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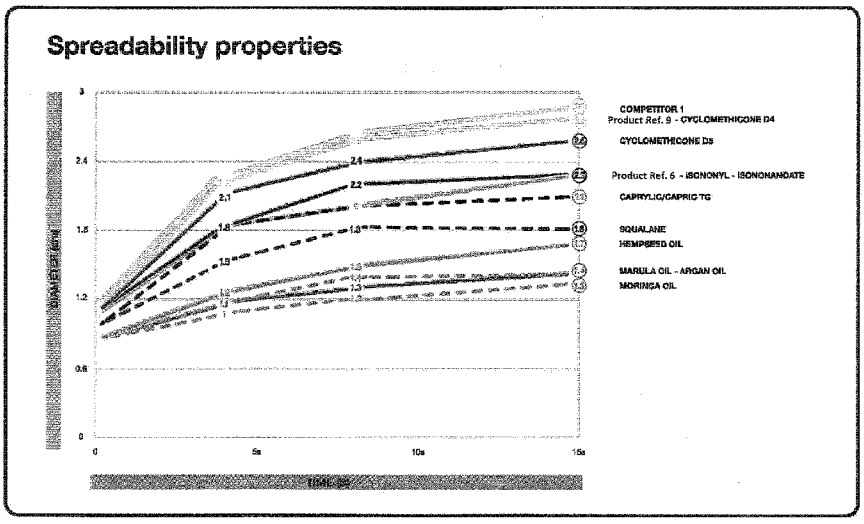

Fig. 2

(57) Abstract: Oily mixture for topical use on the skin and/or hair and/or mucous membranes, comprising only an alkane and/or a precursor of said alkane and at least one liposoluble component, wherein the alkane is an alkane comprising a number of carbon atoms equal to C(14) and/or wherein said precursor of said alkane comprises a number of carbon atoms of between C(10) and C(22); cosmetic, medical, pharmaceutical, veterinary formulation or product or medical device comprising the above oily mixture.

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"ENHANCED OILY MIXTURE FOR TOPICAL USE"

TECHNICAL FIELD OF THE INVENTION

The present invention relates to an oily compound or an oily mixture of compounds for topical use. More in particular, the present invention relates to a formulation or a product for cosmetic or medical or veterinary application or as a medical device comprising such a compound or mixture.

PRIOR ART

It is known that volatile silicone oils, in particular cyclomethicones, are non-biodegradable products and, in some cases, not particularly suitable for cosmetic, pharmaceutical and/or veterinary use.

In particular in the cosmetic field, the attention that workers in the industry, and even the media, are reserving to ecology and safety of raw materials for cosmetic use is growing.

Particularly in Europe, where it is mandatory to register with REACH all of the raw materials for cosmetic use, the formulator must pay special attention when selecting products to be used in cosmetic formulations. In other markets too, however, the focus on this aspect is increasing and, in particular, the use of products that can cause serious ecological or even health problems, such as silicones, should be prevented.

Used in place of vegetable emollient in creams, silicones have the drawback of not penetrating and being absorbed by the skin in any way, and of not nourishing. This is observed when applying silicone creams, as the skin dehydrates more and more. Silicone compounds are often used to mask poor formulations, low in active ingredients: in fact, they give instant pleasure with the feeling of silky skin, but in the long-term, the cosmetic product is more harmful than else. Used on the hair they give good cosmetic results at the first applications, then the hair, heavy with silicones that are deposited and that cannot be washed away, becomes limp and without body. From clinical evidence, the lightest silicones (cyclomethicones) dry out the skin on which they are applied and are particularly contraindicated in case of skin in need of hydration. The hypothesis of an actual sensitization to silicones

can be put forth. Finally, with a focus on eco-friendliness, silicones are totally not biodegradable, they end up in the sewage as such and then accumulate in the environment. In summary, up to a low concentration (about 2%) they are tolerable and their presence enhances the eudermic performances of cosmetic formulations, in too high percentage (from 5% up) they are not compatible with the skin and produce a misleading situation of cosmetic satisfaction, in addition to a serious ecological damage.

The object of the present invention therefore is to solve, in an environmentally friendly and healthy manner, the problem of replacing volatile silicones in cosmetic or medical or veterinary formulations or in medical devices by using an oily compound or an oily mixture of compounds of plant origin or from renewable plant sources.

OBJECTS OF THE INVENTION

The main object of the present invention therefore is to improve the prior art.

Another object of the present invention is to provide an oily compound or an oily mixture of compounds of plant origin for topical use.

A further object of the present invention is to provide an oily compound or an oily mixture of compounds able to replace the volatile silicone oils or cyclomethicones, while giving a similar feeling on a user's skin.

Yet a further object of the present invention is to provide an oily compound or an oily mixture of compounds that is easily or completely biodegradable.

According to one aspect of the invention, an oily compound or an oily mixture of compounds are provided according to claim 1.

A further object of the present invention is to provide a formulation or a product for cosmetic or dermatological or medical or veterinary application or as a medical device, comprising the oily compound or an oily mixture of compounds of plant origin.

A further object of the present invention is to provide a formulation or a cosmetic or medical or veterinary product or a medical device comprising the oily compound or an oily mixture of compounds, wherein such product or formulation

is devoid of volatile silicone oils or cyclomethicones, while having a similar feeling on a user's skin.

