

DESCRIPTION

Title of Invention: AEROSOL COSMETIC

Technical Field

[0001]

The present invention relates to an aerosol cosmetic product including: an aerosol container including a foam discharging member; and a foaming composition that is charged in the aerosol container.

Background Art

[0002]

There are foaming compositions, such as facial cleansing soaps, shampoos, and shaving foams, that produce, by a predetermined operation, a foam body (bubble foam) created by linkage of a multitude of bubbles made of a gas and a liquid film enveloping the gas. In order to produce a creamy and highly resilient foam body and to elongate the time until the foam body disappears, such foaming compositions include an oil/fat component, such as fatty acid, or a metallic soap, such as fatty acid soap.

Patent Literature 1 describes adding a fatty acid salt to a cleansing composition which is a foaming composition, in addition to an inorganic salt and N-acylglycine or a salt thereof.

[0003]

There are known various foaming compositions, such as cleaning agent compositions, that include a stock solution and a propellant which are charged in an aerosol container and that are discharged as a foam body by employing propellant gas. For example, Patent Literature 2 describes a foaming aerosol product including: a foaming composition including a stock solution and a liquified gas; an aerosol container in which the foaming composition is charged; and a discharging member attached to the aerosol container.

The main aim of the foaming aerosol product of Patent Literature 2 is to form a lightweight foam body. The foaming aerosol product employs, as the foaming

composition, a composition including a specific mass ratio of an aqueous stock solution and a liquified gas, and employs, as the discharging member, a member including a foaming space and a discharging surface that covers the foaming space and has a multitude of discharging holes. Thus, the foaming composition ejected into the foaming space is foamed within the foaming space and made into a first foam body, and then, the first foam bodies become long and narrow by passing through the multitude of discharging holes, and link together while taking in air on the outside of the discharging surface, and are thereby made into a second foam body.

Patent Literature 2 also describes including a fatty acid soap, as an anionic surfactant, in the aqueous stock solution.

Citation List

Patent Literature

[0004]

Patent Literature 1: JP H8-53693 A

Patent Literature 2: JP 2013-241203 A

Patent Literature 3: US 5813785

Patent Literature 4: JP S59-190357 U

Summary of Invention

[0005]

The invention provides an aerosol cosmetic product including: an aerosol container including a foam discharging member; and a foaming composition that is charged in the aerosol container.

The foam discharging member has a discharging surface for discharging a foam; a plurality of long narrow discharging holes are formed around a center portion of the discharging surface; and a multi-hole region, in which at least three discharging holes are present independently of one another in a radial direction from the center portion toward an outer circumferential portion of the discharging surface, is formed in an entire region or in a portion, in a circumferential direction, of the discharging surface.

The foaming composition contains components (A) to (D) below:

(A) a fatty acid or salt thereof;

- (B) a paste-form or solid oil (excluding the component (A));
- (C) water; and
- (D) a propellant.

The component (A) is contained in an amount from 1.1 to 15 mass%, in terms of fatty acid, in all components of the foaming composition excluding the component (D), and a neutralization rate of the fatty acid by a base is from 0.75 to 1 in terms of fatty acid.

The component (B) is contained in an amount from 0.01 to 0.8 mass% in all components of the foaming composition excluding the component (D).

[0006]

Herein, the wording “in all components of the foaming composition excluding the component (D)” refers to, in cases where the foaming composition includes components other than components (A) to (D), the total mass of all of the components including the other components, except for the component (D), that are included in the foaming composition.

Brief Description of Drawings

[0007]

[Fig. 1] Fig. 1 is a schematic perspective view illustrating an embodiment of an aerosol cosmetic product of the invention.

[Fig. 2] Fig. 2 illustrates longitudinal sectional views of a foam discharging member of the aerosol cosmetic product illustrated in Fig. 1 and the vicinity thereof. Fig. 2(a) illustrates a state while discharging a foam body, and Fig. 2(b) illustrates a state in which the discharging of a foam body is stopped.

[Fig. 3] Fig. 3 is a perspective view illustrating a state in which a foam body is discharged from a discharging surface of the foam discharging member of the aerosol cosmetic product illustrated in Fig. 1.

[Fig. 4] Fig. 4 is a plan view of a discharging surface, illustrating the shapes and arrangement of discharging holes formed in the discharging surface of the foam discharging member of the aerosol cosmetic product illustrated in Fig. 1.

[Fig. 5] Fig. 5 is a plan view of a discharging surface, illustrating the shapes and arrangement of discharging holes formed in the discharging surface of a foam discharging

member used in a comparative example.

[Fig. 6] Fig. 6 illustrates plan views of discharging surfaces, illustrating the shapes and arrangements of discharging holes formed in the respective discharging surfaces of various foam discharging members used in other comparative examples.

[Fig. 7] Fig. 7 is a plan view of a discharging surface, illustrating a relationship between the length and the width of a discharging hole formed in a discharging surface of a foam discharging member.

[Fig. 8] Fig. 8 illustrates plan views of discharging surfaces, illustrating other embodiments of shapes of discharging holes formed in a discharging surface of a foam discharging member.

Description of Embodiments

[0008]

Cosmetic compositions including fatty acids or fatty acid soaps have a drawback that, when discharged from an aerosol container, the produced foam body is heavy and feels hard to the touch.

To overcome this drawback, it is conceivable to discharge foam bodies from a multitude of discharging openings and then let the discharged foam bodies to link together, so that air is taken into the foam body to thereby improve foam quality, as in Patent Literature 2. Unfortunately, foam bodies produced by a cosmetic composition including a fatty acid or a fatty acid soap are hard in themselves, and thus the foam bubbles are difficult to link together, thus making it difficult to sufficiently improve foam quality.

Cosmetic compositions including fatty acids or fatty acid soaps also have a drawback that, even when a perfume is included, fragrance generation is weak, and in cases where an odorous propellant such as dimethyl ether is used, the odor originating from the propellant is perceived strongly at the time of ejection. The Patent Literature, however, makes no consideration of this drawback whatsoever.

Meanwhile, Patent Literatures 3 and 4 propose aerosol containers having discharging holes with various shapes from the viewpoint of aesthetics. These Patent Literatures, however, make no consideration whatsoever of controlling foam quality and fragrance generation.

[0009]

The invention relates to providing an aerosol cosmetic product capable of overcoming the aforementioned drawbacks of the conventional art.

[0010]

Inventors have found that, by discharging a specific foaming composition including a fatty acid or a salt thereof from an aerosol container including a foam discharging member having specifically-shaped discharging holes, the foam becomes soft to the touch, and also, an effect of improvement in foam quality is achieved and fragrance generation becomes excellent, thus arriving at the present invention.

[0011]

The invention is described below according to preferred embodiments thereof.

As illustrated in Fig. 1, an aerosol cosmetic product according to an embodiment of the invention includes: an aerosol container 2 including a foam discharging member 3; and a foaming composition 21 that is charged in the aerosol container 2. By pressing down on a stem 22 (see Fig. 2) of the aerosol container 2, the foaming composition 21 is ejected, and as illustrated in Fig. 3, is discharged from a discharging surface 31 of the foam discharging member 3 as a foam body 8 (see Fig. 3).

