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FORM 1
REGULATION 9

COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952-1973

APPLICATION FOR A PATENT

We AUSIMONT S.r.l.

of 31, Foro Buonaparte, Milan, ITALY

hereby apply for the grant of a Patent for an invention entitled:

PROCESS FOR PREPARING CLEANSING EMULSIONS FOR BEAUTY TREATMENT AND SO OBTAINED COSMETIC PRODUCTS

which is described in the accompanying complete specification. This Application is a Convention Application and is based on the Application numbered: 22053 A/88 for a Patent or similar protection made in Italy on 23 September 1988.

Our address for service is:

GRIFFITH HACK & CO.
71 YORK STREET
SYDNEY N.S.W. 2000
AUSTRALIA

DATED this 18th day of September 1989

AUSIMONT S.r.l.
By their Patent Attorneys

GRIFFITH HACK & CO.

TO: THE COMMISSIONER OF PATENTS
COMMONWEALTH OF AUSTRALIA

REPRINT OF RECEIPT
SO10205 18/09/89

B — APPLICATION BY ASSIGNEE OF INVENTOR

COMMONWEALTH OF AUSTRALIA
PATENTS ACT 1952

DECLARATION IN SUPPORT OF AN APPLICATION FOR A PATENT

(Name of applicant)

In support of an application made by: AUSIMONT S.r.l.

(Title)

for a patent for an invention entitled: PROCESS FOR PREPARING CLEANSING EMULSIONS FOR BEAUTY TREATMENT AND SO OBTAINED COSMETIC PRODUCTS.

(Full name and address of signatory)

I, Otilio Masseroli

of 31, Foro Buonaparte - Milan, Italy

do solemnly and sincerely declare as follows:

1. I am authorised by the above mentioned applicant for the patent to make this declaration on its behalf.

(Full name and address of inventor(s))

2. The name and address of each actual inventor of the invention is as follows: Giovanni PANTINI - 74, via Teodosio 20121 Milan, Italy; and Mario VISCA - 26/5, viale Michel 15100 Alessandria, Italy

(State whether by assignment or contract of employment)

and the facts upon which the applicant is entitled to make this application are as follows:

"SEE REVERSE"

(Delete paragraphs 3 and 4 for non-Convention application)

3. The basic application(s) as defined by Section 141 of the Act was (were) made as follows:
Country Italy on Sept. 23, 1988
in the name(s) AUSIMONT S.p.A.
and in ..... on .....
in the name(s) .....
and in ..... on .....
in the name(s) .....

(Place and date of signing)

4. The basic application(s) referred to in the preceding paragraph was(were) the first application(s) made in a Convention country in respect of the invention the subject of this application.

Declared at MILAN this 6th day of November 19 89

Signed: AUSIMONT S.r.l.
(ing. Otilio Masseroli)
Position: Chief Ex. Officer

GRIFFITH HACK & CO

SYDNEY OFFICE
G.P.O. BOX 4164
SYDNEY. N.S.W. 2001

MELBOURNE OFFICE
G.P.O. BOX 1285K
MELBOURNE. VIC. 3004

2. the facts upon which the applicant is entitled to make this application is that:

The inventors made the invention for and on behalf of the basic applicant, Ausimont S.p.A., in the course of their duties as employees of the basic applicant. Ausimont S.p.A. was subsequently incorporated by merger into Ausimont S.r.l. on 30 September 1988.

(12) PATENT ABRIDGMENT (11) Document No. AU-B-41529/89
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 612895

(54) Title
PROCESS FOR PREPARING CLEANSING EMULSIONS FOR BEAUTY TREATMENT AND SO OBTAINED COSMETIC PRODUCTS

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(56) Prior Art Documents
AU 71300/87 A61K 7/075

(57) Claim

1. Process for preparing cleansing emulsions for beauty treatment characterized in that:

1) a perfluoropolyether containing perfluoroalkyl end groups, and one or more substance(s) selected from among the group consisting of surfactants, oils, fats and polyalcohols having a low interface tension with the perfluoropolyether, with at least one of these substances being a surfactant, are used;

2) the substances selected from among the surfactants, oils, fats and polyalcohols according to above point (1) are mixed with water and are heated up to such a temperature that a homogeneous mixture or emulsion is obtained; the mixture or emulsion is deaerated;

3) the thickening substances, and any foam-supporting substances are melted and are diluted with water until a medium-viscosity solution is obtained;

4) the perfluoropolyether is added with strong stirring to

.../2

the mixture according to above point (2), or to the mixture according to above point (3);

5) the mixtures according to above points (2) and (3) are mixed together and the obtained mixture is de-aerated;

6) any possible preservatives, dyes, perfumes, softeners, opacifiers and sequestering agents are added to the mixture according to above point (2), or to the mixture according to above point (3), or to the mixture according to above point (5);

7) the whole mixture is cooled with stirring.

