshamn Chemical Co. (Columbos, Ohio, USA) under their Lipex range of chemicals, such as Lipex 102 E-75 (ethoxylated mono, di-glycerides of Shea butter). Similarly, ethoxylated derivatives of Mango, Cocoa and Illipe butter may be used in compositions according to the invention. Although these are classified as ethoxylated nonionic surfactants it is understood that a certain proportion may remain as non-ethoxylated vegetable oil or fat.

Other suitable oil-derived nonionic surfactants include ethoxylated derivatives of almond oil, peanut oil, wheat germ oil, linseed oil, jojoba oil, oil of apricot pits, walnuts, palm nuts, pistachio nuts, sesame seeds, rapeseed, cade oil, corn oil, peach pit oil, poppyseed oil, pine oil, castor oil, soybean oil, avocado oil, safflower oil, coconut oil, hazelnut oil, olive oil, grapeseed oil, and sunflower seed oil.

Oil derived auxiliary nonionic surfactants highly preferred for use herein from the viewpoint of optimum mildness and skin feel characteristics are PEG 60 evening primrose triglycerides; PEG 55 lanolin polyethoxylated derivatives and ethoxylated derivatives of Shea butter.

The compositions herein preferably also contain a zwitterionic surfactant.

Betaine surfactants suitable for inclusion in the composition of the invention include alkyl betaines of the formula $R_5R_6R_7N^+(CH_2)_nM$ (VII) and amido betaines of the formula (VIII)

$$R_5CO(CH_2)_mN(R_6)(CH_2)_nM \quad (R_7)$$

wherein R_5 is C_{12}-C_{22} alkyl or alkenyl, R_6 and R_7 are independently C_1-C_3 alkyl, M is H, alkali metal, alkaline earth metal, ammonium or alkanolammonium, and n, m are each numbers from 1 to 4. Preferred betaines include cocoamidopropyldimethylcarboxymethyl betaine, laurylamidopropyldimethylcarboxymethyl betaine and Tego betaine.

The compositions of the invention may also contain a cationic or nonionic polymeric skin or hair conditioning agent at a level from about 0.01% to about 5%, preferably from about 0.04% to about 2% and especially from about 0.05% to about 1%. The polymer is found to be valuable for enhancing the creaminess and quality of the foam as well as providing a hair or skin conditioning utility.

Suitable polymers are high molecular weight materials (mass-average molecular weight determined, for instance, by light scattering, being generally from about 2,000 to about 3,000,000, preferably from about 5,000 to about 1,000,000).

Useful polymers are the cationic, nonionic, amphoteric, and anionic polymers useful in the cosmetic field. Preferred are cationic and nonionic polymers used in the cosmetic fields as hair or skin conditioning agents.

Representative classes of polymers include cationic and nonionic polysaccharides; cationic and nonionic homopolymers and copolymers derived from acrylic and/or methacrylic acid; cationic and nonionic cellulose resins; cationic copolymers of dimethyldiallylammonium chloride and acrylic acid; cationic homopolymers of

dimethyldiallylammonium chloride; cationic polyalkylene and ethoxypolyalkylene imines; quaternized silicones, and mixtures thereof.

By way of exemplification, cationic polymers suitable for use herein include cationic guar gums such as hydroxypropyl trimethyl ammonium guar gum (d.s. of from 0.11 to 0.22) available commercially under the trade names Jaguar C-14-S(RTM) and Jaguar C-17(RTM) and also Jaguar C-16(RTM), which contains hydroxypropyl substituents (d.s. of from 0.8-1.1) in addition to the above-specified cationic groups, and quaternized cellulose ethers available commercially under the trade names Ucare Polymer JR and Celquat. Other suitable cationic polymers are homopolymers of dimethyldiallylammonium chloride available commercially under the trade name Merquat 100, copolymers of dimethyl aminoethylmethacrylate and acrylamide, copolymers of dimethyldiallylammonium chloride and acrylamide, available commercially under the trade names Merquat 550 and Merquat S, quaternized vinyl pyrrolidone acrylate or methacrylate copolymers of amino alcohol available commercially under the trade name Gafquat, and polyalkyleneimines such as polyethylenimine and ethoxylated polyethylenimine.

Nonionic polymers suitable for use in the compositions according to the present invention include any conventioally used nonionic polymer and preferably those of the Pluronic and Synperonic group of polyoxyethylene polyoxypropylene block copolymers available from BASF, such as Pluronic L-121 and ICI, such as synperonic PE-F127.