[0012]

The foaming composition used in the invention is a composition capable of forming a foam by being discharged from the aerosol cosmetic product, and contains, as essential components; (A) a fatty acid or salt thereof; (B) a paste-form or solid oil (excluding the component (A)); (C) water; and (D) a propellant. Note that, for convenience's sake, a mixture made of components, excluding the component (D), among all of the components of the foaming composition is referred to hereinbelow as "stock solution".

The "aerosol cosmetic product" refers to the overall cosmetic article, including the aerosol container and the foaming composition charged in the aerosol container.

{Component (A)}

In the invention, (A) the fatty acid or salt thereof is included primarily from the viewpoint of improving cleansing effects and foam durability.

From the viewpoint of improving cleansing effects and foam durability, the number of carbon atoms of the fatty acid to be contained in the foaming composition is preferably 8 or greater, more preferably 10 or greater, even more preferably 12 or greater, and preferably 24 or less, more preferably 22 or less, even more preferably 20 or less. More specifically, the number of carbon atoms of the fatty acid is preferably from 8 to 24, more preferably from 10 to 22, even more preferably from 12 to 20.

Further, from the viewpoint of forming a creamier foam, improving foam durability, and suppressing tightness after washing and rinsing, it is preferable to contain at least one type of fatty acid selected from fatty acids having from 8 to 15 carbon atoms and at least one type of fatty acid selected from fatty acids having from 16 to 24 carbon atoms; and more preferable to contain at least one type of fatty acid selected from fatty acids having from 10 to 15 carbon atoms and at least one type of fatty acid selected from fatty acids having from 16 to 22 carbon atoms; and even more preferable to contain at least one type of fatty acid selected from fatty acids having from 12 to 15 carbon atoms and at least one type of fatty acid selected from fatty acids having from 16 to 20 carbon atoms; and preferable to contain a fatty acid having 14 carbon atoms and a fatty acid having 18 carbon atoms.

The fatty acid may either be a straight chain or a branched chain, and the fatty acid may either be saturated or unsaturated. From the same viewpoint as above, the fatty acid is preferably a straight-chain or branched-chain saturated fatty acid, more preferably a straight-chain saturated fatty acid.

[0013]

More specifically, examples of saturated fatty acids include caprylic acid, capric acid, lauric acid, myristic acid, palmitic acid, stearic acid, arachidic acid, and behenic acid, and examples of unsaturated fatty acids include oleic acid, linoleic acid, linolenic acid, and ricinoleic acid. The fatty acid may include plant-derived fatty acids, such as coconut oil fatty acid and palm kernel oil fatty acid, which are a mixture of a plurality of types of fatty acids.

[0014]

Examples of salts of fatty acids to be contained in the foaming composition include:

inorganic salts, such as sodium salt, potassium salt, calcium salt, magnesium salt, and aluminum salt; and organic salts including organic amine salts, such as ammonium salt, monoethanolamine salt, diethanolamine salt, and triethanolamine salt, and basic amino acid salts, such as arginine salt and lysine salt. One type of the fatty acid or salt thereof may be included singly, or two or more types may be included in combination. Among the above, from the viewpoint of improving dissolubility to water and cleansing effects, it is preferable to include at least one type selected from sodium salt, potassium salt, calcium salt, magnesium salt, aluminum salt, ammonium salt, monoethanolamine salt, diethanolamine salt, and triethanolamine salt; more preferably at least one type selected from sodium salt, potassium salt, ammonium salt, monoethanolamine salt, diethanolamine salt, and triethanolamine salt; and even more preferably one or two types selected from sodium salt and potassium salt.

[0015]

From the viewpoint of improving cleansing effects and foam durability, it is necessary that the content of the fatty acid or salt thereof, in terms of fatty acid, in the total amount of the stock solution is 1.1 mass% or greater and 15 mass% or less, and preferably 2 mass% or greater, more preferably 4 mass% or greater, even more preferably 5.5 mass% or greater, and preferably 13 mass% or less, more preferably 11 mass% or less, even more preferably 8 mass% or less, and more specifically, preferably from 2 to 13 mass%, more preferably from 4 to 11 mass%, even more preferably from 5.5 to 8 mass%.

[0016]

As for the fatty acid or salt thereof, the neutralization rate of the fatty acid by a base is from 0.75 to 1 in terms of fatty acid, and from the viewpoint of balancing excellent cleansing effects and foam durability and moisture after washing and rinsing, the neutralization rate is preferably 0.78 or greater, more preferably 0.8 or greater, and preferably 0.95 or less, more preferably 0.9 or less, even more preferably 0.85 or less, and more specifically, the neutralization rate is preferably from 0.78 to 0.95, more preferably from 0.8 to 0.9, even more preferably from 0.8 to 0.85.

To achieve the aforementioned neutralization rate, the fatty acid may be neutralized by a base to a predetermined neutralization rate during the manufacturing process, or a

fatty acid salt, or a fatty acid salt and a fatty acid, may be included so as to fall within the aforementioned range. Note that, in cases of neutralizing the fatty acid by a base during the manufacturing process, the fatty acid may be described as component (A1) and the base may be described as component (A2).

[0017]

Examples of bases for neutralizing the fatty acid to achieve a predetermined neutralization rate during the manufacturing process include: hydroxides of alkali metal salt, such as potassium hydroxide and sodium hydroxide; hydroxides of alkaline-earth metals, such as magnesium hydroxide and calcium hydroxide; alkanolamines, such as 2-amino-2-methyl-1-propanol, monoethanolamine, diethanolamine, and triethanolamine; basic amino acids, such as L-arginine, lysine, and ornithine; ammonia water; ammonium hydroxide; and sodium hydrogencarbonate. Among the above, from the viewpoint of improving dissolubility to water and cleansing effects, it is preferable to include at least one type selected from sodium hydroxide, potassium hydroxide, calcium hydroxide, magnesium hydroxide, aluminum hydroxide, ammonia water, monoethanolamine, diethanolamine, and triethanolamine; more preferably at least one type selected from sodium hydroxide, potassium hydroxide, ammonia water, monoethanolamine, diethanolamine, and triethanolamine; and preferably one or two types selected from sodium hydroxide and potassium hydroxide.

[0018]

{Component (B)}

In the invention, the paste-form or solid oil (excluding the component (A)) is included from the viewpoint of reducing foam hardness and improving foam durability.

In the invention, “paste-form or solid” refers to oily agents having a viscosity of 2000 mPa·s or greater under conditions of 25°C and 1013.25 hPa, including agents that are completely solid and agents with a viscosity too high to be measurable. The viscosity is measured, for example, by using a type-B viscometer (Vismetron viscometer; model VS-A1 (Shibaura Systems Co., Ltd.)) using spindle No. 3 at 12 rpm (rotations/minute) for 30 seconds.

From the viewpoint of making the foam soft to the touch and improving foam

durability and foam spreadability upon use, the viscosity of the paste-form or solid oil is preferably 4000 mPa·s or greater, more preferably 7000 mPa·s or greater, even more preferably 10,000 mPa·s or greater.

[0019]

Examples of paste-form or solid oils include hydrocarbons, ester oils, ether oils, waxes, and higher alcohols, having a viscosity of 2000 mPa·s or greater. More specifically, examples of hydrocarbons include ceresin, solid paraffin, polyethylene powder, microcrystalline wax, and Vaseline. Examples of ester oils include myristyl myristate, cetyl palmitate, decyl oleate, and cetyl octanoate. Examples of waxes include beeswax, spermaceti wax, and lanolin. Examples of higher alcohols include straight-chain saturated aliphatic alcohols having from 10 to 24 carbon atoms, such as lauryl alcohol, cetyl alcohol, stearyl alcohol, and behenyl alcohol. One type, or two or more types, of the aforementioned compounds may be contained.

