

Description

HAIR COSMETIC

[Field of the Invention]

[0001]

The present invention relates to a hair cosmetic.

[Background of the Invention]

[0002]

In recent years, the hair style consumers' demand has been changing. Accordingly, performance demanded in hairstyling agents has been also changing from those for holding the hair using a sticky polymer or a film-forming polymer as have conventionally been to those providing a soft and natural feel to the hair after finished while maintaining a natural styling ease feeling.

[0003]

In response to these demands, there are non-aqueous hair cosmetics, particularly products typically called hair oils available. However, women, particularly in recent years, demand hairstyling agents which are absent in a feeling of an unpleasant presence represented by a friction feeling and oiliness of the hair, provide a touch to the hand as if the hair is not treated, a natural look free from a tress feeling while having good finger running through the hair with a styling ease. For this reason, there is an increasing demand for improving problems such as an oily superficial sliding feeling which continued for a while when a hairstyling agent is set throughout the entire hair during application and even after application, an unnatural tress feeling which remained, the hair having a weighty look and touch to the

hand, and stickiness which stayed due to the oil contained in the hair oils.

[0004]

To solve the above problems on the hair oils, for example, Patent Document 1 discloses a hair oil which uses a polyether-modified silicone having a specific structure, a volatile oil and ethanol in combination. This document discloses that the hair oil eliminates the oiliness immediately after application, has a good set to the hair, and improves dryness over time.

[0005]

Additionally, Patent Document 2 discloses fast drying hair oil containing a specific isoparaffinic hydrocarbon and a specific hydrocarbon. This document discloses that when the fast drying hair oil is applied to the wet hair, the time required to dry hair can be saved and a conditioning effect can be imparted to the dry hair.

[0006]

Patent Document 3 discloses a non-aqueous hair care composition comprising a large amount of base oil consisting of isoparaffin, a mineral oil, a volatile silicone compound and a mixture thereof, and comprising a hydrophilic material such as panthenol and a specific liquid alcohol in a certain ratio. This document discloses that this composition can maintain a transparent appearance by dissolving the hydrophilic material in the base oil while reducing an oily feel.

[0007]

(Patent Document 1) JP-A-2011-195471

(Patent Document 2) JP-A-2015-003886

(Patent Document 3) JP-A-2014-527507

[Summary of the Invention]

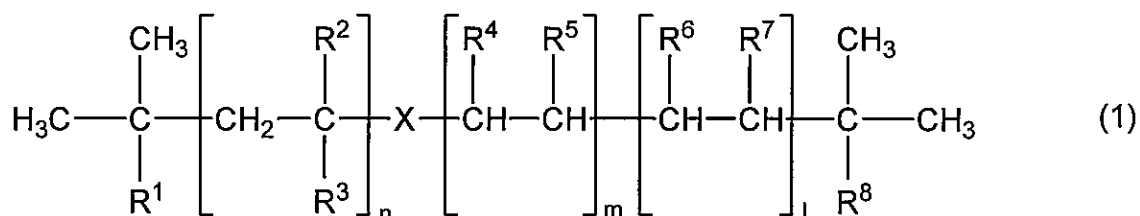
[0008]

The present invention provides a hair cosmetic comprising the following components (A) to (C):

(A) monohydric alcohol having 1 to 4 carbon atoms,

(B) lipophilic solvent selected from the group consisting of liquid oils having 9 to 21 carbon atoms represented by formula (1) and silicones having a number average molecular weight of 100 or more and 1,500 or less

[0009]



[0010]

wherein R^1 to R^8 each independently represent a hydrogen atom or a methyl group, X represents $-\text{CH}_2-$, $-\text{COO}-$, or $-\text{CH}_2\text{COO}-$, n represents 1 to 7, m represents 0 to 2, l represents 0 to 2, and $n+m+l$ is 1 to 7, provided that any one of R^4 to R^7 is a methyl group when both m and l are 1 or more, and

(C) branched saturated or linear unsaturated aliphatic alcohol having 14 to 24 carbon atoms or an ether thereof,

wherein a mass ratio of the component (A) to the component (B), (A)/(B), is 0.8 or more and 99 or less, and a content of water is less than 5 mass%.

[Detailed Description of the Invention]

[0011]

The hair oils of Patent Documents 1 to 3, when applied to the wet hair after washed, can impart a styling ease feeling and a

conditioning effect when dried but, when applied to the dry hair, pose problems such as an unsatisfactory styling ease and goodness in finger running when dried due to the insufficient wet spreadability. Another problem is that when a sufficient amount is applied so that the hair oil can be uniformly applied throughout the entire hair, a weighty look and a tress feeling remained when dried. Additionally, Patent Document 1 still had the remaining issue of the unnatural tress feeling and weighty look caused by the volatile oil, and Patent Documents 2 and 3, despite expedited water evaporation rate of the wet hair after washed, had a strong unnatural touch to the hand after the hair oils are applied to the dry hair until they dry due to a volatile oil, where an improvement needed to be made.

[0012]

The present inventors considered that the problems of the non-aqueous hair cosmetics described above largely lie in the volatile oil requiring some time to volatilize after application, and hence carried out studies, and as a result, found that when a specific lipophilic solvent and a lower alcohol are in a specific ratio, the polymer and other components contained in the hair cosmetic thinly and uniformly wet and spread very fast, thereby consequently providing a good feel both immediately after application and when dried without causing an unnatural tress feeling and a weighty look to the hair.

[0013]

However, this hair cosmetic sometimes posed the problem of causing separation and cloudiness when absorbed water vapor in the atmosphere while in use or while stored.

[0014]

Thus, the present invention relates to a hair cosmetic which dries fast after application when applied to the dry hair, does not impart a friction feeling or an oiliness, naturally styles the hair without causing tresses when dried, and is further less likely to cause deterioration in appearance even when water is mixed therein while in use or while stored.

[0015]

The present inventors found that when a non-aqueous hair cosmetic containing a specific lipophilic solvent and a lower alcohol in a specific ratio contains a branched saturated or linear unsaturated aliphatic alcohol or an ether thereof, deterioration in appearance is less likely to occur even when water is mixed therein while in use or while stored and further a feel after application becomes good, whereby the present invention was accomplished.

[0016]

The hair cosmetic of the present invention thinly and uniformly wets and spreads very fast, and thus dries fast after applied, does not cause a friction feeling or stickiness, or even an oiliness. Further, the hair cosmetic can provide a natural styling ease without causing an unnatural tress feeling or a weighty look to the hair when dried. Furthermore, deterioration in the appearance of the hair cosmetic is less likely to occur when water is mixed therein while in use and while stored.

