

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
26 January 2006 (26.01.2006)

PCT

(10) International Publication Number
WO 2006/009625 A1

- (51) International Patent Classification⁷: **C11D 13/14**, 13/18, 9/26
- (21) International Application Number:
PCT/US2005/020327
- (22) International Filing Date: 9 June 2005 (09.06.2005)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/580,305 16 June 2004 (16.06.2004) US
- (71) Applicant (for all designated States except US): **COLGATE-PALMOLIVE COMPANY** [US/US]; 300 Park Avenue, New York, NY 10022 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **VOLZ, Elizabeth** [US/US]; 29 Yale Terrace, Princeton, NJ 08540 (US). **KUZMICH, Melissa** [US/US]; 199 Mountain Avenue, Apt. C, Somerville, NJ 08876 (US).
- (74) Agent: **RACHINSKY, Tara L.**; COLGATE-PALMOLIVE COMPANY, 909 River Road, P.O. Box 1343, Piscataway, NJ 08855-1343 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**
— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: MASSAGING BAR SOAP

(57) Abstract: A soap bar comprising at least two different portions wherein the portions have a difference in solubility of at least 1.0 %.



WO 2006/009625 A1

5

MASSAGING BAR SOAP

10 Cross-reference to Related Applications

This application claims benefit of U.S. Provisional Application No. 60/580,305, filed June 16, 2004, the disclosure of which is hereby incorporated herein by reference in its entirety.

15 Field of the Invention

This invention relates to a bar soap that can provide massaging and, optionally, exfoliating benefits.

Background of the Invention

20 Various bar aesthetics have been used in marketed products, especially bars having a striped or marbled appearance such as, for example, IRISH SPRING® bar soap from Colgate-Palmolive Co., COAST® Soap from Procter and Gamble, SKIN SO SOFT® by Avon, DOVE NUTRIUM® from Unilever and other specialty products including "Lavendel" from Kappus, a
25 Germany product imported into the United States, and Apothary Stone Washed Refining Soap by Yardley London.

Summary of the Invention

This invention comprises a bar soap having at least two different
30 portions, wherein the individual portions have a solubility difference in water of at least 1.0%, particularly in the range of 3.0 – 7.0%. Upon use of the bar, the differential in solubilities creates a ridged structure which is useful to provide a massaging and, optionally, an exfoliating effect.

35 Detailed Description of the Invention

The bars of the invention comprise at least two different portions which may be in the form of separate stripes, separate discontinuous areas, or other portions of separateness of varying sizes and shapes. The bar has at least two portions each of which has a selected solubility so that the difference

5 between the at least two portions is a minimum of 1.0% and preferably a maximum of 10.0%, more preferably 3.0-7.0%. It is also possible that a bar may be created with more than two portions, provided that at least two of the portions have the described difference in solubilities. Upon use in washing with water, the bar develops ridges or other areas of height differences such
10 that it has a textured effect. The bar can then be used as a massaging and, optionally, an exfoliating cleansing product.

In certain embodiments, the two or more portions of the bar may independently include the same or different visual aspects. The portions of the bar may also independently include the same or different benefit agents.
15 In particular, examples of the invention include bars where the two or more portions can independently:

- a) be matched in color so that there is no visual differentiation;
- b) be different colors so that the bar appears striped;
- c) contain both transparent and opaque portions or both transparent or both
20 opaque portions;
- d) contain exfoliants in one or more of the portions;
- e) contain the same or different exfoliants;
- f) contain pearlizing agents in one or multiple portions;
- g) contain moisturizing agents in one or multiple portions; and
- 25 h) contain other benefit or visual agents (such as beads for visual effect, beads or encapsulates with benefit agents, such as moisturizing beads, fragrance beads, etc.).

