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COSMETIC PREPARATIONS—WAX ROUGE AND FOUNDATION MAKE-UP

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ABSTRACT OF THE DISCLOSURE

A hydrocarbon solvent having at least 85 wt. percent isoparaffins and having a boiling range of about 360° F. to 428° F. in combination with cosmetic powders and waxes produce a high quality facial cosmetic composition. The function of a hydrocarbon solvent in a cosmetic composition is to aid in the application of powders and waxes to desired areas of the skin. The solvent then evaporates leaving the cosmetic ingredients on the face in the desired amounts. Heretofore, solvents used for this purpose had unwanted odors and did not evaporate in a reasonable length of time. The solvent of this invention is superior to those previously known in that it is odorless, non-iritating and evaporates quickly upon application.

The present invention is concerned with high quality cosmetic compositions and is particularly concerned with the use of particular hydrocarbon solvents for the preparation of these cosmetic compositions. The invention is particularly concerned with facial cosmetic formulations which contain a major quantity of a hydrocarbon solvent having a very high concentration of isoparaffinic constituents. The solvent used in accordance with the present invention is characterized by being completely odorless, non-irritant and non-greasy, and by having a gradual rate of evaporation. These properties make it eminently hypoallergenic and advantageous in cosmetics for application on live skin.

It is well known in the art to prepare various cosmetic compositions using various types of solvents. Some of these solvents function to aid the application of the desired constituents and then evaporate, leaving the desired active ingredient on the hair or face, as the case may be. One difficulty of the solvents hitherto used is that many of them are not odorless, which detracts from their use. Or if they are odorless, they do not evaporate in a reasonable time. The highly isoparaffinic solvent of the present invention has a relatively narrow and critical boiling range and is highly purified, which renders it particularly adapted for cosmetic formulations.

It has now also been discovered that if a highly refined and highly isoparaffinic solvent be used having a particular boiling range, unexpected desirable results are secured. The solvent is of the type which has at least 85% isoparaffins, preferably in excess of 95%, and most preferably at least 99% by weight of isoparaffins. The preferred compositions are those isoparaffinic hydrocarbon compositions wherein the contents of unsaturated hydrocarbons, such as aromatics and olefins are less than about 1%, and more preferably less than 0.1% by weight and the contents of cyclo and normal paraffins are less than 10%, and preferably less than about 5% by weight. The preferred compositions are those wherein the total concentrations of non-hydrocarbon impurities such as peroxides, acids, carbonyls, alcohols or other oxygenated compounds are present below about 0.01% by weight, and preferably below 0.001% by weight. In ultimate analysis, the contents of all other elements, particularly S, N and Cl, must be less than 0.0005% by weight.

These highly isoparaffinic compositions may be secured by distilling an alkylate, which is made by reaction between isobutane and an olefin of 3 to 5 carbon atoms, to secure the desired boiling range. The desired cut may be hydrofined and then treated with caustic and adsorbents such as silica gel, alumina, activated char or zeolite to secure the desired purity. These highly isoparaffinic, highly purified fractions may also be secured by the hydrogenation of unsaturated branched olefins of the appropriate boiling range. Isoparaffins constituting this solvent include chiefly tetramethyl hexanes, tetramethyl heptanes and tetramethyl octanes, such as 2,2,4,4-tetramethyl hexane, 2,3,3,5-tetramethyl heptane and 2,2,4,6-tetramethyl octane.

The boiling range of the solvent of the present invention is such that the initial boiling point is higher than about 365° F. and the dry point lower than 428° F., preferably in the range from about 370° to 418° F., and most preferably 374° to 410° F., by ASTM Method D–1078. It is essential that the highly isoparaffinic solvent have an initial boiling point in the range between 360° and 380° F.

The following inspections are typical for this isoparaffinic solvent.

