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<td>(54) Title</td>
<td>PERSONAL CARE WASHING BARS CONTAINING DIMER ACIDS AND THEIR DERIVATIVES</td>
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<tr>
<td>(57) Abstract</td>
<td>A personal cleansing composition containing: (a) a cleansing component; (b) a film-forming additive consisting of a dimer acid and its derivatives; and (c) water.</td>
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PERSONAL CARE WASHING BARS CONTAINING DIMER ACIDS AND THEIR DERIVATIVES

Field of the Invention:

The present invention generally relates to personal cleansing compositions. More particularly, the present invention relates to the incorporation of dimer acids and their derivatives into personal cleansing formulations in order to enhance their protective film properties.

Background of the Invention:

The cleansing of skin with surface-active cleansing preparations has become a focus of great interest. Many people wash and scrub their skin with various surface-active preparations several times a day. Ideal skin cleansers should cleanse the skin gently, causing little or no irritation, without defatting and overdrying the skin or leaving it taught after frequent routine use. Most lathering soaps, liquids and bars included, fail in this respect.

There are basically four categories of personal cleansing compositions: (1) synthetic, (2) combo, (3) soap, and (4) abrasive-containing.

Synthetic detergent bars, frequently referred to as "syndet bars", are well known and are becoming increasingly popular. However, widespread replacement of soap bars by syndet bars has not so far been possible for a variety of reasons, primarily the poor physical characteristics of
syndet bars as compared to soap bars. In clear distinction from syndet bars which are "soap-free" are the so-called "combo" bars which are combinations of fatty acid salts and synthetic detergents. One type of combo bar is produced by combining fatty acid soaps with salts of acyl isethionates. These combo bars, because they contain both a synthetic detergent and a soap component, do not suffer from the poor physical characteristics of syndet bars, and are milder to human skin than traditional fatty acid soaps.

However, a problem encountered in manufacturing combo bars relates to the incorporation of the synthetic acyl isethionates surfactant into the fatty acid soap. Acyl isethionates are high melting solids with low solubility in either water or organic solvents. Aqueous solutions of sodium cocoyl isethionate are inherently highly viscous. Thus, it is very difficult to incorporate acyl isethionates into soap formulations without the attendant physical disadvantages associated with their poor handling properties.

Soap in bar form has long been in use for cleansing purposes. Those skilled in the art use the term soap to designate the reaction product of a carboxylic acid with a base, typically a metal hydroxide or carbonate. The resulting salt has both a polar hydrophilic end and a non-polar lipophilic end which facilitates the removal of oils and other non-polar materials from the skin or other surface in the presence of water.
Bar soaps are customarily prepared either by framing/casting or by refining/plodding. Framed or cast soaps are prepared by reacting an appropriate fat, oil or carboxylic acid with a base in the presence of water to form soap, pouring the molten soap containing about 30% water into a frame or a mold, allowing the soap to cool and harden, and removing the soap having about 20% to 25% water by weight in a bar form. Those skilled in the soap-making art are aware that the carboxylic acid hereafter referred to as a fatty acid is readily available as an article of commerce. The fatty acid also can be obtained from a fat, such as tallow or lard, from an oil, such as coconut oil, palm oil, palm kernel oil, or olive oil, or from combinations of fats and oils. Fats and oils are comprised in substantial part of glycerides of varying chain lengths, which are esters of glycerol (glycerine) and fatty acids. Under alkaline conditions, and in the presence of heat, the glycerides constituting the fats and oils break down to form fatty acid salts, also known as soaps, and glycerine. Regular soap can have a tendency to defat the skin owing to its slightly alkaline character. This can be a problem, particularly to people with dry skin. The incorporation of a superfattening agent containing a free fatty acid into a soap bar imparts enhanced tactile properties to the composition by eliminating the effect of free alkali on the user's skin. The presence of free fatty acid also affects the bubble size of the lather formed by the soap bar by imparting a perception of a richer,
creamier lather.

Abrasive-containing toilet bars/liquids may be based on either soap, synthetic surfactants or combinations thereof and typically contain an abrasive material such as, for example, pumice.

A common problem to all of the above-identified personal cleansing compositions relates to their tactile properties. Due to the tendency of the soaps and surfactants contained therein to irritate human skin, to varying degrees, there is a constant need to develop new formulations which are less irritating to the skin, impart a certain degree of water repellency to the skin, and have enhanced tactile properties.