9. Cleansing emulsions for beauty treatment, comprising:

1) a perfluoropolyether with perfluoroalkyl end groups in an amount comprised within the range of from 0.01 up to 20% by weight;

2) one or more substance(s) selected from among surfactants, oils, fats, and polyalcohols having a low interface tension with said perfluoropolyether, with at least one of these substances being a surfactant;

3) one or more thickening agents;

4) water;

5) possibly, one or more foam supporting substance(s);

6) possibly, one or more softeners and/or perfumes and/or dyes and/or preservatives and/or opacifiers and/or sequestering agents.

612895

COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952 Form 10

COMPLETE SPECIFICATION

FOR OFFICE USE

Short Title:

Int. Cl:

Application Number:
Lodged:

Complete Specification-Lodged:
Accepted:
Lapsed:
Published:

Priority:

Related Art:

TO BE COMPLETED BY APPLICANT

Name of Applicant: AUSIMONT S.r.l.

Address of Applicant: 31, Foro Buonaparte, Milan, ITALY

Actual Inventor: Giovanni PANTINI and Mario VISCA

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Complete Specification for the invention entitled:

PROCESS FOR PREPARING CLEANSING EMULSIONS FOR BEAUTY TREATMENT AND SO OBTAINED COSMETIC PRODUCTS

The following statement is a full description of this invention, including the best method of performing it known to me/us:-

The present invention relates to a process for preparing cleansing emulsions for beauty treatment. It relates also to novel cosmetic products.

An important problem in skin and hair cleansing is the effect of re-distribution of sebum (the so-said "rebound"

effect)

Several additives were proposed in the past in order to reduce the sebum rebound effect. In particular in U.S. patents No. 3,972,998 and No. 3,959,462, the use of film-forming fluorinated resins is disclosed. Unfortunately, the use of film-forming resins originates drawbacks: they result to be difficult to eliminate, can lead to accumulation phenomena, and can cause toxicity problems.

The present Applicant, have surprisingly found now that the effect of re-distribution of sebum on skin and hair can be reduced without running into the above mentioned drawbacks, if cleansing compositions are used, which contain perfluoro-polyethers having perfluoroalkyl end groups.

The present Applicant, have also surprisingly found that the use of the same compositions normalizes the re-distribution of sebum on the skin of asteatosic subjects.

It is known that the perfluoropolyethers containing end perfluoroalkyl groups are insoluble in nearly all of the solvents and are water-repellant and oil-repellant. It derives that their introduction, in a stable condition, in the cleansing compositions for beauty treatment is a very difficult problem to be solved. The present Applicant, have surprisingly found now that a stable emulsion of perfluoropolyethers containing perfluoroalkyl end groups in cleansing compositions for beauty treatment can be achieved

by means of a particular preparation process, which is disclosed in the following.

An object of the present invention is therefore of supplying a process for preparing cleansing emulsions for beauty treatment.

This object is achieved by means of the process for preparing cleansing emulsions for beauty treatment according to the present invention. This process is characterized in that:

1) a perfluoropolyether containing pefluoroalkyl end groups, and one or more substance(s) selected from among the group consisting of surfactants, oils, fats and polyalcohols having a low interface tension with the perfluoropolyether, with at least one of these substances being a surfactant, are used;
2) the substances selected from among the surfactants, oils, fats and polyalcohols according to above point (1) are mixed with water and are heated up to such a temperature that a homogeneous mixture or emulsion is obtained; the mixture or emulsion is deaerated;
3) the thickening substances, and any foam-supporting substances are melted and are diluted with water until a medium-viscosity solution is obtained;
4) the perfluoropolyether is added with strong stirring to the mixture according to above point (2), or to the

mixture according to above point (3);

5) the mixtures according to above points (2) and (3) are mixed together and the obtained mixture is de-aerated;

6) any possible preservatives, dyes, perfumes, softeners, opacifiers and sequestering agents are added to the mixture according to above point (2), or to the mixture according to above point (3), or to the mixture according to above point (5);

7) the whole mixture is cooled with stirring.

