

SKIN AND HAND CLEANSING COMPOSITIONS COMPRISING SCRUBBING MATERIALS

The invention relates to foamable skin and hand cleansing compositions comprising scrubbing materials, and to their use.

Liquid skin and hand cleansing formulations are generally known in the art. They are conventionally provided in containers that are poured or have pumps to pump the liquid compositions onto the skin to be cleaned. Such liquid soaps often have very good cleaning efficiency.

Formulations which are foamed before being placed on the skin or hands are also generally known in the art. Foams tend to be much easier to spread than the corresponding liquid and in addition there is much less waste due to splashing or run-off since the foam has a much higher surface tension than a liquid. One problem associated with foams compared with liquid soaps is they tend to have a lower cleaning efficiency. However, foams have a much higher surface area than un-foamed liquid, so if the cleaning efficiency of the foam can be improved, it is possible to produce foams with the same cleaning power, as obtained with un-foamed liquid but which require much less of the initial liquid to be used.

With the addition of mechanical scrubbers, also known as scrubbing agents, the cleaning performance of liquid soaps can be enhanced. Liquid soaps with suspended scrubbing agents tend to have a viscosity range at their lower end that is higher than that of basic liquid soaps. In order to provide the structure to suspend the mechanical scrubbers of an appropriate size to provide cleaning benefits, these formulations have tended to have a critical strain force (or yield value) superior or equal to 30 dynes/cm², for example associated with non-Newtonian rheological behaviour. Critical strain force is defined as the stress which must be applied before flow will start, although related to viscosity, it is more dependent on the characteristics of the rheological additive used.

As indicated above, the use of foaming hand cleansers offer many benefits over liquid hand soaps. Typically, such foamable soaps are not capable of suspending mechanical scrubbers of sufficient size to provide cleaning benefits.

WO 2014/019944 describes a foamable gritty foam composition comprising particulate mechanical scrubbers with particles sized from 100 microns to about 800 microns as capable of being foamed through a non-aerosol, or unpressurised foam dispenser. The formulation describes using between 0.5% weight for weight to about 30% weight for weight of a solvent, such as D-limonene or sunflower methyl ester. A wide range of

thickeners are described, including those as diverse as xanthan gum, guar gum, quaternised guar gum, alginate, bentonite and fumed silica. One problem associated with such prior art formulations is that they comprise non-aqueous solvents, such as D-limonene, sunflower oil methyl esters or other organic solvents. Such organic solvents are not always acceptable to consumers. Currently there is a need to try and reduce or remove such solvents.

Many prior art formulations use carbomers. Such formulations typically have a pH of 5.5 - 8. The ability to produce a formulation with a pH lower than 5.5, would allow the use of alternative preservatives and produce formulations with improved cleansing properties.

WO 2005/107699 describes an alternative foaming formulation with particles suspended within it that utilises carbomers and a solution of sodium chloride as a preferred system. Such thickeners require a predetermined pH or range of pH to thicken the liquid if pH of the liquid falls outside that range the thickener no longer acts as a thickener.

Other formulations using carboxymethylcellulose (CMC) are known in the art (US 2012/02027304). CMC provides a high viscosity with reduced foaming and instability problems.

The Applicant has identified that it is possible to use xanthan gum, and especially smooth flow xanthan gums, in combination with sulphated castor oils, to produce skin and hand cleansing compositions comprising scrubbing agents.

The invention provides a foamable skin and hand cleansing composition comprising the following components based on the total composition of the cleansing composition:

- a) 0.5 to 10% by weight of sulphated castor oil;
- b) 0.1 to 1% by weight of xanthan gum;
- c) 0 to 5% by weight of at least one non-aqueous solvent, typically an organic solvent;
- d) 1 to 30% by weight of at least one surfactant;
- e) 0 to 3% by weight of at least one emulsifier;
- f) 1 to 20% by weight of at least one scrubbing agent;
- g) 0 to 2% by weight of at least one preservative;
- h) 0 to 2.5% by weight of at least one pH modifier;
- i) 0 to 10% by weight of auxiliaries and/or additive; and
- j) water to make up 100% by weight.

Xanthan gums are polysaccharides produced by microorganisms of the genus *Xanthomonas*, and in particular *Xanthomonas campestris*.

The gum is typically obtained by fermentation of the microorganism and is generally used for a wide range of different uses in the food and chemical industries. Thickening compositions using xanthan gum tend to have a non-uniform or "chunky" flow characteristic, typical to that found with tomato ketchup. Whilst such conventional xanthan gum may be used, the Applicant has unexpectedly found that so-called "smooth-flow" xanthan gums produce better foamable compositions because they have lower viscosity than standard xanthan gums. Such smooth-flow xanthan gums are described in, for example, EP 0005030 and US 4,263,399. Such smooth-flow xanthan gums are available from CP Kelco, under the name of, for example, Keltrol®CG-SFT. Such smooth-flow xanthan gums are typically formed and made using high shear conditions that produces a material that is generally homogeneous, compared with native uneven xanthan gums. The material also has lower extensional viscosity than conventional xanthan gum and is stable under high shear conditions compared to conventional xanthan gum which shows reduced viscosity on being subjected to shearing.

Typically, additional thickeners such as cellulose gums are not used. The addition of cellulose gums, for example, was found to reduce foamability.

Typically, the composition has a viscosity of 500 to 5000 mPa.s. More typically this is less than 3500 mPa.s, between 800 - 2000 mPa.s, especially 800 - 1300 mPa.s. Above 3500 mPa.s or above 2000 mPa.s produces reduced foaming.

Typically the composition has a yield value of at least 30 dynes/cm² up to typically 200 dynes/cm², more typically 50 to 100 dynes/cm² or 80 dynes/cm².

The pH of the composition may be below 6, especially 5.5 or below, more typically above pH 3, or above pH 4.

Sulphated (also known as sulphonated) castor oil is castor oil that has been treated with, for example, sulphuric acid to produce an anionic surfactant.

Typically, the composition comprises 1 to 8% by weight, 1 to 5.5, more typically 3 to 5% or 3 to 3.5% by weight of sulphated castor oil. Sulphated castor oil acts as a surfactant and improves the stability of the formula. The sulphated castor oil may be provided as

substantially pure material or containing, for example, 70% castor oil pure sulphated castor oil.

Typically 0.1 to 1, 0.2 to 0.9 more typically 0.4 to 0.8% by weight of xanthan gum may be used.