Yet a further object of the present invention is to provide a formulation or a product for cosmetic or medical or veterinary application or as a medical device, comprising the oily compound or an oily mixture of compounds that is easily or completely biodegradable.

According to one aspect of the invention, a formulation or a product for cosmetic or medical or veterinary application or as a medical device comprising an oily compound or an oily mixture of compounds are provided according to claim 8.

The dependent claims relate to preferred and advantageous exemplary embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

Further features and advantages of the present invention will appear more clearly from the detailed description of a preferred but non-exclusive embodiment of an oily composition, given by way of a non-limiting example in the accompanying drawings, in which

figure 1 is a graph relating to the sensorial properties of a product, carried out taking into account the surface tension and the kinematic viscosity of a fluid. This graph illustrates the sensorial properties of the compound according to the present invention, compared with other compounds. The abscissa indicates the dryness of the compound, measured as kinematic viscosity of a fluid (mPas) in which 1 corresponds to a dry compound while 1000 corresponds to an oily compound; the ordinate shows the sensoriality, measured as surface tension (mN/m), in which the value of 16 indicates a volatile compound while the value of 38 indicates a durable or long-lasting product. The compounds indicated with a marked circle are moderately or highly polar compounds whereas the compounds indicated with a non-marked circle are non-polar or with low polarity. Two versions of the product according to the present invention are indicated with reference numerals 6 (in particular Tetradecane in admixture with Glyceryl Olivate Oleate Estolide) and 9 (in particular a fatty alcohol of hydrogenated

Brassica Campestris, together with Polyglyceryl 4 Oleate and Glyceryl Olivate) while the wording "Competitor 1" indicates an alternative product based on vegetable alkanes;

figure 2 is a graph showing the spreadability properties of the compound according to the present invention, compared with other compounds, therefore it gives an idea of how well a product is spread on the skin. The abscissa indicates the time, measured in seconds while the ordinate indicates the diameter, measured in centimeters. The other reference compounds are: moringa oil, marula oil or argan oil, hempseed oil, squalene, caprylic or capric triglyceride, reference numeral 6 indicates a compound according to the present invention (in particular Tetradecane in admixture with Olivate Glyceryl Oleate Estolide), isononyl or isononanoate, cyclomethicone D5, reference numeral 9 indicates a further compound according to the present invention (in particular a fatty alcohol of hydrogenated Brassica Campestris, together with Polyglyceryl 4 Oleate and Glyceryl Olivate) and D4 cyclomethicone, while the wording "Competitor 1" indicates an alternative product based on vegetable alkanes.

EXEMPLARY EMBODIMENTS OF THE INVENTION

The present invention relates to an oily compound or an oily mixture of compounds.

In particular, in the remainder of the present description, the terms "oily compound" and "oily mixture" may be used without distinction, unless their difference is explicitly indicated.

The oily compound is of plant origin. In particular, the oily compound or the oily mixture comprise or are in the form of at least one liquid lipid or an oil.

In one version of the invention, the liquid lipid or oil and/or the oily compound and/or the oily mixture are volatile.

Such an oily compound or oily mixture is used for topical use; in particular, it can be applied to the skin, the mucous membranes, the hair, the nails of the human or animal body.

The present invention also relates to the cosmetic, medical, pharmaceutical,

veterinary use or as a medical device of the oily compound or the oily mixture referred to in the present description.

One of the peculiarities of such a compound or such a mixture is the fact of being an alternative to volatile silicone oils, in particular to cyclomethicones.

In particular, the compound according to the present invention has features similar to those of silicones from both the organoleptic and the sensory point of view and can therefore be a valid substitute of volatile silicones or cyclomethicones.

Therefore, the applications of the present compound can be the same for which such silicone compounds are currently applied or were applied.

Such an oily compound or the oily mixture comprises or consists of a mixture of one vegetable alkane, with at least one liposoluble component.

In one version of the invention, the oily compound or the oily mixture comprises or consists of a mixture of a vegetable alkane precursor, with at least one liposoluble component.

According to a preferred embodiment, the liposoluble component is of plant origin.

In this way, the component or the product or the resulting formulation is of plant origin, thus environmentally friendly and/or biodegradable.

The vegetable alkane is obtained from a plant source, such as a vegetable oil.

Likewise, the alkane precursor is obtained from a plant source, such as a vegetable oil.

The vegetable alkane and/or the precursor thereof according to the present invention has a very high percentage of purity or high purity.

The preferred sources from which the alkane or the precursor thereof according to the present invention are derived are coconut oil (Cocos nucifera) and/or rapeseed oil (Brassica campestris) and/or canola oil (Brassica Napus). For example, such oil is derived from rapeseed seeds or canola.

However, the alkane or the precursor thereof can also be derived from other vegetable oils or other plant sources, without thereby departing from the scope of protection of the present invention.

Coconut oil is used in many types of products, as such or as derivatives thereof. In particular, the products in which it is used or present are: soaps and cosmetic and industrial detergents, for metallurgy products (in the extrusion of metals), cosmetics (coconut oil as such or as derivative fatty acids), foodstuffs (coconut oil as such or as hydrogenated derivative), etcetera.

Rapeseed oil is instead less used, the plant is more used than the oil. Recently, however, there has been gradually more attention to this type of oil, both because of its easy availability and for the low cost. This oil is used, in particular, also in certain very advanced products, such as Biodiesel.