The perfluoropolyethers having perfluoroalkyl end groups, i.e., without functional groups, are well-known products. They are generally obtained as mixtures of compounds having a molecular weight comprised within a certain range.

These perfluoropolyethers are disclosed, together with the route for preparing them, in a plurality of documents, among which U.K. patent No. 1,104,482; U.S. patents No. 3,242,218; No. 3,665,041; No. 3,715,378; and No. 4,523,039 and European patent applications Nos. 148,482 and 191,490.

Among the suitable perfluoropolyethers, those are comprised, which are characterized by the presence of one or more of the following repeating perfluoro-oxyalkylene units:

a) (CF_2-CF_2O);

b) (CF_2O);

c) (C_3F_6O), simplified formula for: $(CF_2-\underset{\displaystyle CF_3}{\underset{|}{CF}}-O)$;

d) $(CF_2O-CF_2-CF_2O)$;

e) $(CF_2-CF_2-CF_2O)$;

f) $(\underset{\displaystyle CF_3}{\underset{|}{CFO}})$

g) $$\left(\begin{array}{c} CF_3 \\ | \\ C \\ | \\ CF_3 \end{array}\!\!-O-\!\!\begin{array}{c} R_f^{III} \\ | \\ C \\ | \\ R_f^{III} \end{array}\!\!-\!\!\begin{array}{c} R_f^{III} \\ | \\ C \\ | \\ R_f^{III} \end{array}\!\!-O\right)$$

wherein the R_f^{III} groups, which may be either equal to, or different from, one another, are a fluorine atom, or a perfluoroalkyl group.

According to a preferred form of practical embodiment, the perfluoropolyethers suitable for the present invention contain the following individual perfluoro-oxy-alkylene units, or combinations of perfluoro-oxy-alkylene units:

I) (CF_2-CF_2O) and (CF_2O), with such units being randomly distributed along the perfluoropolyether chain; or

II) $(CF_2-\underset{\displaystyle CF_3}{\underset{|}{CFO}})$ and $(CFXO)$ in which X is either F or CF_3, with such units being randomly distributed along the perfluoropolyether chain; or

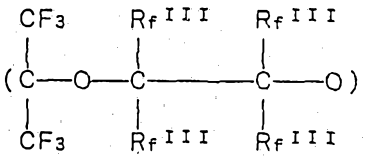
III) (CF_2-CF_2O), $(CF_2-\underset{\displaystyle CF_3}{\underset{|}{CFO}})$ and $(CFXO)$, wherein X is either F or CF_3, with such units being

randomly distributed along the perfluoropolyether chain; or

IV) $(CF(CF_3)-CF_2O)$; or

V) $(CF_2-CF_2-CF_2O)$; or

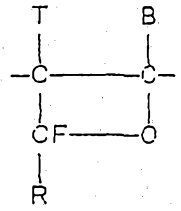
VI) (CF_2-CF_2O); or

VII) 

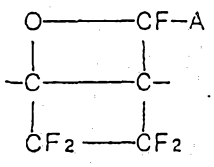
wherein the R_f^{III} groups, which may be either equal to, or different from, one another, are a fluorine atom, or a perfluoroalkyl group; or

VIII) $(CF_2O-CF_2-CF_2O)$.

Also those perfluoropolyethers are suitable, which contain perfluorooxetanic rings:



or



wherein T, B and R, which may be either equal to, or different from, one another, are perfluoro-oxyalkyl

radicals, perfluoro-polyoxyalkyl radical or perfluoroalkyl radicals and A is a perfluoro-oxyalkyl radical, a perfluoro-polyoxyalkyl radical or a perfluoroalkyl radical.

Examples of suitable perfluoropolyethers containing repeating perfluoro-oxyalkylene units are those belonging to the following classes:

A) $R_f-O-(C_3F_6O)_a(\underset{\displaystyle CF_3}{\underset{|}{CF}}-O)_b(CF_2O)_c-R'_f$

wherein:

R_f and R'_f, which may either be equal to, or different from, each other, are selected from the group consisting of CF_3, C_2F_5 and C_3F_7;

the C_3F_6O (oxy-trifluoromethyl-trifluoroethylene), $(\underset{\displaystyle CF_3}{\underset{|}{CF}}-O)$ and (CF_2O) units are randomly distributed along the polymer chain;

a is an integer;

b and c are either integers or zero;

when the total of (b+c) is different from zero, the ratio of a/(b+c) is comprised within the range of from 5 to 40.