Anionic polymers suitable herein include hydrophobically-modified cross-linked polymers of acrylic acid having amphipathic properties as marketed by B F Goodrich under the trade name Pemulen TRI and Pemulen TR2; and the carboxyvinyl polymers sold by B F Goodrich under the trade mark Carbopol and which consist of polymers of acrylic acid cross-linked with polyallyl sucrose or polyallyl pentaeyrthritol, for example, Carbopol 934, 940 and 950.

The viscosity of the final composition (Brookfield RVT, Spindle 5, 50 rpm, 25°C, neat) is preferably at least about 500 cps, more preferably from

about 1,000 to about 10,000 cps, especially from about 2,000 to about 6,000 cps.

The cleansing compositions can optionally include a hair or skin moisturizer which is soluble in the cleansing composition matrix. The preferred level of moisturizer is from about 0.5% to about 20% by weight. In preferred embodiments, the moisturizer is selected from:

1. water-soluble liquid polyols;
2. essential amino acid compounds found naturally occurring in the stratum corneum of the skin; and
3. water-soluble nonpolyol nonocclusives and mixtures thereof.

Some examples of more preferred nonocclusive moisturizers are glycerine, polyethylene glycol, propylene glycol, sorbitol, polyethylene glycol and propylene glycol ethers of methyl glucose (e.g. methyl glucam-20), polyethylene glycol and propylene glycol ethers of lanolin alcohol (e.g. Solulan-75), sodium pyrrolidone carboxylic acid, lactic acid, urea, L-proline, guanidine, pyrrolidone, hydrolyzed protein and other collagen-derived proteins, aloe vera gel and acetamide MEA and mixtures thereof. Of the above, glycerine is highly preferred.

The compositions according to the present invention additionally include a stabilising agent at a level of from 0.1% to about 15%, preferably from 1% to about 12%, more preferably from about 5% to about 10% by weight. Stabilising agents suitable for use in the compositions according to the present invention are selected from ethylene glycol distearate (EGDS), Xanthan gum and Veegum (magnesium aluminium mineral with carboxy methyl cellulose)

A number of additional optional materials can be added to the cleansing compositions. Such materials include proteins and polypeptides and derivatives thereof; water- solubilizable preservatives such as DMDM Hydantoin, Germall 115, methyl, ethyl, propyl and butyl esters of hydroxybenzoic acid, EDTA, Euxyl (RTM) K400, Bronopol (2-bromo-2-nitropropane-1,3-diol), sodium benzoate and 2-phenoxyethanol; other moisturizing agents such as hyaluronic acid, chitin , and starch-grafted

sodium polyacrylates such as Sanwet (RTM) IM-1000, IM-1500 and IM-2500 available from Celanese Superabsorbent Materials, Portsmith, VA, USA and described in US-A-4,076,663; solvents such as hexylene glycol and propylene glycol; anti-bacterial agents such as Oxeco (phenoxy isopropanol); low temperature phase modifiers such as ammonium ion sources (e.g. NH_4 Cl); viscosity control agents such as magnesium sulfate and other electrolytes; colouring agents; pearlescers and opacifiers such as ethylene glycol distearate, TiO_2 and TiO_2-coated mica; perfumes and perfume solubilizers; and zeolites such as Valfour BV400 and derivatives thereof and Ca^{2+}/Mg^{2+} sequestrants such as polycarboxylates, amino polycarboxylates, polyphosphates, polyhosphonates, amino polyphosphonates and gluconates etc and ph adjusting agents such as citric acid and salts thereof. Water is also present at a level preferably of from about 30% to about 89.9% preferably at least about 50% by weight of the compositions herein.

The pH of the compositions is preferably from about 4 to about 8.

The invention is illustrated by the following non-limiting examples.

In the examples, all concentrations are on a 100% active basis and the abbreviations have the following designation:

GA	Polyhydroxy fatty acid amide of formula I in which R_8 is C_{11}-C_{17} alkyl, R_9 is methyl, and Z_2 is $CH_2(CHOH)_4CH_2OH$
Anionic	Sodium laureth-2 sulfate
Amphoteric	Empigen CDL 60 - an aqueous mixture of 23.5% cocoamphoacetate (in which R_1 is coconut alkyl, R_2 is H, and Z is CO_2Na) and 1.35% cocoamphodiacetate (in which R_1 is coconut alkyl, R_2 is CH_2CO_2Na and Z is CO_2Na).
Betaine	Cocoamidopropyldimethylcarboxymethyl betaine
Oil	Mineral Oil
Solan	Solan (RTM) E (PEG 55 lanolin)
Shea	Hydrosoluble Shea Butter (PEG 75)
Preservative	DMDM Hydantoin
Suspension aid 1	Ethyleneglycoldistearate (EGDS)
Suspension aid 2	Veegum Plus;Magnesium aluminium silicate mineral with carboxy methyl cellulose marketed by R.T. Vanderbilt Co. Inc.