According to a preferred embodiment of the present invention, the alkane and/or the precursor thereof is obtained or derived from Brassica Campestris oil, both for ecological reasons and for the ease of finding the raw material in Italy and in European countries. In fact, also the possibility of finding a raw material in countries close to the production site allows for a more environmentally friendly product, as transport-related pollution and/or the environmental upheaval are reduced.

In one version of the invention, the oily compound or the oily mixture according to the present invention comprises one alkane comprising a number of carbon atoms ranging from C(10) to C(14), preferably C(14), also referred to as Tetradecane.

In a further embodiment of the present invention, the oily compound or the oily mixture comprises an alkane precursor, wherein the alkane comprising a number of carbon atoms of between C(10) and C(14), preferably C(14), while the precursor comprising a number of carbon atoms of between C(10) and C(22).

In particular, in one version of the invention, the oily mixture comprises a first and a second component and said first component comprises only one alkane and/or a precursor of such an alkane, wherein this alkane is an alkane comprising a number of carbon atoms equal to 14 and/or wherein the precursor of this alkane comprises a number of carbon atoms of from C(10) to C(22).

This means that a precursor having a number of carbon atoms C of between 10

and 22 is adapted to be a precursor of an alkane having a number of carbon atoms equal to C 14.

In particular, in an alternative version, one of the following alkanes is preferably present: Decane (C10), Undecane (C11), or Dodecane (C12).

Alkane C(12) for example is more volatile but has a very low flash point (about 71°C). On the skin or hair, this alkane has a drier appearance. Alkane C(14), however, has a higher flash point than C(12), about 115°C. The fact of having a higher flash point allows the mixture comprising such an alkane to be safer, for example for transport and use.

Alkanes C(12) and C(13) have a much lower flash point than that of C(14).

On the skin or hair, this alkane C(14) has a softer or silkier appearance than C(12).

In one version of the invention, the oily mixture comprises an alkane whose number of carbon atoms C is 14 C(14) and/or an alkane precursor having a number of carbon atoms equal to C(10-22) and at least one liposoluble component.

These alkanes or precursors or vegetable derivatives thereof, according to a particularly advantageous embodiment of the invention, are derived from Brassica Campestris oil.

In one version of the invention, the alkane precursor comprises a hydrogenated fatty alcohol, such as for example a hydrogenated alcohol of a vegetable oil, such as coconut oil and/or rapeseed oil.

Compared to coconut oil, Brassica Campestris or rapeseed oil is more "environmentally friendly", for example as it allows preventing environmental problems, such as deforestation.

The above alkanes are available on the market or in any case, are most suitable for cosmetic, pharmaceutical, medical, veterinary use or as a medical device.

In particular, the oily compound or the oily mixture according to the present invention comprises a first component comprising or consisting of a single alkane, or a single precursor of such an alkane, together with the liposoluble component

indicated above.

In one version of the invention, an alkane and/or a precursor of the specific alkane may be present together with the liposoluble component described above.

In one version of the invention, as mentioned, the oily mixture, in addition to at least one liposoluble component, only comprises an alkane having a number of carbon atoms equal to 14 or only a precursor of an alkane having a number of carbon atoms equal to 10-22, or it comprises an alkane having a number of carbon atoms equal to 14 and a precursor of an alkane having a number of carbon atoms equal to 14, or it comprises a precursor of an alkane whose number of carbon atoms is 10-22.

In the present invention, therefore, a vegetable alkane (and/or the precursor thereof) is mixed with a liposoluble component, also preferably of plant origin.

In one version of the invention, the oily mixture comprises a second component and said second component is a liposoluble component.

Said liposoluble component may comprise at least one of the following compounds: an estolide, a plant-based estolide, an estolide derived or obtained from vegetable oil, a fatty acid ester, a glycerol ester, a polyglycerol ester, polyglycerol esters with HLB (Hydrophilic-Lipophilic Balance) of less than 8, liposoluble vitamins, vegetable oils, etcetera.

If the HLB is greater than 8, such compounds become water-soluble and are therefore no longer usable.

The estolides according to the present invention exhibit the following properties: they are more stable to temperature variations compared to esters with the same matrix, they are more low-boiling than the esters of the same matrix, etcetera.

Compared to common esters, estolides have the following properties: excellent flow properties at low temperatures, they form a lighter and not fat film, improvement of skin hydration. In addition, they have a more velvety touch compared to commonly used esters, such as cosmetic esters, and are more stable to temperature changes and oxidation.

Moreover, the oily compound or the oily mixture according to the present

invention is very simple as it is formed, at least in a version thereof, of only two components, the alkane and/or the precursor thereof and the liposoluble component, and of three components in another version.

In this way, the mixture according to the present invention, having few components, has less risk of being poorly tolerated by the human or animal body on which it is applied, or of generating allergies. At the same time, despite the simplicity of the components, it is possible to obtain an oily mixture of plant origin that is biodegradable, derived from renewable sources and able to provide excellent properties, comparable to those obtained with the use of known synthetic components, which are not absorbed by the skin and are polluting.

According to one version of the present invention, the estolide or the liposoluble component is obtained or derived from olive oil. In one version, the estolide according to the present invention is for example Glyceryl Olivate Oleate Estolides (GOOE) or the liposoluble component is Polyglyceryl Oleate or Polyglyceryl 4 Oleate and Glyceryl Olivate.

