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(71) Applicant : **UNILEVER PLC**
Unilever House Blackfriars
London EC4P 4BQ (GB)
(84) **GB**

(71) Applicant : **UNILEVER N.V.**
Weena 455
NL-3013 AL Rotterdam (NL)
(84) **CH DE ES FR IT LI NL SE**

(72) Inventor : **Chambers, John George, Unilever Research Port**
Sunlight Laboratory, Quarry Road East, Bebington
Wirral, Merseyside L63 3JW (GB)
Inventor : **Irlam, Geoffrey, Unilever Research Port**
Sunlight Laboratory, Quarry Road East, Bebington
Wirral, Merseyside L63 3JW (GB)

(74) Representative : **Elliott, Peter William et al**
Unilever plc, Patent Division Colworth House
Sharnbrook
Bedford MK44 1LQ (GB)

(54) Toilet soap bars.

(57) Soap bars contain from 90-50% fatty acid soaps obtained from tallow (non-lauric fats) and 10-50% of fatty acid soaps obtained from coconut (lauric fats). Known solutions to the problem of harshness include reduction of the level of soap present and replacement of the balance of the composition by so-called co-actives. A recognised problem engendered by the presence of co-actives is a loss of product structure in the resulting soap bars. Soap bars which comprise co-actives must therefore be manufactured by a process which increase the cost of the eventual products. The invention provides soap bars which comprise :

a) At least 25%wt on total actives of lauric acid soaps,
b) As the balance of the soaps, non-lauric soaps having an iodine value of less than 45, and,
c) At least 5%wt on total actives of one or more synergistic mildness active.

These soap bars have acceptable mildness but can be manufactured with conventional processing equipment.

EP 0 537 964 A1

The present invention relates to toilet soap bars, particularly to mild toilet soap bars comprising blends of soap with one or more coactives.

For very many years soap bars have been manufactured from fats by conversion of triglyceride components of fats into fatty acids and the formation of these 'soaps' into bars.

Traditionally, the most important fats used in soap manufacture have been tallow (a palmatic/stearic fat rendered from animal carcasses) and coconut oil (a lauric fat). For the purposes of this specification the words 'oil' and 'fat' are considered interchangeable except where the context demands otherwise. The use of other palmitic/stearic fats such as palm oil and alternative lauric fats such as palm kernel, babassu or macauba oil is known.

In general the longer chain fatty acid soaps, particularly the less expensive C16 and C18 soaps (as obtained from tallow and palm oil) provide structure in the finished soap bars and prevent or retard disintegration of the soap bar on exposure to water. The more expensive, shorter chain, lauric fat-derived, ie. lauric acid and other soluble soaps (as obtained from coconut and palm kernel oil) contribute the lathering properties of the overall composition. A general problem in the formulation of bar soaps has been that of finding a balance between providing structure (as obtained from the cheaper component) and maintaining lathering properties (as obtained from the more costly component) at a practical overall cost.

The fatty acid chain length distribution of a range of soap components is given below:

Chain length	Tallow	Palm	Coconut	Palm Kernel
10	0.1	0.0	15.1	6.4
12 (lauric)	0.1	0.3	**48.0**	**46.7**
14	2.8	1.3	17.5	16.2
16 (palmitic)	**24.9**	**47.0**	9.0	8.6
18 (stearic)	**20.4**	4.5	9.0	8.6
20	1.8	0.3	0.0	0.4
18:1 (oleic)	**43.6**	**36.1**	5.7	16.1
18:2	4.7	9.9	2.6	2.9
18:3	1.4	0.2	0.0	0.0
Poly unsat	0.1	0.0	0.0	0.0

From the table it can be seen that the coconut and palm kernel fats (together known as the lauric fats) are particularly rich in the C10-C14 saturated fatty acids, particularly fatty acid residues derived from lauric acid itself. For convenience these fats containing saturated, relatively short chain fatty acids will be referred to hereinafter as the lauric fats. This definition includes the palm kernel, babassu or macauba oils as mentioned above. In contrast, tallow and palm oil *per se* are an industrial source of non-lauric fats, especially those containing C16 and C18 fatty acid residues: both saturated and unsaturated residues being present in almost equal quantities. The C16 and C18 fatty acids, together with the longer chain fatty acid are referred to herein as non-lauric fats.