Examples I to VII

The following are personal cleansing compositions in the form of shower gel or bath foam products and which are representative of the present invention:

	I	II	III	IV	V	VI	VII
GA	2.0	5.0	6.0	4.0	9.0	6.0	5.0
Anionic	4.0	2.0	1.0	2.5	0.5	0.5	1.5
Amphoteric	-	2.0	-	-	-	-	0.5
Betaine	0.5	0.5	1.0	-	-	0.5	0.5
Oil	10.0	15.0	18.0	16.0	30.0	12.0	12.0
Solan	0.5	0.5	-	-	-	-	-
Shea	-	-	-	0.5	-	-	-
Stabiliser 1	5.0	7.5	7.5	-	10.0	-	-
Stabiliser 2	-	-	-	3.0	-	4.0	3.0
Perfume	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Preservative	0.15	0.15	0.15	0.15	0.15	0.2	0.2
Water	---------- to 100 ----------						

Compositions I to VII are prepared by first mixing the water and any anionic surfactant followed by addition of stabilising agent at elevated temperature (for EGDS, 75°C and for Veegum 40°C). The nonionic surfactants and the remaining matrix ingredients including the dispersible oils (bar any perfume and preservative) are then added. After cooling to ambient temperature the remaining water, preservative and perfume are added.

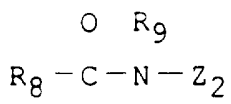
Finally, the compositions have a viscosity (Brookfield RVT, Spindle 5, 50 rpm, 25°C, neat) in the range from 1,000 to 10,000 cps.

The products provide excellent in-use and efficacy benefits including skin feel during and after use, skin conditioning, mildness, stability, cleansing, lathering, good water-feel and appearance and rinsibility.

WHAT IS CLAIMED IS:

1. A personal cleansing composition comprising:

(a) from about 1.5% to about 10 % by weight of an oil dispersing nonionic surfactant selected from C12-C18 polyhydroxy fatty acid amide surfactants having the general formula (I);



wherein R_9 is C_{1-4} alkyl, and R_8 is C_7-C_{19} alkyl or alkenyl, or mixture thereof; and Z_2 is a polyhydroxyhydrocarbyl having a linear hydrocarbyl chain with at least 3 hydroxyls directly connected to the chain, or an alkoxylated derivative thereof,

(b) from about 0.1% to about 5% by weight of auxiliary surfactant selected from other nonionic, anionic, zwitterionic and/or amphoteric surfactants and mixtures thereof;

(c) from about 4.5% to about 30% by weight of a perfume or cosmetic oil; and,

(d) water,

and wherein the ratio of auxiliary surfactant to oil dispersing nonionic surfactant is in the range of from 1:100 to about 1:1 and the ratio of oil dispersing nonionic surfactant to perfume or cosmetic oil is from about 1:20 to about 3:2.

2. A composition according to Claim 1 wherein the composition has a viscosity (Brookfield RVT, Spindle 5, 50 rpm, 25°C, neat) in the range from 1,000 to 10,000 cps .

3. A composition according to Claim 1 or 2 wherein the oil

dispersing nonionic surfactant is a C12-C14 polyhydroxy fatty acid amide.

4. A composition according to any of Claims 1 to 3 wherein the oil dispersing nonionic surfactant is a polyhydroxy fatty acid amide having the formula $R_8(CO)N(CH_3)CH_2(CHOH)_4CH_2OH$ wherein R_8 is a C11-C17 straight chain alkyl or alkenyl group.

5 A composition according to any of Claims 1 to 4 comprising from about 2% to about 9%, preferably from about 4.5% to about 7% by weight of the oil dispersing nonionic surfactant.

6 A composition according to any of Claims 1 to 5 comprising from about 10% to about 25%, more preferably from about 15% to about 20% by weight of perfume or cosmetic oil wherein the perfume or cosmetic oil is dispersible in the oil dispersing nonionic surfactant.

7. A composition according to any of Claims 1 to 6 wherein the cosmetic oil is selected from water-insoluble silicones and modified silicones, amino and quaternary ammonium modified silicones, rigid cross-linked and reinforced silicones and mixtures thereof, C_1-C_{24} esters of C_8-C_{30} fatty acids, saturated and unsaturated fatty alcohols, hydrocarbons, fatty sorbitan esters, lanolin and oil-like lanolin derivatives, animal and vegetable triglycerides and C_1-C_{24} esters of dimer and trimer acids and mixtures thereof.