In one version of the invention, the estolide is obtained by enzymatic route, for example enzymatic transesterification in the presence of an immobilized lipase. This reaction preferably takes place without the use of solvents.

In one specific embodiment of the invention, the reaction for obtaining the estolide is the enzymatic transesterification of a vegetable oil, such as olive oil, and glyceryl olivate.

In particular for this version of estolide, but in general also for the others, during the step of obtaining the estolide itself from vegetable oil, an enzymatic reaction is preferred in order to preserve the naturalness thereof as much as possible.

GOOE has a particular skin substantiveness when used on the skin and/or protects the water loss (TEWL) thereof and/or improves the appearance or shine thereof. Moreover, this estolide is absolutely harmless and 100% biodegradable.

Therefore, in a particular embodiment of the present invention, the oily compound or the oily mixture, of plant origin, comprises a vegetable alkane C14 in admixture with at least one estolide from olive oil.

Even more in particular, in one version of the present invention, the oily compound or the oily mixture comprises Tetradecane in admixture with an estolide or with the estolide derived from Olive Oil or Glyceryl Olivate Oleate Estolides.

Such a liposoluble component, in a further embodiment of the invention, may comprise polyglycerol-2-oleate, polyglycerol-2-dioleate, polyglycerol-3-oleate, polyglycerol-3-dioleate, polyglycerol-2-diisostearate, polyglycerol-4-oleate, polyglycerol-4-dioleate, polyglycerol-2-ricinoleate, polyglycerol-3-ricinoleate, polyglycerol-4-ricinoleate, polyglycerol-caprylate, polyglycerol-dicaprylate, polyglycerol-3-cocoate, polyglycerol-cocoate, glyceryl olivate, etcetera.

Therefore, in a particular embodiment of the present invention, the oily compound or the oily mixture, of plant origin, comprises a precursor of a vegetable alkane C14 having a number of carbon atoms of between C10 and C22, in admixture with at least one polyglycerol and/or glycerol ester derived from Olive oil.

Even more in particular, in one version of the present invention, the oily compound or the oily mixture comprises a precursor of Tetradecane in admixture with a polyglyceryl 4 oleate and/or glyceryl olivate or still the oily compound or the oily mixture comprises polyglyceryl 4 oleate, glyceryl olivate and hydrogenated alcohol derived from rapeseed oil (Polyglyceryl 4 Oleate (and) Glyceryl Olivate (and) Hydrogenated rapeseed Alcohol).

In one version of the invention, the second component or liposoluble component does not comprise further alkanes and/or alkane precursors.

In this version, only the first component comprises or consists of an alkane and/or an alkane precursor.

In one version of the invention, the first and the second component are not derived from palm or palm oil in order to prevent environmental problems such as deforestation.

In a further embodiment of the invention, the first and the second compound are not derived from either palm or coconut or coconut oil, again for the problems that such plants or crops cause at an ecological level.

As seen, the particular and very positive features of sensoriality present in the oily mixture according to the present invention are implemented by the presence of estolide or by polyglyceryl 4 oleate and glyceryl olivate.

In particular, the mixture containing a C14 alkane with an estolide significantly improves skin hydration, largely eliminating the problem of skin dehydration encountered when using mixtures of alkanes or mixtures of alkanes with a lower number of carbon atoms and other liposoluble components.

Also the mixture containing an alkane precursor with polyglyceryl 4 oleate and glyceryl olivate significantly improves skin hydration, largely eliminating the problem of skin dehydration encountered when using mixtures of alkanes or mixtures of alkanes with a lower number of carbon atoms and other liposoluble components.

The estolide derived from olive oil has the following cosmetic features: skin hydration, safety, improves the thermal stability of the product, for examples for sunscreen products or cosmetic products in general, has co-emulsifying properties, is 100% biodegradable. In addition, it derives from a raw material of national origin, without problems of environmental friendliness and/or land conservation (issues that are for example caused by the use of palm oil and derivatives).

In the following examples, when the term alkane is used, it also includes, in one version of the invention, an alkane precursor or a mixture consisting of an alkane and/or a precursor thereof.

In one version, the oily compound or the oily mixture according to the present invention may comprise, in one embodiment of the invention, 1% to 99% weight/weight of the total compound of an alkane and 99% to 1% weight/weight of the total compound of a liposoluble component.

In a particular version, the oily compound or the oily mixture according to the present invention may comprise, in one embodiment of the invention, 50% to 99% weight/weight of the total compound of an alkane and 1% to 50% weight/weight of the total compound of a liposoluble component.

In particular, the higher the percentage of liposoluble component (e.g. estolide, in one version of the invention), the more the resulting component which comprises it has a heavier and/or less evanescent appearance, due to the specific properties of the liposoluble component itself. The specific uses or applications of this version of the invention will be better outlined hereinafter.

The following examples refer to an oily compound or an oily mixture comprising a vegetable alkane and a liposoluble component or a vegetable alkane and a vegetable estolide or even more in detail, a vegetable alkane C(14) with Olivate Glyceryl Oleate Estolides.

The following examples further refer to an oily compound or an oily mixture comprising a precursor of a vegetable alkane and a liposoluble component or a vegetable alkane and a vegetable estolide or even more in detail, a vegetable alkane C(14) with Glyceryl Olivate Oleate Estolides or a precursor of a vegetable alkane and polyglyceryl 4 oleate and glyceryl olivate, such as polyglyceryl 4 oleate, glyceryl olivate and hydrogenated rapeseed alcohol.

