Mischungen aus Mikropigmenten

Die vorliegende Erfindung betrifft die Verwendung von Mischungen aus mikronisierten organischen UV-Filtern zum Schutz der menschlichen und tierischen Haut und Haare vor der schädigenden Einwirkung von UV-Strahlung und ihre Verwendung in kosmetischen und in pharmazeutischen Formulierungen.

Es ist bekannt, dass bestimmte organische UV-Filter, wie z.B. schwerlösliche Benzotriazol- oder Triazinverbindungen ausgeprägte UV-Filtereigenschaften aufweisen, wenn sie als Einzelverbindungen in mikronisierter Form vorliegen. Auf Grund ihrer spezifischen, substanztypischen Eigenschaften absorbieren, reflektieren bzw. streuen sie allerdings immer nur einen bestimmten Teil des schädlichen UV-Bereiches.

Es besteht ein starkes Interesse an Lichtschutzfiltern, die ein breites UV-Spektrum abdecken und damit einen besseren UV-Schutz bieten.

Die Aufgabe der vorliegenden Erfindung besteht also darin, mikronisierte organische UV-Filter zu finden, die einen breiteren Teil des UV-Bereichs abdecken und mit denen damit ein besserer UV-Schutz erzielt werden kann.

Überraschenderweise wurde nun gefunden, dass Mischungen aus mindestens zwei mikronisierten UV-Filtern diese Aufgabe erfüllen können.

Gegenstand der vorliegenden Erfindung ist daher die Verwendung von Mischungen aus mikronisierten organischen UV-Filtern zum Schutz der menschlichen und tierischen Haut und Haare vor der schädlichen Einwirkung von UV-Strahlung.

Geeignete erfindungsgemäss verwendbare UV-Filter sind organische, z.T. schwerlösliche Verbindungen, wie z.B. Triazinderivate, insbesondere Hydroxyphenyltriazinverbindungen oder Benzotriazolderivate, eine Vinylgruppe enthaltende Amide, Zimtsäurederivate, sulfonierte Benzimidazole, Fischerbase-Derivate, Diphenylmalonsäuredinitrile, Oxalylamide, Campherderivate, Diphenylacrylate, Paraaminobenzoesäure (PABA) und deren Derivate, Salicylate, Benzophenone und noch weitere als UV-Filter bekannte Stoffklassen.

comprising dimer acid, stearic acid, cetanol, vaseline, squalene, glycerin monostearate, monosodium-N-stearoylglutamate, propylene glycol, potassium hydroxide and carboxyvinylpolymer.

WO 94/20067 (PCT/EP94/00814) appears to disclose an emulsion of a dicarboxylic acid and an emulsifying agent which is chosen such that the emulsion may be shear thickened in use. According thereto, the emulsion may be used in toiletries compositions, cosmetics compositions and pharmaceutical compositions.

The following patents and published applications appear to disclose the use of polyisobutylene, which is also referred to as polymeric isobutene, polymeric isobutylene and polyisobutene.

US Pat. No. 5,658,577 to Fowler et al. appears to disclose a nonabrasive thickened aqueous-based personal cleansing compositions, which utilize insoluble micronized cleansing particles. One material identified in the general disclosure thereof regarding the solid cleansing particles is polyisobutylene.

WO 96/32092 (PCT/US96/05038) appears to disclose compositions for personal cleansing in the form of oil-in-water emulsions which have the characteristic of breaking up upon contact with the skin. The compositions appear to contain (1) a particular copolymer, (2) a non-emulsifying detersive surfactant, (3) an oil selected from a specific group of compounds, and (4) water. Two of the oils amongst many identified are hydrogenated polyisobutylene and isohexadecane (according to this publication is a commercially available hydrocarbon sold as Permethyl 101A by Presperse, South Plainfield, NJ).

WO 97/16168 (PCT/US96/17506) appears to disclose a personal cleansing composition containing (1) a surfactant, (2) a hydrophobic active component, (3) a

hydrocarbon-containing component and (4) a cationic polymer. The hydrocarbon-containing component may be a "permethyl" having the general formula:

$$CH3 - (- C(CH3)2 - CH2 -)n - C(CH3)H - CH3$$

wherein "n" can vary from about 4 to over 200. Products wherein "n" is 4, 16, 38 and 214, respectively, are disclosed as being marketed as PERMETHYL 102A, 104A, 106A and 1082A from Presperse, Inc. The examples thereof appear to use PERMETHYL 104A and 106A.

U.S. Pat. No. 5,441,730 appears to disclose a shampoo, rather than a hand cleanser, wherein the shampoo contains polymeric isobutylene and surfactants (which do not include cationic surfactants). This reference also appears to disclose a hair styling composition which contains cationic surfactants as a conditioning ingredient.

Skin cleansing compositions must satisfy a number of criteria to be accepted by the customers. These criteria include cleansing, easy to apply and rinse off, copious amount of foam, good skin feel during and after use, and mild to the skin as well as moisturizing and conditioning. The ideal skin cleanser should be able to deliver these product attributes even when used frequently.

In the average home setting, the frequency of hand washing is somewhere between about 5 to 10 times daily. These customers are the average consumers who shop at the local supermarkets for their skin cleansers. Most of the premium skin cleansers on the market will meet these customer needs.

These skin cleansers utilize surfactant combinations that deliver the foaming characteristics while minimizing the irritation. The conditioning cleanser formulations include emollients and moisturizers which leave a coated feel on the skin after rising. The

coated feel frequently is the result of using oils of triglycerides to deliver the conditioning that the customers want; however, most customers want the conditioning benefits without the hard to rinse-off and coated feel.