Table I

	Solvent
Solvency:	
Aniline point, ° F. (ASTM D–611)	187
Kauri butanol value	26.9
Solubility parameter [1]	7.3
Composition, wt. percent:	
C_{11} isoparaffins	19
C_{12} isoparaffins	62
C_{13} isoparaffins	19
n-Paraffins and cycloparaffins	4.6
Aromatics	0.2
Olefins	0.2
Average molecular weight	165
Volatility:	
Flash point, ° F. (ASTM D–56)	144
Vapor pressure @ 100° F., p.s.i.a.	0.2
Distillation, ° F. (ASTM D–1078):	
Initial boiling point	372
5% distilled at	374
10% distilled at	375
50% distilled at	379
90% distilled at	392
95% distilled at	399
Dry point	406
General:	
Specific gravity, 60/60° F.	0.767
Viscosity, centipoise @ 25° C.	1.541
Refractive index @ 20° C.	1.4274
Copper corrosion, ½ hr. @ BP	2
Bromine index (ASTM D–1491)	120
Color, Saybolt	+30

[1] Official Digest of Federation of Societies for Paint Technology, page 726, October 1955.

In the absence of a solute, it tends to evaporate more quickly than mineral spirits of comparable boiling range that are derived from natural petroleum naphtha, as shown by the following data:

TABLE II

Percent evaporated	Minutes elapsed at 25° C. for—	
	Isoparaffinic solvent of 372° to 409° F. range	Petroleum mineral spirits of 361° to 409° F. range
10	10	16
30	34	46
50	63	78
70	99	116
100	189	210

Its surface tension in air at 25° C. is about 23 dynes/cm., which is quite low; and its interfacial tension with water at 25° C. is about 49 dynes/cm., which is quite high. These properties make it exceptionally valuable in cosmetic formulations for spreadability. There are no solvents or vehicles available to the cosmetic formulator which have these characteristics. In addition to being odorless and non-irritating, making it safe to use, the viscosity, the non-greasy feel, and the evaporation rate make it particularly distinctive. Other vehicles, such as ethyl and isopropyl alcohol, have a similar viscosity, but evaporate much too quickly for some applications and also have a high odor value. Vehicles such as the fatty acid esters of isopropyl alcohol also have a low odor value and low viscosity, but will never evaporate in any reasonable length of time. In the present invention, these properties confer a distinct advantage to cosmetic face make-up products. They do not leave the skin oily and shiny, but evaporate off leaving the skin with a natural looking matte finish. The solvent evaporates slowly enough so that there is time for the user to be able to evenly distribute the make-up to her face.

The present invention is concerned with a novel cosmetic formulation which, in essence, comprises the highly isoparaffinic solvent described above, a dry powder and a wax. The amount of isoparaffinic solvent present is in the range from about 50–70% by weight, preferably in the range from 55–65% by weight. The amount of dry powder present is in the range from about 15–40% by weight, preferably in the range from about 25–35% by weight. The dry powder is preferably a mixture of talc and titanium dioxide, but other powders, such as zinc oxide, calcium carbonate, kaolin and colloidal silica may be used.

The amount of wax present is in the range from about 4–15% by weight, preferably about 8% by weight. A preferred wax is carnauba wax. Other waxes, such as beeswax, ceresin, ozokerite, microcrystalline wax, paraffin wax, and spermaceti and the like may be used. Other materials may be used in conjunction with the basic composition, such as up to 10% of lanolin, up to 10% of colored pigment or dye and a perfume up to 0.5% by weight.

A number of formulations were prepared having the following compositions:

Table III

WAX ROUGE

Ingredients:	Parts by wt.
Solvent: Mixed isoparaffins (370–410° F.)	65.7
Solute:	
Carnauba wax	8.8
Lanolin	4.0
California talc	6.0
Titanium dioxide	12.0
Lake Color, DC Red No. 30	3.0
Total	33.8
Perfume, pts. by vol.	0.5

FOUNDATION MAKE-UP

Ingredients, wt. percent	Formulation		
	D	E	F
Solvent:			
Mixed isoparaffins (370–410° F.), solvent X	54.0	53.5	
Isopropyl myristate			53.5
Solute:			
Carnauba wax	7.0	5.0	5.0
Lanolin	3.0		
Beeswax		1.0	1.0
Solids: Dry powder	35.5	40.0	40.0
Perfume	0.5	0.5	0.5

The dry powder contains the following ingredients in wt. percent:

Talc	43.9
Colloidal clay	18.7
Chalk	24.95
Titanium dioxide	9.95
Color mix (blended to desired shade)	2.5

Three comparable formulations, A, B and C, of wax rouge were prepared with 33.8 parts by weight of total "solute" and 0.5 part by volume of "perfume" as in the wax rouge shown in Table III, and with 67.5 parts by weight of three different "solvents" as shown in Table IV.