"Conventional" xanthan gums are those which have not been made using higher shear conditions, for example as described above. Application of high shear rates to such gums reduces the viscosity of such gums.

Both conventional xanthan gums and smooth flow xanthan gums, or mixtures thereof may be used.

However, where conventional xanthan gums, the Applicant identified that higher levels of xanthan gum produce higher viscosities which inhibit foam formation.

Accordingly, the amount of xanthan gum, for example conventional xanthan gum (but alternatively smooth xanthan gum or mixtures thereof) may be limited to 0.1 – 0.5%, more typically 0.35 – 0.45% by weight. Typically, this reduces the viscosity to below 4000 mPa.s.

Typically less than 5%, less than 3% or less than 2% by weight of at least one non-aqueous solvent such as an organic solvent is used, more typically no non-aqueous solvent is used. Non-aqueous solvent may be one or both of D-limonene and sunflower oil methyl ester. Other solvents include glycol ethers, esters, alcohols, other terpenes and aromatic-free white spirit. Non aqueous solvents such as D-limonene may be omitted from the formulation.

The composition typically comprises 2 to 30% by weight, more typically 2 to 20%, or 3 to 10% by weight of the additional surfactant (component d)).

Surfactants include for example:

i) Amphoteric Surfactants

The amphoteric surfactant may be any one or combination of betaines, acyl ethylene diamines, amino-acids derivatives, imidazolines. Alternatively, the amphoteric surfactant may be any one or combination of acylamphoacetate, acylamphodiacetate,

acylamphodipropionate, sodium cocoglycinate, sodium alkyliminodipropionate, cocamidopropyl betaine, sodium cocoamphoacetate.

The betaine may be any one or combination of coco betaine and cocamidopropyl betaine.

ii) Non-Ionic Surfactants

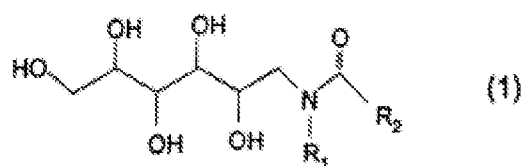
The non-ionic surfactant may be any one or combination of glucosides, ethoxylated fatty alcohols, ethoxylated fatty acids, saccharose esters, sorbitan esters, alkanolamides, glycerol alkyl esters, polyoxyethylene glycol alkylphenol esters.

iii) Anionic Surfactants

The anionic surfactant may be any one or combination of lauryl sulphates, lauryl ether sulphates, sulphosuccinates, carboxylates (i.e. sodium oleate), carboxylic acid esters (i.e. sodium dilaureth citrate), alkyl sulfate (i.e. sodium lauryl ether sulfate, ammonium alkyl sulfate, alkyl and alkyl-aryl sulfonates (i.e. sodium dodecyl benzene sulfonate), sulfosuccinates (i.e. disodium lauryl ether sulfosuccinate), isethionates (i.e. sodium cocoyl isethionate, ammonium cocoyl isethionate), taurates (i.e. sodium methyl cocoyl taurate, sodium methyl oleoyl taurate) acyl glutamates (i.e. sodium lauroyl glutamate, sodium cocoyl glutamate, disodium cocoyl glutamate), sarcosinate (i.e. cocoyl sarcosinate), alkylpolyglucosides (i.e. decyl glucoside, sodium lauryl glucose carboxylate, caprylyl/capryl glucoside).

The surfactants more typically include one or more fatty acid glucamides.

The fatty acid glucamide typically as the general formula:



where:

R^1 = H or a C1 or C4 alkyl, most typically H or $-CH_3$, especially $-CH_3$

R^2 = C_6 to C_{20} linear or branched hydrocarbon residue, most typically C_8 to C_{10} linear or unbranched hydrocarbon residue. The hydrocarbon residue may be saturated or unsaturated.

Mixtures of the glucoamines may be used. For example, the glucamide may be a mixture of capryloyl/caproyl methyl glucamide; lauroyl/myristoyl methyl glucamide; or cocoyl methyl glucamide. Mixtures of these may also be used, for example, a mixture of cocoyl methyl glucamide and capryloyl/caproyl methyl glucamide may be used. Cocoyl methyl glucamide comprises fatty acid residues from coconut oil.

The surfactant may be sodium laureth sulfate or disodium laureth sulfosuccinate. Mixtures of one or more fatty acid glucamides, sodium laureth sulfate (SLS) and disodium laureth sulfosuccinate (DLS) may be used, or indeed mixtures of other surfactants.

Capryloyl/caproyl methyl glucamide optionally mixed with sodium laureth sulfate and/or disodium laureth sulfosuccinate may be used.

The amount of fatty acid glucamide may be between 2.0 and 5.5% by weight, especially 2.5 to 3.5% by weight. SLS may be present in 3.0 to 8.0% by weight. DLS may be present between 2.0 and 4.5% by weight.

Typically the composition may comprise 0.5 to 2.5% by weight, more typically 1.0 to 2.0% of emulsifier. The emulsifier may be selected from those generally known in the art including PEG-18, castor dioleate, polyglycerin 4-caproate, d-n-octylether lauryl glucoside, caprylyl glycol, sorbitan sequeicaprato, hydrogenated castor oil, PEG-10 glyceryl oleate and gemini surfactants and mixtures thereof. Gemini surfactants are a family of surfactant molecules possessing more than one hydrophobic tail and hydrophilic head group. Gemini surfactants usually have better surface-active properties than corresponding conventional surfactants of equal chain length. For example, they have the hydrophobic to hydrophilic head groups connected to one another via a spacer. These are described in, for example, a review article by S. K. Hate and S.P. Moulik, Current Science, Vol 82(9) (2002) 1101-1111. Typically the emulsifier is glyceryl oleate citrate, (commercially available as Dermofeel®Easymuls Plus, Dr Straetmans GmbH), or polyglyceryl 3 caprate (commercially available under the name Tegosoft®PC 31, Evonik Industries AG).

The composition may comprise 5 to 15% by weight of scrubbing agent. The scrubbing agent is particulate and is any one or combination of a vegetable based scrubbing agent, a synthetic based scrubbing agent and a mineral based scrubbing agent, and the particles may have a size in a range from about 100 microns to about 800 microns, or in a range from about, or in a range from about 200 to about 700, or in a range from about 300 to about 500 microns. The particles may have any size in this range, or be in any narrow range than 100 to 800 microns, or there may be a mixture of any size of particles in this

broad range present in the composition. The vegetable based scrubbing agent may be any one or combination of cornmeal, olive stone, walnut shells, ground fruit stones, ground corn meal, ground fruit shells. The synthetic based scrubbing agent may be any one or combination of polyethylene and polypropylene. The mineral based scrubbing agent may be any one or combination of ground shellfish, pumice and silica.