[0017]

[Component (A): monohydric alcohol having 1 to 4 carbon atoms]

The component (A), in combination with the component (B), is a component for controlling the wet spreadability and drying speed on the hair of the hair cosmetic. For the monohydric alcohol having 1 to 4 carbon atoms for the component (A), saturated or

unsaturated aliphatic alcohols can be used. These monohydric alcohols can be used singly or in combinations of two or more. For the alcohol, ethanol, propanol, isopropanol, and tert-butyl alcohol are preferable, with ethanol and isopropanol being more preferable, and ethanol being further preferable.

[0018]

The content of the component (A) in the hair cosmetic of the present invention is, from the standpoint of drying speed and absence of a tress feeling, preferably 45 mass% or more, more preferably 55 mass% or more, and further preferably 60 mass% or more, and is, from the standpoint of the absence of friction after application, preferably 98 mass% or less, more preferably 90 mass% or less, further preferably 80 mass% or less, and further preferably 75 mass% or less.

[0019]

[Component (B): Specific lipophilic solvent]

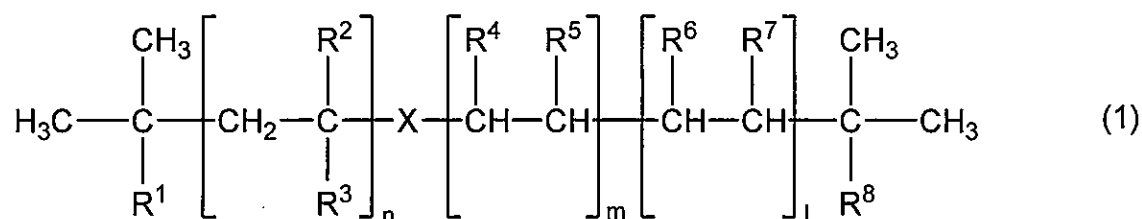
The component (B) is a lipophilic solvent selected from the group consisting of (B1) liquid oils having 9 to 21 carbon atoms represented by formula (1) and (B2) silicones having a number average molecular weight of 100 or more and 1,500 or less. The component (B), in combination with the component (A), is a component for controlling the wet spreadability of the hair cosmetic. Additionally, the component (B), in combination with the component (A), does not cause a feeling of an unpleasant presence after application to the hair and provides a silky natural feel.

[0020]

(B1) Liquid oils having 9 to 21 carbon atoms represented by formula (1)

The liquid oil of the component (B1) is represented by the following formula (1).

[0021]



R^3 are methyl groups, R^8 is a hydrogen atom, and $n = 2$ (PARLEAM 4, NOF CORPORATION). The component (B1) can be used singly or in combinations of two or more.

[0025]

(B2) Silicone having a number average molecular weight of 100 or more and 1,500 or less

The component (B2) is a silicone having a number average molecular weight of 100 or more and 1,500 or less. The number average molecular weight is, from the standpoint of slipping property and goodness in finger running after application, preferably 150 or more, and more preferably 200 or more. Further, the number average molecular weight is, from the standpoint of the absence of a tress feeling and lightness when dried, preferably 1,000 or less, more preferably 700 or less, and more preferably 500 or less.

[0026]

Additionally, the component (B2) is preferably a volatile silicone from the standpoint of lightness when dried and from the standpoint of not causing a feeling of unpleasant hair cosmetic presence when dried. Volatile silicone is a highly volatile organic compound or volatile organic compound defined by WHO (World Health Organization) and a silicone having a boiling point of 260°C or less. Further, a volatile silicone having a boiling point of 50°C or more is preferable.

[0027]

Examples of the silicone include cyclic silicones such as octamethylcyclotetrasiloxane, decamethylcyclopentasiloxane, dodecamethylcyclohexasiloxane, and methylcyclopolyxiloxane; chain silicones such as octamethyltrisiloxane, tetradecamethylhexasiloxane, methyl trimethicone, and

methyldopolysiloxane having a kinetic viscosity of, for example, 0.5 mm²/s or more and 10 mm²/s or less at 25°C. Of these, chain silicones such as decamethylcyclopentasiloxane, methyl trimethicone, and methyldopolysiloxane having a kinetic viscosity of 0.5 mm²/s or more and less than 6 mm²/s at 25°C are preferable, and decamethylcyclopentasiloxane and methyl trimethicone are more preferable. The component (B2) can be used singly or in combinations of two or more.

[0028]

· Content, mass ratio

As the component (B), any one of the component (B1) or the component (B2) can be used, or the component (B1) and the component (B2) can be used in combination. The content of the component (B) in the hair cosmetic of the present invention is, from the standpoint of slipping property and goodness in finger running after application, preferably 1 mass% or more, more preferably 10 mass% or more, further preferably 20 mass% or more, and further preferably 25 mass% or more, and is, from the standpoint of the absence of a tress feeling and lightness when dried, preferably 52 mass% or less, more preferably 45 mass% or less, further preferably 40 mass% or less, and further preferably 35 mass% or less.

[0029]

Further, the mass ratio of the component (A) to the component (B), (A)/(B), in the hair cosmetic of the present invention is 0.8 or more and 99 or less. When the component (B1) is used as the component (B), the hair cosmetic of the present invention in this range exhibits a distinctive characteristic of wetting and spreading fast on the surface regardless of hydrophilic surface or hydrophobic surface. For this reason, it is inferred that the hair

cosmetic is obtained which dries fast on the hair surface while wets and spreads on the hair surface spontaneously and fast at the moment when applied to the hair surface whether the hair is healthy or damaged. Conversely, when the component (B2) is used as the component (B) or when (B1) and (B2) are used in combination in this range, the hair cosmetic of the present invention exhibits the characteristic of spontaneously moving from top to down on the hair surface while spreading transversely when applied to the hair regardless of hydrophilic surface or hydrophobic surface, i.e., healthy hair or damaged hair. For this reason, it is inferred that the hair cosmetic is obtained which dries fast on the hair surface while wets and spreads spontaneously and fast on the hair surface.

[0030]

Thus, whichever the component (B1) or the component (B2) is used, as the hair cosmetic wets and spreads fast after application, tresses are hardly formed, a feeling of a hair cosmetic unpleasant presence disappears fast, and a natural styling ease is imparted while a touch to the hand is as if nothing were applied when dried. Further, there is no superficial sliding feeling or slimy feeling during application, or even an oiliness. From the standpoint of further enhancing these effects, the mass ratio of the component (A) to the component (B), $(A)/(B)$, is preferably 1 or more, more preferably 1.2 or more, further preferably 1.5 or more, and further preferably 2 or more, and preferably 50 or less, more preferably 30 or less, further preferably 10 or less, and further preferably 5 or less.