[0020]

From the viewpoint of achieving, in a balanced manner, cleansing effects while reducing foam hardness and improving softness to the touch and foam durability, it is necessary that the content of the paste-form or solid oil in the total amount of the stock solution is from 0.01 to 0.8 mass%, and preferably 0.05 mass% or greater, more preferably 0.08 mass% or greater, even more preferably 0.1 mass% or greater, and preferably 0.6 mass% or less, more preferably 0.5 mass% or less, even more preferably 0.4 mass% or less, and more specifically, preferably from 0.05 to 0.6 mass%, more preferably from 0.08 to 0.5 mass%, even more preferably from 0.1 to 0.4 mass%.

From the viewpoint of improving cleansing effects and foam durability and suppressing clogging, the content ratio of the paste-form or solid oil (excluding the component (A)) with respect to the amount, in terms of fatty acid, of the fatty acid or salt thereof is preferably 0.015 or greater, more preferably 0.021 or greater, even more preferably 0.025 or greater, and preferably 0.15 or less, more preferably 0.08 or less, even more preferably 0.05 or less, and more specifically, preferably from 0.015 to 0.15, more preferably from 0.021 to 0.08, even more preferably from 0.025 to 0.05.

[0021]

{Component (C)}

The water used in the invention is not particularly limited, and purified water, deionized water, etc. can be included. Water is included as a solvent or a dispersion medium of the components (A) to (D) and optional components, such as component (E), component (F), and other optional components.

From the viewpoint of improving the foamability of the foam and improving dischargeability, the content of water in the total amount of the stock solution is preferably 60 mass% or greater, more preferably 65 mass% or greater, even more preferably 70 mass% or greater, and preferably 92 mass% or less, more preferably 90 mass% or less, even more preferably 88 mass% or less, and more specifically, preferably from 60 to 92 mass%, more preferably from 65 to 90 mass%, even more preferably from 70 to 88 mass%.

[0022]

{Component (D)}

The propellant (D) of the invention may include any propellant conventionally used for aerosol containers without particular limitation, with examples including: liquefied petroleum gases (LPG) such as propane, n-butane, and isobutane; ethers such as dimethyl ether, methylethyl ether, and diethyl ether; and compressed gases such as carbonic acid gas, nitrogen gas, and oxygen gas. At least one type of gas may be included.

Among the above, from the viewpoint of improving dischargeability of foam and foamability of foam at low temperatures, it is preferable to include at least one type selected from propane, n-butane, isobutane, dimethyl ether, methylethyl ether, diethyl ether, carbonic acid gas, nitrogen gas, and oxygen gas; more preferably at least one type selected from propane, n-butane, isobutane, dimethyl ether, methylethyl ether, and diethyl ether; and even more preferably at least one type selected from propane, n-butane, and isobutane.

[0023]

The inner pressure within the aerosol container at 20°C immediately after manufacture can be adjusted as appropriate by the charging amount of the propellant, but

from the viewpoint of providing a creamy foam and discharging the foam uniformly, the inner pressure is preferably 0.2 MPa or greater, more preferably 0.3 MPa or greater, even more preferably 0.35 MPa or greater, and preferably 0.65 MPa or less, more preferably 0.55 MPa or less, even more preferably 0.45 MPa or less. More specifically, the inner pressure is preferably from 0.2 to 0.65 MPa, more preferably from 0.3 to 0.55 MPa, even more preferably from 0.35 to 0.45 MPa.

[0024]

The foaming composition used in the invention may preferably contain either one, or both of, (E) a polyol and (F) a N-acyl amino acid salt, in addition to the aforementioned components (A) to (D).

{Component (E)}

Including (E) a polyol in the foaming composition can achieve a creamier foam quality, make the foam softer to the touch, and further improve foam durability. Further, it is possible to make the foam smooth on the skin when cleansing, and improve moisture after washing and rinsing. Examples of polyols include: sugar alcohols, such as sorbitol, maltitol, erythritol, xylitol, trehalose, and raffinose; and bivalent to tetravalent polyols, such as glycerol, diglycerol, propanediol, butylene glycol, propylene glycol, dipropylene glycol, isoprene glycol, hexylene glycol, octanediol, pentanediol, glycerinmono 2-ethylhexyl ether, polyethylene glycol, and polypropylene glycol. At least one type of polyol may be included.

Among the above, from the viewpoint of achieving a creamy foam quality, making the foam body soft to the touch, and improving smoothness on the skin when cleansing and moisture after washing and rinsing, it is preferable to include at least one type selected from glycerol, diglycerol, polyethylene glycol, polypropylene glycol, sorbitol, maltitol, erythritol, xylitol, and trehalose; more preferably at least one type selected from glycerol, diglycerol, polyethylene glycol, sorbitol, and maltitol; even more preferably at least two types selected from glycerol, diglycerol, polyethylene glycol, sorbitol, and maltitol; and preferably sorbitol and maltitol.

[0025]

From the viewpoint of achieving a creamy foam quality, making the foam soft to

the touch, and improving foam durability, the content of the polyol in the total amount of the stock solution is preferably 1 mass% or greater, more preferably 3 mass% or greater, even more preferably 4 mass% or greater, and preferably 15 mass% or less, more preferably 10 mass% or less, even more preferably 8 mass% or less, and more specifically, preferably from 1 to 15 mass%, more preferably from 3 to 10 mass%, even more preferably from 4 to 8 mass%.

[0026]

{Component (F)}

Including (F) a N-acyl amino acid salt in the foaming composition can achieve a creamier foam quality, make the foam softer to the touch, and further improve foam durability. Further, it is possible to suppress tightness and stickiness after washing and rinsing.

Examples of amino acids in the N-acyl amino acid include glutamic acid, aspartic acid, glycine, alanine, threonine, methylalanine, sarcosine, lysine, and arginine. At least one type of amino acid may be included. These amino acids occur in L-form, D-form, or DL-form; L-form is preferred from the viewpoint of improving temporal stability of the cosmetic.

Among the above, from the viewpoint of achieving a creamy foam quality and suppressing tightness and stickiness after washing and rinsing, it is preferable that the amino acid is an acidic amino acid or a neutral amino acid, and more preferably an acidic amino acid. More specifically, from the aforementioned viewpoint, it is preferable to include at least one type selected from glutamic acid, aspartic acid, glycine, and alanine; more preferably one or two types selected from glutamic acid and glycine; and even more preferably glutamic acid.

[0027]

From the viewpoint of forming a creamy foam, improving foam durability, and suppressing tightness after washing and rinsing, it is preferable that the number of carbon atoms of the acyl group in the N-acyl amino acid is preferably 10 or greater, more preferably 12 or greater, even more preferably 14 or greater, and preferably 24 or less, more preferably 22 or less, even more preferably 20 or less, and more specifically,

preferably from 10 to 24, more preferably from 12 to 22, even more preferably from 14 to 20.

From the same viewpoint, the acyl group is preferably a saturated straight-chain or saturated branched-chain acyl group, more preferably a saturated straight-chain acyl group.