Summary of the Invention:

15 The present invention is directed to a personal cleansing composition containing:

(a) a cleansing component;
(b) a dimer acid and its derivatives; and
(c) water.

The present invention is also directed to a process for enhancing the protective film forming properties of a personal cleansing composition involving the steps of:

(a) providing a cleansing component selected from the group consisting of soap, a nonionic surfactant, an anionic surfactant, an amphoteric surfactant, and mixtures thereof;
(b) providing a dimer acid and its derivatives;
(c) providing water; and
(d) mixing (a)-(c) to form a personal cleansing composition.

Description of the Invention:

Other than in the operating examples, or where otherwise indicated, all number expressing quantities of ingredients or reaction conditions used herein are to be understood as being modified in all instances by the term "about".

The cleansing component of the present invention includes any type of surface-active compound which may be employed to formulate a personal cleansing composition either in toilet bar, liquid or gell form. Examples of suitable cleansing components which may be used include, but are not limited to, those selected from the group consisting of soaps, syndet surfactants, and mixtures thereof. These components are typically used to make soap bars, syndet bars which are formulated using only synthetic surfactants, and combo bars which are formulated using both synthetic surfactants and soap.

Syndet surfactants suitable for use in the present invention include anionic, nonionic, cationic and amphoteric surfactants and mixtures thereof. Especially useful are those surfactants which are well known to have especially mild properties as regards to skin care. Such surfactants include, but are not limited to, alkali metal salts of: alkyl isethionates; e.g., sodium cocoyl- or lauryl isethionate; sarcosinates, sulfosuccinates,
taurates, nonionic sugar surfactants and ethoxylated fatty
alcohols.

In the event that a soap is used as a cleansing
component, it generally contains a blend of about 80% by
weight tallow fatty acid and about 20% by weight coco fatty
acid, wherein the blend is neutralized with an aqueous
solution of a base such as sodium hydroxide, potassium
hydroxide, triethanolamine and mixtures thereof. The
moisture content of the soap component varies in the range
from about 5 to about 30% by weight, and preferably from
about 10 to about 15% by weight, based on the weight of the
soap component.

A typical coco fatty acid is composed primarily of
from 45% to 55% by weight lauric acid, from 15% to 23% by
weight of myristic acid, from 8% to 11% of palmitic acid,
from 1% to 10% by weight of stearic acid, from 1% to 14% of
caprylic and capric acids, and from 1% to 8% by weight of
oleic acid.

A typical tallow fatty acid is one which contains from
about 45% to about 55% by weight of a mixture of saturated
fatty acids, a majority of which are stearic and palmitic
acids and from about 45% to about 55% by weight of a
mixture of unsaturated fatty acids, a large majority of
which is oleic acid and which may also contain linoleic
acid and linolenic acid. As desired, the linolenic and
linoleic acids may also be eliminated by hydrogenation. An
example of a typical commercially available unhydrogenated
tallow fatty acid is EMERY® 401 Tallow Fatty Acid, a
trademark product of Henkel Corporation, Emery Group, Cincinnati, OH. The typical specifications for EMERY® 401 Tallow Fatty Acid are: titer 49-53°C, maximum iodine value of 34-44, acid value of 199-208, color value of 80/95 (%
trans. 440/550 nm., min.).

After neutralization, the soap component is cooled and then dried to a lower moisture level to permit refining and plodding using soap finishing equipment well known in the art. Typically, the soap is dried to a moisture level of from about 10 to about 14% by weight.

The nonionic surfactant component which may be employed in the present invention is generally selected from the group consisting of sugar surfactants, alkyl/aryl ethoxylates, polyglycerol esters, ethoxylated fatty acids, alkyl glycerol ethoxylates and sorbitans, and mixtures thereof.

A particularly preferred class of nonionic surfactants are the nonionic sugar surfactants. The term nonionic sugar surfactant as used herein refers to surfactants that are based on saccharide moieties. The nonionic sugar surfactants which may be employed in the present invention are selected from the group consisting of alkyl polyglycosides, alkyl glucose esters, aldobionamides, gluconamides, glyceramides, glyceroglycolipids, polyhydroxy fatty acid amides, and mixtures thereof.