Another segment of the market is the professional caregivers whose profession demands that they wash their hands about 30 to 50 times a day to minimize cross contamination and thus nosocomial infection. These customers demand skin cleansers that will not damage their skin when used in high frequency. They also do not have the time or, in some cases, are not allowed to apply hand lotions between handwashings. Another product attribute they seek is an easy to rinse off product as they are frequently rushing from patient to patient.

Therefore, a need exists for a personal cleansing composition that (a) can be used at least 30 times per day without causing irritation or dryness to the skin, (b) is easy to rinse off and (c) leaves the skin feeling clean and conditioned.

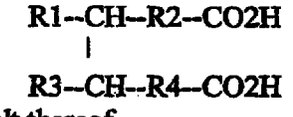
Summary of the Invention

The personal cleansing composition of the present invention provides effective cleansing properties with cosmetic elegance and also long-lasting skin conditioning and moisturization benefits to maintain skin integrity even under frequent usage conditions.

The personal cleansing composition comprises:

a) at least one polymeric isobutene having from about 12 to about 156 carbon atoms, preferably from about 24 to about 156 carbon atoms, wherein the polymeric isobutene is liquid at room temperature and pressure,

b) at least one dicarboxylic acid having the formula



or a cosmetically acceptable salt thereof,

wherein

R1 and R3 are each C6-C10 alkyl and

R2 and R4 are each C6 to C10 alkylene;

c) at least one surfactant selected from the group consisting of anionic, amphoteric, nonionic, zwitterionic and combinations thereof; and

d) water.

The polymeric polyisobutenes and the dicarboxylic acids are hydrophobic and are substantive to the skin. These two materials resist wash off, and provide long-lasting conditioning feel on the skin and moisturization.

The polymeric isobutene component of the composition provides long-lasting skin conditioning via deposition of a hydrophobic film on the skin. Liquid polymeric isobutenes

have primarily been utilized in cosmetic formulations and not in personal cleansing compositions. The polymeric isobutenes may be hydrogenated. The polymeric isobutene is preferably present in an amount ranging from about 0.1 to about 10 percent, more preferably from about 1 to about 8 percent, by weight based on the total weight of the composition.

The dicarboxylic acid is preferably a dimer acid wherein R1 and R3 are the same alkyl and R2 and R4 are the same group. The dicarboxylic acid is preferably present in an amount ranging from about 0.1 to about 10 percent, more preferably from about 1 to about 8 percent.

The surfactants are preferably present in an amount of at least 1% by weight of the composition, more preferably from about 2 to about 30% by weight, and most preferably from about 5 to about 25% by weight. The surfactant component provides the flash and voluminous foam which are difficult to obtain with compositions that are enriched with hydrophobic and skin conditioning ingredients. The surfactants are preferably those which are mild to the skin and provide flash foaming properties to the composition. The anionic surfactants provide voluminous foam. The amphoteric and zwitterionic surfactants provide foam stability and mildness and also build viscosity. The nonionic surfactants provide cleansing and mildness and also provide viscosity.

The composition may optionally further include a viscosity building agent and/or an emulsifying agent to the extent such properties are not supplied or insufficiently supplied by the polymeric isobutene, dicarboxylic acid and surfactant(s).

When present, the emulsifying agent is preferably present in an amount ranging from about 0.1 to about 5 percent, more preferably from about 0.1 to about 2.5 percent, by

weight.

When present, the viscosity building agent is preferably present in an amount ranging from about 0.1 to about 5 percent, more preferably from about 0.1 to about 2.5 percent, by weight.

Polyglycerol esters have the property of being both a viscosity building agent and an emulsifying agent. Polyglycerol esters have the added benefit of being substantive to the skin and providing long-term moisturization. When a large amount of hydrophobic components are present in the composition, surfactants alone are typically not adequate to maintain the composition homogeneous. Accordingly, polyglycerol esters are preferably used to build viscosity, emulsify and keep the composition homogeneous. When present, polyglycerol esters are preferably present in an amount ranging from about 0.1 to about 5 percent, more preferably from about 0.1 to about 2.5 percent, by weight.

The composition optionally further comprises at least one amine-functional silicone, preferably present in an amount ranging from about 0.1 to about 3 percent, more preferably from about 0.1 to about 2 percent, by weight. This component provides substantive skin conditioning and lessens and controls the tacky feel imparted by the polymeric isobutenes and the dicarboxylic acids utilized in the composition.

The polyglycerol ester and the amino-functional silicone may both be present in the composition. However, when the surfactants (e.g., amphoteric and nonionic surfactants can act as viscosity building agents) in the composition provide sufficient viscosity for the composition, the amino-functional silicone may be used without the polyglycerol ester.

The composition may further comprise a polyethylene glycol having a molecular weight ranging from about 1,500,000 to about 5,000,000 molecular weight, preferably

present in an amount ranging from about 0.01 to about 0.7 percent, more preferably from about 0.05 to about 0.4 percent, by weight. This component provides a lubricious feel during usage. This component acts as a lubricating or slip agent.

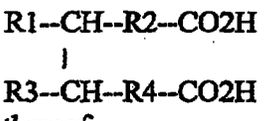
Unless otherwise specified, all percentages used herein are by weight of the total composition and all measurements made are at 25°C. All weight percentages, unless otherwise indicated, are on an active ingredient's weight basis (as opposed to a weight percentage of a commercially available material which contains the active in a solvent).