More specifically, examples include acyl groups derived from fatty acids (including branched fatty acids), such as a decanoyl group, a lauroyl group, a myristoyl group, a palmitoyl group, a stearoyl group, an oleoyl group, and a linoleyl group. These may be derived from animals and plants, with examples including acyl groups derived from naturally-occurring mixed fatty acids, such as coconut oil fatty acid, castor oil fatty acid, olive oil fatty acid, and palm oil fatty acid.

[0028]

Examples of salts of the N-acyl amino acid include: inorganic salts, such as sodium salt, potassium salt, calcium salt, magnesium salt, and aluminum salt; and organic salts including organic amine salts, such as ammonium salt, monoethanolamine salt, diethanolamine salt, and triethanolamine salt, and basic amino acid salts including arginine salt and lysine salt. Among the above, one type, or a mixture of two or more types, may be used. Among the above, from the viewpoint of causing low skin irritation and suppressing tightness after washing and rinsing, it is preferable to include at least one type selected from sodium salt, potassium salt, calcium salt, magnesium salt, aluminum salt, ammonium salt, monoethanolamine salt, diethanolamine salt, and triethanolamine salt; more preferably at least one type selected from sodium salt, potassium salt, ammonium salt, monoethanolamine salt, diethanolamine salt, and triethanolamine salt; and preferably one or two types selected from sodium salt and potassium salt.

[0029]

Preferred concrete examples of the N-acyl amino acid salt include sodium salts, potassium salts, and triethanolamine salts of N-lauroyl glutamic acid, N-myristoyl glutamic acid, N-stearoyl glutamic acid, and N-cocoyl glutamic acid, for example. Among the above, from the viewpoint of achieving a creamy foam quality, improving foam durability, and suppressing tightness and stickiness after washing and rinsing, a

component containing sodium N-stearoyl glutamate is preferable, with examples of commercially available products including Amisoft HS-11P and Amilite GCK-12 (both products of Ajinomoto Healthy Supply Co., Inc.). One type may be included singly, or two or more types may be included in combination.

[0030]

From the viewpoint of achieving a creamy foam quality, making the foam soft to the touch, and improving foam durability, the content of the N-acyl amino acid salt in the total amount of the stock solution is preferably 0.1 mass% or greater, more preferably 0.4 mass% or greater, even more preferably 0.7 mass% or greater, and preferably 5 mass% or less, more preferably 3 mass% or less, even more preferably 1.5 mass% or less, and more specifically, preferably from 0.1 to 5 mass%, more preferably from 0.4 to 3 mass%, even more preferably from 0.7 to 1.5 mass%.

[0031]

In the foaming composition used in the invention, it is possible to use optional ordinarily-used components in addition to the aforementioned components. For example, anionic surfactants other than the component (A) and the component (F), nonionic surfactants, cationic surfactants and amphoteric surfactants, liquid oils other than the component (A), chelating agents, antiseptics, perfumes, plant extract liquids, humectants, antioxidants, skin whitening agents, blood circulation promoting agents, anti-inflammatory agents, bactericides, UV absorbers, coloring agents, etc. can be contained as optional components in amounts that do not impair the effects of the invention. It should be noted that each of the above agents are not limited in use as their respective agents, but can be used for other uses depending on the objective; for example, vitamins can be used as antioxidants. Also, agents can have additional uses; for example, an agent can be used to achieve both effects as a humectant and an antiseptic.

[0032]

From the viewpoint of increasing foam amount and improving foam durability and cleansing properties, the foaming composition used in the invention may contain at least one type of surfactant selected from anionic surfactants other than the component (A) and

the component (F), cationic surfactants, nonionic surfactants, and amphoteric surfactants. From the viewpoint of causing small irritation, having excellent emulsion stability with the components (A) and (F), being less sticky, and further improving spreadability on the skin, the surfactants are preferably nonionic surfactants.

There is no particular limitation to the nonionic surfactants, and examples include glycerol fatty acid esters, polyglycerol fatty acid esters, sorbitan fatty acid esters, polyoxyethylene hydrogenated castor oil, polyoxyethylene alkyl ethers, polyoxyethylene glycerol fatty acid esters, polyether-modified silicone, and polyglycerol-modified silicone.

From the viewpoint of balancing foam amount, cleansing effects, and excellent foam durability, the content, in the total amount of the stock solution, of at least one type of surfactant selected from anionic surfactants other than the components (A) and (F), cationic surfactants, nonionic surfactants, and amphoteric surfactants is preferably less than 5 mass%, more preferably 3 mass% or less, even more preferably 1 mass% or less, more preferably 0.5 mass% or less, further more preferably 0.1 mass% or less.

[0033]

From the viewpoint of suppressing clogging after discharge and improving moisture after washing and rinsing, the foaming composition of the invention may contain a liquid oil excluding the component (A). Note that “liquid oil” in the present invention refers to an oily agent having a viscosity of less than 2000 mPa·s under conditions of 25°C and 1013.25 hPa. The viscosity measurement method is the same as the viscosity measurement method for the paste-form or solid oil.

Examples of liquid oils include hydrocarbons, ester oils, and higher alcohols having a viscosity of less than 2000 mPa·s. More specifically, examples of hydrocarbons include α -olefin oligomers, light isoparaffins, light liquid isoparaffins, and liquid paraffins. Examples of ester oils include: triglycerides, such as glyceryl tri(caprylate/caprate), glyceryl tri(2-ethylhexanoate), glyceryl tricaprylate, glyceryl triisostearate, glyceryl tri(2-heptylundecanoate), glyceryl trioleate, glyceryl trilinoleate, and glyceryl tripalmitoleate; esters of a fatty acid and a monovalent alcohol, such as isopropyl myristate, butyl myristate, palmitate isopropyl, butyl stearate, ethyl oleate, ethyl linoleate, isopropyl linoleate, cetyl caprylate, hexyl laurate, decyl myristate, decyl oleate, oleyl oleate, 2-ethylhexyl palmitate, 2-ethylhexyl stearate, 2-hexyldecyl stearate, isodecyl

oleate, 2-octyldodecyl oleate, 2-octyldodecyl ricinoleate, ethyl isostearate, isopropyl isostearate, cetyl 2-ethylhexanoate, cetostearyl 2-ethylhexanoate, hexyl isostearate, 2-octyldodecyl neopentanoate, 2-hexyldecyl 2-ethylhexanoate, isostearyl 2-ethylhexanoate, 2-ethylhexyl isononanoate, 2-ethylhexyl isopalmitate, 2-hexyldecyl isostearate, isostearyl isostearate, and 2-octyldodecyl isostearate; dibasic acid esters, such as diisopropyl adipate, diisobutyl adipate, diethyl sebacate, diisopropyl sebacate, and 2-ethylhexyl sebacate; and esters of a fatty acid and a polyol, such as ethylene glycol dioleate, propylene glycol dicaprate, and neopentylene glycol dicaprate. Examples of higher alcohols include: straight-chain saturated alcohols having from 6 to 10 carbon atoms such as caprylyl alcohol and capryl alcohol; and straight-chain/branched aliphatic alcohols or unsaturated aliphatic alcohols having from 10 to 24 carbon atoms such as isostearyl alcohol and oleyl alcohol. One type, or two or more types, of the aforementioned compounds may be contained.

From the viewpoint of balancing softness to the touch and excellent foam durability, the content of the liquid oil in the total amount of the stock solution is preferably less than 5 mass%, more preferably 3 mass% or less, even more preferably 1 mass% or less, more preferably 0.5 mass% or less, further more preferably 0.1 mass% or less.