Preferred alkyl polyglycosides which can be used as the complexing agent in the concentrate of the invention have the formula I:
$R_1O(R_2O)_b(Z)_a$  \hspace{1cm} (I)

wherein $R_1$ is a monovalent organic radical having from about 6 to about 30 carbon atoms; $R_2$ is a divalent alkyylene radical having from 2 to 4 carbon atoms; $Z$ is a saccharide residue having 5 or 6 carbon atoms; $b$ is a number having a value from 0 to about 12; $a$ is a number having a value from 1 to about 6. Such alkyl polyglycosides are commercially available, for example, as GLUCOPON\textsuperscript{®}, or PLANTAREN\textsuperscript{®} surfactants from Henkel Corporation, Ambler, PA, 19002. Examples of such surfactants include but are not limited to:

1. GLUCOPON\textsuperscript{®} 225 Surfactant - an alkyl polyglycoside in which the alkyl group contains 8 to 10 carbon atoms and having an average degree of polymerization of 1.7.

2. GLUCOPON\textsuperscript{®} 425 Surfactant - an alkyl polyglycoside in which the alkyl group contains 8 to 16 carbon atoms and having an average degree of polymerization of 1.6.

3. GLUCOPON\textsuperscript{®} 625 Surfactant - an alkyl polyglycoside in which the alkyl group contains 12 to 16 carbon atoms and having an average degree of polymerization of 1.6.

4. APG\textsuperscript{®} 325 Surfactant - an alkyl polyglycoside in which the alkyl group contains 9 to 11 carbon atoms and having an average degree of polymerization of 1.6.

5. GLUCOPON\textsuperscript{®} 600 Surfactant - an alkyl polyglycoside in which the alkyl group contains 12 to 16 carbon atoms and having an average degree of polymerization of 1.4.

6. PLANTAREN\textsuperscript{®} 2000 Surfactant - a C\textsubscript{8-16} alkyl polyglycoside in which the alkyl group contains 8 to 16 carbon atoms and
having an average degree of polymerization of 1.4.

7. PLANTAREN® 1300 Surfactant - a C_{12-16} alkyl polyglycoside
   in which the alkyl group contains 12 to 16 carbon atoms and
   having an average degree of polymerization of 1.6.

Other examples include alkyl polyglycoside surfactant
compositions which are comprised of mixtures of compounds
of formula I wherein Z represents a moiety derived from a
reducing saccharide containing 5 or 6 carbon atoms; a is a
number having a value from 1 to about 6; b is zero; and R,
is an alkyl radical having from 8 to 20 carbon atoms. The
compositions are characterized in that they have increased
surfactant properties and an HLB in the range of about 10
to about 16 and a non-Flory distribution of glycosides,
which is comprised of a mixture of an alkyl monoglycoside
and a mixture of alkyl polyglycosides having varying
degrees of polymerization of 2 and higher in progressively
decreasing amounts, in which the amount by weight of
polyglycoside having a degree of polymerization of 2, or
mixtures thereof with the polyglycoside having a degree of
polymerization of 3, predominate in relation to the amount
of monoglycoside, said composition having an average degree
of polymerization of about 1.8 to about 3. Such
compositions, also known as peaked alkyl polyglycosides,
can be prepared by separation of the monoglycoside from the
original reaction mixture of alkyl monoglycoside and alkyl
polyglycosides after removal of the alcohol. This
separation may be carried out by molecular distillation and
normally results in the removal of about 70-95% by weight
of the alkyl monoglycosides. After removal of the alkyl monoglycosides, the relative distribution of the various components, mono- and poly-glycosides, in the resulting product changes and the concentration in the product of the polyglycosides relative to the monoglycoside increases as well as the concentration of individual polyglycosides to the total, i.e., DP2 and DP3 fractions in relation to the sum of all DP fractions. Such compositions are disclosed in U.S. patent 5,266,690, the entire contents of which are incorporated herein by reference.

Other alkyl polyglycosides which can be used in the compositions according to the invention are those in which the alkyl moiety contains from 6 to 18 carbon atoms and the average carbon chain length of the composition is from about 9 to about 14 comprising a mixture of two or more of at least binary components of alkylpolyglycosides, wherein each binary component is present in the mixture in relation to its average carbon chain length in an amount effective to provide the surfactant composition with the average carbon chain length of about 9 to about 14 and wherein at least one, or both binary components, comprise a Flory distribution of polyglycosides derived from an acid-catalyzed reaction of an alcohol containing 6-20 carbon atoms and a suitable saccharide from which excess alcohol has been separated. The alkyl polyglycoside of the present invention acts as the complexing agent for the iodine complex concentrate.