Such examples have only illustrative and non-limiting purposes for the present invention.

1) Formulation or product for cosmetic or medical or veterinary application or as a medical device, wherein the oily compound or the oily mixture is present in replacement of volatile silicones or cyclomethicones.

Such a formulation comprises, as an oily compound or oily mixture:

1-50% weight/weight of a second component or liposoluble component of the total of the compound, and

50-99% weight/weight of a first component or an alkane (and/or a precursor thereof) of the total of the compound.

The total of the compound is given by the sum by weight of the first and second component.

This formulation, or rather the oily compound or the oily mixture according to the

present invention, has the property of being little greasy on the skin and/or mucous membranes and/or hair. In addition, in contact with such tissues of the human or animal body, they evaporate quickly.

In essence, therefore, the oily compound or the oily mixture according to the present invention exhibits properties and appearance on the skin and/or mucous membranes and/or hair very similar to those conferred by known silicones.

2) Formulation or product for cosmetic or medical or veterinary application or as a medical device, wherein the oily compound or the oily mixture is present in replacement of lipophilic esters or vegetable squalane.

Such a formulation comprises, as an oily compound or oily mixture:

30-60% weight/weight of a second component or liposoluble component of the total of the compound, and

40-70% weight/weight of a first component or an alkane (and/or a precursor thereof) of the total of the compound.

This formulation, or rather the oily compound or the oily mixture according to the present invention, has emollient properties, both in formulations for the care of the skin and/or mucous membranes and/or hair and in cleansing products.

3) Formulation or product for cosmetic or medical or veterinary application or as a medical device, wherein the oily compound or the oily mixture is present in replacement of lipophilic oil-in-water (or o/w) or water-in-oil (or w/o) emulsifiers.

Such a formulation comprises, as an oily compound or oily mixture:

50-90% weight/weight of a second component or liposoluble component of the total of the compound, and

10-50% weight/weight of a first component or an alkane (and/or a precursor thereof) of the total of the compound.

This formulation, or rather the oily compound or the oily mixture according to the present invention, gives a consistency of emulsion to the resulting product.

As mentioned, therefore, the oily compound or the oily mixture according to the present invention exhibits properties of sensoriality, spreadability on the skin and/or mucous membranes and/or hair, and/or evanescence, at least according to the percentages indicated above in example 1), which are very similar to those conferred by volatile silicones or, in particular, by cyclomethicones. Compared to the latter, however, with the same effects, they are environmentally friendly and biodegradable and also confer such properties to products or formulations in which they are present.

Moreover, being of plant origin, they are much more natural than synthetic compounds, are the silicones currently present on the market.

In addition, the oily compound or the oily mixture according to the present invention exhibit at least one of the following properties: they are emollient, less dehydrating, more absorbable and more gentle on the skin and/or mucous membranes and/or hair.

These advantages are better than both volatile silicones on the market, and any other products containing alkanes (and/or precursors and/or derivatives thereof).

Furthermore, compared to the latter, the compound according to the present invention has proven to be less aggressive on the skin and/or mucous membranes and/or hair, in particular as regards their dehydration and dryness.

The oily compound or the oily mixture according to the present invention, or in particular the compound comprising the mixture of tetradecane with estolide from olive oil or hydrogenated alcohol derived from rapeseed oil and polyglyceryl 4 oleate and glyceryl olivate, is fully biodegradable and environmentally friendly.

The product derived from these mixtures can be ECOCERT and COSMOS registered and eye irritation and skin sensitization tests were negative.

The oily compound or the oily mixture according to the present invention is liquid. It is composed of liquid components (both the alkane and/or a precursor thereof and the liposoluble component).

The present invention also relates to a formulation or a product for cosmetic or medical or veterinary or pharmaceutical applications or as a medical device

comprising the oily compound or the oily mixture described above.

Such a formulation or product can be in the form of compact or fluid emulsions (cream or milk) for the skin and/or mucous membranes and/or hair or balm or lotion for the skin and/or mucous membranes and/or for hair, gel for the skin, hair, skin and hair cleanser, etc., make up for the skin, skin and hair toners, hair or skin sprays (lacquers, dermoprotective products, sunscreen products, etc.). In such cases, the oily compound or the oily mixture, for example in the percentages indicated in example 1) above, give to the formulation or product that contains them an evanescent effect or, at least as regards the hair, gloss.

Moreover, such a formulation or product can be in the form of emulsions, masks, creams, etc., for the skin and/or mucous membranes and/or hair, with anti-UV activity (solar products), for the excellent solvent action of sunscreens that the oily compound and/or the mixture has.

In such cases, the oily compound or the oily mixture, for example in the indicated percentages in example 3) above, in which, for example, the percentage of liposoluble component is quite high, causes a film-forming effect or barrier effect on the tissues on which it is applied.

For example, an oil or a mask for hair or skin comprising the oily compound or the oil mixture according to the present invention is able to restore the desired hydration or gloss or smoothness of the hair or skin, for example as a post treatment, as a result of particularly aggressive or invasive or dehydrating treatments on such tissues.

Of course, in addition to the oily compound or oil mixture according to the present invention, the cosmetic, medical, pharmaceutical, veterinary product or formulation or the medical device may further comprise active ingredients, ingredients that determine its effect or the desired consistency thereof, excipients, etc. Such additional ingredients are those usually present in the type of product or formulation to be obtained.