Detailed Description of the Invention

According to the present invention, there is provided a personal cleansing composition comprising:

a) at least one polymeric isobutene having from about 24 to about 156 carbon atoms, wherein the polymeric isobutene is liquid at room temperature and pressure;

b) at least one dicarboxylic acid having the formula



or a cosmetically acceptable salt thereof,

wherein

R1 and R3 are each C6-C10 alkyl and

R2 and R4 are each C6 to C10 alkylene;

c) at least one surfactant selected from the group consisting of anionic, amphoteric, nonionic, zwitterionic and combinations thereof; and

d) water.

Liquid Polymeric Isobutene

The polymeric isobutenes suitable for use in the present invention have from about 12 to about 156 carbon atoms, preferably from about 24 to about 156 carbon atoms. The polymeric isobutenes are liquid (free flowing liquid to viscous liquid) at room temperature and pressure and provides long-lasting skin conditioning via deposition of a hydrophobic film on the skin. Liquid polymeric isobutenes have primarily been utilized in cosmetic formulations and not in personal cleansing compositions. The liquid polymeric isobutene is

sometimes referred to as a "permethyl", and are available from Presperse, Inc. Such materials have the general formula:

$$CH3 - (- C(CH3)2 - CH2 -)n - C(CH3)H - CH3$$

wherein "n" can vary from about 2 to over 200. Products wherein "n" is 2, 3, 4, 16 and 38, respectively, are disclosed as being marketed as PERMETHYL 99A, 101A, 102A, 104A and 106A from Presperse, Inc. These polymeric isobutenes range from a free-flowing liquid to a viscous liquid at room temperature.

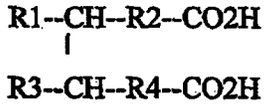
Table A: PERMETHYL Product Viscosity

PERMETHYL	Viscosity
99A (CI2)	1 cps @ 20 °C
101A (C16)	4 cps @ 25 °C
102A (C20)	16 cps @ 25 °C
104A (C68)	7600 cps @ 40 °C
106A (C156)	3200 cps @ 100 °C

Such polymeric isobutenes may be prepared by any suitable method, such as disclosed in U.S. Pat. No. 4,061,780 and in WO 96/32092 (PCT/US96/05038), which are hereby incorporated by reference. For purposes of the present invention, the hydrogenation step of U.S. 4,061,780 is optional. Please note that the PERMETHYL materials do contain some unsaturation.

Dicarboxylic Acid

The dicarboxylic acids useful in the present invention have the formula



or a cosmetically acceptable salt thereof,

wherein

R1 and R3 are each C6-C10 alkyl and

R2 and R4 are each C6 to C10 alkylene.

Preferably, R1 and R3 have the same carbon chain length, and R2 and R4 have the same carbon chain length. In one embodiment, all of R1, R2, R3 and R4 have the same carbon chain length, for example, a C8 alkyl for R1 and R3 and a C8 alkylene for R2 and R4.

The dicarboxylic acid may be produced by the dimerization of an unsaturated C18 fatty acid, for example, linoleic acid. It will be appreciated, however, that other methods of synthesis are possible. Dicarboxylic acids of this type are commercially available, for example under the trade names of EMPOL Dimer Acids from Henkel Corp., such as EMPOL 1008, and "Pripol" from Unichema International, such as Pripol 1006 and Pripol 1009. The "Pripol" dimer acids are hydrogenated.

The polymeric polyisobutenes and the dicarboxylic acids are hydrophobic and are substantive to the skin. These two materials resist wash off, and provide long-lasting conditioning feel on the skin and moisturization. The polymeric isobutene is

preferably present in an amount ranging from about 1 to about 5 percent. The dicarboxylic acid is preferably present in an amount ranging from about 1 to about 10 percent. The dicarboxylic acid is preferably a dimer acid wherein R1 and R3 are the same alkyl and R2 and R4 are the same group. Dimer acids have the added attribute of being useful in sunscreens as an anti-free-radical agent. Unless otherwise indicated all percents are by weight based on the total weight of the composition.

Surfactant

The composition preferably also comprises a surfactant selected from the group consisting of anionic, amphoteric, nonionic, zwitterionic and combinations thereof. The surfactant component provides the flash and voluminous foam which are difficult to obtain with compositions that are enriched with hydrophobic and skin conditioning ingredients. The surfactants are preferably those which are mild to the skin and provide flash foaming properties to the composition. The anionic surfactants provide voluminous foam. The amphoteric surfactants provide foam stability and mildness. The nonionic surfactants provide cleansing and mildness.

Such surfactants are well known and commercially available. See, U.S. Pat. Nos. 5,441,730; 5,534,265; 5,585,104; and 5,658,577, which are hereby incorporated by reference.

Suitable anionic surfactants are the alkyl sulfates, alkyl ether sulfates, alkaryl sulfonates, alkyl succinates, alkyl sulfosuccinates, N-alkyl sarcosinates, alkyl phosphates, alkyl ether phosphates, alkyl ether carboxylates, and α-olefin sulfonates, especially their sodium, magnesium, ammonium and mono-, di- and tri-ethanolamine salts. The alkyl

groups generally contain from 8 to 18 carbon atoms and may be unsaturated. The alkyl ether sulfates, alkyl ether phosphates and alkyl ether carboxylates may contain from 1 to 10 ethylene oxide and/or propylene oxide units per molecule, and preferably contain 2 to 3 ethylene oxide units per molecule.

Examples of further suitable anionic surfactants include sodium acyl isethionates, sodium acyl taurates, sodium oleyl succinate, ammonium lauryl sulfosuccinate, ammonium lauryl sulfate, sodium dodecylbenzene sulfonate, triethanolamine dodecylbenzene sulfonate and sodium N-lauryl sarcosinate. Other useful anionic surfactants include sodium lauryl sulfate, triethanolamine lauryl sulfate, triethanolamine monolauryl phosphate, sodium lauryl ether sulfate 1EO, 2EO and 3EO, ammonium lauryl sulfate and ammonium lauryl ether sulfate 1EO, 2EO and 3EO. As used herein, "EO" means an oxyethylene group.