The products of this invention include bars made with two portions where the first portion "A" as a less soluble portion comprises:
30 (a) 75-90 weight % of a soap such as a sodium soap and particularly a tallowate, cocoate or palmitate soap (particularly 82.6% of an 80/20 tallow/coco soap);
(b) 0.1-5 weight % of one or more of a C₁₂-C₂₀ straight or branched chain fatty acid (particularly coconut or stearic acid) (particularly 1.1 % of coconut or
35 stearic acid);
(c) 0.5-1.2 weight % of a hardening agent selected from the group consisting of inorganic electrolytes (especially sodium chloride), propylene glycol, mixtures of sodium chloride with polyethylene glycol (for example, PEG-600),

- 5 and mixtures of sodium chloride with at least one high melting point wax (for example, 40-60°C as a melting point range) (with a particular hardening agent being sodium chloride, especially in an amount of 0.7%);
- (d) water (for example, 8 - 16 weight %); and
- (e) optionally one or more ingredients selected from the group consisting of:
- 10 (i) an opacifying and/or pearlizing agent such as in an amount of 0-0.5 weight % of titanium dioxide, mica, coated mica, and mixtures thereof (particularly titanium dioxide such as in an amount of 0.3%);
- (ii) fragrance (such as in an amount of 0-2 weight %, particularly 1.2%);
- 15 (iii) a preservative such as in amount of 0.02-0.1 weight % (particularly a chelating type of preservative such as pentasodium pentate or EDTA, especially 0.05% of pentasodium pentate);
- (iv) an antioxidant such as in an amount of 0.01-0.05 weight %, particularly tetradibutyl pentaerythrityl hydroxyhydrocinnamate or
- 20 butylated hydroxytoluene ("BHT"); particularly 0.02% of tetradibutyl pentaerythrityl hydroxyhydrocinnamate;
- (v) a colorant such as in an amount of 0.001-0.1 weight %, particularly 0.002%;
- (vi) 0.1-5.0 weight % of a humectant or skin conditioner such as
- 25 glycerin, petrolatum, mineral oil, silicone compounds, waxes, natural oils (such as sunflower, olive, jojoba, sesame, safflower, wheat germ, almond, safflower, canola or avocado oils) shear butter, lanolin, vitamin E or mixtures thereof (particularly 2.3% glycerin); and
- (vii) exfoliating agents such as polyethylene beads, jojoba beads, oat
- 30 flour, lufa or bran.

The second portion "B" as a more soluble portion comprises:

- (a1) 60-75 weight % of a soap such as a sodium soap and particularly a tallowate, cocoate or palmitate soap (particularly 65.5% of an 80/20
- 35 tallow/coco soap);
- (b1) a solubility enhancing component selected from the group consisting of
- (i) 6-10 weight % of a non-saccharide humectant such as glycerin (particularly 7.6% of glycerin);

- 5 (ii) 3-10 weight % of an alcohol, for example, sorbitol or manitol
(particularly 5.7% sorbitol);
(iii) 0.5-10% of a saccharide type humectant, for example, sucrose,
dextrose, fructose, glucose, xylitol, honey or lactose;
(iv) 0.5-25 weight % of a non-soap synthetic surfactant (for example,
10 cocamidopropyl betaine, sodium dodecyl benzene sulfonate, cocamide
monoethanolamide, C₆-C₂₂ alkyl sulfosuccinates, and C₈-C₁₈ acyl
isethionates, C₈-C₂₂ sarconsinates, C₈-C₂₂ taurates); and
(v) mixtures thereof;
provided that the solubility enhancing components must be present in a
15 minimum amount of at least 5 weight %;
- (c1) 0.5-1.7 weight % of a hardening agent selected from the group
consisting of inorganic electrolytes (especially sodium chloride), propylene
glycol, mixtures of sodium chloride with polyethylene glycol (for example,
PEG-600), and mixtures of sodium chloride with at least one high melting
20 point wax (for example, 40-60°C as a melting point range) (with a particular
hardening agent being sodium chloride, especially in an amount of 1.1%
sodium chloride);
- (d1) 0.1-5 weight % of one or more of a C₁₂-C₂₀ straight or branched chain
fatty acid (particularly coconut or stearic acid) (particularly 1.5% of coconut or
25 stearic acid);
- (e1) water (for example, 14- 19 weight %); and
- (f1) optionally one or more ingredients selected from the group consisting of
- (i) an opacifying and/or pearlizing agent such as in an amount of 0-0.5
weight % of titanium dioxide, mica, coated mica, and mixtures thereof
30 (particularly titanium dioxide such as in an amount of 0.3%);
- (ii) fragrance (such as in an amount of 0-2 weight %, particularly
1.2%);
- (iii) a preservative such as in amount of 0.02-0.1 weight % (particularly
a chelating type of preservative such as pentasodium pentate or EDTA,
35 especially 0.05% of pentasodium pentate);
- (iv) an antioxidant, for example in an amount of 0.01-0.05, particularly
tetradibutyl pentaerythrityl hydroxyhydrocinnamate or butylated