The composition may comprise 0.002 to 2% by weight of at least one preservative. The preservative may be an organic acid, such as sodium benzoate or potassium sorbate.

The preservative may be present in an amount 0.1 to 2.0% or 0.1 to 1.5%, or 0.1 - 0.9% or 0.5 - 0.9% by weight.

pH modifiers may be used to adjust the pH. These include organic acids such as citric acid and lactic acid.

Typically, less than 0.5%, less than 0.4%, less than 0.2%, less than 0.1% wt or no additional thickeners are included. Such additional thickeners include polysaccharides such as carboxymethylcellulose (CMC). Typically, no additional thickener, such as CMC, is incorporated.

The formulation may comprise 0 to 10% by weight of auxiliaries and/or other additives, these include, for example, colourants, salts (such as sodium chloride or monosodium phosphate), oleic acid, pearlessing agents and, fragrances. Typically these are present in an amount of 1 to 9%, 3 - 7% or 5% by weight.

Water is added to make the total percentage weight 100%.

The invention also provides hand pumping apparatus comprising compositions of the invention. Such hand pumping apparatus include those described for example, in WO 2005/107699. Typically the apparatus uses a hand pumping dispenser, rather than a pre-pressurised dispenser.

Methods of washing skin using the compositions of the invention are also provided. This typically includes expelling the composition through a foaming apparatus to produce a foam, and applying the foam to a portion of the skin of the subject. This may then be washed off using water, together with at least a portion of any dirt found on the skin. Skin is typically the hands and/or the face of a subject.

The invention will now be described by way of example with reference to the following table. The table shows examples of different formulae and effect of different additives on cleansing foamability and stability of the foam.

Cleansing performance was typically carried out using the following method:

Foam Production

The formulations described below were tested by evaluating the Foam quality as a ratio between the g product / ml foam. This was aimed to be typically 1:4 or even better 1:5 but not lower or equal to 1:2.

Cleansing Performance

Cleansing performance was typically carried out using the following method:

The test model of the hand washing test with standardised soiling or paint gives information about the cleaning effect of the products to be tested. For relevance in practice, it is necessary that all subjects have a characteristic skin structure on the palms of the hands caused by manual work. Using one product at time, the following test is carried out in the morning and afternoon:

Test Procedure With Water:

0.5g of soiling (model soiling, practice soiling or paint) is distributed on the palm and the back of the hand and rubbed in.

Rub in and leave to dry within 2 min.

1.2 g of cleansing composition are applied and rubbed in

1 ml of water is added twice within 1 min.

Rinse under hand warm running tap water and remove as much or all of the soil as possible within 30 s

Visual assessment of the residual soiling (RS) on the back of the hand and the palm according to the scale, see below.

Test Procedure Without Water:

0.5 g of soiling (model soiling, practice soiling or paint) are distributed on the palm and on the back of the hand and rubbed in

Leave to dry for 1 1/2 min

1.2 g of cleaning composition are applied and rubbed in

Using a cellulose paper, the soiling on the hand surfaces is removed together with the product

Visual assessment of the residual soiling (RS) on the back of the hand and the palm according to the scale, see below.

0=clean 5=no cleaning effect (graduation in steps of 0.5 possible).

The percentage cleaning effect is calculated according to the following formula:

$$\text{cleaning effect [\%]} = \frac{10 - (\overline{RS}_{palm} + \overline{RS}_{back})}{10} * 100\%$$

RS_{palm} =mean value of the residual soiling on palms of n measurement series (subjects).

RS_{back} =mean value of the residual soiling on backs of hands of n measurement series (subjects).

Since the deterioration of the cleaning effect has a broader variation range, an absolute deviation of 5% between two measurement series is allowable.

Composition of a suitable model soiling:

Flame soot: 5.42%

Iron oxide (Fe_2O_3): 0.72%

In the Examples below the amount of sulphonated castor oil used is the amount of 100% pure sulphonated castor oil. Examples are wt %.

Keltrol is "smooth" xanthan gum. Jungbunzlauer "conventional" xanthan gum.

Typically water was added to a vessel and mixed with the xanthan gum by stirring. Scrubbing agents and preservatives were then added followed by the surfactants; including the sulphonated castor oil, then the emollients and perfume. The pH was adjusted using the pH modifiers.

A list of components used in the examples by trade name and INCI name follows, along with examples of the invention and comparative examples.

The following examples provide particularly good hand cleansing, foamability and stability: B7 to B16, C1 to D6, D8 to D10, E2 to F3, O1 and O1.1 to O1.3.

