

PATENT SPECIFICATION

(11) 1 579 401

1 579 401

- (21) Application No. 47377/77 (22) Filed 14 Nov. 1977
 (31) Convention Application No. 2 658 450
 (32) Filed 23 Dec. 1976 in
 (33) Fed. Rep. of Germany (DE)
 (44) Complete Specification published 19 Nov. 1980
 (51) INT CL³ C11D 10/02; (C11D 10/02, 1/66, 3/34)
 (52) Index at acceptance

C5D 6A1 6A5B 6A5D2 6B11A 6B12G2A 6B12NX 6B13 6B1
 6B2 6C6 6C9



(54) IMPROVEMENTS IN OR RELATING TO CLEANSING

(71) We, KUKIDENT RICHARD-
 SON-MERRELL GMBH & CO. KG for-
 merly known as Kukident Kurt Krisp KG.,
 a Company of the Federal Republic of
 Germany, of 6940 Weinheim (Bergstrasse),
 Federal Republic of Germany, do hereby
 declare the invention, for which we pray that
 a patent may be granted to us, and the
 method by which it is to be performed, to be
 particularly described in and by the following
 statement:—

The present invention relates to a cleanser
 for the self-acting, or automatic, cleansing
 of dentures in an aqueous solution. The pre-
 sent invention further relates to such a clean-
 ser in tablet or pulverulent form and to a
 method of preparing a cleanser, and parti-
 cularly a cleansing tablet.

German Offenlegungsschrift No. 2 357 720,
 proposed a two-layer cleansing tablet. This
 cleansing tablet contains sodium bicarbonate,
 sodium polyphosphates as calcium-bonding
 agents, additional organic calcium-bonding
 agents and acid carriers, caroates, that is
 salts of Caro's acid, as oxidising agents, sur-
 factants in the form of alkyl or alkyl aryl
 sulphonates such as alkyl benzene sulphonates
 and exipients and releasants or parting agents.
 Specifically, the first layer of this cleansing
 tablet comprises sodium bicarbonate, sodium
 hexametaphosphate, a calcium-bonding or-
 ganic acid, ethylene diamine tetra-acetate, a
 high-molecular polyethylene glycol, surfactants
 and peppermint or other flavouring substances.
 The second layer of this cleansing tablet in-
 cludes caroates, sodium bicarbonate, sodium
 hexametaphosphate, acid sodium pyrophos-
 phate, high-molecular polyethylene glycol, a
 polymeric dye carrier having a dye additive
 and surface-active cleansing properties, soluble
 starch and peppermint or other flavouring
 substances. The pH of a 1% solution is from
 6.5 to 7.0 for each layer. Of the components
 present in the first and second layers, the
 sodium bicarbonate acts as a pH-stabilising,
 gas-forming (or producing) carrier. The
 sodium hexametaphosphate acts as a softener,

while citric acid provided as an organic
 calcium-bonding agent, has a reducing, anti-
 microbial effect, and, in addition, dissolves
 the tarter present on the dentures to be
 cleansed. The ethylene diamine tetraacetate,
 present in the first layer, is used as the
 complexing agent forming chelate-like com-
 plexes for metal ions and has a softening
 and demineralising effect as a result of chelate
 formation and is also found to have a tartar-
 dissolving effect. The high molecular weight
 polyethylene glycol acts as an anti-microbial
 effervescent agent. The surfactants, as a
 whole, have an emulsifying effect and dissolve
 or disintegrate the denture coating by virtue
 of their surface-activity. The second layer
 also contains an organic calcium-bonding
 agent, namely, sodium citrate, which has the
 same effect as the citric acid in the compo-
 sition of the first layer. The sodium pyro-
 phosphate has a reducing and softening effect
 and dissolves or decomposes the denture coat-
 ing by means of surface-activity. The caroates
 employed, that is, the salts of Caro's acid, act
 as oxidising agents. The polymeric dye carrier
 having the surface-active cleansing effect is
 a commercial sodium salt of a polycarboxylic
 acid, such as is described in German Offen-
 legungsschrift No. 2 357 720 page 17 lines
 15 and 16, which is a surfactant and thus
 likewise improves the cleansing process. An
 example of an alkyl benzene sulphonate sur-
 factant is sodium dodecyl benzerie sulphonate,
 to which fatty acid disodium sulposuccinates
 can also be added. The preferred molecular
 weight of the polyethylene glycol can be
 between 4 000 and 25 000 but is preferably
 approximately 20 000.