Nonionic surfactants include condensation products of aliphatic (C_8-C_{18}) primary or secondary linear or branched-chain alcohols or phenols with alkylene oxides, usually ethylene oxide and generally from about 6 to about 30 EO groups.

Other suitable nonionics include mono- or di-alkyl alkanolamides and alkyl polyglucosides. Examples include coco mono- or di-ethanolamide, coco mono-isopropanolamide, and coco di-glucoside.

Amphoteric and zwitterionic surfactants include alkyl amine oxides, alkyl betaines, alkyl amidopropyl betaines, alkyl sulfobetaines (sultaines), alkyl glycinates, alkyl carboxyglycinates, alkyl amphopropionates, alkyl amphoglycinates, alkyl amidopropyl hydroxysultaines, acyl taurates and acyl glutamates, wherein the alkyl and acyl groups have from 8 to 19 carbon atoms. Examples include lauryl amine oxide, cocodimethyl sulfopropyl betaine and preferably lauryl betaine, cocamidopropyl betaine and sodium

cocamphopropionate.

The total level of surfactant material(s) in the compositions of the present invention is preferably at least 1% by weight of the composition, more preferably from about 2 to about 30% by weight and most preferably from about 5 to about 25% by weight.

Any emulsifier may be used which provides the necessary emulsion stability and examples of such emulsifiers are well known in the art and will therefore not be discussed at length here.

The emulsifier agent may if desired or appropriately be provided by any surfactant present in the composition as a detergent material or may alternatively be constituted by another surfactant component present purely for its emulsifier properties.

A particularly preferred emulsifier agent is an anionic emulsifier, such as an alkylarylpolyalkoxyethylene sulfate, e.g. sodium alkylphenylpolyethoxyethylene sulfate, available commercially for example as Alipal CO-433.

The emulsifier agent may be used in any suitable amount, as appropriate to the processing conditions and materials used. By way of example, a suitable amount of emulsifier agent may be from about 0.1 to about 10% by weight, preferably from about 1 to about 5% by weight.

Polyglycerol Ester

The composition preferably further comprises at least one polyglycerol ester is preferably present in an amount ranging from about 0.25 to about 2 percent. This component is substantive to the skin and provides long-term moisturization and

emulsification of the components of the composition. When a large amount of hydrophobic components are present in the composition, surfactants alone are typically not adequate to maintain the composition homogeneous. The polyglycerol esters are used to emulsify and keep the composition homogeneous. Such materials are available commercially, for example, from Lonza, Inc., Fair Lawn, NJ under the trade name POLYALDO. These include: Polyaldo 3-1-S (triglyceryl monostearate), Polyaldo 6-2-0 (hexaglyceryl dioleate), Polyaldo 6-4-0 (hexaglyceryl tetraoleate), Polyaldo 6-2-P (hexaglyceryl dipalmitate), Polyaldo 6-2-S (hexaglyceryl distearate), Polyaldo 10-1-0 (decaglyceryl mono-oleate), Polyaldo 10-6-0 (decaglyceryl hexaoleate), Polyaldo 10-10-0 (decaglyceryl decaoleate), Polyaldo 10-2-P (decaglyceryl dipalmitate), and Polyaldo 10-1-S (decaglyceryl monostearate). Suitable polyglycerol esters include those disclosed in U.S. 3,936,391, which have 3 to 10 glycerol units and 1 to 2 saturated fatty acyl ester groups each having from 16 to 20 carbon atoms. U.S. 4,950,441 and 5,247,114 and WO 96/01616 (Lonza) disclose suitable polyglycerol esters and their method of manufacture. U.S. 3,936,391; 4,950, 441; and 5,247,114 and WO 96/01616 (Lonza) are hereby incorporated by reference.

Amine-Functional Silicone

The composition preferably further comprises at least one amine-functional silicone, preferably present in an amount ranging from about 0.25 to about 2 percent. This component provides substantive skin conditioning and lessens and controls the tacky feel imparted by the polymeric isobutenes and the dicarboxylic acids utilized herein. Such materials are available commercially, for example, from Witco under the trade name

"Silsoft"; Goldschmidt under the trade name "Abil" and "Tegosoft"; and Dow Corning under the trade name, for example, Dow Corning 344 Fluid.

Polyethylene Glycol

The composition preferably further comprises a polyethylene glycol having a molecular weight from about 1,500,000 to about 5,000,000, preferably present in an amount ranging from about 0.01 to about 0.7 percent. This component provides a lubricious feel during usage. This component acts as a lubricating agent.

Polyethylene glycol is a well-known material and has CAS number 25322-68-3. It is also known as poly(oxyethylene), polyglycol and polyether glycol. Polyethylene glycol is prepared by the condensation of ethylene glycol or of ethylene oxide and water. Such materials are also available commercially, for example, from R.I.T.A. under the trade name PEO, such as PEO-18, which is PEG-90M. Such materials are also available from Amerchol.

Other Ingredients

One or more other adjunct ingredients commonly found in personal cleansing compositions may also be included in compositions of the present invention in minor amounts. Such additional ingredients include foam boosters, pearlizers, opacifiers, suspending agents, preservatives, perfumes, dyes, coloring agents, viscosity modifiers, proteins, polymers, buffering agents, polyols and other moisturizing agents and herb and other plant extracts.

The compositions of the invention are preferably based on an aqueous emulsion, typically with water forming at least one component of the continuous phase. The compositions, especially those which are hair care compositions, preferably comprise water in an amount of from about 30 to about 90% by weight, most preferably from about 40 to

about 70% by weight.