Trade Name	INCI Name
Water	Aqua
Yield improvement	
Keltrol CG-SFT	Xanthan Gum
Sucraclear HC-31	Cellulose Gum, Chondrus Crispus (Carrageenan) Extract, Ceratonia Siliqua Gum, Sucrose
Jungbunzlauer FEDCS-PC	Xanthan Gum
Simulgel FL	Hydroxyethyl Acrylate / Sodium Acryloyldimethyl Taurate Copolymer; Isohexadecane; Polysorbate 60
Exilva	
Aristoflex TAC	Ammonium Acryloyldimethyltaurate/ Carboxyethyl Acrylate Crosspolymer
Actigum VSX 20	sclerotium gum and xanthan gum
Kelcogel CG-LA	Gellan gum
Rhodicare S	Xanthan Gum
Walocel CRT 50.000 PA 07	Cellulose Gum
Nonionics	
Gluco Tain Clear	Capryloyl/Caproyl Methyl Glucamide
Gluco Tain Care	Cocoyl Methyl Glucamide
Rewopal LA 6	Laureth 6
Marlipal 24/70	Trideceth 7
Mackamine LA	Lauramine Oxide
Bio Saponins	Saponins
Steposol MET 10 U	N,N-dimethyl 9-decanamide
Betaine Coco Base	Cocoamidopropyl Betaine
Anionics	
SLES	Sodium Laureth Sulfate
Sulfated Castor Oil 75 WS	Sulfated Castor Oil
Rewopol SBF A 30 B	Disodium Laureth Sulfosuccinate
Protelan LS9011	Natrium-N-lauroylsarkosinat
Greenbentin MLS/100	Fatty acids C12-16 and C18-unsaturated, esters with polyethylene glycol mono-Me ether
Eucarol Age SS	Disodium alkylpolyglucose
TEA Laurylsulfat	TEA-Lauryl Sulphate
Emulsifieres/Stabiliser	
Dermofeel Easymuls Plus	Glyceryl Oleate Citrate
Dermosoft Octiol	Caprylyl Glycol
Versatil MPC	Methylpropanediol; Phenoxyethanol; Caprylyl Glycol
Antilsoft SC	Sorbitan Sesquicaprylate
Oxypon 401	PEG-9 Cocoglycerides
Glycerin pflanzlich 99,5%	Glycerin
Polyglycerin-6	Glycerin
Cetiol OE	di-n-octyl Ether
Glucopon 650 EC/HH	Lauryl Glucoside
Cosmacol ELI	C12-13 Alkyl Lactate
Tegosoft PC 31	Polyglyceryl 3 Carprate
Preservative	
Organic acid	Sodium Benzoate
Organic acid	Potassium Sorbate
Scrubber	
Cornmeal	Corn (Zea Mays) Meal
Olive Stone Granules	Olea Europaea (olive) Seed Powder
Auxillaries	
Fragrance	Parfum (Fragrance)
Palmera A1813	Oleic Acid
pH Adjuster	Citric acid
Mononatriumphosphat calc.	Mononatriumphosphat calc.
Sodiumchlorid solution 15%	Sodium Chloride
Performance	
Cleansing effect (Method as described) as requested > 70%	
Foamability - Foamquality (Methode as described) as requested > 3,9	
Stability (Method as described) as requested min +	

Trade Name	A1	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
Water	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100
Yield improvement											
Keltrol CG-SFT	0.10	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Sucraclear HC-31											
Jungbunzlauer FEDCS-PC											
Simulgel FL											
Exilva											
Aristoflex TAC											
Actigum VSX 20											
Kelcogel CG-LA											
Rhodicare S											
Walocel CRT 50.000 PA 07											
Nonionics											
Gluco Tain Clear							2.20	3.30	3.30	3.30	3.30
Gluco Tain Care											
Rewopal LA 6	6.00						4.00				
Marlipal 24/70											
Mackamine LA											
Bio Saponins											
Steposol MET 10 U											
Betaine Coco Base											
Anionics											
SLES	3.64	3.38	3.64	6.50	10.40	13.00	6.50	3.37	3.38	5.20	5.20
Sulfated Castor Oil 75 WS	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00	3.00
Rewopol SBF A 30 B	2.10	1.20	2.10	12.60	3.50	3.50			1.75		
Protelan LS9011											
Greenbentin MLS/100											
Eucarol Age SS											
TEA Laurylsulfat											
Emulsifieres/Stabiliser											
Dermofeel Easymuls Plus											
Dermosoft Octiol											
Versatil MPC											
Antilsoft SC											
Oxypon 401											
Glycerin pflanzlich 99,5%											
Polyglycerin-6											
Cetiol OE											
Glucopon 650 EC/HH											
Cosmacol ELI											
Tegosoft PC 31	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Preservative											
Organic acid	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Organic acid	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Scrubber											
Cornmeal	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50
Olive Stone Granules	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Auxillaries											
Fragrance	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Palmera A1813	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
pH Adjuster	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
Mononatriumphosphat calc.											
Sodiumchlorid solution 15%											
Performance											
Cleansing effect	95%	65%	65%	65%	65%	65%	95%	71%	71%	71%	71%
Foamability	3.0	4.0	4.0	4.0	4.0	4.0	3.0	4.5	4.5	4.5	4.5
Stability	+	+	+	+	+	+	+	+	+	+	+

Trade Name	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20	B21
Water	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100
Yield improvement											
Keltrol CG-SFT	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Sucraclear HC-31											
Jungbunzlauer FEDCS-PC											
Simulgel FL											
Exilva											
Aristoflex TAC											
Actigum VSX 20											
Kelcogel CG-LA											
Rhodicare S											
Walocel CRT 50.000 PA 07											
Nonionics											
Glucotain Clear	3.30	3.30	3.30	3.30	3.30						
Glucotain Care						2.88	1.92				
Rewopal LA 6							4.00	4.00	4.00	4.00	4.00
Marlipal 24/70											
Mackamine LA											
Bio Saponins											4.00
Steposol MET 10 U											
Betaine Coco Base											
Anionics											
SLES	5.20	5.20	5.20	5.20	5.20	3.38	6.50	4.68	6.50	6.50	6.50
Sulfated Castor Oil 75 WS	3.00	3.00	3.00	3.00	4.00	3.00	3.00	3.00	3.00	3.00	3.00
Rewopol SBF A 30 B								2.10	2.10		
Protelan LS9011										1.80	
Greenbentin MLS/100											
Eucarol Age SS											
TEA Laurylsulfat											
Emulsifiers/Stabiliser											
Dermofeel Easymuls Plus											
Dermosoft Octiol											
Versatil MPC											
Antilsoft SC											
Oxypon 401											
Glycerin pflanzlich 99,5%											
Polyglycerin-6											
Cetiol OE											
Glucopon 650 EC/HH											
Cosmacol ELI											
Tegosoft PC 31	1.00	2.00	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Preservative											
Organic acid	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Organic acid	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Scrubber											
Cornmeal	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50
Olive Stone Granules	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Auxillaries											
Fragrance	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Palmera A1813	1.50	1.50	1.00	2.00	1.50	1.50	1.50	1.50	1.50	1.50	1.50
pH Adjuster	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
Mononatriumphosphat calc.											
Sodiumchlorid solution 15%											
Performance											
Cleansing effect	71%	71%	71%	71%	71%	71%	95%	85%	85%	85%	90%
Foamability	4.5	4.5	4.5	4.5	4.5	4.5	3.0	3.0	3.0	3.0	3.0
Stability	+	+	+	+	+	+	+	+	+	-	-