B) $CF_3O-(C_2F_4O)_d(CF_2O)_e-CF_3$

wherein

the C_2F_4O and CF_2O units are randomly distributed along the chain;

d and e are integers;

the ratio of d/e is comprised within the range of from 0.3 to 5.

C) $CF_3O-(C_3F_6O)_f(C_2F_4O)_g(CFXO)_h-CF_3$

wherein

the C_3F_6O, C_2F_4O and CFO units are randomly distributed along the chain;

X is either F or CF_3;

f, g and h are integers;

the ratio of f/(g+h) is comprised within the range of from 1 to 50; and

the ratio of g/h is comprised within the range of from 1 to 10;

D) $R^3_fO-(CF_2CF_2CF_2O)_jR^4_f$

wherein:

R^3_f and R^4_f, which may be either equal to, or different from each other, are $-CF_3$ or $-C_2F_5$ and j is an integer.

The average molecular weight of perfluoropolyethers suitable for use in the instant invention is generally comprised within the range of from 500 to 20,000. Their average molecular weight is preferably comprised within the range of from 1500 to 10,000.

The contents of perfluoropolyether in the cleansing emulsions is generally comprised within the range of from 0.01 up to 20% by weight, and is preferably comprised within the range of from 0.05 up to 5%.

The interface tension with the perfluoropolyether of the surfactants, oils, fats and polyalcohols suitable for use in the process according to the present invention is generally lower than, or equal to, 15 dyne.cm^{-1}, and is preferably lower than, or equal to, 12 dyne.cm^{-1}.

Suitable surfactants are, for exemplifying purposes: coco-amphoglycinate, coco-amido-betaine, lauroyl sarcosinate, DEA oleylamide (a mixture of diethanolamides and oleic acid), DEA coco-amide (a mixture of diethanolamides and coconut fatty acids), polyethyleneglycol-6-caprylic-capric triglycerides, dodecylamine oxide, polyethyleneglycol-7 coco acid monoglycerides and diglycerides, polyethyleneglycol-78 cocomous and di-glycerides, sodium laurylether sulfate 2.5 ethylene oxide and stearyl-dimethyl-benzyl-ammonium chloride.

Suitable oils and fats are, e.g.; squalane, staeric acid and avocado pear oil.

A suitable polyalcohol is, e.g., glycerol.

The mixture of substances selected from among the group consisting of surfactants, oils, fats and polyalcohols with water is heated up to a selected temperature comprised within the range of those temperatures which are commonly used in the preparation of cleansing emulsions, i.e., of from 25°C up to 75°C, and preferably comprised within the range of from 40°C up to 75°C.

The mixture of thickeners for viscosity purposes and of possible foam supporting substances with water is also heated up to a temperature selected within the range of temperatures commonly used in the preparation of cleansing emulsions, i.e., at a temperature comprised within the range of from 25°C up to 75°C, and preferably of from 40°C up to 75°C. The viscosity of said mixture is adjusted by means of the addition of water, until a madium-viscosity solution is obtained. For that purpose, a viscosity usually comprised within the range of from 500 up to 5,000 centipoises (as measured at 25°C), and preferably of from 1000 to 2000 centipoises, is suitable.

The addition of the perfluoropolyether to either of the above said mixtures is carried out with strong stirring. For that purpose, an apparatus is used, such as, e.g., a turbine stirrer, which runs at a revolution speed of at least 3,000 rpm, and preferably of at least 5,000 rpm.

The perfluoropolyether is preferably added to the mixture of thickening agents and possible foam supporting agents with water.

Any possible preservatives, dyes, perfumes, softeners, opacifiers and sequestering agents are preferably the last to be added, i.e., they are added to the mixture of substances selected from among the surfactants, oils, fats and polyalcohols with the thickeners, the possible foam

supporting agents, the perfluoropolyether and water, before the emulsion is cooled.

The so-otbained cleansing emulsions comprise the shampoos, the foam baths, the cleansing milks, the cleansing creams, the bath oils, the liquid soaps and similar compositions for skin and hair cleansing.