A standard measure of the degree of saturation of a fatty acid residue, or more usually of a blend of fats or fatty acids, is the so-called iodine value. The iodine value of a fatty acid residue is determined by the ability of the residue to bind iodine expressed in MoleS. Iodine binds to unsaturated fatty acids in proportion to the extent of the unsaturation and does not bind to saturated fats. Consequently, saturated fats have low iodine values, mono unsaturated fats bind around 100 Mole % iodine and have iodine values ('IV') of around 100. In contrast di-unsaturated fats bind around 200 Mole % and have iodine values approaching 200. The 63rd Edition of the CRC Handbook (CRC Press) gives the iodine value of beef tallow as 49.5, and for coconut oil gives an iodine value of 10.4.

In typical commercial formulations, soap bars contain from 90-50% fatty acid soaps obtained from tallow (ie. non-lauric fats) and 10-50% of fatty acid soaps obtained from coconut (ie. lauric fats). In particular, in countries where tallow is acceptable to consumers, most commercial soap formulations comprise 80% tallow and 20% coconut oil. In countries where tallow is unacceptable other oils and fats, such as palm oil, replace tallow.

The conventional 'toilet-bar' soap making process is well documented in the literature. In outline the process is as follows. In conventional 'wet' soap making, fats, ie. tallow and coconut oil blends, are saponified in the presence of an alkali (typically NaOH) to yield fatty acids as alkaline soaps and glycerol. The glycerol is extracted with brine to give a dilute fatty acid soap solution containing around 70% soap and 30% aqueous phase This soap solution is dried, typically by heating in heat exchangers to circa 130°C and drying under vacuum, to a water content of around 12%, and finished by milling, plodding and stamping into bars.

A principal drawback of compositions containing fatty acid soap is harshness, a property which is determined by a number of tests as will be elaborated upon hereafter. Known solutions to the problem of harshness include reduction of the level of soap present and replacement of the balance of the composition by so-called co-actives. A recognised problem engendered by the presence of co-actives is a loss of product structure in the resulting soap bars.

In order to overcome the problem of loss of structure soap bars which comprise co-actives have been manufactured by a process which increase the cost of the eventual products. Several such processes are known.

GB 2182343-A (Procter & Gamble) discloses toilet soaps comprising a fatty acid soap, a synthetic surfactant co-active and a water soluble polymer. In order to reduce the softening effect of the co-active it is necessary for some of the soap to be present in the so-called beta-crystalline phase and crystallisation in this phase can only be achieved by the application of high shear (ie. energetic working) in an additional processing step after the drying step and prior to finishing.

EP 363215 (Colgate) discloses the production of toilet soap bars from soap and an ethoxylated surfactant co-active. This soap composition needs to be dried to below a critical 5%wt moisture content in order to harden the material sufficiently for processing into bar form using conventional soap making/forming equipment. This drying step requires additional equipment in the form of batch drying trays to be used prior to soap finishing.

EP 311343 (Procter & Gamble) discloses the combined use of a beta-crystalline phase, an ethoxylated non-ionic surfactant co-active and a water soluble polymer. As described above, these compositional modifications require modification of the soap processing line to provide for the energetic working needed to form the beta-crystalline phase.

It can be seen from the foregoing that each of the known, alternative processes for the production of soap bars containing co-actives require the provision of further processing apparatus, particularly in the form of drying and/or energetic working apparatus and the additional processing step which makes use of this apparatus prior to soap finishing. In order to use conventional soap production lines without substantial modification, a need exists for a soap bar composition which avoids the necessity of these additional steps and yet provides a product with reduced harshness while maintaining lathering and structural properties.

The present invention provides such a composition and subsists in the use of relatively more highly saturated long chain soaps, ie. relatively less unsaturated long chain soaps than in conventional soap compositions. It is believed that the removal of soluble non-lauric fatty acid soaps is particularly advantageous in improving the soap-structuring properties to an extent such that higher levels of co-actives than are conventionally used may be incorporated in the soap composition without the need for special processing.

Accordingly, a first aspect of the present invention comprises the use, as a structuring agent, of insoluble non-lauric fatty acid soaps, having a low iodine value, in the preparation of a soap bar containing one or more synergistic mildness agents.