[0034]

From the viewpoint of coloring the foam and further improving aesthetics, the foaming composition used in the invention may contain a coloring agent. From the viewpoint of preventing staining of the skin, clothing, etc., the coloring agent is preferably a water-insoluble colorant. Specific examples include: inorganic colorants, such as tourmaline, chromium oxide, yellow 32, iron oxide, black iron oxide, colcothar, cobalt oxide, ultramarine blue, chromium hydroxide, titanium oxide, zinc oxide, talc, and manganese violet; and organic colorants, including azo-based pigments such as azo lake pigments, insoluble azo pigments and condensed azo pigments, phthalocyanine-based pigments such as phthalocyanine blue and phthalocyanine green, and quinacridone, isoindolinone, dioxazine, etc. One type of coloring agent, or two or more types, can be included. From the viewpoint of sufficiently coloring the foam, organic colorants are preferred, and at least one type selected from lycopene, carotene, xanthophyll, chlorophyll, Helindone pink (Red No. 226), lake red (Red Nos. 203 and 204), lithol red, permanent

orange, phthalocyanine blue, and Hansa yellow is further preferable.

From the viewpoint of sufficiently coloring the foam and preventing the staining of the skin and clothing, the content of the coloring agent in the total amount of the stock solution is preferably 0.001 mass% or greater, more preferably 0.005 mass% or greater, even more preferably 0.01 mass% or greater, and preferably 4 mass% or less, more preferably 2 mass% or less, even more preferably 1 mass% or less, and more specifically, preferably from 0.001 to 4 mass%, more preferably from 0.005 to 2 mass%, even more preferably from 0.01 to 1 mass%.

[0035]

The foaming composition of the invention forms a foam immediately after being discharged from the aerosol container. From the viewpoint of making the foam soft to the touch, improving foam durability, and suppressing clogging, the viscosity of the foam immediately after discharge and under conditions of 25°C and 1013.25 hPa is preferably 10,000 mPa·s or greater, more preferably 12,000 mPa·s or greater, even more preferably 14,000 mPa·s or greater, and preferably 50,000 mPa·s or less, more preferably 35,000 mPa·s or less, even more preferably 20,000 mPa·s or less. The viscosity of the foam is measured by using a type-B viscometer (Vismetron viscometer; model VS-A1 from Shibaura Systems Co., Ltd.) using spindle No. 4 at 12 rpm (rotations/minute) for 30 seconds.

[0036]

{Manufacturing method}

The aerosol cosmetic product of the invention can be manufactured according to a known method. For example, a cosmetic product charged in an aerosol container including a foam discharging member can be manufactured by: step 1 of uniformly mixing the components (A) to (C), excluding the component (D), and, if necessary, the component (E), component (F) and/or other optional components, to prepare a stock solution; step 2 of charging the stock solution of the step 1 into an aerosol container; a step involving step 3 of charging, under pressure, a prescribed amount of the component (D) into the aerosol container; and step 4 of attaching, to an upper portion of the aerosol container, the foam discharging member having a discharging surface.

More specifically, the step 2 may involve: step 2a of charging the stock solution of the step 1 into an aerosol container; and step 2b of clinching an aerosol valve onto the aerosol container.

[0037]

Further, in order to improve the mixing of the components contained in the stock solution in the step 1, the temperature is preferably 50°C or higher, more preferably 55°C or higher, and from the viewpoint of preventing evaporation and thermal degradation of the components, it is preferable to conduct mixing under heating at preferably 90°C or lower, more preferably 85°C or lower. In cases where heating is conducted, it is preferable to charge the solution into the aerosol container in the step 2 after cooling to 30°C or lower.

[0038]

In cases where the product is manufactured by neutralizing the fatty acid with a base, it is preferable that the step 1 involves: step 1a of mixing, under heating, a component (A2), the component (C), and if necessary, the component (E), component (F) and/or other optional water-soluble components; step 1b of mixing, under heating, a component (A1), the component (B), and other optional oil-soluble components; step 1c of adding the preparation of the step 1b to the preparation of the step 1a and mixing until uniform; and step 1d of cooling the preparation of the step 1c to 30°C or lower. As described above, the component (A1) is a fatty acid, and the component (A2) is a base.

There is no particular limitation to the heating conditions for the steps 1a and 1b so long as the temperature is equal to or higher than the dissolution temperature of the component (A1), but from the viewpoint of dissolving the component (A) while preventing thermal degradation, the temperature is preferably 70°C or higher, more preferably 75°C or higher, and preferably 90°C or lower, more preferably 85°C or lower.

[0039]

{Aerosol container}

In the aerosol container 2 of the aerosol cosmetic product 1 of the present embodiment, the aforementioned foaming composition is charged as the foaming

composition 21.

The aerosol container 2 illustrated in Fig. 1 is described in further detail. The aerosol container 2 has a structure similar to known aerosol containers. A stem 22 connected to an internal valve (not illustrated) projects from an upper portion. By pressing down the stem 22, the valve is opened, and liquid (stock solution) charged inside is ejected together with a propellant.

The aerosol container 2 includes a foam discharging member 3 at an upper portion. The foam discharging member 3 of the aerosol cosmetic product 1 in the present embodiment includes: a connection member 4 for detachably fixing the foam discharging member 3 to the aerosol container 2; a movable member 5 including a tubular connection portion 51 that is fitted onto the stem 22 of the aerosol container 2 and that forms a flow path linking the flow path inside the stem 22 with a later-described foaming space 7; and a discharging-surface forming member 6 whose upper surface forms the aforementioned discharging surface 31 for the foam body 8. The discharging-surface forming member 6 includes: a plate-like discharging-surface forming portion 61 whose upper surface forms the discharging surface 31 for the foam body 8 and that is circular in a planar view; and a tubular suspended portion 62 that is suspended so as to hang down from a peripheral edge portion of the discharging-surface forming portion 61.

[0040]

The connection member 4 includes: an annular first fitting portion 41 that is detachably fitted onto a bead portion 23 of the aerosol container 2; an engagement portion 42 that is located on the outer side the first fitting portion 41 and that engages with a lower-end portion of the tubular suspended portion 62 of the discharging-surface forming member 6; and a spring support portion 43 that is located on the inner side of the first fitting portion 41 and that supports a lower end of a coil spring 52 as a biasing means. The movable member 5 includes: a bottom forming portion 53 that is circular in a planar view and that forms the foaming space 7 between it and the discharging-surface forming portion 61 of the discharging-surface forming member 6; and a tubular suspended portion 54 that is suspended so as to hang down from a peripheral edge portion of the bottom forming portion 53. The movable member 5 includes the aforementioned tubular connection portion 51 at a central portion, in a planar view, of the bottom forming portion 53. An inlet 71 for the foaming composition 21 ejected from the aerosol container 2 is

formed in the central portion on the upper surface of the bottom forming portion 53. The movable member 5 is held movably in the vertical direction in a state where the tubular suspended portion 54 is supported by the tubular suspended portion 62 of the discharging-surface forming member 6 and/or a tubular support portion 44 provided to the connection member 4. Before a discharge operation or after a discharge operation, the movable member 5 is biased by the biasing means such as the coil spring 52, and the upper surface of the bottom forming portion 53 contacts the lower surface of the discharging-surface forming portion 61 of the discharging-surface forming member 6, as illustrated in Fig. 2(b). In this state, the stem 22 is in a non-pressed state, and the foaming space 7 has disappeared. As illustrated in Fig. 1, a pair of cutaway portions 64, 64 is formed at two sections, in the circumferential direction, of the tubular suspended portion 62 of the discharging-surface forming member 6, and the tubular suspended portion 54 of the movable member 5 and press-down operation portions 56 provided outward of the tubular suspended portion 62 of the discharging-surface forming member 6 are integrated by means of respective connection portions 55 passed through the respective cutaway portions 64.