EXAMPLES

The performance of the following composition examples were evaluated by sensory panels, focus groups, biophysical measurements, trained clinicians, digital imaging photography and/or technical personnel.

A sensory panel is comprised of both technical and non-technical personnel who used the products on a blind-label basis and provided feedback based on sensory perception. The focus group participants also evaluated the products without knowing the manufacturer of the products. In addition, they were evaluating and assessing whether the products delivered on the benefits presented in the product concepts.

Clinician evaluation of the skin consisted of visual examination of the skin to assess degree of erythema and scaling.

Digital imaging photography offers consistently high resolution and color reproduction that conventional photography does not offer.

Evaluation by technical personnel consisted of evaluating the cosmetic appearance, testing the physical properties using instruments such as pH meter, viscometer, microscope, spectrophotometer, etc. and assessing the performance of the products on sensory parameters such as smell, skin feel, etc.

Materials Used:

The following materials have been used in preparing the formulations of the Examples herein:

Table B

Tradename (Supplier)	Description	Function
Polyado HGDS (Lonza)	Hexaglycerol Distearate	Emulsifier/thickener/moisturizer
Mapeg 6000 (PPG)	PEG 150 Distearate	Thickener/skin conditioning agent
Empicol AL 70/A (Albright & Wilson)	Ammonium Lauryl Sulfate	High foaming anionic surfactant
Standapol EA-2 (Henkel/Cospha)	Ammonium Laureth Sulfate	Moderate to high foaming anionic surfactant
Atlas G-4280 (ICI)	polyoxyethlyene (80) monolaurate [PEG-80 sorbitan laurate]	Skin coating & adhesion
Mackam CBS-50G (McIntyre)	Cocamidopropyl Hydroxysultaine	Gentle zwitterionic surfactant/ foam booster/thickener
Silsoft A-858 (OSI/Witco)	Trimethylsilyl Amodimethicone Copolyol	Skin adhesion agent/smooth agent
Lexorez-100 (Inolex)	Adipic Acid/Diethylene Glycol/Glycerin Crosspolymer	Skin coating & adhension
Arlacel 80 (ICI)	Sorbitan Mono-oleate	Strong emulsifier/nonionic surfactant
Dimer Acid (Henkel)	EMPOL 1008	Carrier/coating agent
Permethyl 104A (Presperse, Inc.)	Polyisobutene	Coating agent/skin feel/adhering aid
Carbopol ETD 2020 (B.F. Goodrich)	Carbomer	Thickener/suspending/viscosity control
Dowicil 200 (Dow Chemical)	Quaterium-15	Preservative

Table B (Cont'd)

Tradename (Supplier)	Description	Function
D.I. Water		
Empicol LX-100 (Albright & Wilson)	Sodium Lauryl Sulfate	High foaming anionic surfactant
Empicol ESD FEA (Albright & Wilson)	Sodium Laureth Sulfate	Moderate to high foaming anionic surfactant
Eucarol AGE-EC (Pilot Chemical)	Disodium Cocoglucoside Citrate	Gentle moderate foaming anion surfactant
PEO-18 (R.I.T.A.)	PEG-90M	Friction reducer/slippery feel/conditioning agent
Seafoam (Firmenich)	Fragrance	Fragrance
Mackanate EL (McIntyre)	Disodium Laureth Sulfosuccinate	Gentle moderate to high foamin anionic surfactant
Tego Betaine L-7 (Goldschmidt Chem.)	Cocoamidopropyl Betaine	Gentle moderate foam amphoteric surfactant
Ritamectant PCA (R.I.T.A.)	Sodium PCA	Humectant
Glycerin (Witco, Corp.)	Glycerin	Moisturizer
Stepanate SXS (Stepan)	Sodium xylenesulfonate	High foaming anionic surfactant/foam booster
Monateric 1023 (Mona Indus.)	Sodium Lauroampho PG-acetate phosphate	Gentle moderate to high foamin amphoteric surfactant
Empicol ESB 70/FEA (Albright & Wilson)	Sodium Laureth Sulfate	Moderate to high foaming anionic surfactant

Table B (Cont'd)

Tradename (Supplier)	Description	Function
TECH-O #11-070 (Beacon CMP Corp.)	Oat Flour (CAS # 134134-86-4)	Thickener, binder and protein source
Ritacomplex J (R.I.T.A.)	Na Cocoyl lactylate/GMS/ Cetearyl alcohol	Conditioning agents, emollient
Witconate AOS (Witco Corp.)	Alkyl (C_{14} – C_{16}) olefin Sulfonate	Anionic surfactant
VERSENE NA (Dow Chemical)	$Na_2H_2EDTA \bullet 2H_2O$	Chelating agent
Empicol EAC 70/EP (Albright & Wilson)	Ammonium Laureth Sulfate	Moderate to high foaming anionic surfactant
Amphoterge K-2 (Lonza)	Disodium Cocoamphodipropionate	High foaming amphoteric surfactant
LANETTE 14 NF (Henkel/Cospha)	Myristyl alcohol (CAS# 112-72-1)	Emollient/conditioning agent.

Formulation Procedure:

Unless otherwise indicated, the formulations in the following examples were prepared using the procedure given below:

1. Charge approximately 40% of the total water needed into a mixer and heat to 65 to 70°C while under agitation.
2. Add the POLYALDO HGDS and the MAPEG 6000 to the mixer and allow to mix for 15 to 20 minutes under moderate agitation until homogeneous. Solution will appear smooth and milky – white.
3. In a second mixing vessel, combine the PEO–18 (PEG-90M) with the remaining

required water. (Use caution not to introduce air into the solution)

4. Reduce mixing speed to give a light-moderate agitation. Add STEPANATE SXS and Witconate AOS, an anionic surfactant, (if used) and continue mixing for an additional 30 (thirty) minutes. (NOTE: Mixing speed should not generate foam or introduce air into the solution.)