Table IV

Formulation:	Solvent, parts by wt.
A. Solvent X	67.5
B. Solvent X	45.0
Mineral white oil	22.5
C. Isopropyl myristate	45.0
Mineral white oil	22.5

Formulation C is a standard reference according to the prior art. Formulation B has solvent X replacing the isopropyl myristate of the standard reference. Formulation A has solvent X, isoparaffinic solvent (370–410° F.) as the sole solvent. The three formulations were tested on women's faces.

Formulation C gave the oiliest film, which was objectionably shiny. Formulations B and C rubbed off easily. Formulation A, made in accordance with the present invention, was creamier and therefore applied more easily than B or C. Formulation A developed a desirably dull or matte finish and was not easily rubbed off.

In Table III, Formulation F is a standard reference "foundation make-up" according to the prior art. Formulation E applied as smoothly and as easily as F, but was a little chalkier on the skin. Formulation D, containing no beeswax, was subjected to "half-face" tests by a five-member panel of women in direct comparison with three widely advertised commercial brands of make-up. Three of the five panel members preferred Formulation D, because it was not greasy and left a "more natural" matte finish. The only objection the other two panel members had to Formulation D was that it didn't spread easily; but the fact that "it went on sparingly" was considered a positive advantage by one of the other three panel members. All five panel members thought it necessary to use powder on the "half-faces" with the commercial brands of make-up because they were shiny; but none of the five panel members thought it necessary to use powder on the "half-faces" with Formulation D.

The present invention is a composition of matter suitable for use as a facial cosmetic and comprising a major proportion of a predominantly isoparaffinic hydrocarbon solvent boiling in the range of 360–428° F., a minor proportion of 5 to 15% of organic binder selected from the class of waxes and fats, and a minor proportion of 10 to 43% of inorganic powder selected from the class of fillers and pigments.

What is claimed is:

1. Cosmetic composition which comprises in combination from about 50 to 70% by weight of a hydrocarbon solvent, from about 15 to 40% by weight of a powder and 4 to 15% by weight of a wax, said solvent being characterized by boiling in the range from about 360 to 428° F. and being further characterized by having an isoparaffin concentration greater than about 85% by weight.

2. Composition as defined by claim 1 wherein the isoparaffinic content of said solvent is greater than about 95% by weight and wherein the unsaturated content of said solvent is less than about 1% by weight.

3. Composition as defined by claim 1 wherein said powder is selected from the class of fillers and pigments and wherein said wax is a hydrocarbon wax.

4. Composition as defined by claim 1 wherein the isoparaffinic content of said solvent is greater than about 99% by weight, wherein the unsaturated content is below about 0.1% by weight and wherein the initial boiling point of said solvent is in the range from about 360 to 380° F.

5. Composition as defined by claim 3 wherein said powder is selected from the class consisting of talc, colloidal clay, chalk and titanium dioxide.

6. Composition as defined by claim 5 wherein said wax is a carnauba wax.

7. Composition as defined by claim 6 wherein from about 2 to 15% by weight of lanolin is utilized in said composition.

8. The composition as defined by claim 1 wherein the isoparaffinic content of said solvent is greater than about 99% by weight, wherein the unsaturated content is below about 0.1% by weight and wherein the initial boiling point of said solvent is in the range from about 360 to 380° F.; the powder is selected from the class consisting of talc, colloidal clay, chalk and titanium dioxide; and the wax is carnauba wax.

9. A water-free cosmetic composition which comprises in combination from about 50 to 70% by weight of a hydrocarbon solvent, from about 15 to 40% by weight of a powder and 4 to 15% by weight of a wax, said solvent being characterized by a boiling range from about 360° to 428° F. and being further characterized by having an isoparaffin concentration greater than about 85% by weight.

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