The surfactants, the oils, the fats, and the polyalcohols are commonly selected from among those which are customarily used in the preparation of cleansing emulsions for beauty treatment, which simultaneously show a low interface tension with the perfluoropolyether.

The thickeners, and all of the other components are commonly selected from among those which are customarily used in the preparation of cleansing emulsions for beauty treatment.

Suitable thickeners are, e.g., xanthan gum, guar gum and PEG 6000 distearate.

Another object of the present invention are the cleansing emulsions comprising:

1) a perfluoropolyether with perfluoroalkyl end groups in an amount comprised within the range of from 0.01 up to 20% by weight;
2) one or more substance(s) selected from among surfactants, oils, fats, and polyalcohols having a low interface tension with said perfluoropolyether, with at least one

of these substances being a surfactant;

3) one or more thickening agents;

4) water;

5) possibly, one or more foam supporting substance(s);

6) possibly, one or more softeners and/or perfumes and/or dyes and/or preservatives and/or opacifiers and/or sequestering agents.

A further object of the present invention are foam baths, cleansing milks, bath oils and liquid soaps characterized in that the contain, besides their usual components, from 0.01% up to 20% by weight of perfluoropolyethers with perfluoroalkyl end groups.

The main advantages of the present invenzion can be summarized as follows:

- stable emulsions of the perfluoropolyether in the cleansing compositions for skin and hair are obtained;
- after the washing, a reduction is obtained in the rebound effect on hair and on seborrheic skin;
- a normalization of the redistribution of sebum on skin of asteatosic sujects is obtained after the washing.

The following examples have to be regarded as given for merely illustrative purposes, and should not be regarded as being limitative of the present invention.

Example 1

For comparative purposes a shampoo not containing a

perfluoropolyether was prepared. Said shampoo had the following composition, by weight:

A)	alkylamidobetaine	5.0%
B)	alkylamidoamine N-oxide	4.0%
C)	coco-ampho-glycinate	5.0%
D)	sodium laurylether sulfate	5.0%
E)	ethoxylated coco glycerides	4.0%
F)	sodium chloride	1.0%
G)	polyethyleneglycol 6000 distearate	3.0%
H)	deionized water	q.s. up to 100%
I)	preservatives, dyes, perfume	q.s.

The shampoo was prepared as follows:

(1) (A), (C) and (D) were mixed with each other, together with a portion of (H); then (F) was added and the whole mixture carefully deaerated;

(2) (B) and (E) were melted together with (G) and water at 75°C was added, until a pourable solution is obtained;

(3) (2) was slowly added to (1), and the so-obtained mixture was deaerated;

(4) (I) was added;

(5) the obtained mass was cooled with simultaneous stirring.

Example 2

A shampoo was prepared which was identical to the shampoo of Example 1, but which additionally contained 1% of a perfluoropolyether with perfluoroalkyl end groups. The

perfluoropolyether was Fomblin HC/04 by Montefluos S.p.A., having the formula:

$$CF_3-[(O-CF-CF_2)_n(OCF_2)_m]-OCF_3$$
$$\quad\quad CF_3$$

wherein n/m is comprised within the range of from 20 to 40.

This perfluoropolyether has an average molecular weight of 1,500 and a viscosity of 35 cSt at 20°C.

The shampoo had the following composition, by weight:

A)	alkylamidobetaine	5.0%
B)	alkylamidoamine N-oxide	4.0%
C)	coco-ampho-glycinate	5.0%
D)	sodium laurylether sulfate	5.0%
E)	ethoxylated coco glycerides	4.0%
F)	sodium chloride	1.0%
G)	polyethyleneglycol 6000 distearate	3.0%
H)	perfluoropolyether Fomblin HC/04	1.0%
I)	deionized water	q.s. up to 100%
J)	preservatives, dyes, perfume	q.s.

The shampoo wsa prepared as follows:

(1) (A), (C) and (D) were mixed with each other, together with a portion of (I); then (F) was added and the whole mixture carefully deaerated;

(2) (B) and (E) were melted together with (G) and water at 75°C was added, until a pourable solution is obtained;

(3) (H) was dispersed throughout the mixture (2) by means of

a turbine mixer;

(4) (3) was slowly added to (1), and the whole mixture deaerated;

(5) (J) was added;

(6) the obtained mass was cooled with simultaneous stirring.