Trade Name	B22	B23	B24	B25	B26	B27	B28	B29	B30	B31	B32
Water	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100
Yield improvement											
Keltrol CG-SFT	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Sucraclear HC-31											
Jungbunzlauer FEDCS-PC											
Simulgel FL											
Exilva											
Aristoflex TAC											
Actigum VSX 20											
Kelcogel CG-LA											
Rhodicare S											
Walocel CRT 50.000 PA 07											
Nonionics											
Gluco Tain Clear											
Gluco Tain Care											
Rewopal LA 6	4.00	4.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Marlipal 24/70											
Mackamine LA		6.00	4.00								
Bio Saponins											
Steposol MET 10 U											
Betaine Coco Base											
Anionics											
SLES	6.40	6.50	6.50	3.64	3.6	3.64	3.64	3.6	3.64	3.64	3.64
Sulfated Castor Oil 75 WS	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Rewopol SBF A 30 B				2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
Protelan LS9011											
Greenbentin MLS/100											
Eucarol Age SS	1.80										
TEA Laurylsulfat											
Emulsifieres/Stabiliser											
Dermofeel Easymuls Plus											
Dermosoft Octiol											
Versatil MPC											
Antilsoft SC											
Oxypon 401											
Glycerin pflanzlich 99,5%											
Polyglycerin-6											
Cetiol OE								1.00	1.00	1.50	2.00
Glucopon 650 EC/HH											
Cosmacol ELI											
Tegosoft PC 31	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Preservative											
Organic acid	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Organic acid	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Scrubber											
Cornmeal	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50
Olive Stone Granules	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Auxillaries											
Fragrance	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Palmera A1813	1.50	1.50	1.50	1.50	1.00	0.50		1.50	1.50	1.50	1.50
pH Adjuster	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
Mononatriumphosphat calc.											
Sodiumchlorid solution 15%											
Performance											
Cleansing effect	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
Foamability	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Stability	-	-	-	+	-	-	-	+	+	+	+

Trade Name	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43
Water	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100
Yield improvement											
Keltrol CG-SFT	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Sucraclear HC-31											
Jungbunzlauer FEDCS-PC											
Simulgel FL											
Exilva											
Aristoflex TAC											
Actigum VSX 20											
Kelcogel CG-LA											
Rhodicare S											
Walocel CRT 50.000 PA 07											
Nonionics											
Glucotain Clear											
Glucotain Care											
Rewopal LA 6	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Marlipal 24/70											
Mackamine LA											
Bio Saponins											
Steposol MET 10 U											
Betaine Coco Base											
Anionics											
SLES	3.6	3.64	3.6	3.64	3.64	3.64	3.64	3.64	3.64	3.64	3.64
Sulfated Castor Oil 75 WS	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Rewopol SBF A 30 B	2.42	2.38	2.35	2.35	2.31	2.28	2.10	2.10	2.10	2.10	2.10
Protelan LS9011											
Greenbentin MLS/100											
Eucarol Age SS											
TEA Laurylsulfat											
Emulsifiers/Stabiliser											
Dermofeel Easymuls Plus							1.50			1.00	0.70
Dermosoft Octiol											
Versatil MPC											
Antilsoft SC											
Oxypon 401											
Glycerin pflanzlich 99,5%								1.50			
Polyglycerin-6									1.50		
Cetiol OE											
Glucopon 650 EC/HH											
Cosmacol ELI											
Tegosoft PC 31	0.60	0.70	0.80	0.80	0.90	1.00					
Preservative											
Organic acid	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Organic acid	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Scrubber											
Cornmeal	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50
Olive Stone Granules	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Auxillaries											
Fragrance	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Palmera A1813	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
pH Adjuster	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
Mononatriumphosphat calc.											
Sodiumchlorid solution 15%											
Performance											
Cleansing effect	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
Foamability	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Stability	-	-	-	-	-	-	+	-	-	+	+

Trade Name	B44	B45	B46	B47	B48	B49	B50	B51	B52	B53	B54
Water	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100
Yield improvement											
Keltrol CG-SFT	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Sucraclear HC-31											
Jungbunzlauer FEDCS-PC											
Simulgel FL											
Exilva											
Aristoflex TAC											
Actigum VSX 20											
Kelcogel CG-LA											
Rhodicare S											
Walocel CRT 50.000 PA 07											
Nonionics											
Glucotain Clear											
Glucotain Care											
Rewopal LA 6	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Marlipal 24/70											
Mackamine LA											
Bio Saponins											
Steposol MET 10 U											
Betaine Coco Base											
Anionics											
SLES	3.64	3.64	3.64	3.64	3.64	3.64	3.64	3.64	3.64	3.64	3.64
Sulfated Castor Oil 75 WS	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Rewopol SBF A 30 B	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
Protelan LS9011											
Greenbentin MLS/100											
Eucarol Age SS											
TEA Laurylsulfat											
Emulsifiers/Stabiliser											
Dermofeel Easymuls Plus	0.50	0.40	0.30	0.20							
Dermosoft Octiol					0.50	1.00	1.50				
Versatil MPC								0.50	1.00	1.50	
Antilsoft SC											1.00
Oxypon 401											
Glycerin pflanzlich 99,5%											
Polyglycerin-6											
Cetiol OE											
Glucopon 650 EC/HH											
Cosmacol ELI											
Tegosoft PC 31					1.50	1.50	1.50	1.50	1.50	1.50	
Preservative											
Organic acid	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Organic acid	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Scrubber											
Cornmeal	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50
Olive Stone Granules	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Auxillaries											
Fragrance	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Palmera A1813	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
pH Adjuster	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
Mononatriumphosphat calc.											
Sodiumchlorid solution 15%											
Performance											
Cleansing effect	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
Foamability	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Stability	-	-	-	-	+	+	+	+	+	+	+