In general, the cleansing tablet of German
 Offenlegungsschrift No. 2 357 720 has given
 good results. In many applications, however,
 it has been found desirable to obtain a
 cleansing time much shorter than approxi-
 mately from 10 to 15 minutes, which is re-
 quired for the cleansing tablet of German
 Offenlegungsschrift No. 2 357 720. In addi-
 tion, the two-layer structure of this cleansing

50

55

60

65

70

75

80

85

90

tablet can be relatively expensive for many applications.

It has been proposed that deposits of calcium compounds on dentures or metal parts thereof or on jaw-regulating apparatus can be more efficiently dissolved by special acid cleansing agents where the pH is from 1.5 to 5. A disadvantage, of this however, is that chelate-forming complexing agents cannot act under such acid conditions because the upper pH required for their action is about 6.

According to a first aspect of the present invention there is provided a cleanser for the self-acting cleansing of dentures in an aqueous solution, which cleanser comprises a non-ionic fluorochemical surfactant and amidosulphonic acid. Advantageously, there is provided a cleanser, more particularly in tablet form, for the self-acting cleansing of dentures in an aqueous solution, which cleanser comprises from 15 to 25 wt % of sodium bicarbonate, from 8 to 15 wt % of sodium hexametaphosphate, acid disodium pyrophosphate, caroates, more than 15 wt % of amidosulphonic acid, from 2 to 6 wt % of ethylene diamine tetraacetate acid, from 1 to 4 wt % of a high-molecular weight polyethylene glycol, at least 1 wt % of a polymeric dye carrier having surface-active cleansing properties, more than 0.5 wt % of surfactants, from 1.5 to 2.5 wt % of dialkyl thiourea, from 0.2 to 0.5 wt % of a non-ionic fluorochemical surfactant, the cleanser having a total cleansing time of from 3 to 5 minutes and a decomposition time of from 1 to 2 minutes and the pH of the cleanser when in a 1% aqueous solution being from 6.3 to 6.5.

According to a second aspect of the present invention there is provided a method of preparing a cleanser, which method comprises forming a granulate from sodium bicarbonate, sodium hexametaphosphate, polyethylene glycol and amidosulphonic acid and admixing the granulate and a non-ionic fluorochemical surfactant. Advantageously, there is provided a method of preparing a cleansing tablet, which method comprises forming a granulate from sodium bicarbonate, sodium hexametaphosphate, polyethylene glycol and amidosulphonic acid, admixing the granulate with acid disodium pyrophosphate, caroates, ethylene diamine tetraacetic acid, a polymeric dye carrier having surface-active cleansing properties, surfactants, dialkyl thiourea and a non-ionic fluorochemical surfactant and forming a tablet from the admixture.

The present invention further relates to a cleanser whenever prepared using the method of the second aspect.

The present invention enables the provision of a cleansing tablet constructed in a single layer and ensuring rapid and reliable cleansing, that is cleaning of dentures. The term dentures also includes jaw-regulating apparatus.

The cleanser can be in tablet or pulverulent form. When the cleanser is a pulverulent cleansing agent, moulding agents and lubricants normally required for tablet manufacture can be omitted.

The present invention enables the provision of a cleanser which, when in aqueous solution, produces a cleansing liquor having a surface tension of from 25 to 26 dynes/cm.

In an embodiment of a method in accordance with the present invention admixing takes place in a vacuum drier at a pressure of < 80 Torr and at a temperature of $< 45^{\circ}\text{C}$. The vacuum drier can be a tumbling drier or a double-cone drier, the pressure is preferably from 50 to 60 Torr and the temperature is preferably from 32 to 38°C . Advantageously, the admixture has a residual moisture content of $< 0.5\%$ preferably $< 0.25\%$.

A specially preferred embodiment of a cleanser in accordance with the present invention incorporates a polymeric dye carrier such as from 1 to 2 wt % of a commercial sodium salt of a polycarboxylic acid as described in German Offenlegungsschrift No. 2 357 720, page 17, lines 15 and 16 preferably sodium polyacrylate. Advantageously, from 1 to 2 wt % of a cross-linked polyvinyl pyrrolidone is also provided.