[0031]

[Component (C): Branched saturated or linear unsaturated aliphatic alcohol having 14 to 24 carbon atoms or ether thereof]

The component (C) is a component for prohibiting the deterioration in appearance caused by water mixed in the hair cosmetic, and is a branched saturated or linear unsaturated aliphatic alcohol having 14 to 24 carbon atoms or an ether thereof. Of these, examples of the branched saturated aliphatic alcohol include isostearyl alcohols such as hexyldecanol, 16-methylheptadecanol, octyldecanol, and decyl octanol, 2-octyldodecanol, and 2-decyltetradecanol, and examples of the linear unsaturated aliphatic alcohol include oleyl alcohols. Additionally, an example of the ether is isostearyl glyceryl ether. Of these, isostearyl alcohol and isostearyl glyceryl ether are preferable, and isostearyl alcohol is more preferable.

[0032]

The content of the component (C) in the hair cosmetic of the present invention is, from the standpoint of causing no deterioration in the appearance of the hair cosmetic while in use and while stored, preferably 0.1 mass% or more, more preferably 0.5 mass% or more, further preferably 1 mass% or more, and further preferably 2 mass% or more, and is, from the standpoint of absence of a feeling of an unpleasant presence when dried, preferably 10 mass% or less, more preferably 8 mass% or less, and further preferably 6 mass% or less.

[0033]

[Component (D): Polymer for hair cosmetic having solubility or dispersibility in water or ethanol]

The hair cosmetic of the present invention can further contain, as a component (D), a polymer for the hair cosmetic having solubility or dispersibility in water or ethanol. The component (D) is, from the standpoint of being able to be stably present in a solvent having a polarity such as the component (A), preferably

those dissolved or stably dispersed in water or ethanol without using a surfactant. Such a component (D) is a component which can impart a natural styling ease feeling and a natural feel to the hair when dried without a feeling of an unpleasant presence derived from the polymer when uniformly applied to the hair surface according to the constitution of the present invention. Film-forming polymers and polyether-modified silicones are preferable to be such a polymer for hair cosmetic having solubility or dispersibility in water or ethanol.

[0034]

From the standpoint of further enhancing a styling ease feeling when dried, a film-forming polymer is preferably used as the component (D). The film-forming polymer usable for the component (D) is not particularly limited as long as it has solubility or dispersibility in water or ethanol, and any polymer typically used in hairstyling agents from those having a strong setting power to those having a comparatively low setting power can be used.

[0035]

Examples of the film-forming polymer include silicone graft polymers, urethane polymer compounds, polyvinylpyrrolidone polymer compounds, anionic vinyl ether polymer compounds, anionic polyvinyl acetate polymer compounds, anionic (meth)acrylic polymer compounds, amphoteric (meth)acrylic polymer compounds, nonionic (meth)acrylic polymer compounds, cationic (meth)acrylic polymer compounds, and maleimide polymer compounds.

[0036]

Examples of the silicone graft polymer include polysilicone-9 such as poly(N-formylethyleneimine)organopolysiloxane, poly(N-acetyleneimine)organopolysiloxane, and poly(N-

propionylethyleneimine)organopolysiloxane; organopolysiloxane graft polymers described in International Publication No. WO2014/002707 such as polysilicone-28; alkyl acrylate copolymer methylpolysiloxane esters such as KP-545 (Shin-Etsu Chemical Co., Ltd.); polysilicone-17 such as Silsoft Spread TT (Momentive Performance Materials Inc.); and alkyl acrylate-methacrylic acid-silicone copolymers such as Luviflex Silk (BASF). Of these, polysilicone-9 such as poly(N-formylethyleneimine)organopolysiloxane, poly(N-acetyleneimine)organopolysiloxane, and poly(N-propionylethyleneimine)organopolysiloxane; organopolysiloxane graft polymers described in International Publication No. WO2014/002707 such as polysilicone-28; and alkyl acrylate copolymer methylpolysiloxane esters such as KP-545 (Shin-Etsu Chemical Co., Ltd.) are more preferable from the standpoint of setting property, absence of stickiness when drying, softness after application, and finger running property after application.

[0037]

Examples of the urethane polymer compound include polyurethanes such as Luviset P.U.R. (BASF Japan); and polyurethane-14-AMP-acrylates copolymers such as Dynam X (Akzo Nobel).

[0038]

Examples of the polyvinylpyrrolidone polymer compounds include polyvinylpyrrolidones such as Luviskol K12, Luviskol K17, Luviskol K30, Luviskol L60, Luviskol K80, and Luviskol K90 (BASF); and PVP K15, PVP K17, PVP K30, PVP K60, PVP K90, and PVP K120 (all from Ashland Inc.); polyvinyl caprolactams such as Luviskol VA28, Luviskol VA37, Luviskol VA55, Luviskol VA64P, Luviskol VA73 (all from BASF); and Luviskol Plus (BASF); (vinylpyrrolidone/vinyl

acetate) copolymers such as PVP/VA E-735, PVP/VA E-635, PVP/VA E-535, PVP/VA E-335, PVP/VA S-630, and PVP/VA W-735 (all from Ashland Inc.); polyvinylpyrrolidone/vinyl acetate/vinyl propionate terpolymers such as Luviskol VAP343 (BASF); polyvinylpyrrolidone/dimethylaminomethyl/acrylic acid copolymers such as Luviflex (BASF); copolymer 845, copolymer 937, and copolymer 958 (all from Ashland Inc.); polyvinylpyrrolidone/dimethylaminoethylmethacrylate/vinylcaprolactam copolymers such as copolymer VC-713 (Ashland Inc.); (VP/methacrylamide/vinylimidazole) copolymers such as Luviset Clear (BASF); and vinyl methylimidazolium metachloride/vinylpyrrolidone copolymers such as Luviquat HM552 (BASF). Of these, (vinylpyrrolidone/vinyl acetate) copolymers and polyvinylpyrrolidones are more preferable from the standpoint of smoothness immediately after application, setting property, absence of stickiness when drying, and softness after application.