- 5 hydroxytoluene ("BHT"); particularly 0.02% of tetradibutyl
pentaerythrityl hydroxyhydrocinnamate;
(v) a colorant, for example in an amount of 0.001-0.1 weight %,
particularly 0.002%;
(vi) 0.01-5 weight % of a skin conditioner, for example one or more
10 members selected from the group consisting of petrolatum, mineral oil,
silicones, natural oils (such as sunflower, olive, jojoba, sesame,
almond, safflower, wheat germ, canola or avocado oils), shea butter,
lanolin, vitamin E, and mixtures thereof; and
(vii) exfoliating agents, for example polyethylene beads, jojoba beads,
15 oat flour, lufa or bran.

wherein the amounts in each of A and B portions are based on each separate portion as 100%.

The bar must contain at least two different portions, but it can contain additional portions, each with its own solubility profile, provided that the bar
20 contains at least two portions that have a difference in solubility when used with water. Normally after standard use-up test this will translate to a height difference in a bar of 2.5 cm size thickness (approximately 100 grams) of at least 0.1 mm, particularly in the range of 0.1-0.6 mm. For example, the initial shape of the bar may be a rectangular bar 10 cm X 6 cm with a thickness of
25 2.5 cm of thickness at its midpoint with some rounding at the edges.

In using the bars of this invention, ridges or areas of varying depth are created as the bar is used, thereby giving a textured bar, for example, with ridges only or a combination of ridges and regular or random areas of varying height on the bar that may be useful for a massaging and, optionally, an
30 exfoliating effect.

In using the bars made according to Examples 1A and 1B, a difference in ridges was noticed as soon as 30 seconds after washing with the bar.

The bars of this invention may be of varying sizes and shapes such as ovoid or rectangular in shape with either a flat or curved profile as an overall
35 appearance. For example, a rectangular bar 10 cm X 6 cm with a thickness of 2.5 cm of thickness at its midpoint with some rounding at the edges. It is to be noted that in various embodiments of the invention, the initial surface of the bar may be either smooth or initially have some texture formed during the

5 extrusion and/or pressing of the bar. During use, the smooth bar will develop appropriate ridges and the non-smooth bars will be able to have their texture enhanced. It should be noted that the difference in solubilities is critical to keep an initially non-smooth bar from wearing into a smooth one.

The bars may be made by the standard method of refining soap chips.

10 For each portion the ingredients are weighed out on calibrated scales and mixed properly using an amalgamator or other mixing means. For each of the separate portions to be used, the separate portion mixed batch is preferably refined at least two times in an extruder or rolling mill. After both portions are refined the portions will then be processed using co-extrusion equipment (for
15 example, combining the two portions when a bar is made that contains only the two portions to be made). This equipment includes two separate pieces of extrusion equipment joined together by a common co-extrusion nozzle that combines the two streams of soap into a distinct striped pattern. The striped pattern can be varied by the design of the co-extrusion nozzle insert. In one
20 particular method (which comprises equipment used in the Examples), the dual extrusion equipment used includes the Twin Worm Mazzoni and Single Worm Mazzoni manufactured by Mazzoni LB in Italy. The common co-extrusion nozzle was also manufactured by Mazzoni LB in Italy. For example, Portion A is processed through the Single Worm Mazzoni and Portion B is
25 processed through the Twin Worm Mazzoni; however, each of Portion A and Portion B can also be processed on the other extrusion equipment. The two streams are combined in the common co-extrusion nozzle, extruded, and then the soap billets are collected. The soap billets are pressed into soap bars on the soap press using conventional techniques known in the soap making art.
30 The co-extrusion equipment is run under appropriate conditions of speed and temperature (for example, a speed in the range of 300-500 grams of soap per minute and a temperature in the range of 32-50°C), particularly under a vacuum, for example, a vacuum of 500-600 mm Hg, to obtain the striped bars.