Trade Name	B55	B56	B57	B58	B59	B60	B61	B62	B63	C1	C2
Water	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100
Yield improvement											
Keltrol CG-SFT	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.40	0.40
Sucraclear HC-31											
Jungbunzlauer FEDCS-PC											
Simulgel FL											
Exilva											
Aristoflex TAC											
Actigum VSX 20											
Kelcogel CG-LA											
Rhodicare S											
Walocel CRT 50.000 PA 07											
Nonionics											
Glucotain Clear										3.30	3.30
Glucotain Care											
Rewopal LA 6	6.00	6.00	6.00	6.00	6.00						
Marlipal 24/70						6.00	6.00	6.00	6.00		
Mackamine LA											
Bio Saponins											
Steposol MET 10 U											
Betaine Coco Base											
Anionics											
SLES	3.64	3.64	3.64	3.64	3.64	3.64	3.64	3.64	3.64	3.38	5.20
Sulfated Castor Oil 75 WS	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Rewopol SBF A 30 B	2.10	2.10	2.10	2.10	2.10	2.10	2.28	2.45	2.63	1.75	
Protelan LS9011											
Greenbentin MLS/100											
Eucarol Age SS											
TEA Laurylsulfat											
Emulsifiers/Stabiliser											
Dermofeel Easymuls Plus											
Dermosoft Octiol											
Versatil MPC											
Antilsoft SC	0.80	0.50									
Oxypon 401			1.50	2.25	3.00						
Glycerin pflanzlich 99,5%											
Polyglycerin-6											
Cetiol OE											
Glucopon 650 EC/HH											
Cosmacol ELI											
Tegosoft PC 31						1.50	1.00	0.50		1.00	1.50
Preservative											
Organic acid	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Organic acid	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Scrubber											
Cornmeal	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50
Olive Stone Granules	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Auxillaries											
Fragrance	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Palmera A1813	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
pH Adjuster	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
Mononatriumphosphat calc.											
Sodiumchlorid solution 15%											
Performance											
Cleansing effect	95%	95%	95%	95%	95%	85%	95%	95%	95%	71%	72%
Foamability	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.5	4.5
Stability	-	-	-	-	-	-	+	+	-	+	+

Trade Name	C3	C4	C5	C6	C7	C8	D1	D2	D3	D4	D5
Water	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100
Yield improvement											
Keltrol CG-SFT	0.40	0.40	0.40	0.40	0.40	0.40	0.50	0.50	0.50	0.50	0.50
Sucraclear HC-31											
Jungbunzlauer FEDCS-PC											
Simulgel FL											
Exilva											
Aristoflex TAC											
Actigum VSX 20											
Kelcogel CG-LA											
Rhodicare S											
Walocel CRT 50.000 PA 07											
Nonionics											
Glucotain Clear	3.30	3.30	3.30	3.30	3.30	3.30	2.20	2.20	2.20	2.75	2.75
Glucotain Care											
Rewopal LA 6											
Marlipal 24/70											
Mackamine LA											
Bio Saponins											
Steposol MET 10 U											
Betaine Coco Base										1.86	1.86
Anionics											
SLES	3.38	3.38	3.38	3.38	3.38	3.38	3.90	3.90	3.38	5.20	3.38
Sulfated Castor Oil 75 WS	3.00	2.00	4.00	3.00	3.00	3.00	3.00	2.00	2.00	3.00	3.00
Rewopol SBF A 30 B	1.75	1.75	1.75	1.75	1.75	1.75	1.75	2.45	3.15		
Protelan LS9011											
Greenbentin MLS/100											
Eucarol Age SS											
TEA Laurylsulfat											
Emulsifiers/Stabiliser											
Dermofeel Easymuls Plus											
Dermosoft Octiol											
Versatil MPC											
Antilsoft SC											
Oxypon 401											
Glycerin pflanzlich 99,5%											
Polyglycerin-6											
Cetiol OE											
Glucopon 650 EC/HH											
Cosmacol ELI											
Tegosoft PC 31	1.50	1.50	1.50	1.50	1.50	2.00	1.50	1.50	1.00	1.50	1.50
Preservative											
Organic acid	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Organic acid	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Scrubber											
Cornmeal	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50
Olive Stone Granules	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Auxillaries											
Fragrance	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Palmera A1813	1.50	1.50	1.50	1.00	2.00	1.50	1.50	1.50	1.50	1.50	1.50
pH Adjuster	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.50	0.45
Mononatriumphosphat calc.											
Sodiumchlorid solution 15%											
Performance											
Cleansing effect	71%	72%	73%	73%	73%	73%	71%	72%	74%	75%	75%
Foamability	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Stability	+	+	+	+	+	+	+	+	+	+	+

Trade Name	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16
Water	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100
Yield improvement											
Keltrol CG-SFT	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Sucraclear HC-31											
Jungbunzlauer FEDCS-PC											
Simulgel FL											
Exilva											
Aristoflex TAC											
Actigum VSX 20											
Kelcogel CG-LA											
Rhodicare S											
Walocel CRT 50.000 PA 07											
Nonionics											
Glucotain Clear	2.75	3.30	3.30	3.30	3.30						
Glucotain Care											
Rewopal LA 6						6.00	6.00	6.00	6.00	6.00	6.00
Marlipal 24/70											
Mackamine LA											
Bio Saponins											
Steposol MET 10 U											
Betaine Coco Base	1.86										
Anionics											
SLES	7.80	3.38	3.64	5.20	3.64	3.64	3.64	3.64	3.64	3.64	3.64
Sulfated Castor Oil 75 WS	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Rewopol SBF A 30 B		1.75	1.75		1.75	2.10	2.10	2.35	2.31	2.28	2.45
Protelan LS9011											
Greenbentin MLS/100											
Eucarol Age SS											
TEA Laurylsulfat											
Emulsifiers/Stabiliser											
Dermofeel Easymuls Plus			1.50								
Dermosoft Octiol											
Versatil MPC											
Antilsoft SC											
Oxypon 401											
Glycerin pflanzlich 99,5%											
Polyglycerin-6											
Cetiol OE											
Glucopon 650 EC/HH											
Cosmacol ELI		1.50									
Tegosoft PC 31	1.50			1.50	1.50	1.50	1.50	0.80	0.90	1.00	0.50
Preservative											
Organic acid	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Organic acid	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Scrubber											
Cornmeal	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50
Olive Stone Granules	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Auxillaries											
Fragrance	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Palmera A1813	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
pH Adjuster	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
Mononatriumphosphat calc.											
Sodiumchlorid solution 15%											
Performance											
Cleansing effect	75%	74%	73%	72%	71%	95%	95%	95%	95%	95%	95%
Foamability	4.5	4.5	5.0	5.0	4.5	3.0	3.0	3.0	3.0	3.0	3.0
Stability	+	-	+	+	+	+	+	-	-	-	-