8. A composition according to any of Claims 1 to 7 wherein the cosmetic oil is mineral oil.

9. A composition according to any of Claims 1 to 8 wherein the ratio of oil dispersing nonionic surfactant : perfume or cosmetic oil is in the range from about 1:6 to about 1:2, preferably from about 1:4 to about 1:3.

10. A composition according to Claims 1 to 9 comprising a mixture of oil dispersing nonionic, anionic and optionally other nonionic, zwitterionic and/or amphoteric surfactants together with mineral oil.

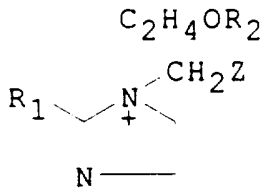
11. A composition according to Claims 1 to 10 comprising from about 0.5% to about 4%, more preferably from about 1% to about 3.5%, most preferably from about 1.5% to about 2.5% by weight in total of auxiliary surfactant.

12. A composition according to any of Claims 1 to 11 wherein the anionic surfactant is selected from ethoxylated alkyl sulfates, alkyl glyceryl ether sulfonates, methyl acyl taurates, fatty acyl glycinates, alkyl ethoxy carboxylates, N-acyl glutamates, acyl isethionates, alkyl sulfosuccinates, alpha-sulfonated fatty acids, their salts and/or their esters, alkyl phosphate esters, ethoxylated alkyl phosphate esters, acyl sarcosinates and fatty acid/protein condensates, and mixtures thereof.

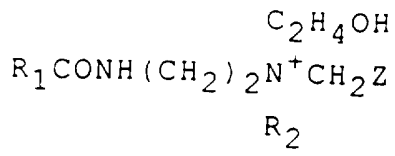
13. A composition according to any of Claims 1 to 12 wherein the anionic surfactant comprises an ethoxylated C_8-C_{22} alkyl sulfate.

14. A composition according to any of Claims 1 to 13 wherein the amphoteric surfactant is selected from:

(a) imidazolinium derivatives of formula (II)



wherein R_1 is C_7-C_{22} alkyl or alkenyl, R_2 is hydrogen or CH_2Z, each Z is independently CO_2M or CH_2CO_2M, and M is H, alkali metal, alkaline earth metal, ammonium or alkanolammonium; and/or ammonium derivatives of formula (III)



wherein R_1, R_2 and Z are as defined above:

(b) aminoalkanoates of formula (IV)

$$R_1NH(CH_2)_nCO_2M$$

and iminodialkanoates of formula (V)

$$R_1N[(CH_2)_mCO_2M]_2$$

wherein n and m are numbers from 1 to 4, and R_1 and M are independently selected from the groups specified in (a) above; and

(c) mixtures thereof.

15. A composition according to Claim 14 wherein the amphoteric is selected from the imidazolinium derivatives of formula II and/or ammonium derivatives of formula III.

16. A composition according to any of Claims 1 to 15 wherein the weight ratio of anionic surfactant:other nonionic, zwitterionic and/or amphoteric surfactant is in the range from about 1:2 to about 6:1.

17. A composition according to any of Claims 1 to 16 additionally comprising from 0.01% to 5%, preferably from about 0.04% to about 2% and more preferably from 0.05% to 1% of a cationic or nonionic polymeric skin or hair conditioning agent, selected from cationic and nonionic polysaccharides; cationic and nonionic homopolymers and copolymers derived from acrylic and/or methacrylic acid, cationic and nonionic cellulose resins; cationic copolymers of dimethyldiallylammonium chloride and acrylic acid;

cationic homopolymers of dimethyldiallylammonium chloride; cationic polyalkylene and ethoxypolyalkylene imines; quaternized silicones, and mixtures thereof.

18. A composition according to any of Claims 1 to 17 additionally comprising moisturiser selected from glycerin, polyethylene glycol, propylene glycol, sorbitol, polyethylene glycol and polypropylene glycol ethers of methyl glucose, sodium pyrrolidone carboxylic acid, lactic acid, L-proline and mixtures thereof.

INTERNATIONAL SEARCH REPORT

I. national application No.
PCT/US95/08341

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :A61K 7/48, 7/075

US CL :424/401, 70.122, 70.31

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 424/401, 70.122, 70.31

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US, A, 5,009,814 (KELKENBERG ET AL.) 23 April 1991, Abstract, columns 2-3.	1-3
Y	US, A, 5,104,642 (WELLS ET AL.) 14 April 1992, see columns 6-7 and example 1.	1-3

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search	Date of mailing of the international search report
24 AUGUST 1995	06 OCT 1995
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer JYOTHSNA VENKAT
Facsimile No. (703) 305-3230	Telephone No. (703) 308-2351

Form PCT/ISA/210 (second sheet)(July 1992)*

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US95/08341

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☒ Claims Nos.: 4-18
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.