The shampoo according to the present invention, and the comparative shampoo, not containing perfluoropolyether, were evaluated as follows.

A preliminary study under the scanning electron microscope was carried out on seborrheic hair before and after the application of the shampoo which contained perfluoropolyether. Hair samples supplied by six seborrheic patients were studied. The hair samples were drawn from the same scalp region of all of said patients two days after the cleansing with the placebo shampoo, not containing perfluoropolyether in its formulation (Example 1).

A second taking was carried out after one month of twice-weekly washings with the same shampoo containing 1% of perfluoropolyether (Example 2).

Each hair was drawn by means of suitable tweezers and, without any preliminary treatments, were placed on a support, on which they were fastened by means of a bis-adhesive tape. They were then metallized with 200 Å of gold-platinum on a Balzers MED 010 metallizer, and were observed by means of the Philips 505 scanning electron microscope.

The individual hairs were observed at their suprabulbar region.

The observation was carried out at magnifications comprised within the range of from 1100 up to 8800. Under basal reference condition (see Figure 1, at 2100 X magnifications), the presence is observed on hair surface of an "induitus" characterized by structure-lacking polycyclic and semispherical masses or protrusions, which hindered, at least partially, the normal morphology of cuticular geometry.

These finds were identical in all of the analysed samples.

The observation of hairs after the treatment with the shampoo which contained perfluoropolyether (see Figure 2, at 2200 X magnifications) made it possible a meaningful decrease to be evidenced in the presence of this induitus, which is normally to be ascribed to the presence of sebum.

Example 3

A foam bath not containing perfluoropolyether was prepared for comparative purposes. Said foam bath had the following composition, by weight:

A)	sodium laurylether sulfate	15 %
B)	coco-ampho-glycinate	8.0%
C)	alkylamidobetaine	10.0%
D)	ethoxylated coco glycerides	6.0%
E)	alkylamidoamine N-oxide	5.0%

F) polyethyleneglycol 6000 distearate 2.0%

G) xanthan gum 2.0%

H) sodium chloride 1.0%

I) deionized water q.s. up to 100%

J) preservatives, dyes, perfume

The foam bath was prepared as follows:

(1) (G) was dispersed in a portion of (I) and in (H), until a homogeneous gel was obtained; this latter was then deaerated, and (A), (B) and (C) added under vacuum;

(2) (D), (E) and (F) were melted at 75°C, and water at 75°C was added, until a pourable solution was obtained;

(3) (2) is slowly added to (1), and the whole mixture was deaerated;

(4) (J) was added;

(5) the obtained mass was cooled with simultaneous stirring.

Example 4

A foam bath was prepared which was identical to the foam bath of Example 3, but additionally containing 1% of a perfluoropolyether with perfluoroalkyl end groups. The perfluoropolyether was Fomblin HC/R by Montefluos S.p.A., having the same formula as specified in Example 2.

This perfluoropolyether had an average molecular weight of 6,600 and a viscosity of 1500 cSt at 20°C.

The foam bath had the following composition, by weight:

A) sodium laurylether sulfate 15 %

B)	coco-ampho-glycinate		8.0%
C)	alkylamidobetaine		10.0%
D)	ethyoxylated coco glycerides		6.0%
E)	alkylamidoamine N-oxide		5.0%
F)	polyethyleneglycol 6000 distearate		2.0%
G)	xanthan gum		2.0%
H)	sodium chloride		1.0%
I)	deionized water	q.s. up to	100%
J)	perfluoropolyether Fomblin HC/R		1.0%
K)	preservatives, dyes, sequestering agents, perfume	q.s.	

The foam bath was prepared as follows:

(1) (G) was dispersed in a portion of (I) and in (H), until a homogeneous gel was obtained; this latter is then deaerated, and (A), (B) and (C) were added under vacuum;

(2) (D), (E) and (F) were melted at 75°C, and water at 75°C was added, until a pourable solution was obtained;

(3) (J) was dispersed throughout (2) by means of a turbine stirrer;

(4) (3) was slowly added to (1), and the whole mixture deaerated;

(5) the obtained mass was cooled with simultaneous stirring.

The foam bath according to the present invention (Example 4) and the foam bath not containing perfluoropolyether (Example 3) were evaluated as follows.

The sebacic response of skin to cleansing was determined <u>in vivo</u>. Thirty health volunteers from 13 to 81

years old were selected.