Trade Name	D17	D18	D19	D20	D21	D22	D23	D24	E1	E2	F1
Water	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100
Yield improvement											
Keltrol CG-SFT	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.60	0.60	0.80
Sucraclear HC-31											
Jungbunzlauer FEDCS-PC											
Simulgel FL											
Exilva											
Aristoflex TAC											
Actigum VSX 20											
Kelcogel CG-LA											
Rhodicare S											
Walocel CRT 50.000 PA 07											
Nonionics											
Glucotain Clear									3.30	3.30	3.30
Glucotain Care											
Rewopal LA 6	6.00	6.00	6.00								
Marlipal 24/70											
Mackamine LA				10.00							
Bio Saponins											
Steposol MET 10 U						4.00					
Betaine Coco Base			1.86	1.86	1.86	1.86	3.10				
Anionics											
SLES	3.64	3.64	3.64	6.40	6.50	6.50	6.40	6.40	5.20	3.38	3.38
Sulfated Castor Oil 75 WS	3.00	3.00		3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Rewopol SBF A 30 B	2.42	2.38						3.50		1.75	
Protelan LS9011											
Greenbentin MLS/100					4.00						
Eucarol Age SS											
TEA Laurylsulfat			2.40								
Emulsifiers/Stabiliser											
Dermofeel Easymuls Plus											
Dermosoft Octiol											
Versatil MPC											
Antilsoft SC											
Oxypon 401											
Glycerin pflanzlich 99,5%											
Polyglycerin-6											
Cetiol OE											
Glucopon 650 EC/HH											
Cosmacol ELI											
Tegosoft PC 31	0.60	0.70	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Preservative											
Organic acid	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Organic acid	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Scrubber											
Cornmeal	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50
Olive Stone Granules	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Auxillaries											
Fragrance	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Palmera A1813	1.50	1.50		1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
pH Adjuster	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
Mononatriumphosphat calc.											
Sodiumchlorid solution 15%											
Performance											
Cleansing effect	95%	95%	95%	65%	65%	65%	65%	65%	72%	74%	75%
Foamability	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0
Stability	-	-	-	-	-	-	-	-	+	+	+

Trade Name	F2	F3	G1	H1	I1	J1	K1	L1	L2	L3	L4
Water	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100
Yield improvement											
Keltrol CG-SFT	0.80	0.80	0.04								
Sucraclear HC-31				0.30							
Jungbunzlauer FEDCS-PC					0.30						
Simulgel FL						2.00					
Exilva							3.00				
Aristoflex TAC								0.50	0.60	0.70	1.00
Actigum VSX 20											
Kelcogel CG-LA			0.08								
Rhodicare S											
Walocel CRT 50.000 PA 07											
Nonionics											
Gluco Tain Clear	3.30	3.30	3.30								
Gluco Tain Care											
Rewopal LA 6				6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Marlipal 24/70											
Mackamine LA											
Bio Saponins											
Steposol MET 10 U											
Betaine Coco Base											
Anionics											
SLES	3.38	3.38	3.38	3.64	3.64	3.64	3.64	3.64	3.64	3.64	3.64
Sulfated Castor Oil 75 WS	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Rewopol SBF A 30 B	1.75			2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
Protelan LS9011											
Greenbentin MLS/100											
Eucarol Age SS											
TEA Laurylsulfat											
Emulsifieres/Stabiliser											
Dermofeel Easymuls Plus											
Dermosoft Octiol											
Versatil MPC											
Antilsoft SC											
Oxypon 401											
Glycerin pflanzlich 99,5%											
Polyglycerin-6											
Cetiol OE											
Glucopon 650 EC/HH		8.00									
Cosmacol ELI											
Tegosoft PC 31	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Preservative											
Organic acid	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Organic acid	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Scrubber											
Cornmeal	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50
Olive Stone Granules	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Auxillaries											
Fragrance	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Palmera A1813	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
pH Adjuster	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
Mononatriumphosphat calc.			0.10								
Sodiumchlorid solution 15%			0.70								
Performance											
Cleansing effect	74%	75%	75%	95%	95%	95%	95%	95%	95%	95%	95%
Foamability	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Stability	+	+	-	+	+	+	-	-	-	-	+

Trade Name	L5	M1	M2	M3	M4	M5	M6	N1	O1	O2	O3
Water	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100	ad 100
Yield improvement											
Keltrol CG-SFT											
Sucraclear HC-31											
Jungbunzlauer FEDCS-PC											
Simulgel FL											
Exilva											
Aristoflex TAC	1.00										
Actigum VSX 20		0.10	0.20	0.30	0.40	0.50	0.60				
Kelcogel CG-LA								0.10			
Rhodicare S									0.50		0.50
Walocel CRT 50.000 PA 07										0.50	0.50
Nonionics											
Glucotain Clear									3.3	3.3	3.3
Glucotain Care											
Rewopal LA 6	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00			
Marlipal 24/70											
Mackamine LA											
Bio Saponins											
Steposol MET 10 U											
Betaine Coco Base											
Anionics											
SLES	3.64	3.64	3.64	3.64	3.64	3.64	3.64	3.64	3.38	3.38	3.38
Sulfated Castor Oil 75 WS	3.00	3.00	3.00	3.00	3.00	3.00	3.00		2.80	2.80	2.80
Rewopol SBF A 30 B	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	1.65	1.65	1.65
Protelan LS9011											
Greenbentin MLS/100											
Eucarol Age SS											
TEA Laurylsulfat								2.40			
Emulsifiers/Stabiliser											
Dermofeel Easymuls Plus									1.5	1.5	1.5
Dermosoft Octiol											
Versatil MPC											
Antilsoft SC											
Oxypon 401											
Glycerin pflanzlich 99,5%											
Polyglycerin-6											
Cetiol OE											
Glucopon 650 EC/HH											
Cosmacol ELI											
Tegosoft PC 31		1.50	1.50	1.50	1.50	1.50	1.50	1.50			
Preservative											
Organic acid	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Organic acid	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Scrubber											
Cornmeal	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50
Olive Stone Granules	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Auxillaries											
Fragrance	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Palmera A1813	1.50	1.50	1.50	1.50	1.50	1.50	1.50		1.50	1.50	1.50
pH Adjuster	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
Mononatriumphosphat calc.								0.10			
Sodiumchlorid solution 15%								0.50			
Performance											
Cleansing effect	95%	95%	95%	95%	95%	95%	95%	95%	74%	74%	74%
Foamability	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.0	1.0	1.0
Stability	-	-	-	-	-	-	-	-	+	-	+