35

5

EXAMPLES

The following Examples are offered as illustrative of the invention and are not to be construed as limitations thereon. In the Examples and elsewhere in the description of the invention, chemical symbols and terminology have their usual and customary meanings. Temperatures are in degrees C unless otherwise indicated. The amounts of the components are in weight percents based on the standard described; if no other standard is described then the total weight of the composition is to be inferred. Various names of chemical components include those listed in the CTFA International Cosmetic Ingredient Dictionary (Cosmetics, Toiletry and Fragrance Association, Inc., 7th ed. 1997).

Example 1A

A bar can be made comprising:

Portion A -less soluble portion:

82.6 weight % sodium soap (80/20 tallow/coco)
2.3 weight % glycerin
1.2 weight% fragrance
1.1 weight % stearic/coco fatty acid
0.7 weight % sodium chloride
0.3 weight % titanium dioxide
0.05 weight % pentasodium pentatate
0.02 weight % tetradibutyl pentaerythrityl hydroxyhydrocinnamate (contained in the fragrance)
0.002 weight % colorants
11.728 weight % water

Portion B –more soluble portion:

65.5 weight % sodium soap (80/20 tallow/coco)
7.6 weight % glycerin
1.2 weight% fragrance
1.5 weight % stearic/coco fatty acid
1.1 weight % sodium chloride
5.7 weight% sorbitol
0.05 weight % pentasodium pentatate
0.02 weight % tetradibutyl pentaerythrityl hydroxyhydrocinnamate (contained in the fragrance)
0.002 weight % colorants
17.328 weight % water

For Example 1A, the bars may be made by the standard method of refining soap chips. For each portion the ingredients are weighed out on

5 calibrated scales and mixed properly. For each portion, the glycerin, stearic/coco fatty acid, sodium chloride, (sorbitol for portion B), (titanium dioxide for portion A), pentasodium pentatate, and water are already formulated into the soap chips along with the sodium soap. For each of the separate portions to be used, the separate portion mixed batch was refined
10 two times in an extruder. After both portions were refined the portions were then processed using co-extrusion equipment (for example, combining the two portions when a bar is made that contains only the two portions to be made). This equipment includes two separate pieces of extrusion equipment joined together by a common co-extrusion nozzle that combines the two
15 streams of soap into a distinct striped pattern. The striped pattern can be varied by the design of the co-extrusion nozzle insert. The dual extrusion equipment used included the Twin Worm Mazzoni and Single Worm Mazzoni manufactured by Mazzoni LB in Italy. The common co-extrusion nozzle was also manufactured by Mazzoni LB in Italy. Portion A was processed through
20 the Single Worm Mazzoni and Portion B was processed through the Twin Worm Mazzoni; however, each of Portion A and Portion B can also be processed on the other extrusion equipment. The two streams were combined in the common co-extrusion nozzle, extruded, and then soap billets were collected. The soap billets were pressed into soap bars on the soap
25 press using conventional techniques known in the soap making art. The co-extrusion equipment was run under appropriate conditions of speed and temperature (for example, a speed of 300 grams of soap per minute and a temperature in the range of 37-44°C), particularly under a vacuum, for example, a vacuum of 500-600 mm Hg, to obtain the striped bars.