Preferred embodiments of the present invention include soap bars which comprise:

a) At least 25%wt on total actives of lauric acid soaps,

b) As the balance of the soaps, non-lauric soaps having an iodine value of less than 45, and,

c) At least 5%wt on total actives of one or more synergistic mildness active.

As mentioned above, lauric acid soaps promote lathering and are characterised by a fatty acid composition containing a high proportion, particularly 65-80% on fatty acid content, of C10-C14 saturated acids. In the context of the present invention suitable sources of lauric fatty acids include:- coconut oil/fatty acid, palm kernel oil/fatty acid, babassu oil/fatty acid, macauba oil/fatty acid and mixtures thereof. The fats and fatty acids derived from coconut are preferred due to availability.

Suitable non-lauric soaps are those rich in saturated fatty acids having a chain length greater than C14. Sources of such fatty acids include animal fats/fatty acids, eg. tallow and lard and the fatty acid derived therefrom, and also vegetable derived oils, particularly fats/fatty acids rich in palmitic and stearic acid such as palm oils and fractions thereof. Where fatty acids are derived from oil-sources yielding fatty acids with a high degree of unsaturation, such as soya bean oil, sunflower oil, rice bran oil, linseed oil, rapeseed oils, ground nut oil, marine oils and the like, the oil stocks are preferably hardened or fractionated to yield partially or fully hardened fatty acid mixtures and or stearines. The fats and fatty acids derived from tallow are preferred except where nut-oil or other vegetable substitutes are employed for cultural reasons.

The preferred upper limit of the lauric acid soaps is about 60%, for reasons of economy.

In preferred embodiments of the invention the iodine value of the non-lauric soaps ranges from 10 to 45, is more preferably 20 to 40, and most preferably in the range 25 to 40. For conventional soap blends of tallow and coconut oil the iodine value of the non-lauric soaps is measured at around 48 (similar to the quoted value for pure tallow), it can therefore be seen that the non-lauric fats of the compositions of the present invention are, in general, more saturated than those employed in conventional soap making.

While single oils and or fatty acids derived therefrom may be employed in soap components of the formulations according to the invention the use of mixtures or two or more oils and/or fatty acid compositions is not hereby excluded and, in practice, will be more commonplace.

As mentioned above, in compositions according to the present invention the ratio of saturated to unsaturated fatty acids in the non-lauric soaps has been shifted in favour of the saturated fatty acids. This can be accomplished by the addition of saturates to the soap blend or the removal or unsaturates. It is particularly preferable that a relative increase in the level of saturates is accomplished by the removal of oleic soaps. The oleics are the soluble C18:1 (oleic) and C18:2 (linoleic) soaps in tallow and palm and removal of these increases the overall saturate content.

Overall for the soaps, the iodine value of the soap blend will be less than 35 taking into account both lauric and non-lauric components.

In particular embodiments of the present invention the composition further comprises at least one synthetic anionic active at a level of not more than 20%wt, preferably at a level of not more than 10%wt, most preferably at a level of not more than 6%wt on the total active content of product.

In embodiments of the present invention the overall soluble active inventory should be in the range 50-70%wt, based on a normalised total active content of 100%wt and classing saturated soaps with a carbon chain length of less than 16, unsaturated soaps, synthetic anionic actives and synergistic mildness actives within the soluble active component inventory.

Preferably, the synergistic mildness active is selected from the group consisting of non-ionic surfactants, amphoteric surfactants and mixtures thereof. The synergistic mildness active should be present at a level of at least 5%wt of the total active level. Particularly useful compositions comprise 5-25%wt, preferably 8-20%wt, more preferably 9-18%wt of synergistic mildness active on total actives.

Suitable non-ionic surfactants include:- polyethoxylated alcohols, polyethoxylated alkyl phenols, alkyl polyglycosides, sorbitan esters, polysorbates, alkanolamides, poloxamers, and mixtures thereof. Preferred amongst the non-ionic surfactants are polyethoxylated alcohols, particularly tallow ethoxylates The preferred tallow ethoxylates have an average alkyl chain length of 10-20 carbons and an average ethoxylate content of 3-20 units.