Preferably, these products or formulations do not comprise volatile silicones or silicone derivatives.

The oily compound or the oily mixture according to the present invention, according to a particular version, can act as oily vehicle to deliver a given active ingredient, such as a lipophilic active ingredient, on the skin and/or mucous membranes and/or hair.

In this case, one of the effects of the compound according to the present invention is to confer softness.

Moreover, the oily compound or oil mixture according to the present invention may be comprised in a detergent and/or deodorant product or formulation. For example, in the latter case, the product or the formulation may be spray or liquids or fluid products and confer, by virtue of the compound according to the present invention, evanescence features, they may be used as carriers for other substances or active ingredients or also not to "dirty" the skin or tissues or objects (such as clothes) located in the vicinity of the application area.

At least according to one version of the present invention, the oily compound or the oily mixture is an emollient agent. This emollient agent is non-polar.

The oily compound or the oily mixture according to the present invention has a non-oily appearance (once applied to the skin and/or mucous membranes and/or hair) but velvety, has a low viscosity, has excellent spreadability on the skin or on hair or tissues where it is applied, is compatible with UVA and UVB sunscreens and is stable to oxidation.

The oily compound or the oily mixture according to the present invention has a flash point of 130-140°C.

The vegetable alkane (and/or a precursor thereof) and/or the liposoluble component and/or the oily component or the oily mixture according to the present invention is volatile.

In one version of the invention, the oily compound or the oily mixture according to the present invention has a kinematic viscosity of between 3.5 and 3.9 cst at 40°C.

In a further version of the invention, it has a kinematic viscosity of between 6.5 and 6.9 cst (for example for the version indicated with numeral 9 in the

accompanying figures).

As can be seen in figure 1, the test on sensorial properties is carried out taking into account the surface tension and the kinematic viscosity of a fluid.

The higher the surface tension of a fluid, the less it is volatile, the lower the kinematic viscosity, the more it is dry, and thus these data can be used on the skin to understand if a fluid (oil) has a rather "greasy" and "persistent" sensoriality or it has an "evanescent" and "dry" sensoriality.

The present invention has a good evanescence, not too dry nor greasy, thus "silky" on the skin.

As shown in Figure 2, the spreadability test instead gives an idea of when a product is easily spread on the skin. The test is carried out as follows:

an exact amount of product is placed on a controlled absorption surface (normally, it is a particular absorbent paper); the stain size (circle) that is formed is measured at time 0 and at different times (as can be seen in the graph) and the extent of dispersion of the fluid (oil) on the absorbent surface is determined.

Products with low viscosity disperse much more than high viscosity products. The skin thus has a similar behavior with excellent dispersion for lighter (less viscous) products.

It is therefore noted that the oily compound or the oily mixture according to the present invention are better than the other components tested from the eudermic point of view. For example, the oily compound or the oily mixture according to the present invention have proved to be, for example, less dry and more viscous, so with a silkier feel to the touch than the compound referred to as Competitor 1.

Such a compound referred to as Competitor 1, moreover, as can be seen in figure 2, being more dry, is more dispersed on the skin compared to the oily compound according to the present invention, which disperses slightly less while maintaining an optimal evanescence.

Due to the presence of the oily compound or the oil mixture according to the present invention, the products or formulations that comprise it, for example the cosmetic or medical or pharmaceutical or veterinary products or the medical

devices, transmit at least a feeling of softness, hydration, evanescence to the consumer. The products that have these properties are, for example, emulsion products (creams, milks, ointments, etc.), cleansing products (shampoo, bath foams, soaps, etc.), make-up products, products for sensitive skin, baby products, products in spray bottles containing propellant gas, BOV (Bag on Valve) cylinders or no gas cans, etc., hair products such as conditioners, hair colors, ampoules, masks, etc.

The present invention has been described according to preferred embodiments but equivalent versions may be conceived without departing from the scope of protection offered by the following claims.

CLAIMS

1. Oily mixture for topical use on the skin and/or hair and/or mucous membranes, comprising a first component and a second component, wherein said second component comprises at least one liposoluble component, **characterized in that** said first component comprises only an alkane and/or a precursor of said alkane, wherein said alkane is an alkane with a number of carbon atoms equal to 14 and/or wherein said precursor of said alkane comprises a number of carbon atoms of between C(10) and C(22), **and in that** said alkane and/or said precursor is of plant origin.

2. Mixture according to claim 1, wherein said alkane precursor comprises a hydrogenated alcohol of a vegetable oil.

3. Mixture according to claim 1 or 2, wherein said mixture is liquid and/or volatile.

4. Mixture according to any one of the preceding claims, wherein said alkane and/or said precursor of said alkane derives from a vegetable oil and/or from a renewable plant source or from coconut oil (Cocos Nucifera) and/or from rapeseed oil (Brassica Campestris) and/or from canola oil (Brassica napus).