30

35

Example 1B

A bar can be made comprising:

Portion A -less soluble portion:

82.5 weight % sodium soap (80/20 tallow/coco)

2.3 weight % glycerin

40 1.2 weight% fragrance

- 5 1.1 weight % stearic/coco fatty acid
0.7 weight % sodium chloride
0.3 weight % titanium dioxide
0.1 weight % Inducos 14/3 Blue (polyethylene beads)
0.05 weight % pentasodium pentatate
10 0.02 weight % tetradibutyl pentaerythrityl hydroxyhydrocinnamate (contained
in the fragrance)
0.002 weight % colorants
11.728 weight % water

15 Portion B – more soluble portion:

- 65.5 weight % sodium soap (80/20 tallow/coco)
7.6 weight % glycerin
1.2 weight% fragrance
1.5 weight % stearic/coco fatty acid
20 1.1 weight % sodium chloride
5.7 weight% sorbitol
0.05 weight % pentasodium pentatate
0.02 weight % tetradibutyl pentaerythrityl hydroxyhydrocinnamate (contained
in the fragrance)
25 0.002 weight % colorants
17.328 weight % water

For Example 1B, the bars may be made by the standard method of refining soap chips. For each portion the ingredients are weighed out on calibrated scales and mixed properly. For each portion, the glycerin, stearic/coco fatty acid, sodium chloride, (sorbitol for portion B), (titanium dioxide for portion A), pentasodium pentatate, and water are already formulated into the soap chips along with the sodium soap. For each of the separate portions to be used, the separate portion mixed batch was refined two times in an extruder. After both portions were refined the portions were then processed using co-extrusion equipment (for example, combining the two portions when a bar is made that contains only the two portions to be made). This equipment includes two separate pieces of extrusion equipment joined together by a common co-extrusion nozzle that combines the two streams of soap into a distinct striped pattern. The striped pattern can be varied by the design of the co-extrusion nozzle insert. The dual extrusion equipment used included the Twin Worm Mazzoni and Single Worm Mazzoni manufactured by Mazzoni LB in Italy. The common co-extrusion nozzle was also manufactured by Mazzoni LB in Italy. Portion A was processed through the Single Worm Mazzoni and Portion B was processed through the Twin

5 Worm Mazzoni; however, each of Portion A and Portion B can also be processed on the other extrusion equipment. The two streams were combined in the common co-extrusion nozzle, extruded, and then the soap billets were collected. The soap billets were pressed into soap bars on the soap press using conventional techniques known in the soap making art. The
10 co-extrusion equipment was run under appropriate conditions of speed and temperature (for example, a speed of 300 grams of soap per minute and a temperature in the range of 37-44°C), particularly under a vacuum, for example, a vacuum of 500-600 mm Hg, to obtain the striped bars. The less soluble portion "A" contains polyethylene beads that provide an exfoliating
15 benefit.

Example 2 – Comparative Bar

A comparative or control bar is made which contains two portions that have
20 same solubility in water (differ by less than 1%) but differ in color:

Portion A:

82.6 weight % sodium soap (80/20 tallow/coco)
2.3 weight % glycerin
1.2 weight% fragrance
25 1.1 weight % stearic/coco fatty acid
0.7 weight % sodium chloride
0.3 weight % titanium dioxide
0.05 weight % pentasodium pentatate
0.02 weight % tetradibutyl pentaerythrityl hydroxyhydrocinnamate (contained
30 in the fragrance)
0.002 weight % colorants
11.728 weight % water

35

Portion B:

82.6 weight % sodium soap (tallow, palm and/or coco)
2.3 weight % glycerin
1.2 weight% fragrance
40 1.1 weight % stearic/coco fatty acid
0.7 weight % sodium chloride
0.3 weight % titanium dioxide
0.05 weight % pentasodium pentatate
0.02 weight % tetradibutyl pentaerythrityl hydroxyhydrocinnamate (contained
45 in the fragrance)
0.002 weight % colorants