5. Slightly increase the mixing speed of the first vessel containing the added components and start adding the PEO-18 solution (prehydrate) slowly. The system will start to cool down – but hold the temperature between 55 to 60°C.

6. If a CARBOMER (ETD – 2020) is used, it should be handled similar to the PEO–18 by making a prehydrate solution and by adding slowly as in step # 5.

7. The following products can be added at this step EMPICOL ESB 70/FEA, EMPICOL AL 70/A, STANDAPOL EA-2, EMPICOL LX-100, EUCAROL AGE-EC. MACKANATE EL, AND MONATERIC 1023 as per each individual formulation requirement. After this addition, add the TEGO BETAINE L-7 and allow to mix for 20 minutes. Maintain good mixing as the solution thickens by increasing mixing speed without creating foam or introducing air into the solution. At this step, start increasing the temperature to 65 – 70°C.

8. Add the ATLAS G-4280, ARLACEL 80, MACKAM CBS-50G, SILSOFT A-858, and LEXOREZ–100 (if noted in the formulation). Then, mix for 20 minutes while holding the temperature at 65 to 70°C.

9. Add the dimer acid (EMPOL 1008), followed by the PERMETHYL 104A. Increase the mixing speed to maintain good mixing without creating foam or introducing air (bubbles) into the solution.

10. Mix for 90 minutes at 60 to 65°C. Then, cool to 45°C before going to the next step.
11. Add RITAMECTANT PCA followed by KEMSTRENE (glycerine). Mix for 5 minutes.
12. Add DOWICIL 200 (if used), then the VERSENE NA. Mix for 5 minutes.
13. Add fragrance and continue mixing for 20 minutes while letting the product cool to 25 to 30°C.
14. Adjust pH to 5.5 with (20%) citric acid and/or (20%) sodium hydroxide.
15. Add water to obtain the final weight and mix for additional 15-20 minutes with no heating.

Examples 1462-126 and 1462-127

Formulations 14621-126 and 1462-127 were formulated to provide a lotion-like appearance and improve lathering and long term conditioning benefits. Dimer acid and polyisobutene were used for long term conditioning benefits. The trimethysilyl amodimethicone copolyol was used to reduce the tacky tactile properties of the dimer acid. Emulsifiers, such as PEG-80 sorbitan laurate and sorbitan mono-oleate, were used keep the formulation homogeneous.

Formulation No.:	1462-126	1462-127
Ingredient	%w/w	%w/w
Hexaglyceryl Distearate	1.00	1.00
PEG-150 Distearate	2.00	2.00
Ammonium lauryl sulfate	8.76	8.76
Ammonium laureth sulfate	1.00	0.75
Adipic acid/diethylene glycol/glycerin crosspolymer	0.50	1.00
PEG-80 Sorbitan Laurate	1.44	1.44
Cocamidopropyl Hydroxysultaine	2.00	2.00
Sorbitan mono-oleate	1.00	1.00
Dimer Acid	2.50	2.50
Polyisobutene (Permethyl 104A)	2.50	2.50
Carbomer	0.50	0.50
Trimethylsilyl amodimethicone copolyol	1.75	1.50
Quaternium-15	0.05	0.05
Disodium EDTA	0.10	0.10
Fragrance	0.50	0.50
D.I. water	65.59	66.70
Misc.*	8.90	7.70
Total	100.00	100.00

Note: "Misc." as used in the formulations of the Examples herein includes the carriers (typically water) and impurities contained in the commercially available products which are the sources of the ingredients listed in the formulations.

Examples 1462-151 and 1462-161

Formulations 1462-151 and 1462-161 were formulated to provide the lubricious feel during application of the product on the hands. Polyethylene glycols provide such tactile properties. PEG-90M was used in these examples.

A sensory panel composed of 25 individuals used these two formulations and a benchmark product (the identity of which was concealed from the panelists). The panelists each washed their hands at least 3 times a day (normal household usage) with each of these formulations and rated them on a scale of 0 to 7, where "7" represented the highest level of satisfaction of the panelist, relative to certain specific attributes, except that with "Feel coated" category "0" represented the highest Level of satisfaction. The results are given in Table 1.

TABLE 1

ATTRIBUTE	-151	CONTROL	-161
Like product consistency	5.32	5.96	2.08
Ease of application	5.80	6.28	2.60
Ease of lathering	4.96	5.92	3.04
Like ease of lathering	5.04	5.92	2.92
Amount of lather	4.44	5.36	3.08
Like amount of lather	4.80	5.80	3.36
* Lubricious feel during appl	5.76	5.76	4.60
* Easy to rinse off	5.40	5.08	2.92
* Feel coated (lower number is better)	3.36	3.84	3.80
Like way hands feel	5.56	5.16	4.32
* Feel moisturized	4.88	4.36	3.88
* Feel moisturized, 30 min after application	4.16	3.80	3.28
Overall liking	5.00	4.96	2.76

One of the performance objectives of the invention was to provide a skin cleanser that has long term conditioning effects, including moisturizing attributes. The "*" marked categories are those which relate to this performance objective. The coated feel category is included since it provides an indicator of user acceptance.