[0039]

Examples of the anionic vinyl ether polymer compound include (vinyl methyl ether/ethyl maleate) copolymers such as Gantrez ES-225 (Ashland Inc.); and (vinyl methyl ether/butyl maleate) copolymers such as Gantrez ES-425 (Ashland Inc.). Of these, (vinyl methyl ether/butyl maleate) copolymers are preferable from the standpoint of setting property, absence of stickiness when drying, and softness after application.

[0040]

Examples of the anionic polyvinyl acetate polymer compound include vinyl acetate/crotonic acid copolymers such as Resyn 28-1310 (Akzo Nobel) and Luviset CA66 (BASF); (vinyl acetate/crotonic acid/vinyl neodecanoate) copolymers such as Resyn 28-2930 (Akzo

Nobel); and vinyl acetate/crotonic acid /vinyl propionate copolymers such as Luviset CAP (BASF).

[0041]

Examples of the anionic (meth)acrylic polymer compound include acrylic resin alkanolamine solutions such as Plascize L-53P and Plascize L-9540B (all from Goo Chemical Co., Ltd.); acrylic acid/acrylic ester copolymers such as Diahold (Mitsubishi Chemical Corporation); acrylic acid/acrylic acid amide/ethyl acrylate copolymers such as Ultrahold 8, Ultrahold strong (all from BASF), Amphomer V-42, and Dermacryl 79 (all from Akzo Nobel); and alkyl acrylate copolymers such as Aniset NF-1000 and Aniset HS-3000 (all from OSAKA ORGANIC CHEMICAL INDUSTRY LTD).

[0042]

Examples of the amphoteric (meth)acrylic polymer compound include (methacryloyloxyethylcarboxybetaine/alkyl methacrylate) copolymers such as Yukaformer M-75, Yukaformer R205, Yukaformer 301, Yukaformer SM (all from Mitsubishi Chemical Corporation), and RAM Resin (OSAKA ORGANIC CHEMICAL INDUSTRY LTD); (octylacrylamide/hydroxypropyl acrylate/butylaminoethyl methacrylate) copolymers such as Amphomer 28-4910 and Amphomer LV-71 (all from Akzo Nobel); (alkyl acrylate/octylacrylamide) copolymers such as Amphomer HC (Akzo Nobel); and (acrylates/lauryl acrylate/stearyl acrylate/ethylamine oxide methacrylate) copolymers such as DIAFORMER Z-651 (Mitsubishi Chemical Corporation). Of these, (methacryloyloxyethylcarboxybetaine/alkyl methacrylate) copolymers are preferable from the standpoint of setting property, absence of stickiness when drying, and softness after application.

[0043]

Examples of the nonionic (meth)acrylic polymer compound include (dimethylacrylamide/hydroxyethyl acrylate/methoxyethyl acrylate) copolymers such as Plascize L-2700 and Plascize L-2714 (all from Goo Chemical Co., Ltd.).

[0044]

Examples of the cationic (meth)acrylic polymer compound include alkylacrylamide/acrylate/alkylaminoalkylacrylamide/polyethyleneglycol methacrylate copolymers described in JP-A-2-180911; alkylacrylamide/alkylaminoalkylacrylamide/polyethyleneglycol methacrylate copolymers described in JP-A-8-291206; Polyquaternium-99 such as Plascize L-515 (Goo Chemical Co., Ltd.); (PVP/vinylcaprolactam/acrylic acid DMAPA) copolymers such as AQUAFLEX SF-40 (Ashland Inc.); (vinylpyrrolidone/acrylic acid DMAPA) copolymers such as Styleze CC-10 (Ashland Inc.); and quaternary compounds of vinylpyrrolidone/dimethylaminomethacrylate copolymers (Polyquaternium-11) such as Luviquat PQ11 (BASF), GAFQUAT 734, and GAFQUAT 755 (all from Ashland Inc.). Of these, alkylacrylamide/acrylate/alkylaminoalkylacrylamide/polyethyleneglycol methacrylate copolymers described in JP-A-2-180911, alkylacrylamide/alkylaminoalkylacrylamide/polyethyleneglycol methacrylate copolymers described in JP-A-8-291206, and Polyquaternium-11 are preferable.

[0045]

Examples of the maleimide polymer compound include (isobutylene/ethylmaleimide/hydroxyethylmaleimide) copolymers such as AQUAFLEX FX-64 (ISP Japan Ltd.).

[0046]

Of these film-forming polymers, silicone graft polymers, polyvinylpyrrolidone polymer compounds, anionic polyvinyl acetate

polymer compounds, amphoteric (meth)acrylic polymer compounds, nonionic(meth)acrylic polymers, and cationic (meth)acrylic compounds are more preferable from the standpoint of setting property, absence of stickiness when drying, and softness after application.

[0047]

On the other hand, a polyether-modified silicone is preferably used as the component (D) from the standpoint of further enhancing the absence of friction immediately after application and a styling ease when dried. The polyether-modified silicone used to be the component (D) is not particularly limited as long as it has solubility or dispersibility in water or ethanol, and examples include polyoxyethylene-modified silicones, polypropylene-modified silicones, polyoxyethylene/polyoxypropylene-modified silicones, and polyglycerol-modified silicones, with examples of the modification form including pendant forms (side-chain modification forms) and linear-chain copolymer forms.

[0048]

The polyether-modified silicone is preferably a copolymer having a block chain of an organosiloxane chain and a polyalkylene chain, and examples include (PEG-40/PPG-8 methylaminopropyl/hydropropyl dimethicone) copolymers such as Silsoft A+ (Momentive Performance Materials Inc.); polysilicone-13 such as FZ-2222, FZ-2233, and CB2250 (Dow Corning Toray Co., Ltd.); PEG-12 dimethicones such as Silwet L-8600 (Momentive Performance Materials Inc.), PPG-12 dimethicones such as Silsoft 900 (Momentive Performance Materials Inc.); PEG-10 dimethicones such as Silsoft 860 (Momentive Performance Materials Inc.); (bisisobutyl PEG-14/amodimethicone) copolymers such as Silstyle 104 (Dow Corning Toray Co., Ltd.); (bisisobutyl PEG/PPG-

20/35/amodimethicone) copolymers such as Silstyle 401 (Dow Corning Toray Co., Ltd.); bis-isopropanolamino-PG-propyl dimethicone/bis-isobutyl PEG-14 copolymers such as CE-8411 Smooth Plus Emulsion (Dow Corning Toray Co., Ltd.); and (bisisobutyl PEG-15/amodimethicone) copolymers such as DOW CORNING TORAY SS-3588 (Dow Corning Toray Co., Ltd.). Of these, a copolymer having a block chain of an amino-modified organopolysiloxane chain and a polyoxyalkylene chain is preferable, linear-chain copolymer amino-polyether-modified silicones such as (bisisobutyl PEG-14/amodimethicone) copolymers, (bisisobutyl PEG/PPG-20/35/amodimethicone) copolymers, bis-isopropanolamino-PG-propyl dimethicone/bis-isobutyl PEG-14 copolymers, and (bisisobutyl PEG-15/amodimethicone) copolymers are more preferable, and (bisisobutyl PEG-15/amodimethicone) copolymers are further preferable.