In contradistinction to proposed denture-cleansing tablets which are very alkaline, neutral or weakly acid, such as the cleansing tablet of German Offenlegungsschrift No. 2 357 720, the pH of an embodiment of a cleanser in accordance with the present invention may be exactly adjusted from 6.3 to 6.5 with a fluctuation of not more than ± 0.3 . In the case of a preferred embodiment of a cleanser, such as a cleansing tablet, in accordance with the present invention, it is no longer necessary to clean the dentures once a day, that is for a long period once a day, in order to remove the daily accumulation of deposits such as food residues and saliva. Instead, the decomposition time of this embodiment cleanser is a previously unattainable from 1 to 2 minutes and cleansing is complete after a total period of from 3 to 5 minutes.

An embodiment of a cleanser, such as a cleansing tablet, in accordance with the present invention and having the following composition has given particularly good results:—

from 10 to 12 wt % of sodium hexametaphosphate, from 18 to 20 wt % of sodium bicarbonate, from 1.5 to 2.0 wt % of polyethylene glycol having a molecular weight of 20 000, from 24 to 30 wt % of amidosulphonic acid, from 20 to 24 wt % of caroates, from 5.5 to 7.5 wt % of acid disodium pyrophosphate, from 2 to 3 wt % of ethylene diamine tetraacetic acid, from 0.5 to 2.0 wt % of a commercial sodium salt of a carboxylic acid, for example as described in German

Offenlegungsschrift No. 2 357 720 on page 17, lines 15 and 16, having a dye additive, from 0.5 to 1.5 wt % of peppermint substance, such as powder, from 0.5 to 1.5 wt % of sodium dodecyl benzene sulphonate, from 0.3 to 1.0 wt % of lauryl polyglycol ether sulphosuccinate, from 0.2 to 0.4 wt % of a non-ionic that is a non-ionogenic fluorochemical surfactant, from 0.8 to 1.1 wt % of sodium benzoate, from 1.5 to 2.0 wt % of dialkyl thiourea, from 1.5 to 2.0 wt % of polyvinyl polypyrrolidone, from 0.5 to 1.5 wt % of disodium sulphosuccinate and from 0.8 to 1.2 wt % of alkyl aryl sulphonate.

An important feature of this embodiment is that the amidosulphonic acid is used in combination with the dialkyl thiourea compound which is an anti-corrosion agent. A suitable dialkyl thiourea compound, which acts as an inhibitor for amidosulphonic acid in order reliably to prevent damage to the denture material or the metal components, is "LITHSOLVENT-HC" supplied by Keller & Bohacek KG, Dusseldorf. The word "LITHSOLVENT-HC" is a Trade Mark. The anti-corrosion agent or inhibitor acts synergistically with the sodium benzoate, a disinfectant. This results in a further synergistic effect with the active oxygen, from the caroate, since the inhibitor is an anti-oxidising agent. There is also synergism between the anti-corrosion agent and the amidosulphonic acid. This prevents the peroxides from decomposing when the cleanser, for example in tablet form, is stored. Advantageously, the sodium hexametaphosphate is the instant-acting sodium hexametaphosphate "BUDIT 8 H". The word "BUDIT 8 H" is a Trade Mark.

Advantageously, pulverulent ethylene diamine tetraacetic acid is used which has a pH of from 2.5 to 3.0 in saturated aqueous solution, which enables a considerably less amount of the chelate-forming complexing agent to be used than when ethylene diamine tetraacetate in the usual known form is used. An example of a pulverulent ethylene diamine tetraacetic acid (H_4 EDTA) is "Versene Acid" supplied by the Dow Chemical Company, U.S.A. The term "Versene Acid" is a Trade Mark.

By combining surfactants with the non-ionic fluorochemical surfactant, the cleansing liquor obtained from the cleanser can have an extremely low surface tension of from 25 to 26. As a result, of the low surface tension, the wetting power or emulsifying action of the liquor can be greatly increased resulting in a short cleansing time. The surfactants used are preferably the raw materials "Steinapol NKS 100" and "Rewo-DERM S 1333", supplied by Rewo Chemische Fabrik GMBH, Steinau. The terms "Steinapol NKS 100" and "Rewo-DERM S 1333" are Trade Marks. These surfactants yield a permanent, creamy,