Sensory panel results show that 1462-151 performed on the moisturizing

attributes but generated slightly less lather versus the benchmark [Oil of Olay Moisturizing Body Wash]. The overall liking and preference were equivalent. When the panelists were asked to pick the product they liked the best of the three. The results revealed that 40% picked 1462-151 and 48% picked the benchmark product

Formulation 1462-161 was prepared and used without an initial evaluation as to basic properties such as viscosity prior to use with the sensory panel. Formulation 1462-161 was not perceived to have performed as well as Formulation 1462-151 and the benchmark product. This was due in part to its greater viscosity compared to the other two formulations tested. Due to the greater viscosity, the panelists had a difficult time getting the product out of the container. This had a negative halo effect on the performance of this formulation. The increased viscosity is believed to have been due to the use of disodium laureth sulfosuccinate (note that it was not used in Formulation 1462-151) and its interaction with the other ingredients possibly forming micelles. It is believed that by lowering the concentration of this ingredient, for example, to about 1.5% by weight (the amount of disodium cocoglucoside citrate used in Formulation 1462-151) that this high viscosity situation would be ameliorated and a less viscous product would result.

One of the performance objectives of the invention was to provide a skin cleanser that can be used at least 30 times a day without causing skin irritation or dryness. A technical person tested 1462-151 by washing with it 30 times a day for one week. Digital imaging photograph was used to document the effects of the skin cleanser on the hands. Digital photographs were taken before usage, two days, four days and seven days later. The photographs showed no visible skin irritation or dryness after seven days of frequent handwashing.

Ingredient	1462-151 %w/w	1462-161 %w/w
Hexaglyceryl Distearate	1.50	1.50
PEG-150 Distearate	2.00	2.00
Sodium lauryl sulfate	7.68	2.88
Sodium laureth sulfate	1.40	3.50
Disodium cocoglucoside citrate	1.50	0.00
PEG-80 sorbitan laurate	1.44	1.44
Cocamidoproyl Hydroxysultaine	2.00	2.00
Sorbitan mono-oleate	1.00	1.00
Dimer Acid	2.50	2.50
Polyisobutene	2.50	2.50
Disodium laureth sulfosuccinate	0.00	3.20
Trimethylsilyl amodimethicone copolyol	2.00	1.50
PEG-90M	0.40	0.40
Quaternium-15	0.05	0.05
Disodium EDTA	0.10	0.10
Fragrance	0.50	0.50
D.I. water	66.90	65.90
Misc.	6.50	9.0
Total	100.00	100.00

Examples 1488-57, 1488-58 and 1488-59

Formulations 1488-57, 58 and 59 were additional formulations with variations in the concentration of the sodium laureth sulfate, sodium xylenesulfonate, cocamidopropyl hydroxy sultaine, trimethylsilyl amodimethicone copolyol, sodium PCA, glycerin and fragrance.

In four focus group sessions attended by operating room nurses, Formulation 1488-59 received favorable evaluations in the areas of lathering characteristics, skin feel and moisturization when tested against the concept of a skin cleanser that will provide moisturization as well cleansing and can be used frequently in the hospital setting.

A technical person washed with Formulation 1488-59 for 35 consecutive times in one day. No perceivable irritation was experienced and no perceivable dryness was observed on the hands.

Three technical person washed with Formulations 1488-57 and 1488-58 in a similar manner to Formulations 1488-59. These formulations had good foaming action, cleaning, after feel and moisturizing. No perceivable irritation was experienced and no perceivable dryness was observed on the hands.

Ingredient	1488-57 %w/w	1488-58 %w/w	1488-59 %w/w
Hexaglyceryl Distearate	0.75	0.75	0.75
PEG-150 Distearate	1.00	1.00	1.00
Sodium laureth sulfate	9.10	8.40	9.10
Sodium xylenesulfonate	1.20	0.80	0.80
PEG-80 sorbitan laurate	2.88	2.88	2.88
Cocamidopropyl Betaine	1.80	1.80	1.80
Cocamidoproyl Hydroxysultaine	2.00	1.75	2.00
Dimer Acid	2.50	2.50	2.50
Polymeric isobutene(Permethyl 104A)	2.50	2.50	2.50
Trimethylsilyl amodimethicone copolyol	1.00	0.50	0.50
PEG-90M	0.30	0.30	0.30
Sodium PCA	1.00	0.75	0.75
Glycerin	6.00	4.00	4.00
Quaternium-15	0.05	0.05	0.05
Disodium EDTA	0.10	0.10	0.10
Fragrance	0.50	0.40	0.40
D.I. water	52.80	59.70	58.20
Misc.	14.50	11.80	12.40
Total	100.00	100.00	100.00

The compositions of the present invention may be prepared by the following general

procedures outlined here. In one procedure, the PEG-90M was first dispersed in 65°C water. The polyglycerol ester and PEG-150 distearate were then introduced. This was followed by the various surfactants and emulsifiers. Care was taken in the whole process to minimize aeration of the mixture. Maintaining the mixture at 65°C, the dimer acid and liquid polymeric isobutene were then added. The heat was removed at this stage, and the humectants, glycerin and sodium PCA, were add. This was followed by the preservatives, quaternium-15 and disodium EDTA (versene NA). After the mixture cooled to 40°C, the fragrance was added. The final pH was adjusted with either citric acid or sodium hydroxide solution to about 5.5.

In another procedure, the compositions of the present invention may also be prepared as follows. The polyglycerol ester and PEG-150 distearate were added to 65-70°C water. After the mixture was homogeneous, sodium xylene sulfonate was added to the mixture. Then, the PEG-90M which was dispersed in water in a second vessel was added to the main vessel. The remaining surfactants, trimethylsilyl amodimethicone copolyol, dimer acid, liquid polymeric isobutene, sodium PCA, glycerin, preservatives and fragrance were then added in order with mixing after the addition of each ingredient. The final pH was adjusted with either citric acid or sodium hydroxide solution.