At the objective examination, volunteers' skin appeared to be normal or mixed in 39.6% of cases, seborrheic in 11.4% of cases, asteatosic in 49% of cases. The skin regions submitted to evaluation were: the forehead (at glabella level) and the presternal region (immediately under the sternal angle).

On each subject, in both of these regions two cleansing agents were used, which correspond to the preparations disclosed in Examples 3 and 4. The subjects with normal, mixed or seborrheic skin were taught to use, always at the same time in the morning, for ten consecutive days, the perfluoropolyether-containing cleansing preparate on forehead, and the placebo on the presternal region; the subjects with asteatosic skin were taught to do the contrary.

The determinations of the sebacic response after cleansing were carried out according to two different routes: with the Schwarzhaupt's SM 410 sebometer, and with Sebumtape(R) adhesive tapes (Cuderm Co. Dallas, U.S.A.; Hermal Pharm. Lab., Oak Hill, U.S.A.).

Such determinations were carried out between 9 o'clock and 11 o'clock a.m., under constant conditions of room temperature and humidity (50% ± 2% of humidity, 22°C ± 1°C).

The sebometric measurements were carried out:

1) under basal conditions ("lipid casual level);
2) soon after a strong washing with 30% isopropanol (with sebometric index being practically zero-set);
3) one hour after the cleansing according to (2);
4) after 24 hours, with the cleansing emulsion being used 1 hour in advance;
5) after 10 days of daily use, in the morning, of the cleansing emulsions, 1 hour after the last wash.

The Sebumtape strip was simultaneously applied on a skin region immediately adjacent to the region on which the sebometric measurement was carried out, was left on said region for 1 hour, and was then removed, applied onto a piece of thin card of black colour, and was finally photographed with a constant magnification.

The measurements carried out under basal conditions confirmed the distribution of the sebometric values by sex, age, and body region.

The sebometric determinations carried out in order to quantify the response to the cleansing treatment made it possible the following results to be obtained:

- In the subjects with normal, mixed or seborrheic skin, the washing with isopropanol leads to a considerable increase in seborrheic value already after 1 hour.

  After 24 hours (1 hour after the use of the cleansing emulsion), the sebometric values had further increased.

After 10 days of constant use of the cleansing emulsion containing the perfluoropolyether, the treated regions showed a lower average sebometric value than the preceding measurement (i.e., the measurement carried out after 24 hours).

The skin regions treated in the same way with the cleansing system not containing perfluoropolyether had undergone an increase in sebum (rebound effect);

- In the subjects with asteatosic skin, the average sebometric increase occurred more slowly, and resulted to be maximum after 10 days of use of the cleansing agent with the perfluoropolether. On the contrary, in skin regions treated with the placebo, the value remained constantly low.

Such results were confirmed as well by the observation of the photographs of Sebumtapes, in which a decrease was observed in number and in size of black spots (decrease in seborrhea) in case of subjects with normal, mixed or seborrheic skin treated with perfluoropolyether-containing cleanser, contrarily to what was observed on subjects with asteatosic skin.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. Process for preparing cleansing emulsions for beauty treatment characterized in that:

1) a perfluoropolyether containing perfluoroalkyl end groups, and one or more substance(s) selected from among the group consisting of surfactants, oils, fats and polyalcohols having a low interface tension with the perfluoropolyether, with at least one of these substances being a surfactant, are used;

2) the substances selected from among the surfactants, oils, fats and polyalcohols according to above point (1) are mixed with water and are heated up to such a temperature that a homogeneous mixture or emulsion is obtained; the mixture or emulsion is deaerated;

3) the thickening substances, and any foam-supporting substances are melted and are diluted with water until a medium-viscosity solution is obtained;

4) the perfluoropolyether is added with strong stirring to the mixture according to above point (2), or to the mixture according to above point (3);

5) the mixtures according to above points (2) and (3) are mixed together and the obtained mixture is de-aerated;

6) any possible preservatives, dyes, perfumes, softeners, opacifiers and sequestering agents are added to the mixture according to above point (2), or to the mixture according to above point (3), or to the mixture according to above point (5);

7) the whole mixture is cooled with stirring.