[0041]

By pressing the press-down operation portions 56 from above and pressing down the movable member 5 from the state illustrated in Fig. 2(b) to the state illustrated in Fig. 2(a), the stem 22 is accordingly pressed down by the tubular connection portion 51 of the movable member 5, and also, the foaming space 7 is formed between the lower surface of the discharging-surface forming portion 61 of the discharging-surface forming member 6 and the upper surface of the bottom forming portion 53 of the movable member 5. Thereby, the valve inside the aerosol container 2 is opened and the foaming composition 21 is ejected from the aerosol container 2, causing the foaming composition 21 ejected from the aerosol container 2 to be introduced into the foaming space 7 from the inlet 71 and to be foamed inside the foaming space 7, and then be discharged as wall-shaped foam bodies respectively from the multitude of discharging holes 33 formed in the discharging-surface forming portion 61. The discharged wall-shaped foam bodies are integrated in a state where air is trapped therebetween, and form a three-dimensional foam body 8, as illustrated in Fig. 3. According to the aerosol cosmetic product 1 of the present embodiment, as illustrated in Fig. 3, the foam body formed by the foaming of the

foaming composition 21 is discharged so as to form a foam body 8 having a predetermined three-dimensional shape on the discharging surface 31.

[0042]

In the foam body discharging surface 31 of the foam discharging member 3 of the aerosol cosmetic product 1 of the present embodiment, a plurality of long narrow discharging holes 33 are formed around a center portion C of the discharging surface 31; and a multi-hole region, in which at least three discharging holes 33 are present independently of one another in the radial direction from the center portion C toward an outer circumferential portion 32 of the discharging surface, is formed in a circumferential direction A of the discharging surface 31. The center portion C of the discharging surface 31 is the center portion surrounded by the multitude of discharging holes 33, and as illustrated in Fig. 2(a), is preferably located at a position intersecting with an extended line 22c of the central axis of the stem 22. The multi-hole region requires at least three discharging holes 33 present independently of one another in the radial direction from the center portion C toward an outer circumferential portion 32 of the discharging surface; from the viewpoint of making the foam soft to the touch and improving fragrance generation and foam durability, it is preferable that there are 4 or more, more preferably 5 or more discharging holes, and preferably 9 or fewer, more preferably 8 or fewer, even more preferably 7 or fewer discharging holes, and more specifically, preferably from 3 to 9, more preferably from 4 to 8, even more preferably from 5 to 7 discharging holes.

[0043]

Suppose that a line segment D connecting the center portion C and a point on the outer circumferential portion 32 is rendered on the discharging surface 31 in Fig. 4. In a state where the line segment D is at position S, the line segment D intersects with five discharging holes 33a in the radial direction from the center portion C toward the outer circumferential portion 32 of the discharging surface, which means that, at position S in the circumferential direction A of the discharging surface 31, there are five discharging holes 33a present independently of one another in the radial direction from the center portion toward the outer circumferential portion of the discharging surface. It should be noted that, in the present invention, it is considered that a discharging hole that is present

on a straight line connecting the center portion and a point on the outer circumferential circle intersects with the line segment D in cases where the shorter one of the length from an end portion, in the circumferential direction, of the discharging hole up to the line segment D (i.e., the length of a line segment rendered from the discharging hole's end portion in the circumferential direction up to the line segment D along a direction perpendicular to the line segment D) is longer than the width W3 of the discharging hole.

When the line segment D is rotated clockwise from the position S to position S1 about the center portion C, the line segment D intersects with at least three discharging holes 33 at every position as it moves from the position S to the position S1. This means that the range, in the circumferential direction A, from the position S to the position S1 of the discharging surface 31 is a multi-hole region in which at least three discharging holes 33 are present independently of one another in the radial direction from the center portion C toward the outer circumferential portion 32 of the discharging surface.

[0044]

Further, when the line segment D is rotated clockwise from the position S1 to position S2 about the center portion C, the line segment D intersects with at least three discharging holes 33 at every position as it moves from the position S1 to the position S2. Thus, the range, in the circumferential direction A, from the position S1 to the position S2 of the discharging surface 31 is also a multi-hole region in which at least three discharging holes 33 are present independently of one another in the radial direction from the center portion C toward the outer circumferential portion 32 of the discharging surface.

Similarly, when the line segment D is rotated clockwise about the center portion C from the position S2 to position S3 and from the position S3 to the position S, the line segment D intersects with at least three discharging holes 33 at every position. Thus, the range from the position S2 to the position S3 of the discharging surface 31 and the range from the position S3 to the position S of the discharging surface 31 are also multi-hole regions in which at least three discharging holes 33 are present independently of one another in the radial direction from the center portion C toward the outer circumferential portion 32 of the discharging surface.

As described above, on the discharging surface 31 of the aerosol container 2 of the present embodiment, the discharging surface 31's entire region in the circumferential direction A constitutes a multi-hole region in which at least three discharging holes 33 are present independently of one another in the radial direction from the center portion C toward the outer circumferential portion 32 of the discharging surface.

[0045]

In contrast, in the discharging surface 31 illustrated in Fig. 5, the three ranges indicated by R1 to R3 in the circumferential direction A of the discharging surface 31 constitute multi-hole regions in which at least three discharging holes 33 are present independently of one another in the radial direction from the center portion C toward the outer circumferential portion 32 of the discharging surface. In the discharging surface 31 illustrated in Fig. 5, each of the angular ranges θ_1 , θ_2 , θ_3 where the respective multi-hole regions R1 to R3 are present is 56° , and the total value ($\theta_1 + \theta_2 + \theta_3$) of the angular ranges where the three multi-hole regions are present is 168° . Further, in the discharging surface 31 illustrated in Fig. 5, a hole-free region N where there is no discharging hole is present between multi-hole regions adjacent to one another in the circumferential direction A of the discharging surface 31.

In contrast, in the discharging surface 31 illustrated in Fig. 4, the entire region, in the circumferential direction A, of the discharging surface 31 constitutes a multi-hole region, and the angular range where the multi-hole region is present is 360° . Further, the discharging surface 31 illustrated in Fig. 4 has no hole-free region N.

[0046]

From the viewpoint of making the foam soft to the touch and improving fragrance generation and foam durability, and at the same time achieving cleansing effects, the angular range in which the multi-hole region is present on the discharging surface 31 of the foam discharging member 3 used in the aerosol cosmetic product of the invention is preferably 135° or greater, more preferably 180° or greater, even more preferably 225° or greater, further more preferably 270° or greater, and preferably 360° or less, and more specifically, preferably from 135° to 360° , more preferably from 180° to 360° , even more preferably from 225° to 360° , further preferably from 270° to 360° , and even more preferably 360° . Herein, the angular range in which the multi-hole region is present is the total value of rotation angles of ranges in which there are at least three discharging holes 33 intersecting a line segment D connecting the center portion C and a point on the outer circumferential portion 32 when the line segment D is rotated clockwise about the center portion C.