Trade Name	01.1	01.2	01.3
Water	ad 100	ad 100	ad 100
Yield improvement			
Keltrol CG-SFT			
Sucraclear HC-31			
Jungbunzlauer FEDCS-PC			
Simulgel FL			
Exilva			
Aristoflex TAC			
Actigum VSX 20			
Kelcogel CG-LA			
Rhodicare S	0.45	0.40	0.35
Walocel CRT 50.000 PA 07			
Nonionics			
Glucotain Clear	3.3	3.3	3.3
Glucotain Care			
Rewopal LA 6			
Marlipal 24/70			
Mackamine LA			
Bio Saponins			
Steposol MET 10 U			
Betaine Coco Base			
Anionics			
SLES	3.38	3.38	3.38
Sulfated Castor Oil 75 WS	2.80	2.80	2.80
Rewopol SBF A 30 B	1.65	1.65	1.65
Protelan LS9011			
Greenbentin MLS/100			
Eucarol Age SS			
TEA Laurylsulfat			
Emulsifiers/Stabiliser			
Dermofeel Easymuls Plus	1.5	1.5	1.5
Dermosoft Octiol			
Versatil MPC			
Antilsoft SC			
Oxypon 401			
Glycerin pflanzlich 99,5%			
Polyglycerin-6			
Cetiol OE			
Glucopon 650 EC/HH			
Cosmacol ELI			
Tegosoft PC 31			
Preservative			
Organic acid	0.60	0.60	0.60
Organic acid	0.30	0.30	0.30
Scrubber			
Cornmeal	7.50	7.50	7.50
Olive Stone Granules	4.00	4.00	4.00
Auxillaries			
Fragrance	0.20	0.20	0.20
Palmera A1813	1.50	1.50	1.50
pH Adjuster	0.45	0.45	0.45
Mononatriumphosphat calc.			
Sodiumchlorid solution 15%			
Performance			
Cleansing effect	74%	74%	74%
Foamability	4.5	4.8	5.0
Stability	+	+	+

The data shows that using smooth flow xanthan gums and castor oil it is possible to produce stable foams containing scrubbing agents. Using conventional xanthan gums, increased the viscosity to above optional levels unless concentration of the gum is controlled. Using surfactants, such as one or more fatty acid glucamides, such as capryloyl/caproyl methyl glucamide improves the product as does the addition of other surfactants such as SLS and DLS. Changing the xanthan gum for other polysaccharide gums, such as mixtures of other gums or gellan gums affects the properties of the final product away from optimum results.

Further work with conventional xanthan gums showed that 0.5% xanthan gum was able to be used to produce a foam. However, when stored for over 14 days the viscosity increased leading to reduced foam production. Viscosities of over 3500 cP decreased foam production.

CLAIMS

1. A hand pump foamer apparatus comprising a foamable skin and hand cleansing composition comprising the following components based on the total composition of the cleansing composition:

- a) 0.5 to 10% by weight of sulphated castor oil;
- b) 0.1 to 1% by weight of xanthan gum;
- c) 0 to 5% by weight of at least one non-aqueous solvent, typically an organic solvent;
- d) 1 to 30% by weight of at least one surfactant;
- e) 0 to 3% by weight of at least one emulsifier;
- f) 1 to 20% by weight of at least one scrubbing agent;
- g) 0 to 2% by weight of at least one preservative;
- h) 0 to 2% by weight of at least one pH modifier;
- i) 0 to 10% by weight of auxiliaries and/or additive; and
- j) water to make up 100% by weight.

wherein the surfactant is selected from:

- i) an amphoteric surfactant selected from any one or combination of betaines, acyl ethylene diamines, amino-acids derivatives or imidazolines; any one or combination of acylamphoacetate, acylamphodiacetate, acylamphodipropionate, sodium cocoglycinate, sodium alkyliminodipropionate, cocamidopropyl betaine or sodium cocoamphoacetate;
- ii) a non-ionic surfactant selected from any one or combination of glucosides, ethoxylated fatty alcohols, ethoxylated fatty acids, saccharose esters, sorbitan esters, alkanolamides, glycerol alkyl esters or polyoxyethylene glycol alkylphenol esters;
- iii) an anionic surfactant selected from any one or combination of lauryl sulphates, lauryl ether sulphates, sulphosuccinates, carboxylates, carboxylic acid esters, alkyl sulfate, alkyl and alkyl-aryl sulfonates, sulfosuccinates, isethionates, taurates acyl glutamates. sarcosinate, alkylpolyglucosides; or
- iv) one or more fatty acid glucamides.

the emulsifier is selected from:

PEG-18, castor dioleate, polyglycerin 4-caproate, d-n-octylether lauryl glucoside, caprylyl glycol, sorbitan sequeicaprate, hydrogenated castor oil, PEG-10 glyceryl oleate and gemini surfactants and mixtures thereof.

2. The hand pump foamer apparatus according to claim 1, wherein the xanthan gum is smooth flow xanthan gum.
3. The hand pump foamer apparatus according to claims 1 or 2, having a viscosity of 200 to 5000 mPa.s.
4. The hand pump foamer apparatus according to claims 1 to 3, having a yield value of at least 30 dynes/cm².
5. The hand pump foamer apparatus according to claims 1 to 4 having a pH of below 5.5.
6. The hand pump foamer apparatus according to claims 1 to 5 comprising 1.0 to 8% by weight, more typically 3 to 5% by weight of sulphated castor oil.
7. The hand pump foamer apparatus according to claims 1 to 6 comprising 0.1 to 0.9% by weight of xanthan gum.
8. The hand pump foamer apparatus according to claim 7, wherein the xanthan gum is conventional xanthan gum and the amount of xanthan gum is 0.1 to 0.5% by weight.
9. The hand pump foamer apparatus according to claims 1 to 8 comprising less than 3% by weight of non-aqueous solvent.
10. The hand pump foamer apparatus according to claims 1 to 9 comprising 2 to 20%, typically 3 to 10% by weight of surfactant.
11. The hand pump foamer apparatus according to claims 1 to 10 wherein the surfactant is selected from one or more fatty acid glucamides, sodium laureth sulfate and disodium laureth sulfosuccinate and mixtures thereof.
12. The hand pump foamer apparatus according to claims 1 to 11, comprising 0.5 to 2.5% by weight, typically 1.0 to 2.0% by weight emulsifier.

13. The hand pump foamer apparatus according to claims 1 to 12 comprising 5 to 15% by weight of scrubbing agent.
14. The hand pump foamer apparatus according to claims 1 to 13, comprising less than 0.5 wt % of an additional thickener.
15. A method of washing skin of a subject comprising expelling a foamable skin and hand cleansing composition through a hand pump foamer apparatus comprising the foamable skin and hand cleansing composition according to claims 1 to 14, to produce a foam and applying the foam to a portion of skin of the subject.