Example: 1488 -94, -92, and –78

In this example, three formulations were prepared using the ingredients shown below:

Formulations:

Formulation No.:	(94)	(92)	(78)
POLYALDO HGDS FG	0.75%	0.75%	0.75%
MAPEG 6000	--	1.00%	1.00%
EMPICOL ESB 70/FEA	9.1%	7.0%	9.1%
STEPANATE SXS	0.8%	0.8%	0.8%
ATLAS G-4280	2.88%	2.88%	2.88%
TEGO BETAINE L-7	1.8%	1.8%	1.8%
MACKEM CBS -50G	2.0%	1.0%	1.0%
SILSOFT A –858	0.5%	0.5%	0.5%
Dimer Acid	2.5%	2.0%	2.0%
PERMETHYL 104A	2.5%	2.0%	2.0%
PEO-18 (PEG 90M)	0.3%	0.2%	0.2%
RITAMECTANT PCA	0.75%	--	--
R.I.T.A. (Na Cocoyl Lactylate/GMS)	1.5%	2.0%	3.0%
VERSENE EDTA	0.1%	0.1%	0.1%
Fragrance	0.2%	0.5%	0.5%
WITCONATE AOS	--	1.2%	0.8%
Citric Acid (20%) or NaOH (20%)-pH Adj.	5.5%	5.5%	5.5%
ARLACEL 80 (Sorbitan Mono-oleate)	1.00%	1.25%	1.25%
DOWICIL 200	0.05%	0.05%	0.05%
Glycerine	4.0%	4.0%	--
D.I. water	60.8%	61.5%	65.4%
Misc.	3.0%	4.0%	1.4%
TOTAL	100%	100%	100%

Note: The percentages in the foregoing table refer to the amount of the active component (contained in the trademarked product – refer to Table B above) contained in the formulation.

Three technical persons washed with each of the foregoing formulations for 35 consecutive times in one day, each formulation on a separate day. These formulations had good foaming action, cleansing, after feel and moisturizing. No perceivable irritation was experienced and no perceivable dryness was observed on the hands.

Example: 1524D - 086

In this example, another formulation according to the present invention was prepared using the procedure of the previous example.

Ingredients	% w/w
Delionized Water	61.65
VERSENE NA	0.10
POLYALDO HGDS	0.50
TECH-O #11-070	2.00
ARLACEL 80	2.50
EMPICOL EAC 70/EP	12.50
AMPHOTERGE K-2	1.00
DOWICIL 200	0.05
TEGO BETAINE L-7	10.00
Fragrance	0.20
Dimer Acid	2.00
LEXOREZ 100	1.00
PERMETHYL 104A	5.00
LANETTE 14 NF	1.50
TOTAL %→	100.00

Note: The percentages in the foregoing table refer to the amount of the active component (contained in the trademarked product – refer to Table B above.

Three technical persons washed with each of the foregoing formulation for 35 consecutive times in one day. This formulation had good foaming action, cleansing, after feel and moisturizing. No perceivable irritation was experienced and no perceivable dryness was observed on the hands.

WHAT IS CLAIMED IS:

1. A personal cleansing composition ingredients comprising:

a) at least one polymeric isobutene having from about 24 to about 156 carbon atoms, wherein the polymeric isobutene is liquid at room temperature and pressure;

b) at least one dicarboxylic acid having the formula

R1--CH--R2--CO2H
|
R3--CH--R4--CO2H

or a cosmetically acceptable salt thereof,

wherein

R1 and R3 are each C6-C10 alkyl and

R2 and R4 are each C6 to C10 alkylene;

c) at least one surfactant selected from the group consisting of anionic, amphoteric, nonionic, zwitterionic and combinations thereof; and

d) water.

2. The composition according to claim 1 further comprising a component selected from the group consisting of viscosity building agents, emulsifying agents, agents which are both a viscosity building agent and an emulsifying agent, and combinations thereof.

3. The composition according to claim 2, wherein the component comprises at least one polyglycerol ester.

4. The composition according to claim 1 further comprising at least one amine-

* C L M S *

functional silicone.

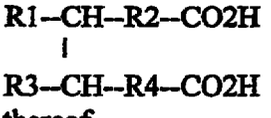
5. The composition according to claim 4 further comprising at least one polyglycerol ester.

6. The composition according to claim 1 further comprising a polyethylene glycol having a molecular weight ranging from about 1,500,000 to about 5,000,000 molecular weight.

7. A personal cleansing composition prepared by combining starting ingredients comprising:

a) at least one polymeric isobutene having from about 24 to about 156 carbon atoms, wherein the polymeric isobutene is liquid at room temperature and pressure;

b) at least one dicarboxylic acid having the formula



or a cosmetically acceptable salt thereof,

wherein

R1 and R3 are each C6-C10 alkyl and

R2 and R4 are each C6 to C10 alkylene;

e) at least one surfactant selected from the group consisting of anionic, amphoteric, nonionic, zwitterionic and combinations thereof; and

f) water.

* C L M S *

8. The composition according to claim 7 prepared by further combining a component selected from the group consisting of viscosity building agents, emulsifying agents, agents which are both a viscosity building agent and an emulsifying agent, and combinations thereof.

9. The composition according to claim 8, wherein the component comprises at least one polyglycerol ester.

10. The composition according to claim 7 prepared by further combining at least one amine-functional silicone.

11. The composition according to claim 10 prepared by further combining at least one polyglycerol ester.

12. The composition according to claim 7 prepared by further combining a polyethylene glycol having a molecular weight ranging from about 1,500,000 to about 5,000,000 molecular weight.

* C L M S *