Suitable amphoteric surfactants include:- amine oxides, aminomides, betaines, amido betaines and sulphobetaines, and mixtures thereof. Cocoamidpropyl betaines and tegobetaines are particularly preferred due to their low potential nitrosamine-precursor content.

As mentioned above the composition preferably comprises one or more synthetic anionic actives. Suitable synthetic anionic actives include:- alkyl sulphates, alkyl ether sulphates, alpha-olefin sulphonates, fatty isethionates, alkyl glyceryl ether sulphonates, mono-alkyl glyceryl sulphates, alkyl sarcosinates, alkyl taurides, alkyl sulphosuccinates, alkyl phosphates, and mixtures thereof. Preferred amongst the anionic actives are sodium lauryl ether sulphate (SLES), alpha-olefin sulphonates and sodium fatty isethionates. Sodium lauryl ether sulphate (SLES) is particularly preferred.

Preferred compositions according to the present invention have a 'lathering ratio' greater than 0.56, preferably greater than 0.6, more preferably greater than 0.8. The lathering ratio is defined as the sum of the saturated soaps with carbon chain lengths less than 16 plus the synthetic anionic actives divided by the sum of the unsaturated soaps plus the synergistic mildness actives. As noted above, the synergistic mildness actives can be either non-ionic surfactants, amphoteric surfactants and mixtures thereof. In consequence for the vast majority of formulations, the lathering ratio can be written as L/LL where:

L:= C_{8-14}:0 + synthetic anionic actives

LL:= unsaturated soaps + non-ionics + amphoterics

For conventional '80/20' soap formulations based on tallow and coconut oil (free of synthetic anionic actives, nonionics and amphoterics) the ratio L/LL is about 0.45.

In embodiments of the present invention the total water content of the soap bar should be in the range 8-20%wt of the soap bar, preferably 9-17%wt, more preferably 10-16%wt. The most preferred level of water in the final bar is a normal water content for soap bars (around 12%) hence conventional driers can be used to achieve this level.

The salt content of the bars can vary. In practice the salt level will lie between 0 and 1.5%. Some or all of this salt can be residue from the saponification processes typically employed in soap making, as is known in the art. It is also known that the level of salt can have some slight influence on the eventual hardness of the product. This variation modifies the hardness of the soap bars and can be used to control the final hardness within production limits. It is preferred that the salt content lies between 0.2-0.8 wt%.

The most preferred compositions according to the present invention obey all the formulation rules given above: ie these blends comprise:

a) 25-60%wt on total actives of lauric acid soaps,

b) As the balance of the soaps non-lauric soaps having an iodine value in the range 10-45, and,

c) 5-20%wt on total actives of one or more synergistic mildness active,

d) 50-70%wt on total actives of saturated soaps with a carbon chain length of less than 16, unsaturated soaps, optional synthetic anionic actives and synergistic mildness actives, and,

e) a ratio of greater than 0.56:1, of L:LL wherein:

L:= saturated soaps with carbon chain lengths less than 16 plus the optional synthetic anionic actives, and,

LL:= unsaturated soaps plus the synergistic mildness actives.

Having regard to process aspects a further aspect of the present invention provides a process for the manufacture of soap bars from neat soap which comprises the steps of:

a) preparing a neat soap comprising non-lauric fatty acid soaps having an iodine value of less than 45 and lauric fatty acid soaps, preferably such that the overall iodine value is less than 35,

b) combining the product of step (a) with one or more synergistic mildness actives and drying to obtain a blend comprising at least 5%wt on total actives of synergistic mildness active, at least 25%wt on total actives of lauric acid soaps and 8-20wt% moisture, and,

c) finishing the soap without energetic working to obtain soap bars.

It should be noted that in step (b) drying can precede the combination of ingredients or can follow the combination of ingredients. A further alternative is that the combination of ingredients takes place during the drying process, ie. after the completion of a first drying stage, eg. after the heat exchangers but before the vacuum drying step.

Conveniently, the finishing step (c) comprises the conventional steps of milling, plodding and stamping.

In order that the present invention can be better understood it will be illustrated hereafter by way of non-limiting examples.

EXAMPLES:

The following three processing methods were applied in the production of a bar soap using the formulations given hereafter. The processing applied was essentially conventional and did not make use of a modified processing line.