[0049]

These film-forming polymers and polyether-modified silicones can be used singly or in combinations of two or more, but from the standpoint of further enhancing both of a natural styling ease feeling and a natural feel when dried, the above film-forming polymer and polyether-modified silicone are preferably used in combination as the component (D).

[0050]

Additionally, the component (D) is preferably an amphiphilic film-forming polymer or polyether-modified silicone from the standpoint of remaining thinly and uniformly on the hair without causing stickiness when drying and further imparting a natural feel and a styling ease when dried. The amphiphilic film-forming polymer is a set polymer containing 10% or more and 98% or less in terms of mass ratio of a hydrophobic part, and examples of the

amphiphilic film-forming polymer include polysilicone-9 and polysilicone-28 with polysilicone-9 being particularly preferable.
[0051]

The content of the component (D) in the hair cosmetic of the present invention is, from the standpoint of imparting a hair styling ease when dried, preferably 0.1 mass% or more, more preferably 0.5 mass% or more, and further preferably 1 mass% or more. Further, the content is, from the standpoint of imparting a natural feel and a styling ease feeling without causing a weighty look and a tress feeling to the hair when dried, preferably 10 mass% or less, more preferably 7 mass% or less, and further preferably 5 mass% or less.

[0052]

[Component (E): High-temperature stabilizer]

The hair cosmetic of the present invention preferably further contains, from the standpoint of allowing stable preservation even at a high temperature without the hair cosmetic being separated, one or two or more member(s) selected from the group consisting of polyols, urea, organic acids, polyoxyalkylene alkyl glucosides and polyoxyalkylene glyceryl ethers as a component (E). Examples of the preferable polyol include 1,3-butanediol, glycerin, and polyglycerin. Further, examples of the preferable organic acid include lactic acid, malic acid, and citric acid. Furthermore, examples of the preferable polyoxyalkylene alkyl glucoside include PPG-10 methyl glucose, PPG-20 methyl glucose, methyl gluceth-10, and methyl gluceth-20. Additionally, examples of the preferable polyoxyalkylene glyceryl ether include PEG/PPG/polybutyleneglycol-8/5/3 glycerin. Of these, from the standpoint of high-temperature preservation stability, urea, lactic acid, glycerin are preferable, with urea being more preferable.

[0053]

The content of the component (E) in the hair cosmetic of the present invention is, from the standpoint of ensuring high-temperature stability, preferably 0.1 mass% or more, and more preferably 0.5 mass% or more, and is, from the standpoint of keeping both high-temperature stability and a natural feel, preferably 3 mass% or less, and more preferably 2 mass% or less.

[0054]

[Water]

The hair cosmetic of the present invention does not preferably contain water. However, a trace to small amount (e.g., 0.0001 mass% or more) of water contamination may be inevitable but, even in such a case, a water content is preferably small. Specifically, the content of water is preferably less than 5 mass%, more preferably less than 3 mass%, and further preferably less than 0.5 mass%.

[0055]

[Optional component]

The hair cosmetic of the present invention may contain an oil agent for cosmetic other than the components (B) and (D) in addition to the components described so far within a limit which does not impair the effect of the present invention. The content of the oil agent for cosmetic other than the components (B) and (D) in the hair cosmetic is preferably 0.1 mass% or more and 10 mass% or less. Examples of the oil agent for cosmetic include glycerides such as castor oil, cacao oil, mink oil, avocado oil, and olive oil; waxes such as beeswax, spermaceti, lanolin, and carnauba wax; esters such as isopropyl myristate, hexyl laurate, cetyl lactate, propylene glycol monostearate, oleyl oleate, hexadecyl 2-ethylhexanoate, octyldodecyl myristate; and silicone

derivatives excluding those contained in the component (B) and (D) such as dimethylpolysiloxane, methylphenylpolysiloxane, epoxy-modified silicone oil, amino-modified silicone oils, and alkyl-modified silicone oil.

[0056]

Further, the hair cosmetic of the present invention can contain a fragrance and a coloring for enhancing the product value and preservatives and antioxidants for protecting the hair cosmetic from quality deterioration with the lapse of time, and may further contain as necessary a surfactant, a curing agent, an anti-static agent, a defoaming agent, a dispersant, a thickener, an ultraviolet absorber, an antioxidant, a preservative, a colored dye, a dye fixer, or a propellant.

[0057]

[Agent form]

The agent form of hair cosmetic of the present invention is not particularly limited and can be in the form of a clear liquid, a lotion, an emulsion, a mist (hair mist, hair spray), or a foam (hair mousse), but, of these, the agent form that is applied in the form of a mist is preferable, and the agent form of non-aerosol form is more preferable. Note that when a non-aerosol type hair cosmetic is prepared, the component (D) is preferably an amphiphilic film-forming polymer or polyether-modified silicone from the standpoint of having good dispersibility or solubility in both the component (A) and component (B).

[0058]

Note that when the hair cosmetic of the present invention is used as an aerosol type hair cosmetic consisting of an aerosol stock solution and a propellant, the content of each component

refers to a content in the entire composition of aerosol stock solution excluding the propellant.

[0059]

The hair cosmetic of the present invention can be packed in any container in accordance with the agent form for use. The hair cosmetic of the present invention is less likely to cause deterioration in appearance even when water is mixed therein, and thus the material of a container may be any material as long as it is commonly used in the field of hair cosmetic, and containers made of moisture permeable materials such as plastic containers can even be preferably used, thereby being advantageous.

[0060]

[Hairstyling method]

The hair cosmetic of the present invention can be preferably used as a hairstyling agent. The method of use as the hairstyling agent, that is, the hairstyling method, can be any method as long as a method arranges a hairstyle by applying the hair cosmetic of the present invention to the hair. The hair cosmetic of the present invention may apply to the wet hair or dry hair but applying to the dry hair is preferable.

[0061]

For example, it is preferable that the hair cosmetic be directly applied in the form of mist and a hairstyle is arranged while combing by hand, a comb or brush.