[0047]

From the viewpoint of making the foam soft to the touch and improving fragrance generation and foam durability, and at the same time achieving cleansing effects, the angular range in which a hole-free region is present on the discharging surface 31 of the foam discharging member 3 used in the invention is preferably less than 135° , more preferably less than 90° , even more preferably less than 60° , even more preferably less than 30° , and further more preferably substantially null. Herein, the angular range in which a hole-free region is present is the total value of rotation angles of ranges in which there is no discharging hole 33 intersecting a line segment D connecting the center portion C and a point on the outer circumferential portion 32 when the line segment D is rotated clockwise about the center portion C.

In the discharging surface 31, regions other than hole-free regions and multi-hole regions are regions where there is/are one or two discharging holes 33 present independently of one another in the radial direction from the center portion C toward the outer circumferential portion 32 of the discharging surface. From the aforementioned viewpoint, it is preferable that such a region includes two discharging holes within the entire region.

[0048]

As illustrated in Fig. 4, the discharging hole 33 formed in the discharging surface 31 of the present embodiment is arc-shaped. Since the foam discharge force is stronger in the vicinity of the center portion C and the shape of the foam body tends to get misshapen, it is preferable that the discharging hole 33 is arranged along an arc of a discretionary circle centered about the center portion C of the discharging surface 31.

As regards the size of the discharging hole 33, from the viewpoint of making the foam body soft to the touch and improving fragrance generation, it is preferable that the length L3 is 10 times or greater, more preferably 12 times or greater, even more preferably 15 times or greater, the width W3 thereof; and the length L3 is preferably 250 times or less, more preferably 180 times or less, even more preferably 100 times or less, further more preferably 50 times or less, the width W3 thereof; and more specifically, the length is preferably from 10 to 250 times, more preferably from 12 to 180 times, even more preferably from 15 to 100 times, further more preferably from 15 to 50 times, the width thereof.

[0049]

So long as the shape of the discharging hole 33 is long and narrow, instead of an arc shape, the discharging hole's shape may be rectangular like the discharging hole (a) in Fig. 8, or elliptic like the discharging hole (b). The rectangular/elliptic discharging hole may partially be curved or bent, or may partially have projections and depressions, as illustrated in Fig. 8. For example, as illustrated in Fig. 8, the discharging hole may be rectangular with a portion bent, like the discharging hole (c), or may be arc-shaped with a portion curved, like the discharging hole (d), or may be elliptic with a portion depressed, like the discharging hole (e). Since a complicated shape tends to make clogging likely, it is preferable that the shape of the discharging hole 33 is either arc-shaped, rectangular, or elliptic. Further, the discharging holes 33 formed in the discharging surface may partially be shaped differently, or all of the discharging holes may have the same shape.

[0050]

As illustrated in Fig. 7, of the inner-circumferential lengths between the end portions (V, W) of the discharging hole 33, the length L3 of the discharging hole 33 is the longer length a. The "end portion" of the discharging hole 33 refers to the discharging hole's end in the length direction. For example, the end portions V, W can be defined as follows: for an arc-shaped discharging hole, the intersection points with a line segment where the chord of the arc passes; for a rectangular discharging hole, the intersection points with a line segment passing through the long diagonal; and for an elliptic discharging hole, the intersection points with a line segment where the major axis passes. The width W3 of a discharging hole 33 is the length b of a longest section among lengths between two intersection points (X-Y) formed between the inner periphery of the discharging hole 33 and various line segments in a direction perpendicular to a line segment (VW) connecting the end portions of the discharging hole 33. It should be noted that the intersection points X, Y are points respectively located on different inner-peripheral sides between the end portions (V, W).

As illustrated in the enlarged diagram in Fig. 2(a), in cases where the width W3 of the discharging hole 33 is different on the upper surface side and the lower surface side of the discharging-surface forming portion 61 forming the discharging surface 31, the narrower of the width W3 on the upper surface side and the width W3 on the lower surface side is considered the width W3 of the discharging hole 33.

[0051]

From the viewpoint of making the foam soft to the touch and improving fragrance generation and foam durability, the width W3 of the discharging hole 33 is preferably 0.1 mm or greater, more preferably 0.4 mm or greater, and preferably 1.5 mm or less, more preferably 0.9 mm or less, and more specifically, preferably from 0.1 to 1.5 mm, more preferably from 0.4 to 0.9 mm.

From the same viewpoint, the length L3 of the discharging hole 33 is preferably 5 mm or greater, more preferably 6 mm or greater, and preferably 25 mm or less, more preferably 18 mm or less, and more specifically, preferably from 5 to 25 mm, more preferably from 6 to 18 mm.

From the viewpoint of making the foam soft to the touch, improving dischargeability, and suppressing clogging, the number of discharging holes 33 in the discharging surface 31 is preferably 7 or greater, more preferably 10 or greater, even more preferably 15 or greater, and preferably 35 or less, more preferably 30 or less, even more preferably 25 or less. More specifically, the number of discharging holes is preferably from 7 to 35, more preferably from 10 to 30, even more preferably from 15 to 25.

[0052]

As for the discharging holes 33, from the viewpoint of making the foam soft to the touch and improving fragrance generation and foam durability, the distance between the discharging holes 33, 33 adjacent to one another in the radial direction, which is from the center portion C of the discharging surface 31 toward the outer circumferential portion 32 of the discharging surface 31, is preferably 1.5 times or greater, more preferably 2 times or greater, and preferably 7.5 times or less, more preferably 6 times or less, and more specifically, preferably from 1.5 to 7.5 times, more preferably from 2 to 6 times, the width of the discharging hole 33 on the center portion C side.

[0053]

There is no particular limitation to the area of the discharging surface 31, but from the viewpoint of balancing the number of discharging holes and good dischargeability from the discharging holes, the area is preferably 500 mm² or greater, more preferably 1000 mm² or greater, and preferably 3000 mm² or less, more preferably 1500 mm² or less,

and more specifically, preferably from 500 to 3000 mm², more preferably from 1000 to 1500 mm².

The total area of the discharging holes present in the discharging surface 31 can be changed as appropriate depending on the shape and number of the discharging holes and the inner pressure of the propellant, but from the viewpoint of good dischargeability, making the foam soft to the touch, and improving fragrance generation, the total area of the discharging holes is preferably 100 mm² or greater, more preferably 150 mm² or greater, and preferably 300 mm² or less, more preferably 250 mm² or less, and more specifically, preferably from 100 to 300 mm², more preferably from 150 to 250 mm².

[0054]

As illustrated in the enlarged diagram in Fig. 2(a), from the viewpoint of making the foam soft to the touch and improving fragrance generation, it is preferable that, on the outer circumferential portion 32 side in the radial direction from the center portion C of the discharging surface 31 toward the outer circumferential portion 32 of the discharging surface—preferably more toward the outer circumferential portion 32 side than a position at half the radius—the outer side surface d, of the side surfaces of the discharging hole 33b, is inclined outwardly with respect to the vertical direction, and it is more preferable that there are a plurality of such outwardly-inclined discharging holes 33b, and the closer the discharging hole 33 is to the outer circumferential portion 32, the greater the angle of inclination. The inner side surface a, of the side surfaces of the discharging hole 33b, may either be a vertical side surface or inclined outwardly at an inclination smaller than that of the outer side surface d.