The properties of the final product as regards 'harshness' were assessed using a test substantially similar to the 'Zein' test as described by E. Gotte in Proceedings of the IVth International Congress on Surface Active Substances (Brussels (1964)), [3] pp 83-90 at a 2%wt dilution level.

Example (Process) 1.

The fat charge was saponified as for conventional soap-making and washed/fitted to produce a neat soap at >70°C. This material was then dried via conventional flash vacuum drying equipment, with the synergistic mildness actives being injected into the process stream prior to passage of the process stream through heat exchangers. The optional synthetic anionic active(s) were injected into the process stream after the heat exchangers but prior to the drying chamber. Subsequent processing of the process stream was via conventional milling/plodding/stamping.

Example (Process) 2.

The fat charge was saponified as for conventional soap and washed/fitted to produce a neat soap at >70°C as in the method of process example 1. This material is then dried via conventional flash drying equipment, with the synergistic mildness actives and optional synthetic anionic actives being injected at the same time either prior to or immediately after passage of the process stream through the heat exchangers. Subsequent processing of the process stream was via the conventional process operations of milling/plodding/stamping.

Example (Process) 3.

The fat charge was saponified as for conventional soap and washed/fitted to produce a neat soap at >70°C as in example 1. The synergistic mildness agent(s) were added directly to this neat soap to produce a pumpable mix. The optional synthetic anionic active(s) were injected into this mix either before or after the heat exchangers and prior to a conventional drying step as in process example 1.

Using the above-mentioned processes, soap bars were manufactured from the feedstocks listed below in product examples 1-13 as shown in Table 1 below. All ratios are given as ratios of wt% on total active. Process example 3 was found to be particularly advantageous in practice. In addition to the components mentioned below the process was conducted with conventional levels of further soap ingredients such as water, perfumes and colours.

Materials employed in the examples are identified as follows:

Synperonic A7:	[RTM] Alcohol ethoxylate (ex. ICI) with C13/15 alkyl chain with an average of 7 ethoxylate units.
Synperonic A3:	[RTM] Alcohol ethoxylate (ex. ICI) with C13/15 alkyl chain with an average of 3 ethoxylate units.
Synperonic A20:	[RTM] Alcohol ethoxylate (ex. ICI) with C13/15 alkyl chain with an average of 20 ethoxylate units.
Tegobetaine L7:	Cocoamidopropyl betaine (ex. Goldschmidt)
EGE:	Ethyl-6-O-dodecyl glycoside (prepared in house)
Empilan KM11:	[RTM] Alcohol ethoxylate (ex. Albright & Wilson) with C16/18 alkyl chain with an average of 11 ethoxylate units.
Empilan KM20:	[RTM] Alcohol ethoxylate (ex. Albright & Wilson) with C16/18 alkyl chain with an average of 20 ethoxylate units.
Pluronic PE/P85:	[RTM] a block co-polymer of polyoxyethylene and polyoxypropylene (ex. BASF).
SLES	Genapol [RTM] sodium lauryl ether sulphate (ex Hoechst)
HT	Hardened Tallow (made in-house).

Example 1 is a control example in which conventional soap having a ratio of 80-parts conventional nonlaurics to 20-parts laurics was employed. The iodine value of the nonlauric component of this blend was 48, a typical value for tallow. It can be seen that the Zein value of this composition was determined at 0.72. This result is to be expected of current toilet soap bars. Lower Zein values indicate milder products.

Examples 2-10 relate to embodiments of the present invention in which hardened tallow (indicated as 'HT'), a non-ionic surfactant (indicated as 'Non') and coconut oil (indicated as 'CNO') were employed as the components of the fat charge. It is noted that the iodine values of the non-lauric fats range from 1-28: this is indicative of the increased degree of saturation of the non-lauric fats. It can also be seen that the Zein value of the products prepared with these compositions ranged from 0.50 to 0.58, indicating a positive benefit as regards reduced harshness. The non-ionic surfactant used in the examples is Empilan KM20 unless otherwise indicated.

In examples 11-13, sodium lauryl ethyl sulphate (indicated as 'SLES') a synthetic anionic, was incorporated into the composition by one of the methods discussed above. The addition level of SLES varied in the range 6-12% on total active. The presence of SLES or other synthetic anionics is optional in embodiments of the present invention. It can be seen that the Zein value of the products prepared with these compositions ranged from 0.44-0.45 indicating a further benefit as regards reduced harshness.