[0062]

In regard with the embodiments described above, preferable aspects of the present invention are further disclosed below.

[0063]

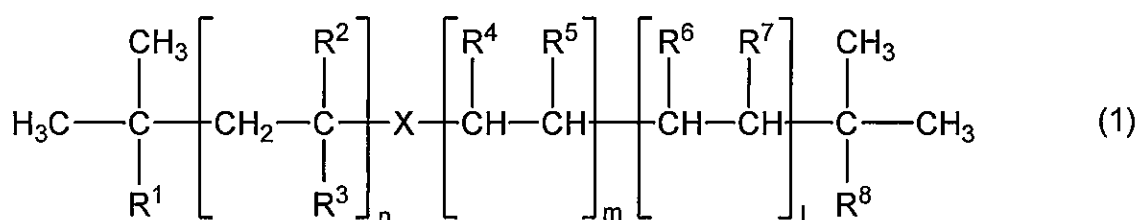
<1>

A hair cosmetic comprising the following components (A) to (C):

(A) monohydric alcohol having 1 to 4 carbon atoms,

(B) lipophilic solvent selected from the group consisting of liquid oils having 9 to 21 carbon atoms represented by formula (1) and silicones having a number average molecular weight of 100 or more and 1,500 or less

[0064]



[0065]

wherein R^1 to R^8 each independently represent a hydrogen atom or a methyl group, X represents $-\text{CH}_2-$, $-\text{COO}-$, or $-\text{CH}_2\text{COO}-$, n represents 1 to 7, m represents 0 to 2, l represents 0 to 2, and $n+m+l$ is 1 to 7, provided that any one of R^4 to R^7 is a methyl group when both m and l are 1 or more, and

(C) branched saturated or linear unsaturated aliphatic alcohol having 14 to 24 carbon atoms or an ether thereof,

wherein a mass ratio of the component (A) to the component (B), (A)/(B), is 0.8 or more and 99 or less, and a content of water is less than 5 mass%.

[0066]

<2>

The hair cosmetic according to <1>, wherein the component (A) is preferably ethanol, propanol, isopropanol, or tert-butyl alcohol, more preferably ethanol or isopropanol, and further preferably ethanol.

[0067]

<3>

The hair cosmetic according to <1> or <2>, wherein a content of the component (A) is preferably 45 mass% or more, more preferably 55 mass% or more, and further preferably 60 mass% or more, and preferably 98 mass% or less, more preferably 90 mass% or less, further preferably 80 mass% or less, and further preferably 75 mass% or less.

[0068]

<4>

The hair cosmetic according to any one of <1> to <3>, wherein the liquid oil having 9 to 21 carbon atoms represented by the formula (1) of the component (B) is preferably isododecane, hydrogenated polyisobutene, isononyl isononate, or isopropyl isostearate, isododecane, hydrogenated polyisobutene, or isononyl isononate, and more preferably isododecane or hydrogenated polyisobutene.

[0069]

<5>

The hair cosmetic according to any one of <1> to <4>, wherein the liquid oil having 9 to 21 carbon atoms represented by the formula (1) of the component (B) is preferably hydrogenated polyisobutenes wherein R^1 , R^2 and R^3 are methyl groups, R^8 is a hydrogen atom, and $n = 1$ or hydrogenated polyisobutenes wherein R^1 , R^2 and R^3 are methyl groups, R^8 is a hydrogen atom, and $n = 2$.

[0070]

<6>

The hair cosmetic according to any one of <1> to <5>, wherein a number average molecular weight of the silicone of the component (B) is preferably 150 or more, more preferably 200 or more, and

preferably 1,000 or less, more preferably 700 or less, and more preferably 500 or less.

[0071]

<7>

The hair cosmetic according to any one of <1> to <6>, wherein the silicone of the component (B) is preferably a volatile silicone.

[0072]

<8>

The hair cosmetic according to any one of <1> to <7>, wherein a content of the component (B) is preferably 1 mass% or more, more preferably 10 mass% or more, further preferably 20 mass% or more, and further preferably 25 mass% or more, and preferably 52 mass% or less, more preferably 45 mass% or less, further preferably 40 mass% or less, and further preferably 35 mass% or less.

[0073]

<9>

The hair cosmetic according to any one of <1> to <8>, wherein a mass ratio of the component (A) to the component (B), $(A)/(B)$, is preferably 1 or more, more preferably 1.2 or more, further preferably 1.5 or more, and further preferably 2 or more, and preferably 50 or less, more preferably 10 or less, and further preferably 5 or less.

[0074]

<10>

The hair cosmetic according to any one of <1> to <9>, wherein the component (C) is preferably isostearyl alcohol, 2-octyldodecanol, 2-decyltetradecanol, oleyl alcohol, or isostearyl glyceryl ether, more preferably isostearyl alcohol, or isostearyl glyceryl ether, and further preferably isostearyl alcohol.

[0075]

<11>

The hair cosmetic according to any one of <1> to <10>, wherein a content of the component (C) is preferably 0.1 mass% or more, more preferably 0.5 mass% or more, further preferably 1 mass% or more, and further preferably 2 mass% or more, and preferably 10 mass% or less, more preferably 8 mass% or less, and further preferably 6 mass% or less.

[0076]

<12>

The hair cosmetic according to any one of <1> to <11>, preferably further comprising, as a component (D), a polymer for the hair cosmetic having solubility or dispersibility in water or ethanol.

[0077]

<13>

The hair cosmetic according to <12>, wherein the component (D) is preferably a film-forming polymer or a polyether-modified silicone.

[0078]

<14>

The hair cosmetic according to <12> or <13>, wherein a content of the component (D) is preferably 0.1 mass% or more, more preferably 0.5 mass% or more, and further preferably 1 mass% or more, and preferably 10 mass% or less, more preferably 7 mass% or less, and further preferably 5 mass% or less.

[0079]

<15>

The hair cosmetic according to any one of <1> to <14>, preferably further comprising, as a component (E), one or two or

more member(s) selected from the group consisting of polyols, urea, organic acids, polyoxyalkylene alkyl glucosides, and polyoxyalkylene glyceryl ethers.

[0080]

<16>

The hair cosmetic according to <15>, wherein a content of the component (E) is preferably 0.1 mass% or more, more preferably 0.5 mass% or more, and preferably 3 mass% or less, more preferably 2 mass% or less.

[0081]

<17>

The hair cosmetic according to <1> to <16>, wherein a content of water is preferably less than 5 mass%, more preferably less than 3 mass%, further preferably less than 0.5 mass%, and further preferably water is not contained.