stiff foam; the surface tension in a 0.1% aqueous solution is about 25 for "NKS 100" and from 30 to 35 for "S 1333". The surface tension of the entire cleansing liquor is reduced from 25 to 26 by adding the non-ionic fluorochemical surfactant, such as "Monflor 51" or "Monflor 52" supplied by ICI, in a concentration of from 0.2 to 0.5% in the cleanser, such as tablet composition. The terms "Monflor 51" and "Monflor 52" are Trade Marks; "Monflor 51" being the non-ionic tenside $C_8F_{15}O(CH_2CH_2O)_nCH_3$, where C_8F_{15} is the residue of the tetramer of tetrafluoro ethylene and n has an average value of 8 and "Monflor 52" being the non-ionic tenside $C_8F_{15}O(CH_2CH_2O)_n$, where C_8F_{15} is the residue of the tetramer of tetrafluoro ethylene and n has an average value of 23. This can greatly increase the wetting power and penetration of the surfactants. As a result, such an embodiment cleanser provides the possibility of developing a very-rapid-acting cleansing agent operating in a cleansing liquor at a surface tension of from 25 to 26 dynes/cm, whereas the average tension for other cleansing agents is from 35 to 90 dynes/cm.

The moulding and auxiliary agents, when used, can be similar to those of the cleansing tablet disclosed in German Offenlegungsschrift No. 2 357 720 such as fatty acid esters of sugar for example "Wasag 7" and "Wasag 15". These products are sold under the trade name "Sucrapan" in Switzerland, Austria and East Europe. Alternatively, the moulding and auxiliary agents and lubricant can include "Luviskol V 64", "Aerosil", "Tamol", "Awycel" or "Waxy Mais". The terms "Luviskol V 64", "Aerosil", "Tamol", "Awycel" and "Waxy Mais" are Trade Marks. In general, these agents and lubricants can include suitable native starches, sugared starches and derivatives, such as glucose, anhydrous dextrose, polyethylene glycol and microcrystalline cellulose.

The following Example further illustrates the present invention.

Example.

An embodiment of a cleansing tablet in accordance with the present invention was prepared as follows. 10.55 parts by weight of "Budite 8 H", a calcium-bonding agent, 10.85 parts by weight of amidosulphonic acid, sulphamic acid, 19.00 parts by weight of sodium bicarbonate and 1.81 parts by weight of polyethylene glycol having a molecular weight of 20 000 were introduced, via a conventional hopper and elevator, into a mixing boiler. The boiler was then coupled to a GLATT granulator. The components to be granulated were heated in a stream of air at a temperature of from 100 to 115°C, the feed air aperture being adjusted to stage 5 to 6 and the outlet air aperture being ad-

justed to stage 2 to 3. The components to be granulated were heated with continuous agitation, such as spinning, whereupon granulation occurred at a temperature of from 60 to 65°C. This temperature was maintained for about 10 minutes to ensure that the polyethylene glycol 20 000 melted completely, that is without residue, whereupon the granulation process was complete. Next the feed and discharge air apertures were maintained, or adjusted as before, and the granulate was cooled to about 25°C in a stream of cooling air at a temperature of from 6 to 10°C. Next, the granulate was poured into air-tight and moisture-tight containers, for example polyethylene bags, and regular samples were taken to check that the maximum moisture content was 0.25% H₂O.

Next 42.21 parts by weight of the resulting granulate were mixed in a manner described in detail in German Offenlegungsschrift No. 2 357 720, the entire contents of which are incorporated into the present Specification by reference, with the remaining components of the tablet, that is, in the present Example, with 22.60 parts by weight of caroate, 6.23 parts by weight of disodium pyrophosphate, 2.26 parts by weight of ethylene diamine tetraacetic acid, "Versene acid", 1.18 parts by weight of a commercial sodium salt of a polycarboxylic acid, as described in German Offenlegungsschrift No. 2 357 720 on page 17, lines 15 to 16, having a dye additive, 1 part by weight of peppermint powder, 0.81 parts by weight of sodium dodecyl benzene sulphonate, "Steinaryl NKS 100" supplied by Rewo Chemische Werke GMBH, 0.54 parts by weight of lauryl polyglycol ether sulphosuccinate, "Rewo-DERM S 1333", 0.30 parts by weight of a non-ionic fluorochemical surfactant "Monflor 51", 0.90 parts by weight of sodium benzoate, 1.81 parts by weight of dialkyl thiourea, "LITHSOLVENT-HC", 1.81 parts by weight of polyvinyl pyrrolidone "Plasdone XL" supplied by GAF, Deutschland, GMBH, 1 part by weight of disodium sulphosuccinate "Wasag 7", 1 part by weight of alkyl aryl sulphonate "Wasag 15" and 16.27 parts by weight of amidosulphonic acid, sulphamic acid. After mixing, drying and screening, the substance was moulded to form a cleansing tablet. The terms "Steinaryl NKS 100", "Plasdone XL", "Wasag 7" and "Wasag 15" are Trade Marks.