The alkyl glucose ester sugar surfactants are
generally disclosed in U.S. patent Nos. 5,109,127 and 5,190,747, the entire contents of both of which are incorporated herein by reference. These sugar surfactants have the general formula II:

![Chemical Structure](image)

wherein R represents a fatty acid residue of 6 to 20 carbon atoms, preferably 6 to 12 carbon atoms and R¹ represents an alkyl group having 2 to 6 carbon atoms. Representative examples of such alkyl glucose esters are 1-ethyl-6-caprylglucoside, 1-ethyl-6-laurylglucoside, 1-butyl-6-caprylglucoside, 1-ethyl-6-palmitylglucoside and 1-ethyl-6-oleylglucoside.

The aldobionamide sugar surfactants are generally disclosed in U.S. Patent No. 5,310,542 and in published European Patent Application No. 550,281, both of which are incorporated herein by reference. An aldobionamide is generally defined as the amide of an aldobionic acid or aldobionolactone and an aldobionic acid in turn is defined as a sugar substance (e.g., any cyclic sugar) in which the aldehyde group has been replaced by a carboxylic acid which
upon drying is capable of cyclizing to form an aldonolactone. The aldobionamides can be based on compounds comprising two saccharide units, e.g., lactobionamides, maltobionamides, cellobionamides, melibionamides, or gentiobionamides, or they can be based on compounds comprising more than two saccharide units provided that the polysaccharide has a terminal sugar unit with an aldehyde group available.

The preferred aldobionamides of the present invention are lactobionamides of the formula III:

wherein $R^1$ and $R^2$ are the same or different and are selected from hydrogen and an aliphatic hydrocarbon radical containing up to about 36 carbon atoms (e.g., alkyl groups and alkenyl groups which groups may also include a heteroatom such as N, O, S, present, for instance, as an amide, carboxy, ether and/or saccharide moiety) except that $R^1$ and $R^2$ cannot simultaneously be hydrogen. The aliphatic hydrocarbon radical preferably contains up to 24 carbon atoms, most preferably from 8 to 18 carbon atoms. Representative examples of such lactobionamides are N-propyl lactobionamide, N-pentyl lactobionamide, N-decyl lactobionamide, N-hexadecyl lactobionamide, N-oleyl
lactobionamide, N-dodecyl-N-methyl lactobionamide, and N-
dodecylxypropyl lactobionamide.

The gluconamide sugar surfactants are generally
disclosed in U.S. Patent 5,352,386, the entire contents of
which are incorporated herein by reference. These
surfactants have the general formula IV:

$$\text{HOCH}_2-(\text{CHOH})_n-C(\text{O})-\text{NHR} \quad (IV)$$

wherein m is an integer from 2 to 5; and R is a straight or
branched, saturated or unsaturated aliphatic hydrocarbon
having 4 to about 24 carbon atoms, preferably 8 to 24
carbon atoms, which R group can also contain a heteroatom
selected from the group consisting of oxygen, nitrogen and
sulfur. Representative examples of such cosurfactants are
N-octylerythronamide, N-decylerthronamide, N-
dodecylerythronamide, N-tetradecylerthronamide, N-
decyloxylonamide and N-dodecylxylonamide.

The glyceramide sugar surfactants are generally
disclosed in U.S. Patent 5,352,387, the entire contents of
which are incorporated herein by reference. These
cosurfactants have the general formula V:

$$\text{HOCH}_2\text{CH(OH)}\text{C(\text{O})NHR} \quad (V)$$

wherein R is a C₈ to C₂₄ straight or branched chained,
saturated or unsaturated aliphatic hydrocarbon in which the
R group may also be substituted by a heteroatom selected
from oxygen, nitrogen and sulfur. Representative examples of such cosurfactants are N-octylglyceramide, N-decylglyceramide and N-hexadecylglyceramide.

The glyceroglycolipid sugar surfactants are generally disclosed in U.S. Patent 5,358,656, and published European Patent Application No. 550,279, the disclosure of each of which is incorporated herein by reference. The glyceroglycolipids can be of the formula VI:

\[ \text{A}^1\text{-O-CH}_{2}\text{-CH(B)-CH}_3\text{NRR}_1 \]  