5 11.728 weight % water

For Example 2, the bars may be made by the standard method of refining soap chips. For each portion the ingredients are weighed out on calibrated scales and mixed properly. For each portion, the glycerin,
10 stearic/coco fatty acid, sodium chloride, titanium dioxide, pentasodium pentatate, and water are already formulated in with the sodium soap and form what is called soap chips. For each of the separate portions to be used, the separate portion mixed batch was refined two times in an extruder. After both portions were refined the portions were then processed using co-extrusion
15 equipment (for example, combining the two portions when a bar is made that contains only the two portions to be made). This equipment includes two separate pieces of extrusion equipment joined together by a common co-extrusion nozzle that combines the two streams of soap into a distinct striped pattern. The striped pattern can be varied by the design of the co-extrusion
20 nozzle insert. The dual extrusion equipment used included the Twin Worm Mazzoni and Single Worm Mazzoni manufactured by Mazzoni LB in Italy. The common co-extrusion nozzle was also manufactured by Mazzoni LB in Italy. Portion A was processed through the Single Worm Mazzoni and Portion B was processed through the Twin Worm Mazzoni; however, each of Portion
25 A and Portion B can also be processed on the other extrusion equipment. The two streams were combined in the common co-extrusion nozzle, extruded, and then the soap billets were collected. The soap billets were pressed into soap bars on the soap press using conventional techniques known in the soap making art. The co-extrusion equipment was run under
30 appropriate conditions of speed and temperature (for example, a speed of 300 grams of soap per minute and a temperature in the range of 37-44°C), particularly under a vacuum, for example, a vacuum of 500-600 mm Hg, to obtain the striped bars.

35 Example 3

Separate portions made for Portions A and B as described in Example 1A were tested using the following protocol for a standard use-up test. The procedure is as follows:

- 5 1. Weigh bars and record initial weights. Label soap dishes (preferably
with drainage pans) for each sample and place each bar in appropriate
dish.
2. Have people wash with the bars for 10 seconds each in 37.8°C water,
using whatever hand wash technique they would normally use at
10 home. Space the washes approximately 30 minutes apart.
3. Bars are washed a total of 20 times.
4. Once the washes are completed, allow the bars to dry for 24 hours at
room temperature in dry soap dishes. Take the final bar weights, and
calculate use-up or wear rate as percent weight loss.

15

Solubility Data:

Based on standard use-up test, the solubilities were evaluated as follows:

Example 1-A:

For Portion A (less soluble): 21.4% used after twenty 10 second washes

20 For Portion B (more soluble): 26.6% used after twenty 10 second washes

Example 1-B:

For Portion A (less soluble): 19.3% used after twenty 10 second washes

For Portion B (more soluble): 24.6% used after twenty 10 second washes

25

30

Example 4: Surface Rating Test A

A surface rating can be done to evaluate the surface profile of the bar
products.

Instrumental Method:

35 Bars prepared according to Example 1A were evaluated under the use up
conditions described in Example 3. Defined ridges could be felt and were
observed in the bar. These were measured using an Optical Comparator at a
depth of 0.35 mm. The depth range is 0.05-1.0 mm particularly 0.3-0.6 mm.

40

Example 5: Surface Rating Test B

5 A surface rating can be done to evaluate the surface profile of the bar products.

Tactile Grading:

A panel was completed where panelists were asked to rate the ridges on the bar made according to Example 1A compared with a bar made in Example 2,
10 where similar compositions were used in both sides. Comparison was done after the standard use-up test from a test such as Example 3. Panelists provided an average rating of "3.4" to the bar in Example 1A and an average rating of "1" to the bar in Example 2.

15 Ratings:

1. Bar has a smooth surface. No ridges can be felt.
2. Bar has a slightly uneven surface. Very minor ridges can be felt.
3. Bar has a moderately uneven surface. Some ridges can be felt.
4. Bar has an uneven surface. Defined ridges can be felt throughout the bar.
- 20 5. Bar has a very uneven surface. Distinct ridges can be felt throughout the bar.