5. Mixture according to any one of the preceding claims, wherein said liposoluble component comprises at least one of the following compounds: an estolide, a plant-derived estolide, an estolide derived or obtained from vegetable oil, a fatty acid ester, a glycerol ester, a polyglycerol ester, polyglycerol esters with HLB (Hydrophilic-Lipophilic Balance) of less than 8, polyglycerol-2-oleate, polyglycerol-2-dioleate, polyglycerol-3-oleate, polyglycerol-3-dioleate, polyglycerol-2-diisostearate, polyglycerol-4-oleate, polyglycerol-4-dioleate, polyglycerol-2-ricinoleate, polyglycerol-3-ricinoleate, polyglycerol-4-ricinoleate, polyglycerol-caprylate, polyglycerol-dicaprylate, polyglycerol-3-cocoate, polyglycerol-cocoate, glycerol olivate, liposoluble vitamins, vegetable oils, etcetera.

6. Mixture according to any one of the preceding claims, wherein said liposoluble component comprises an estolide derived from olive oil and/or

comprises Glyceryl Olivate Oleate Estolide and/or wherein said mixture comprises Tetradecane and Glyceryl Olivate Oleate Estolide or wherein said liposoluble component comprises polyglyceryl 4 oleate and glyceryl olivate.

7. Mixture according to any one of the preceding claims, wherein said mixture comprises:

1% to 99% weight/weight of the total of the mixture of said alkane and/or said precursor and 99% to 1% weight/weight of the total of the mixture of said liposoluble component or

50% to 99% weight/weight of the total of the mixture of said alkane and/or said precursor of said alkane and 1% to 50% weight/weight of the total of the mixture of said liposoluble component or

30% to 60% weight/weight of the total of the mixture of said liposoluble component and 40% to 70% weight/weight of the total of the mixture of said alkane and/or said precursor of said alkane or

50% to 90% weight/weight of the total of the mixture of said liposoluble component and 10% to 50% weight/weight of the total of the mixture of said alkane and/or said precursor of said alkane.

8. Formulation or product adapted to be applied topically on the skin and/or hair and/or mucous membranes, comprising the oily mixture according to one of claims 1 to 7.

9. Formulation or product according to claim 8, wherein said formulation or product is for cosmetic or medical or veterinary or pharmaceutical applications or as a medical device.

10. Formulation or product according to claim 8 or 9, wherein said formulation or product is in the form of oil or milk or cream or ointment or balm or lotion or emulsion, or mask, or oily carrier for delivering a predetermined active ingredient, detergent and/or deodorant formulation or product or spray formulation or product, emulsion products or makeup products or hair products or gels, etcetera.

11. Formulation or product according to any one of claims 8 to 10, comprising

further ingredients as active ingredients, ingredients which determine the effect or texture thereof, excipients, etcetera.

12. Formulation according to one or more of claims 8 to 11 for medical or veterinary or pharmaceutical use or as a medical device.

13. Topical and cosmetic use on the skin and/or hair and/or mucous membranes of the formulation according to any one of claims 8 to 11 for the treatment of skin and/or mucous membranes and/or hair, for cleansing and/or deodorization of the skin and/or mucous membranes and/or hair, to increase hydration and/or gloss and/or smoothness of the skin and/or mucous membranes and/or hair and/or to cause a film-forming effect or barrier effect on the tissues of the skin and/or mucous membranes and/or hair and/or as a softening agent for the skin and/or mucous membranes and/or hair and/or as makeup and/or for the photo-protection as an anti-UVA and/or UVB sunscreen agent.

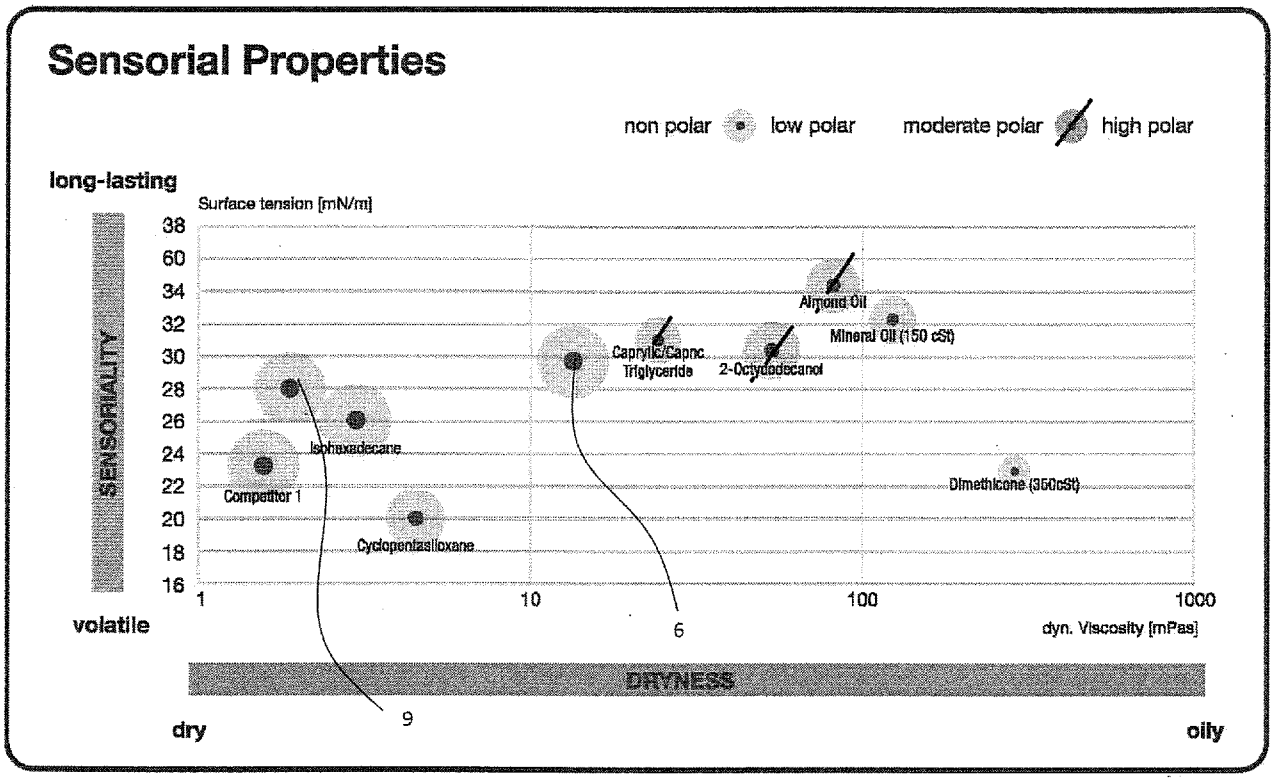
Sensorial Properties
non polar
low polar
moderate polar
high polar
long-lasting
Surface tension [mN/m]
38
60
34
32
30
28
26
24
22
20
18
16
SENSORIALITY
Almond Oil
Mineral Oil (150 cSt)
Caprylic/Capric Triglyceride
2-Octyldodecanol
Isohexadecane
Competitor 1
Dimethicone (350cSt)
Cyclopentasiloxane
1
10
100
1000
volatile
6
dyn. Viscosity [mPas]
DRYNESS
dry
9
oily