(VI)

wherein A\(^1\) is a saccharide, preferably having one or more saccharide units, more preferably a mono or disaccharide and most preferably a monosaccharide such as glucose or galactose; R and R\(_1\) are the same or different and are hydrogen, a branched or unbranched hydrocarbon radical having from 1 to about 24, preferably from about 6 to about 18 carbon atoms; B is OH or a NR\(_2\)R\(_3\) group, wherein R\(_2\) and R\(_3\) may be the same or different and are hydrogen, a branched or unbranched hydrocarbon radical having 1 to 24, preferably from 6 to 18 carbon atoms, and NRR\(_1\) and B are positionally interchangeable. Representative examples of such cosurfactants are 3-(butylamino)-2-hydroxypropyl-β-D-galactopyranoside, 3-(octylamino)-2-hydroxypropyl-β-D-galactopyranoside, 3-(eicosylamino)-2-hydroxypropyl-β-D-galactopyranoside, 3-(butylamino)-2-hydroxypropyl-β-D-glucopyranoside, and 3-(pentyiamino)-2-hydroxypropyl-β-D-mannopyranoside.
Other glyceroglycolipid surfactants are disclosed in published European Patent Application No. 550,280, which is incorporated herein by reference. These cosurfactants are of the formula VII:

\[
A^1-\text{O-CH}_2-\text{CH}(\text{OR}_1)-\text{CH}_2\text{OR} \quad \text{(VII)}
\]

wherein \(A^1\) is from 1 to 4 saccharide units and more preferably represents a mono or disaccharide, and most preferably a monosaccharide, for example, glucose or galactose; \(R\) and \(R_1\) are the same or different and are hydrogen, or a branched or unbranched, saturated or unsaturated, hydrocarbon radical having from 1 to 24 carbon atoms, preferably from 6 to 18 carbon atoms. Representative examples of such cosurfactants are 3-(butyloxy)-2-hydroxypropyl-\(\beta\)-D-galactopyranoside, 3-(eicosyloxy)-2-hydroxypropyl-\(\beta\)-D-galactopyranoside, 3-(decyloxy)-2-hydroxypropyl-\(\beta\)-D-galactopyranoside, 3-(butyloxy)-2-hydroxypropyl-\(\beta\)-D-glucopyranoside, 3-(octyloxy)-2-hydroxypropyl-\(\beta\)-D-mannopyranoside, 3-(tetradecyloxy)-2-hydroxypropyl-\(\beta\)-D-lactoside, 3-(octadecyloxy)-2-hydroxypropyl-\(\beta\)-D-maltoside, 3-(octyloxy)-2-hydroxypropyl-\(\beta\)-D-galactotrioside, and 3-(dodecyloxy)-2-hydroxypropyl-\(\beta\)-D-cellobioside.

The polyhydroxy fatty acid amide sugar surfactants are generally disclosed in U.S. Patent Nos. 5,174,927, 5,223,179 and 5,332,528, the entire disclosure of each of which is incorporated herein by reference. The polyhydroxy
fatty acid amide surfactant component of the present invention comprises compounds of the structural formula VIII:

\[ R^2C(O)N(R^1)Z \]  \hspace{1cm} (VIII)

wherein: \( R^1 \) is H, \( C_1-C_4 \) hydrocarbyl, 2-hydroxy ethyl, 2-hydroxy propyl or a mixture thereof, preferably \( C_1-C_4 \) alkyl, more preferably \( C_1 \) or \( C_2 \) alkyl, most preferably \( C_1 \) alkyl (i.e., methyl); and \( R^2 \) is a \( C_2-C_{12} \) hydrocarbyl, preferably straight chain \( C_{7}-C_{12} \) alkyl or alkenyl, more preferably straight chain \( C_{3}-C_{7} \) alkyl or alkenyl, most preferably straight chain \( C_{11}-C_{17} \) alkyl or alkenyl, or mixture thereof; and \( Z \) 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. \( Z \) preferably will be derived from a reducing sugar in a reductive amination reaction; more preferably \( Z \) is a glycytyl. 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 \( Z \). It should be understood that it is by no means intended to exclude other suitable raw materials. \( Z \) preferably will be selected from the group consisting of \(-\text{CH}_3-(\text{CHOH})_n\text{-CH}_2\text{OH},\)
-CH(CH₂OH)ₙ-(CHOH)ₙ₋₁-CH₂OH, -CH₂-(CHOH)₂(CHOR')₂(CHOH)-CH₂OH,
where n is an integer from 3 to 5, inclusive, and R' is H or a cyclic or aliphatic monosaccharide, and alkoxyalated derivatives thereof. Most preferred are glycosyls wherein n is 4, particularly -CH₂-(CHOH)₄-CH₂OH.

In the above formula R¹ can be, for example, N-methyl, N-ethyl, N-propyl, N-isopropyl, N-butyl, N-2-hydroxy ethyl, or N-2-hydroxy propyl.