5

CLAIMS

What is claimed is:

1. A soap bar comprising at least two different portions wherein the portions have a difference in solubility of at least about 1.0 %. 10
2. The soap bar of Claim 1 wherein the portions have a difference in solubility of between about 3 and 7%.
- 15 3. The soap bar of Claim 1 wherein the difference in solubilities causes formation of a ridged structure upon use of the bar.
4. The soap bar of Claim 1 wherein the portions independently have the same or different visual aspects. 20
5. The soap bar of Claim 4 wherein the visual aspects are selected from the group consisting of colors, transparent portions, opaque portions, pearlizing agents, and beads.
- 25 6. The soap bar of Claim 1 wherein one or more of the portions independently comprise benefit agents.
7. The soap bar of Claim 6 wherein the benefit agents are selected from the group consisting of exfoliating agents and moisturizing agents. 30
8. The soap bar of Claim 1 comprising two portions Portion A and Portion B, wherein Portion A is the lesser soluble portion and comprises:
 - (a) about 75-90 weight % of a soap;
 - (b) about 1-5 weight % of one or more of a C₁₂-C₂₀ straight or branched chain fatty acids; 35
 - (c) about 0.5-1.2 weight % of a hardening agent;
 - (d) water; andPortion B is more soluble than Portion A in water and comprises:

- 5 (a1) 60-75 weight % of a soap;
- (b1) a solubility enhancing component selected from the group consisting of
- (i) 6-10 weight % of a humectant ;
 - (ii) 3-10 weight % of an alcohol;
 - (iii) 0.5-10% of a saccharide type humectant;
 - 10 (iv) 0.5-25 weight % of a non-soap synthetic surfactant; and
 - (v) mixtures thereof;
- provided that the solubility enhancing components must be present in a minimum amount of at least about 5 weight %;
- (c1) about 0.5-1.7 weight % of a hardening agent;
- 15 (d1) about 0.1-5 weight % of one or more of a C₁₂-C₂₀ straight or branched chain fatty acid; and
- (e1) water.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2005/020327

A. CLASSIFICATION OF SUBJECT MATTER C11D13/14 C11D13/18 C11D9/26		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) C11D		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, PAJ, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 723 690 B1 (ARONSON MICHAEL PAUL ET AL) 20 April 2004 (2004-04-20) claims; examples	1-8
X	GB 1 142 238 A (M. KAPPUS) 5 February 1969 (1969-02-05) claims; examples	1-7
X	US 5 602 088 A (TOKOSH ET AL) 11 February 1997 (1997-02-11) claims; examples	1-4
A	US 5 834 410 A (SLOCUM ET AL) 10 November 1998 (1998-11-10) claims; figures	1-8
<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> Further documents are listed in the continuation of box C. <input checked="" type="checkbox"/> Patent family members are listed in annex. </div>		
<div style="display: flex;"> <div style="flex: 1;"> <p>° Special categories of cited documents :</p> <p>*A* document defining the general state of the art which is not considered to be of particular relevance</p> <p>*E* earlier document but published on or after the international filing date</p> <p>*L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>*O* document referring to an oral disclosure, use, exhibition or other means</p> <p>*P* document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="flex: 1;"> <p>*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>*&* document member of the same patent family</p> </div> </div>		
Date of the actual completion of the international search <div style="text-align: center; font-weight: bold;">4 November 2005</div>		Date of mailing of the international search report <div style="text-align: center; font-weight: bold;">29/11/2005</div>
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer <div style="text-align: center; font-weight: bold;">Pfannenstein, H</div>

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2005/020327

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6723690	B1	20-04-2004	NONE	
GB 1142238	A	05-02-1969	AT 287155 B DE 1617253 A1 DE 1617254 A1 FR 1551437 A SE 347760 B	11-01-1971 18-02-1971 18-02-1971 27-12-1968 14-08-1972
US 5602088	A	11-02-1997	US 5895780 A	20-04-1999
US 5834410	A	10-11-1998	NONE	