The features of the present invention given in the preceding description and in the following claims may be used, either singly or in combination, to bring about various embodiments of the present invention.

WHAT WE CLAIM IS:—

1. A cleanser for the self-acting cleansing of dentures in an aqueous solution, which cleanser comprises a non-ionic fluorochemical

surfactant and amidosulphonic acid.

2. A cleanser according to Claim 1, which has a total cleansing time of from 3 to 5 minutes and a decomposition time of from 1 to 2 minutes.

3. A cleanser according to Claim 1 or 2, which further comprises dialkyl thiourea.

4. A cleanser according to Claim 1, 2 or 3, which further comprises ethylene diamine tetraacetic acid.

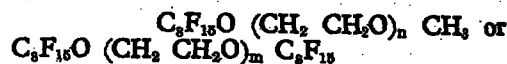
5. A cleanser according to Claim 4, wherein the cleanser has a total cleansing time of from 3 to 5 minutes and a decomposition time of from 1 to 2 minutes, wherein the cleanser comprises from 1.5 to 2.5 wt % of dialkyl thiourea and from 0.2 to 0.5 wt % of a non-ionic fluorochemical surfactant and wherein the pH of the cleanser when in a 1% aqueous solution is from 6.3 to 6.5.

6. A cleanser according to any one of the preceding claims which further comprises one or more surfactants.

7. A cleanser according to any one of the preceding claims, which further comprises a benzoate.

8. A cleanser for the self-acting cleansing of dentures in an aqueous solution, which cleanser comprises from 15 to 25 wt % of sodium bicarbonate, from 8 to 15 wt % of sodium hexametaphosphate, acid disodium pyrophosphate, caroates, more than 15 wt % of amidosulphonic acid, from 2 to 6 wt % of ethylene diamine tetraacetic acid, from 1 to 4 wt % of a high-molecular weight polyethylene glycol, at least 1 wt % of a polymeric dye carrier having surface-active cleansing properties, more than 0.5 wt % of surfactants, from 1.5 to 2.5 wt % of dialkyl thiourea, from 0.2 to 0.5 wt % of a non-ionic fluorochemical surfactant, the cleanser having a total cleansing time of from 3 to 5 minutes and a decomposition time of from 1 to 2 minutes and the pH of the cleanser when in a 1% aqueous solution being from 6.3 to 6.5.

9. A cleanser according to any one of the preceding claims, wherein the fluorochemical surfactant is a non-ionic tenside



where C_8F_{15} is the residue of the tetramet of tetrafluoro ethylene, n has an average value of 8 and m has an average value of 23.

10. A cleanser according to any one of the preceding claims, which comprises surfactants in the form of alkyl and/or alkyl aryl sulphonates.

11. A cleanser according to any one of the preceding claims, which further comprises from 0.5 to 1.5 wt % of flavouring substances.

12. A cleanser according to any one of the preceding claims, which, when in aqueous



justed to stage 2 to 3. The components to be granulated were heated with continuous agitation, such as spinning, whereupon granulation occurred at a temperature of from 60 to 65°C. This temperature was maintained for about 10 minutes to ensure that the polyethylene glycol 20 000 melted completely, that is without residue, whereupon the granulation process was complete. Next the feed and discharge air apertures were maintained, or adjusted as before, and the granulate was cooled to about 25°C in a stream of cooling air at a temperature of from 6 to 10°C. Next, the granulate was poured into air-tight and moisture-tight containers, for example polyethylene bags, and regular samples were taken to check that the maximum moisture content was 0.25% H₂O.