R²C(O)N⁻ can be, for example, cocamide, stearamide, oleamide, lauramide, myristamide, capricamide, palmitamide, tallowamide, etc.

Z can be 1-deoxyglucityl, 2-deoxyfructityl, 1-deoxymaltityl, 1-deoxylactityl, 1-deoxygalactityl, 1-deoxygenityl, 1-deoxymaltotriotityl, etc.

Representative examples of such surfactants are N-methyl-N-1-deoxyglucityl cocoamide and N-methyl-N-1-deoxyglucityl tallowamide.

Other suitable polyhydroxy fatty acid amide surfactants (see U.S. Patent Nos. 5,223,179 and 5,338,491, the entire contents of each which are incorporated herein by reference) are those of the formula IX:

$$RC(O)N(R')CH₂CH(CHOH)CH₂OH \quad \text{(IX)}$$

wherein R is a C₇-C₃₁ hydrocarbyl species, i.e., coconut, tallow, palm fatty alkyl and oleyl, and R¹ is a C₁ to C₆ hydrocarbyl or substituted hydrocarbyl species, i.e., N-alkyl-N-(1,2-propanediol) and N-hydroxyalkyl-N-1,2-propane
diol fatty acid amides. Representative examples of such cosurfactants are the tallow amide of 3-[2-(hydroxyethyl)amino]-1,2-propanediol (HEAPD), the palmitate amide of 3-methylamino-1,2-propanediol (MAPD) and the lauramide of MAPD.

The anionic surfactant component which may be employed in the present invention is generally selected from the group consisting of acyl isethionates, alkyl/aryl sulfonates, alkyl/aryl sulfates, sarcosines, taurates, sulfosuccinates, and mixtures thereof.

A particularly preferred class of anionic surfactants for use in the present invention are the acyl isethionates. The acyl isethionates which may be employed in the present invention correspond to the formula:

\[ RCO-OCH_2CH_2-SO_3Z \]

wherein RCO is a linear or branched acyl radical having from about 6 to about 22 carbon atoms and Z is selected from the group consisting of an alkali metal, an alkaline earth metal and ammonium. These esters may be prepared by reacting an alkali metal, alkaline earth metal or ammonium isethionate with a mixture of aliphatic fatty acid(s) having from 8 to 22 carbon atoms. In a particularly preferred embodiment, the acyl isethionate is sodium cocooyl isethionate.

The dimer acids, their salts and derivatives thereof which may be employed in the present invention are generally represented by the structure X-R²-X wherein R² is a C₁₃₋₃₄ hydrocarbon radical and X is COOH.
Examples of suitable dimer acid derivatives which may be employed include, but are not limited to, dimer acid diesters. The dimer acid diesters are characterized by their high viscosity ranging from about 10 to about 20 centistokes at 100°C and low pour points ranging from about -40 to about -60. These dimer acid diesters are commercially available from Henkel Corp., Emery Division, under the tradenames EMERY® 2900 and EMERY® 2905.

A particularly preferred dimer acid for use in the present invention is C_{24} dibasic acid commercially available from Henkel Corp. under the tradenames EMPOL® E-1004 AND EMPOL® E-1008.

According to one embodiment of the present invention, there is provided a personal cleansing composition containing at least one of the above-disclosed cleansing components, water and an effective amount of a dimer acid and/or its derivatives. The amount of dimer acid employed in the personal cleansing composition is preferably from about 0.1 to about 10% by weight, and most preferably from about 0.1 to about 5% by weight, based on the total weight of the personal cleansing composition. The specific cleansing components chosen and the amounts thereof used to formulate a personal cleansing composition will be known and ultimately depend on the desires of those skilled in the art. In general, however, the cleansing component will be present in the personal cleansing composition in an amount ranging from about 0.1 to about 96.9% by weight, based on the total weight of the personal cleansing
composition. The crux of the present invention, however, relates to the use of the above-disclosed dimer acids and their derivatives, in personal cleansing compositions, in order to impart enhanced tactile properties and some degree of water repellency onto human skin treated therewith.

With respect to the amount of water present in the personal cleansing composition, it will depend on the final, in-use form of the personal cleansing composition. For example, if the personal cleansing composition is formed into a toilet bar, the amount of water present will range from about 3 to about 50% by weight, based on the weight of the toilet bar.