In all of the examples 1-13, the resulting soap bars had a hardness similar to that of conventional soap bars and had similar in-use properties with respect to wear-rate and mush formation. In the examples 2-13, the soaps exhibited improved creaminess and a reduced Zien harshness.

Examples 14-16 illustrate that soap bars according to the present invention can be manufactured with levels of solubles higher than those found in the control. It will be noted that the Iodine Value of these compositions (as defined below) is lower than that of the control and that the Zein value (see example 16) indicates a reduction in the harshness of the product as compared with the control.

Examples 17-21 illustrate how soap bars containing SLES can be manufactured with higher levels of solubles than those found in the control. As with the above-mentioned embodiments the Zein value (see examples 19-21) indicates a reduction in the harshness of the product as compared with the control.

TABLE 1

	Blend	Solubles*	L/LL**	I.V.***	Zein
1	80/20 control	60	0.45	48	0.72
	HT/Non/CNO				
2	52/11/37	55	1.1	21	0.5
3	58/11/31	55	0.8	28	0.58
4	47/11/31	55	1.5	16	0.57
5	52/17/31	56	0.8	23	0.55
6	46/17/37	55	1.1	16	0.55
7	41/17/42	56	1.5	7	0.52
8	41/22/37	56	0.96	6	-
9	36/22/42	59	1.3	1	0.52
10	53/10/37	56	1.0	25	0.5
14	42/11/47	68.2	1.14	38	-
15	52/11/37	61.6	0.88	34	-
16	52/11/37	63.7	0.83	38	0.69
	HT/Non/SLES/CNO				
11	48/16/06/28	55	1.0	15	0.44
12	45/17/12/26	58	1.2	15	0.45
13	37/22/12/29	58	1.4	1	0.45
17	47/17/05/31	61.6	0.90	26	-
18	42/17/10/31	65.4	1.09	26	-
19	42/17/05/35.5	64.5	1.03	26	0.58
20	49/17/04/40	65.9	1.10	26	0.67
21	42/17/04/37	64.1	1.01	26	0.59

Key:

* Soluble soap component inventory as defined above: based on a normalised total active content of 100% and classing saturated soaps with a chain length of less than 16 carbons, unsaturated soaps, synthetic anionic actives and synergistic mildness actives within the soluble soap component inventory.

** Ratio of lathering to low lathering species: defined as the sum of the saturated soaps with carbon chain lengths of less than 16 plus the synthetic anionic actives divided by the sum of the unsaturated soaps plus the synergistic mildness actives.

*** iodine value of non-lauric oil.

Table 2, as presented below illustrates the present invention by means of comparative examples in which the soluble soap component inventory as defined above falls in the range 50-70% wt, ie. the preferred range of the present invention, but the lathering ratio as defined above are below the preferred lower limit of 0.56. In addition to the values tabulated in Table 1, lather volumes have been indicated. The non-ionic detergent employed was Empilan KM20.

TABLE 2

	Blend	Solubles*	L/LL**	I.V.***	Zein	Lather
1	80/20 control	60	0.45	48	0.72	32
	HT/Non/CNO					
22	68/11/21	54	0.41	26	0.62	19
23	57/22/21	56	0.40	17	0.59	16
24	46/33/21	57	0.38	8	0.39	15
25	38/41/21	59	0.37	2	0.29	11
14	42/11/47	68.2	1.14	38	-	42.6
15	52/11/37	61.6	0.88	34	-	39.9
16	52/11/37	63.7	0.83	38	0.69	37.9
	HT/Non/SLES/CNO					
17	47/17/05/31	56.1	1.12	9	-	38.5

It can be seen from the comparative examples 22-25 presented in Table 3 that compositions having a low lathering ratio exhibit poor lathering performance, as demonstrated by the low lather volumes. Examples 14-17 are reproduced in the table with lather performance indicated. It can be seen that the embodiments of the invention have acceptable lather volumes, in all cases better than the control.

Table 3, as present below, provides further examples of the present invention in which alternative mildness agents have been employed. In all cases it can be seen that the Zein harshness is improved as compared with a conventional soap bar (example 1).