[0082]

<18>

The hair cosmetic according to any one of <1> to <17>, packed preferably in a container made of a moisture permeable material, and more preferably in a plastic container, for use.

[Examples]

[0083]

Hereinafter, the present invention is further specifically described in reference to Examples. The present invention is not limited to these Examples.

[0084]

[Examples 1 to 12 and Comparative Examples 1 to 4]

Hair cosmetics described in Table 1 were prepared by a routine method, and water resistance and high-temperature stability were evaluated in accordance with the following methods and criteria.

[0085]

"Water resistance evaluation"

For a model in which water was mixed, water was added to the hair cosmetics described in Table 1 to investigate the maximum amount of water added at which cloudiness or separation was not caused.

1. 10 g of the hair cosmetic described in Table 1 was weighed into a No. 6 screw vial (manufactured by Maruemu Corporation).
2. 25 μ L each of ion exchanged water was added dropwise using a micropipette (Research Plus V 3120, manufactured by Eppendorf AG) while stirring using a stirrer.
3. 1-minute stirring was carried out every dropwise addition, and another 25 μ L was added when water was homogeneously dissolved.
4. 2 and 3 were repeated and ended when water did not dissolve any more causing cloudiness or the solution was separated to determine the total amount (μ L) of water added up to immediately before the separation as the maximum water resistance per 10 g of the hair cosmetic.

[0086]

"High-temperature stability evaluation"

40 mL of the hair cosmetic shown in Table 3 was weighed into a 50 mL glass bottle (standard wide mouth bottle PS-NO.6; Sansyo Co., Ltd.), which was hermetically sealed with the lid on. The bottle was left to stand in a 50°C thermostatic chamber for 2 hours. Subsequently, the glass bottle was removed from the thermostatic chamber, and the condition of hair cosmetic in the glass bottle

was visually observed. The evaluation was carried out by the following criteria.

A: No separation

B: Clouded but returned to the homogeneous solution when the temperature was back to room temperature

C: Cloudiness or separation was caused and never returned to the homogeneous solution even when the temperature was back to room temperature and then the glass bottle was shaken

[0087]

Additionally, the hair cosmetics described in Table 1 with good water resistance test result were packed in a Yoshino Seisakusho pump spray container (the sprayer, which gave an average particle diameter of 60 μm when the hair cosmetics of Examples and Comparative Examples were sprayed, was used) and performance evaluations were carried out in accordance with the following methods and criteria.

[0088]

(Tress for the evaluation)

Tender curly hair free of chemical treatment history of a Japanese was used to produce a tress having a length of 30 cm and a weight of 8 g. The tress was wet for 30 seconds with tap water at 40°C, subsequently 3 g of Kao Corporation SUCCESS medicated Shampoo h was applied thereto, foamed and cleansed for 30 seconds, and rinsed out for 30 seconds with tap water at 40°C. The shampoo procedure was repeated twice. Subsequently, 3 g of a model rinse having the following formula was applied, set for 15 seconds, and then rinsed out for 30 seconds with tap water at 40°C. Subsequently, the tress was towel dried and then air dried under the laboratory conditions for 6 hours to be used as the tress for evaluation.

[0089]

(Composition of the model rinse)

Component	(mass%)
Cetearyl Alcohol	2.0
Steartrimonium Chloride	0.76
Distearyldimonium Chloride	2.7
Propylene glycol	5.0
Isopropanol	0.6
Ethylparaben	0.1
Ion exchanged water	balance
Total	100

[0090]

(Evaluation method)

"Absence of friction immediately after application"

0.2 g of each hair cosmetic filled in the pump spray was sprayed throughout the entire tress for the evaluation. After sprayed, the tress for the evaluation was combed by the hand 30 times. The absence of a friction feeling while repeatedly combing the tress by the hand 1 to 10 times was evaluated on the following criteria.

For the evaluation, seven panelists were asked to select any one of "friction feeling is absent"/"neither"/"friction feeling is present" when the tress was treated by the above procedure using each composition. The number of panelists who answered "friction feeling is absent"/"neither"/"friction feeling is present" is presented in this order.

[0091]

"Absence of a tress feeling when dried"

The tress was treated by the same method as the "Absence of friction immediately after application" and allowed to stand for 3

minutes after hand combing was completed. Subsequently, the absence of a tress feeling was evaluated on the following criteria.

For the evaluation, seven panelists were asked to select any one of "tress feeling is absent"/"moderate tress feeling is present"/"tress feeling is present" when the tress was treated by the above procedure using each composition. The number of panelists who answered "tress feeling is absent"/"moderate tress feeling is present"/"tress feeling is present" is presented in this order.

[0092]

"Styling ease when dried"

The tress was treated by the same method as the "Absence of friction immediately after application" and allowed to stand for 3 minutes after hand combing was completed. Subsequently, the styling ease was evaluated on the following criteria.

For the evaluation, seven panelists were asked to select any one of "styled easily"/"styled moderately"/"not styled" when the tress was treated by the above procedure using each composition. The number of panelists who answered "styled easily"/"styled moderately"/"not styled" is presented in this order.

[0093]

"Absence of a feeling of a hairstyling agent presence when dried"

The tress was treated by the same method as the "Absence of friction immediately after application" and allowed to stand for 3 minutes after hand combing was completed. Subsequently, a feeling of an unpleasant presence caused by the hairstyling agent, particularly by the polymer and oil agent, on the tress for the evaluation was evaluated on the following criteria.

For the evaluation, seven panelists were asked to select any one of "feeling of a presence is absent"/"neither"/"feeling of a

presence is present" when the tress was treated by the above procedure using each composition. The number of panelists who answered "feeling of a presence is absent"/"neither"/"feeling of a presence is present" is presented in this order.

[0094]

"Goodness in finger running when dried"

The tress was treated by the same method as the "Absence of friction immediately after application" and allowed to stand for 3 minutes after hand combing was completed. Subsequently, the finger running through the tress for evaluation was evaluated on the following criteria.

For the evaluation, seven panelists were asked to select any one of "good finger running"/"neither"/"poor finger running" when the tress was treated by the above procedure using each composition. The number of panelists who answered "good finger running"/"neither"/"poor finger running" is presented in this order.