Conversely, if the personal cleansing composition is formed into a liquid or gel, the amount of water present will range from about 30 to about 99.8% by weight, based on the weight of the liquid or gel. In general, however, the amount of water present in the personal cleansing composition will range from about 3 to about 99.8% by weight, based on the weight of the personal cleansing composition prior to its being formed into a ready-to-use final product.

Other performance chemicals and adjuvants may also be present in the personal cleansing composition prior to its processing into final form. The amounts of these chemicals and adjuvants added to the personal cleansing composition will typically range from about 1 to about 5% by weight, based on the total weight of the personal cleansing composition. Examples of chemicals and adjuvants which may
be used include, but are not limited to, perfumes, pigments, dyes, preservatives, electrolyte salts, water, and mixtures thereof. Similarly, by-products typically present in commercially available acyl isethionates, if they are chosen, such as sodium isethionate, may also be present in the final composition.

According to another embodiment of the present invention, there is provided a process for enhancing the protective film forming properties of a personal cleansing composition containing at least one of the above-disclosed cleansing components and water by adding to the personal cleansing composition, an effective amount of a dimer acid and/or its derivatives. The amount of dimer acid which may be added to the personal cleansing composition is preferably from about 0.1 to about 10% by weight, and most preferably from about 0.1 to about 5% by weight, based on the total weight of the personal cleansing composition.

The present invention will be better understood from the examples which follow, all of which are intended to be illustrative only and not meant to unduly limit the scope of the invention. Unless otherwise indicated, percentages are on a weight-by-weight basis.
EXAMPLES

Personal cleansing compositions were prepared and evaluated to determine the effects of the presence of free dimer acid and dimer acid soaps. The bars were evaluated for after wash feel by a panel of eight members on a scale of 1 to 5, with 5 representing the best feeling on their hands after washing. In examples 1-4 below, sodium soap bars based on an 80/20 mixture of tallow/coco fatty acids were prepared. Free C\textsubscript{36} dibasic acid was added to examples 2 and 4.

<table>
<thead>
<tr>
<th>Example No.</th>
<th>C\textsubscript{36} dibasic acid</th>
<th>Rating of coating feel on skin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>---</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>2.2%</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>---</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>2.2%</td>
<td>4</td>
</tr>
</tbody>
</table>

In examples 5 and 6 below, the C\textsubscript{36} dibasic acid in the form of a sodium soap was incorporated directly into the soap bars during their formulation.

<table>
<thead>
<tr>
<th>Example No.</th>
<th>tallow/coco/C\textsubscript{36} dimer acid</th>
<th>Coating Feel Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>60/20/20</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>56/34/10</td>
<td>3</td>
</tr>
</tbody>
</table>

As can be seen from the evaluations above, the incorporation of a dimer acid into a standard soap bar results in the formation of a protective coating on the skin which imparts a desirable softness/smoothness feeling to skin.
What is claimed is:

1. A personal cleansing composition comprising:
   (a) a cleansing component;
   (b) a film-forming additive consisting of a dimer acid and its derivatives; and
   (c) water.

2. The composition of claim 1 wherein the cleansing component is selected from the group consisting of soap, a syndet surfactant, and mixtures thereof.

3. The composition of claim 2 wherein the syndet surfactant is selected from the group consisting of an anionic surfactant, a nonionic surfactant, a cationic surfactant, an amphoteric surfactant, and mixtures thereof.

4. The composition of claim 3 wherein the anionic surfactant is an acyl isethionate.

5. The composition of claim 3 wherein the nonionic surfactant is an alkyl polyglycoside of the formula:

   \[ R_1O(R_2O)_b(Z)_a \]  

   where \( R_1 \) is a monovalent organic radical having from about 6 to about 30 carbon atoms; \( R_2 \) is a divalent alkylene radical having from 2 to 4 carbon atoms; \( Z \) is a saccharide residue having 5 or 6 carbon atoms; \( b \) is a number having a value from 0 to about 12; \( a \) is a number having a value from 1 to about 6.

6. The composition of claim 1 wherein the cleansing component is present in the personal cleansing composition in an amount of from about 0.1 to about 96.9% by weight, based on the weight of the personal cleansing composition.
7. The composition of claim 1 wherein film-forming additive is a C₃₄ dibasic acid.

8. The composition of claim 1 wherein the film-forming additive is present in the personal cleansing composition in an amount of from about 0.1 to about 10% by weight, based on the weight of the personal cleansing composition.

9. The composition of claim 1 wherein the water is present in the personal cleansing composition in an amount of from about 3 to about 99.8% by weight, based on the weight of the personal cleansing composition.