Next 42.21 parts by weight of the resulting granulate were mixed in a manner described in detail in German Offenlegungsschrift No. 2 357 720, the entire contents of which are incorporated into the present Specification by reference, with the remaining components of the tablet, that is, in the present Example, with 22.60 parts by weight of caroate, 6.23 parts by weight of disodium pyrophosphate, 2.26 parts by weight of ethylene diamine tetraacetic acid, "Versene acid", 1.18 parts by weight of a commercial sodium salt of a polycarboxylic acid, as described in German Offenlegungsschrift No. 2 357 720 on page 17, lines 15 to 16, having a dye additive, 1 part by weight of peppermint powder, 0.81 parts by weight of sodium dodecyl benzene sulphonate, "Steinaryl NKS 100" supplied by Rewo Chemische Werke GMBH, 0.54 parts by weight of lauryl polyglycol ether sulphosuccinate, "Rewo-DERM S 1333", 0.30 parts by weight of a non-ionic fluorochemical surfactant "Monflor 51", 0.90 parts by weight of sodium benzoate, 1.81 parts by weight of dialkyl thiourea, "LITHSOLVENT-HC", 1.81 parts by weight of polyvinyl pyrrolidone "Plasdone XL" supplied by GAF, Deutschland, GMBH, 1 part by weight of disodium sulphosuccinate "Wasag 7", 1 part by weight of alkyl aryl sulphonate "Wasag 15" and 16.27 parts by weight of amidosulphonic acid, sulphamic acid. After mixing, drying and screening, the substance was moulded to form a cleansing tablet. The terms "Steinaryl NKS 100", "Plasdone XL", "Wasag 7" and "Wasag 15" are Trade Marks.

The features of the present invention given in the preceding description and in the following claims may be used, either singly or in combination, to bring about various embodiments of the present invention.

WHAT WE CLAIM IS:—

1. A cleanser for the self-acting cleansing of dentures in an aqueous solution, which cleanser comprises a non-ionic fluorochemical

surfactant and amidosulphonic acid.

2. A cleanser according to Claim 1, which has a total cleansing time of from 3 to 5 minutes and a decomposition time of from 1 to 2 minutes.

3. A cleanser according to Claim 1 or 2, which further comprises dialkyl thiourea.

4. A cleanser according to Claim 1, 2 or 3, which further comprises ethylene diamine tetraacetic acid.

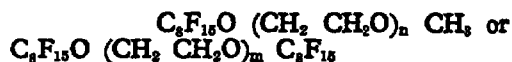
5. A cleanser according to Claim 4, wherein the cleanser has a total cleansing time of from 3 to 5 minutes and a decomposition time of from 1 to 2 minutes, wherein the cleanser comprises from 1.5 to 2.5 wt % of dialkyl thiourea and from 0.2 to 0.5 wt % of a non-ionic fluorochemical surfactant and wherein the pH of the cleanser when in a 1% aqueous solution is from 6.3 to 6.5.

6. A cleanser according to any one of the preceding claims which further comprises one or more surfactants.

7. A cleanser according to any one of the preceding claims, which further comprises a benzoate.

8. A cleanser for the self-acting cleansing of dentures in an aqueous solution, which cleanser comprises from 15 to 25 wt % of sodium bicarbonate, from 8 to 15 wt % of sodium hexametaphosphate, acid disodium pyrophosphate, caroates, more than 15 wt % of amidosulphonic acid, from 2 to 6 wt % of ethylene diamine tetraacetic acid, from 1 to 4 wt % of a high-molecular weight polyethylene glycol, at least 1 wt % of a polymeric dye carrier having surface-active cleansing properties, more than 0.5 wt % of surfactants, from 1.5 to 2.5 wt % of dialkyl thiourea, from 0.2 to 0.5 wt % of a non-ionic fluorochemical surfactant, the cleanser having a total cleansing time of from 3 to 5 minutes and a decomposition time of from 1 to 2 minutes and the pH of the cleanser when in a 1% aqueous solution being from 6.3 to 6.5.

9. A cleanser according to any one of the preceding claims, wherein the fluorochemical surfactant is a non-ionic tenside



where C_6F_{18} is the residue of the tetramet of tetrafluoro ethylene, n has an average value of 8 and m has an average value of 23.

10. A cleanser according to any one of the preceding claims, which comprises surfactants in the form of alkyl and/or alkyl aryl sulphonates.

11. A cleanser according to any one of the preceding claims, which further comprises from 0.5 to 1.5 wt % of flavouring substances.

12. A cleanser according to any one of the preceding claims, which, when in aqueous



* C L M S *

1,579,401

5

(16)

solution, produces a cleansing liquor having a surface tension of from 25 to 26 dynes/cm.

13. A cleanser according to any one of the preceding claims, which further comprises a polymeric dye carrier comprising from 1 to 2 wt % of a commercial sodium salt of a polycarboxylic acid.