TABLE 3

	Blend	**Mildness**	**Solubles***	**L/LL****	**I.V.*****	**Zein**
		Agent				
1	80/20	none	60	0.45	48	0.72
	HT/CA/CNO					
26	50/05/45	Synperonic A7	66	1.65	21	0.63
27	48/10/42	Synperonic A7	68	1.35	28	0.63
28	45/15/40	Synperonic A7	69.6	1.12	16	0.55
29	48/10/42	Synperonic A3	68	1.35	38	0.65
30	48/10/42	Synperonic A20	68	1.35	38	0.69
31	48/10/42	Tegobetaine L7	68	1.35	38	0.65
32	48/10/42	EGE	68	1.35	38	0.61
33	48/10/42	Empilan KM11	68	1.35	38	0.57
34	48/10/42	Pluronic	68	1.35	38	0.64

Claims

1. Soap bar comprising:

a) At least 25%wt on total actives of lauric acid soaps,

b) As the balance of the soaps, non-lauric soaps having an iodine value of less than 45, and,

c) At least 5%wt on total actives of one or more synergistic mildness active.

2. Soap bar according to claim 1 wherein the iodine value of the non-lauric soaps ranges from 10 to 45.

3. Soap bar according to claim 2 wherein the iodine value of the non-lauric soaps ranges from 20 to 40.

4. Soap bar according to any of the preceding claims further comprising a synthetic anionic active at a level of not more than 20%wt, preferably at a level of not more than 10%wt, most preferably at a level of not more than 6%wt on the total active content of product.

5. Soap bar according to any of the preceding claims wherein the overall soluble active content is in the range 50-70%wt, based on a normalised total active content of 100%wt and classing saturated soaps with a carbon chain length of less than 16, unsaturated soaps, any synthetic anionic actives and said synergistic mildness actives within the soluble active content.

6. Soap bar according to any of the preceding claims wherein said synergistic mildness active comprises 5-25%wt, preferably 8-20%wt, more preferably 9-18%wt on total actives.

7. Soap bar according to any of the preceding claims having a lathering ratio greater than 0.56, preferably greater than 0.6, more preferably greater than 0.8 said lathering ratio being defined as the sum of the saturated soaps with carbon chain lengths less than 16 plus any synthetic anionic actives divided by the sum of unsaturated soaps plus said synergistic mildness actives.

8. Soap bar according to any of the preceding claims having a total water content in the range 8-20%wt of the soap bar, preferably 9-17%wt, more preferably 10-16%wt.

9. Soap bar according to claim 1 comprising:

a) 25-60%wt on total actives of lauric acid soaps,

b) as the balance of the soaps non-lauric soaps having an iodine value in the range 10-45, and,

c) 5-20%wt on total actives of one or more synergistic mildness active,

d) 50-70%wt on total actives of saturated soaps with a carbon chain length of less than 16, unsaturated soaps, optional synthetic anionic actives and synergistic mildness actives, and,

e) a ratio of greater than 0.56:1, of L:LL wherein:

L:= saturated soaps with carbon chain lengths less than 16 plus the optional synthetic anionic actives, and,

LL:= unsaturated soaps plus the synergistic mildness actives.

10) Process for the manufacture of soap bars from neat soap which comprises the steps of:

a) preparing a neat soap comprising non-lauric fatty acid soaps having an iodine value of less than 45 and lauric fatty acid soaps,

b) combining the product of step (a) with one or more synergistic mildness actives and drying to obtain a blend comprising at least 5%wt on total actives of synergistic mildness active, at least 25%wt on total actives of lauric acid soaps and 8-20wt% moisture, and,

c) finishing the soap without energetic working to obtain soap bars.

11. Process according to claim 9 wherein the finishing step (c) further comprises the conventional steps of milling, plodding and stamping.

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 92 30 9271

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	GB-A-989 007 (PROCTER & GAMBLE) * the whole document * ---	1,4	C11D9/00 C11D10/04
A	EP-A-0 194 126 (PROCTER & GAMBLE) * page 3 - page 4; claims 1,2 * ---	1,4	
P,A	GB-A-2 243 614 (PROCTER & GAMBLE) * the whole document * ---	1,4	
A	WO-A-8 404 929 (HENKEL) * abstract * -----	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

C11D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	25 JANUARY 1993	DELZANT J-F.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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