10. The composition of claim 1 further comprising an auxiliary component selected from the group consisting of perfumes, pigments, dyes, preservatives, electrolyte salts and mixtures thereof.

11. A personal cleansing composition comprising:

   (a) from about 0.1 to about 96.9% by weight of a cleansing component selected from the group consisting of soap, a syndet surfactant and mixtures thereof;

   (b) from about 0.1 to about 5% by weight of a C₃₄ dibasic acid; and

   (c) remainder, water, all weights being based on the total weight of the personal cleansing composition.

12. A process for enhancing the protective film-forming properties of a personal cleansing composition comprising:

   (a) providing a cleansing component;

   (b) providing a film-forming additive component consisting of a dimer acid and its derivatives;

   (c) providing a water component; and
(d) mixing components (a)-(c) to form a personal cleansing composition.

13. The process of claim 12 wherein the cleansing component is selected from the group consisting of soap, a syndet surfactant, and mixtures thereof.

14. The process of claim 13 wherein the syndet surfactant is selected from the group consisting of an anionic surfactant, a nonionic surfactant, a cationic surfactant, an amphoteric surfactant, and mixtures thereof.

15. The process of claim 14 wherein the anionic surfactant is an acyl isethionate.

16. The process of claim 14 wherein the nonionic surfactant is an alkyl polyglycoside of the formula:

\[ R_1 O (R_2 O)_b (Z)_a \]  

wherein \( R_1 \) is a monovalent organic radical having from about 6 to about 30 carbon atoms; \( R_2 \) is a divalent alkylene radical having from 2 to 4 carbon atoms; \( Z \) is a saccharide residue having 5 or 6 carbon atoms; \( b \) is a number having a value from 0 to about 12; \( a \) is a number having a value from 1 to about 6.

17. The process of claim 12 wherein the cleansing component is present in the personal cleansing composition in an amount of from about 0.1 to about 96.9% by weight, based on the weight of the personal cleansing composition.

18. The process of claim 12 wherein film-forming additive is a \( C_{16} \) dibasic acid.

19. The process of claim 12 wherein the film-forming additive is present in the personal cleansing composition
in an amount of from about 0.1 to about 10% by weight, based on the weight of the personal cleansing composition.

20. The process of claim 12 wherein the water is present in the personal cleansing composition in an amount of from about 3 to about 99.8% by weight, based on the weight of the personal cleansing composition.

21. The process of claim 12 further comprising an auxiliary component selected from the group consisting of perfumes, pigments, dyes, preservatives, electrolyte salts and mixtures thereof.

22. The process of claim 12 further comprising forming the personal cleansing composition into a toilet bar.

23. The process of claim 12 further comprising forming the personal cleansing composition into a liquid or gel.

24. A process for enhancing the protective film-forming properties of a personal cleansing composition comprising:

(a) providing from about 0.1 to about 96.9% by weight of a cleansing component selected from the group consisting of soap, a syndet surfactant and mixtures thereof;

(b) providing from about 0.1 to about 5% by weight of a C₃₄ dibasic acid;

(c) providing remainder, water, all weights being based on the total weight of the personal cleansing composition; and

(d) mixing components (a)-(c) to form a personal cleansing composition.
**INTERNATIONAL SEARCH REPORT**

International application No.  
PCT/US98/20485

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A. **CLASSIFICATION OF SUBJECT MATTER**  
IPC(6) :C11D 9/32  
US CL :510/130, 131, 141, 151, 152, 153, 155  
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. : 510/130, 131, 141, 151, 152, 153, 155

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
NONE

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C. **DOCUMENTS CONSIDERED TO BE RELEVANT**

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<tbody>
<tr>
<td>Y</td>
<td>US 5,340,492 A (KACHER ET AL) 23 August 1994 (23-08-94), columns 1, 13, lines 15-29; column 18, lines 32-34; column 4, lines 64-65 and table 4.</td>
<td>1-24</td>
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<tr>
<td>Y</td>
<td>US 3,951,842 A (PRINCE ET AL) 20 April 1976 (20-04-76), column 6, lines 24-54; column 6, lines 34-36.</td>
<td>1,7, 11, 18 and 24</td>
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<tr>
<td>A</td>
<td>US 3,926,828 A (O’NEILL ET AL) 16 December 1975 (16-12-75), see entire document.</td>
<td>1-18</td>
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</table>

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

Date of the actual completion of the international search: 19 NOVEMBER 1998  
Date of mailing of the international search report: 23 DEC 1998

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