Fig. 1

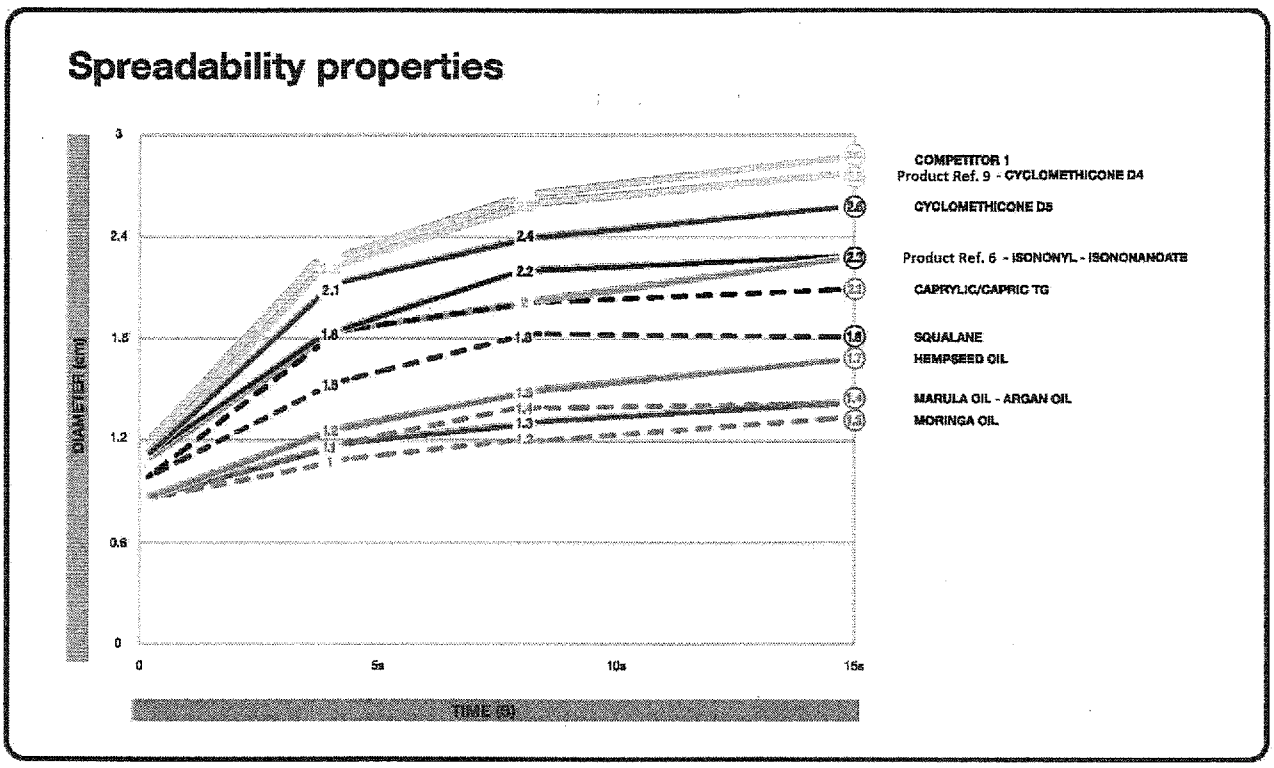
Spreadability properties
DIAMETER (cm)
3
2.4
1.8
1.2
0.6
0
0
5s
10s
15s
TIME (s)
COMPETITOR 1
Product Ref. 9 - CYCLOMETHICONE D4
CYCLOMETHICONE D5
Product Ref. 6 - ISONONYL - ISONONANOATE
CAPRYLIC/CAPRIC TG
SQUALANE
HEMPSEED OIL
MARULA OIL - ARGAN OIL
MORINGA OIL

Fig. 2