14. A cleanser according to Claim 13, wherein the polymeric dye carrier is sodium polyacrylate.

15. A cleanser according to any one of the preceding claims, which further comprises from 1 to 2 wt % of a cross-linked polyvinyl pyrrolidone.

16. A cleanser according to Claim 8 or any one of Claims 9 to 15 when appended to Claim 8, which has a composition of from 10 to 12 wt % of sodium hexametaphosphate, from 18 to 20 wt % of sodium bicarbonate, from 1.5 to 2.0 wt % of polyethylene glycol having a molecular weight of 20 000, from 24 to 30 wt % of amidosulphonic acid, from 20 to 24 wt % of caroates, from 5.5 to 7.5 wt % of acid disodium pyrophosphate, from 2 to 3 wt % of ethylene diamine tetraacetic acid, from 0.5 to 2.0 wt % of a commercial sodium salt of a carboxylic acid having a dye additive, from 0.5 to 1.5 wt % of peppermint powder, from 0.5 to 1.5 wt % of sodium dodecyl benzene sulphonate, from 0.3 to 1.0 wt % of lauryl polyglycol ether sulposuccinate, from 0.2 to 0.4 wt % of a non-ionic fluorochemical surfactant, from 0.8 to 1.1 wt % of sodium benzoate, from 1.5 to 2.0 wt % of dialkyl thiourea, from 1.5 to 2.0 wt % of polyvinyl polypyrrolidone, from 0.5 to 1.5 wt % of disodium sulposuccinate and from 0.8 to 1.2 wt % of alkyl aryl sulphonate.

17. A cleanser according to any one of the preceding claims, which is in tablet form.

18. A cleanser according to any one of the preceding claims, which is in pulverulent form.

19. A method of preparing a cleanser, which method comprises forming a granulate from sodium bicarbonate, sodium hexametaphosphate, polyethylene glycol and amidosulphonic acid and admixing the granulate and a non-ionic fluorochemical surfactant.

20. A method of preparing a cleansing tablet, which method comprises forming a granulate from sodium bicarbonate, sodium hexametaphosphate, polyethylene glycol and amidosulphonic acid, admixing the granulate

with acid disodium pyrophosphate, caroates, ethylene diamine tetraacetic acid, a polymeric dye carrier having surface-active cleansing properties, surfactants, dialkyl thiourea and a non-ionic fluorochemical surfactant and forming a tablet from the admixture.

21. A method according to Claim 20, wherein from 30 to 50 wt % of the total quantity of amidosulphonic acid is used to form the granulate.

22. A method according to Claim 20 or 21, which comprises feeding components for the granulate into a granulator, heating the components therein to a temperature of from 60 to 65°C, agitating the components at the said temperature for about 10 minutes and cooling the completed granulate to about 25°C.

23. A method according to Claim 22, wherein the granulate components are heated in a stream of heating air at a temperature of from 100 to 115°C.

24. A method according to Claim 22 or 23, wherein the completed granulate is cooled in a stream of cooling air at a temperature of from 6 to 10°C.

25. A method according to any one of Claims 20 to 24, wherein the admixing takes place in a vacuum drier at a pressure of < 80 Torr and at a temperature of < 45°C.

26. A method according to Claim 25, wherein the vacuum drier is a tumbling drier.

27. A method according to Claim 25, wherein the vacuum drier is a double-cone drier.

28. A method according to Claim 25, 26 or 27, wherein the pressure is from 50 to 60 Torr.

29. A method according to any one of Claims 25 to 28, wherein the temperature is from 32 to 38°C.

30. A method according to any one of Claims 20 to 29, wherein the admixture has a residual moisture content of < 0.5%.

31. A method according to Claim 30, wherein the residual moisture content is < 0.25%.

32. A cleanser, substantially as described in the foregoing Example.

33. A method of preparing a cleanser, substantially as described in the foregoing Example.

34. A cleanser whenever prepared using the method of any one of Claims 20 to 30 and 33.

(17)

6

1,579,401

6

FORRESTER, KETLEY & CO.,
Chartered Patent Agents,
Forrester House,
52 Bounds Green Road,
London, N11 2EY.,
— and also at —
Rutland House,
148 Edmund Street,
Birmingham, B3 2LD.,
— and also at —
Scottish Provident Building,
29 St. Vincent Place,
Glasgow, G1 2DT.,
Agents for the Applicants.

Printed for Her Majesty's Stationery Office by the Courier Press, Leamington Spa, 1980.
Published by the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from
which copies may be obtained.