2. Process according to claim 1, characterized in that

the perfluoropolyether contains one or more repeating perfluoro-oxyalkylene units selected from the group consisting of:

a) (CF_2-CF_2O);

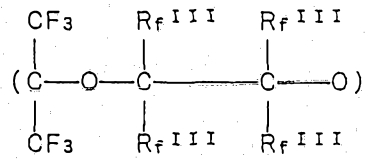
b) (CF_2O);

c) (C_3F_6O);

d) $(CF_2O-CF_2-CF_2O)$;

e) $(CF_2-CF_2-CF_2O)$;

f) (CFO) with CF_3 as substituent;

g) 

wherein the R_f^{III} groups, which may be either equal to, or different from, one another, are a fluorine atom, or a perfluoroalkyl group.

3. Process according to claim 2, characterized in that the perfluoropolyether contains either individual repeating perfluoro-oxy-alkylene units, or combinations of repeating perfluoro-oxy-alkylene units, selected from among the group consisting of:

I) (CF_2-CF_2O) and (CF_2O), with such units being randomly distributed along the perfluoropolyether chain; or

II) (CF_2-CFO) with CF_3 as substituent and $(CFXO)$ in which X is either F or CF_3,

with such units being randomly distributed along the

perfluoropolyether chain; or

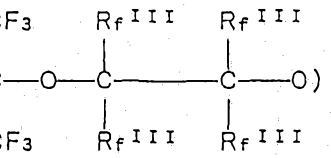
III) (CF_2-CF_2O), $(CF_2-\underset{\displaystyle CF_3}{\underset{|}{CF}}O)$ and $(CFXO)$,

wherein X is either F or CF_3, with such units being randomly distributed along the perfluoropolyether chain; or

IV) $(\underset{\displaystyle CF_3}{\underset{|}{CF}}-CF_2O)$; or

V) $(CF_2-CF_2-CF_2O)$; or

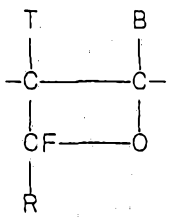
VI) (CF_2-CF_2O); or

VII) 

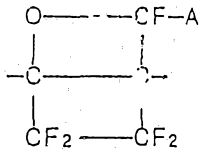
wherein the R_f^{III} groups, which may be either equal to, or different from, one another, are a fluorine atom, or a perfluoroalkyl group; or

VIII) $(CF_2O-CF_2-CF_2O)$

4. Process according to claim 1, characterized in that the perfluoropolyether contains perfluorooxetanic rings of formula:



or



wherein T, B and R, which may be either equal to, or different from, one another, are perfluoro-oxyalkyl radicals, perfluoro-polyoxyalkyl radicals or perfluoroalkyl radicals and A is a perfluoro-oxyalkyl radical, a perfluoro-polyoxyalkyl radical or a perfluoroalkyl radical.

5. Process according to one or more of the preceding claims, characterized in that the average molecular weight of the perfluoropolyether is comprised within the range of from 500 up to 20,000.

6. Process according to one or more of the preceding claims, characterized in that the contents of perfluoropolyether in the cleansing emulsions is generally comprised within the range of from 0.01 up to 20% by weight.

7. Process according to one or more of the preceding claims, characterized in that the perfluoropolyether is added to the mixture according to above point (3).

8. Process according to one or more of the preceding claims, characterized in that the possible preservatives, dyes, perfumes, softeners, opacifiers and sequestering agents are added to the mixture according to above point (5).

9. Cleansing emulsions for beauty treatment,

comprising:

1) a perfluoropolyether with perfluoroalkyl end groups in an amount comprised within the range of from 0.01 up to 20% by weight;
2) one or more substance(s) selected from among surfactants, oils, fats, and polyalcohols having a low interface tension with said perfluoropolyether, with at least one of these substances being a surfactant;
3) one or more thickening agents;
4) water;
5) possibly, one or more foam supporting substance(s);
6) possibly, one or more softeners and/or perfumes and/or dyes and/or preservatives and/or opacifiers and/or sequestering agents.

10. Foam baths, cleansing milks, bath oils and liquid soaps characterized in that they contain, besides their usual components, from 0.01% up to 20% by weight of perfluoropolyethers with perfluoroalkyl end groups.

11. A process for preparing cleansing emulsions as claimed in claim 1 substantially has herein described with reference to the examples.

12. Cleansing emulsions as claimed in claim 9 substantially as herein described with reference to the examples.

DATED this 18th day of September 1989

AUSIMONT S.p.A.

By their Patent Attorney
GRIFFITH HACK & CO.

FIG. 1

FIG. 2