[0095]

[Table 1]

(Mass%)		Example												Comparative Example			
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
(A)	Ethanol	61.8	61.8	61.8	61.8	61.8	61.8	61.8	67	70.8	67.8	68.8	72	61.8	61.8	61.8	66.8
(B)	Hydrogenated polyisobutene (*1)	30	30	30	30	30	30	30	24.8	20	25	25	-	30	30	30	30
	Dimethicone (5mm ² /s) (*2)	-	-	-	-	-	-	-	-	-	-	-	19.8	-	-	-	-
	Hexyldecanol (*3)	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Isostearyl alcohol (*4)	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Isostearyl alcohol (*5)	-	-	5	-	-	-	-	4	5	3	2	4	-	-	-	-
	2-Octyldodecanol (*6)	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-
(C)	2-Decyltetradecanol (*7)	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-
	Isostearyl glyceryl ether (*8)	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-
	Oleyl alcohol	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-
	Isodecyl glyceryl ether	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-
(C')	Hexylene glycol	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-
	Ethyl diglycol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-
(D)	Polysilicone-9 (*9)	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
(E)	Urea	-	-	-	-	-	-	-	0.33	0.33	0.33	0.33	0.33	-	-	-	-
	Lactic acid	-	-	-	-	-	-	-	0.33	0.33	0.33	0.33	0.33	-	-	-	-
	Glycerin	-	-	-	-	-	-	-	0.33	0.33	0.33	0.33	0.33	-	-	-	-
	Fragrance	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Mass ratio (A)/(B)		2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.7	3.5	2.7	2.8	3.6	2.1	2.1	2.1	2.2
Maximum water resistance (μL/10 g)		375	400	375	375	375	300	350	350	450	300	300	300	100	200	200	200
High-temperature stability		B	B	B	B	B	B	B	A	A	A	A	A	B	B	B	B
Absence of friction immediately after application		6/1/0	6/1/0	7/0/0	7/0/0	6/1/0	7/0/0	6/1/0	7/0/0	4/2/1	6/1/0	5/2/0	7/0/0	-	-	-	-
Absence of tress feeling when dried		5/2/0	5/2/0	5/2/0	4/3/0	4/2/1	4/3/0	3/3/1	5/2/0	4/3/0	6/1/0	7/0/0	4/3/0	-	-	-	-
Styling ease when dried		5/2/0	5/1/1	6/1/0	4/3/0	4/2/1	5/2/0	6/1/0	6/1/0	7/0/0	5/2/0	4/3/0	7/0/0	-	-	-	-
Absence of feeling of a presence when dried		5/1/1	4/3/0	5/2/0	4/2/1	4/2/1	4/3/0	3/3/1	6/1/0	4/2/1	7/0/0	7/0/0	4/2/1	-	-	-	-
Goodness in finger running when dried		6/1/0	6/1/0	7/0/0	6/1/0	6/1/0	5/1/1	4/2/1	7/0/0	5/2/0	6/1/0	6/1/0	5/2/0	-	-	-	-

[0096]

*1: PARLEAM 3 (manufactured by NOF CORPORATION)

*2: KF-96L-5cs (manufactured by Shin-Etsu Chemical Co., Ltd.)

*3: Risonol 16SP (manufactured by KOKYU ALCOHOL KOGYO CO., LTD.)

*4: Isostearyl alcohol EX (manufactured by KOKYU ALCOHOL KOGYO CO., LTD.)

*5: Risonol 18SP (manufactured by KOKYU ALCOHOL KOGYO CO., LTD.)

*6: Risonol 20SP (manufactured by KOKYU ALCOHOL KOGYO CO., LTD.)

*7: Risonol 24SP (manufactured by KOKYU ALCOHOL KOGYO CO., LTD.)

*8: PENETOL GE-IS (manufactured by Kao Corporation)

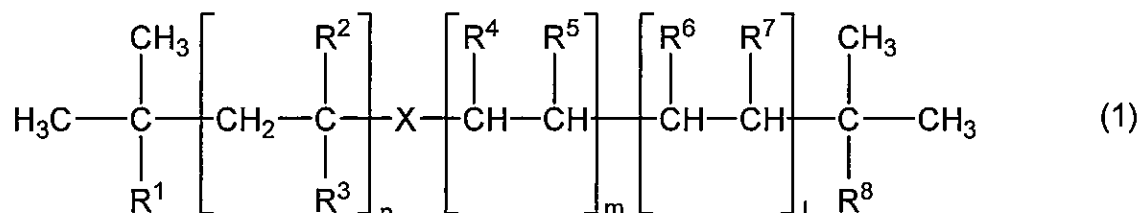
*9: Organopolysiloxane A described in Synthesis Example 1 of JP-A-2013-40162

Claims

1. A hair cosmetic comprising the following components (A) to (C):

(A) monohydric alcohol having 1 to 4 carbon atoms,

(B) lipophilic solvent selected from the group consisting of liquid oils having 9 to 21 carbon atoms represented by formula (1) and silicones having a number average molecular weight of 100 or more and 1,500 or less



wherein R^1 to R^8 each independently represent a hydrogen atom or a methyl group, X represents $-\text{CH}_2-$, $-\text{COO}-$, or $-\text{CH}_2\text{COO}-$, n represents 1 to 7, m represents 0 to 2, l represents 0 to 2, and $n+m+l$ is 1 to 7, provided that any one of R^4 to R^7 is a methyl group when both m and l are 1 or more, and

(C) branched saturated or linear unsaturated aliphatic alcohol having 14 to 24 carbon atoms or ether thereof

wherein a mass ratio of the component (A) to the component (B), (A)/(B), is 0.8 or more and 99 or less, and a content of water is less than 5 mass%.

2. The hair cosmetic according to claim 1, wherein a content of the component (A) is 45 mass% or more and 98 mass% or less.

3. The hair cosmetic according to claim 1 or 2, wherein a content of the component (B) is 1 mass% or more and 52 mass% or less.

4. The hair cosmetic according to any one of claims 1 to 3, wherein a content of the component (C) is 0.1 mass% or more and 10 mass% or less.
5. The hair cosmetic according to any one of claims 1 to 4, further comprising, as a component (D), a polymer for the hair cosmetic having solubility or dispersibility in water or ethanol.
6. The hair cosmetic according to any one of claims 1 to 5, wherein the component (A) is ethanol.
7. The hair cosmetic according to any one of claims 1 to 6, further comprising, as a component (E), one or two or more member(s) selected from the group consisting of polyols, urea, organic acids, polyoxyalkylene alkyl glucosides and polyoxyalkylene glyceryl ethers.
8. The hair cosmetic according to any one of claims 1 to 7, which is used as a non-aerosol type cosmetic.