From the same viewpoint, as for the discharging holes 33 forming the multi-hole region, it is preferable that, on the center portion side in the radial direction from the center portion C of the discharging surface 31 toward the outer circumferential portion 32 of the discharging surface—preferably within a section between a position at one-fifth the radius from the center portion C and a position at half the radius—the inner side surface a, of the side surfaces of the discharging hole 33c, is inclined inwardly with respect to the vertical direction. The outer side surface b, of the side surfaces of the discharging hole 33c, may either be a vertical side surface or inclined inwardly at an inclination smaller than that of the inner side surface a.

[0055]

The invention is not limited to the foregoing embodiments, and can be modified as appropriate.

For example, the foam discharging member 3 may have the same structure as the foam discharging member illustrated in Figs. 1 and 2 of Patent Literature 2, except for the shape and arrangement of the discharging holes 33 formed in the discharging surface 31.

[0056]

Fig. 3 illustrates an example in which the aerosol cosmetic product of the invention forms a foam body having a three-dimensional shape like a rose flower. The aerosol cosmetic product may, however, form a foam body having a three-dimensional shape of a flower of another type of plant, or, instead of a flower, a three-dimensional geometric shape, or a three-dimensional shape of a fruit of a plant, a vehicle, the entirety or a portion (e.g. the face) of an animal, or a character. Since the aerosol cosmetic product offers excellent feeling when applied, such as texture to the touch, and offers excellent feeling such as good fragrance generation and foam durability, the product can be suitably used for external compositions for the skin, and can be used as a cosmetic to be applied to the skin in general including the scalp, and preferably to the skin excluding the scalp, and more preferably to the face, the body, or the hands and feet.

The aerosol cosmetic product of the invention finds use in: cleansers, such as facial cleansing soaps, hand soaps, body soaps and dishwashing detergents; disinfectants for the hands and fingers; cosmetics for the head and hair, such as hair grooming agents, holding agents and hair growth agents; cosmetics for the skin, such as toners, moisturizers and serums; and shaving foams. Because of its excellent cleansing effects, the aerosol cosmetic product can suitably be used as cleansers.

[0057]

In relation to the foregoing embodiments, the invention further discloses the following additional features (aerosol cosmetic products, manufacturing methods therefor, etc.).

{1}

An aerosol cosmetic product comprising:

an aerosol container including a foam discharging member; and
 a foaming composition that is charged in the aerosol container, wherein:
 the foam discharging member has a discharging surface for discharging a foam;
 a plurality of long narrow discharging holes are formed around a center portion of the discharging surface;

a multi-hole region, in which at least three of the discharging holes are present independently of one another in a radial direction from the center portion toward an outer circumferential portion of the discharging surface, is formed in an entire region or in a portion, in a circumferential direction, of the discharging surface;

the foaming composition contains components (A) to (D) below:

- (A) a fatty acid or salt thereof;
- (B) a paste-form or solid oil (excluding the component (A));
- (C) water; and
- (D) a propellant;

the component (A) is contained in an amount from 1.1 to 15 mass%, in terms of fatty acid, in all components of the foaming composition excluding the component (D), and a neutralization rate of the fatty acid by a base is from 0.75 to 1 in terms of fatty acid; and

the component (B) is contained in an amount from 0.01 to 0.8 mass% in all components of the foaming composition excluding the component (D).

[0058]

{2}

The aerosol cosmetic product as set forth in clause {1}, wherein the number of carbon atoms of the fatty acid of the component (A) is preferably 8 or greater, more preferably 10 or greater, even more preferably 12 or greater, and preferably 24 or less, more preferably 22 or less, even more preferably 20 or less, and preferably from 8 to 24, more preferably from 10 to 22, even more preferably from 12 to 20.

{3}

The aerosol cosmetic product as set forth in clause {1} or {2}, wherein the component (A) includes at least one type of fatty acid selected from fatty acids having from 8 to 15 carbon atoms and at least one type of fatty acid selected from fatty acids having from 16 to 24 carbon atoms.

{4}

The aerosol cosmetic product as set forth in any one of clauses {1} to {3}, wherein the fatty acid of the component (A) is a straight-chain or branched-chain saturated fatty acid.

{5}

The aerosol cosmetic product as set forth in clause {4}, wherein the saturated fatty acid is at least one type selected from caprylic acid, capric acid, lauric acid, myristic acid, palmitic acid, stearic acid, arachidic acid, and behenic acid.

{6}

The aerosol cosmetic product as set forth in any one of clauses {1} to {3}, wherein the fatty acid of the component (A) is a straight-chain or branched-chain unsaturated fatty acid.

[0059]

{7}

The aerosol cosmetic product as set forth in any one of clauses {1} to {6}, wherein the salt of the fatty acid is at least one type selected from sodium salt, potassium salt, calcium salt, magnesium salt, aluminum salt, ammonium salt, monoethanolamine salt, diethanolamine salt, triethanolamine salt, arginine salt, and lysine salt.

{8}

The aerosol cosmetic product as set forth in any one of clauses {1} to {7}, wherein the salt of the fatty acid is at least one type selected from sodium salt, potassium salt, calcium salt, magnesium salt, aluminum salt, ammonium salt, monoethanolamine salt, diethanolamine salt, and triethanolamine salt.

{9}

The aerosol cosmetic product as set forth in any one of clauses {1} to {8}, wherein the salt of the fatty acid is at least one type selected from sodium salt, potassium salt, ammonium salt, monoethanolamine salt, diethanolamine salt, and triethanolamine salt.

{10}

The aerosol cosmetic product as set forth in any one of clauses {1} to {9}, wherein the content of the component (A), in terms of fatty acid, in all components of the foaming composition excluding the component (D) of the foaming composition is preferably 2 mass% or greater, more preferably 4 mass% or greater, even more preferably 5.5 mass%

or greater, and preferably 13 mass% or less, more preferably 11 mass% or less, even more preferably 8 mass% or less.

{11}

The aerosol cosmetic product as set forth in any one of clauses {1} to {9}, wherein the content of the component (A), in terms of fatty acid, in all components of the foaming composition excluding the component (D) of the foaming composition is preferably from 2 to 13 mass%, more preferably from 4 to 11 mass%, even more preferably from 5.5 to 8 mass%.

{12}

The aerosol cosmetic product as set forth in any one of clauses {1} to {11}, wherein, as for the component (A), the neutralization rate of the fatty acid by a base in terms of fatty acid is preferably 0.78 or greater, more preferably 0.8 or greater, and preferably 0.95 or less, more preferably 0.9 or less, even more preferably 0.85 or less.

{13}

The aerosol cosmetic product as set forth in any one of clauses {1} to {12}, wherein, as for the component (A), the neutralization rate of the fatty acid by a base in terms of fatty acid is preferably from 0.78 to 0.95, more preferably from 0.8 to 0.9, even more preferably from 0.8 to 0.85.

{14}

The aerosol cosmetic product as set forth in any one of clauses {1} to {13}, wherein a base for neutralization to achieve a predetermined neutralization rate is at least one type selected from potassium hydroxide, sodium hydroxide, magnesium hydroxide, calcium hydroxide, 2-amino-2-methyl-1-propanol, monoethanolamine, diethanolamine, triethanolamine, L-arginine, lysine, ornithine, ammonia water, ammonium hydroxide, and sodium hydrogencarbonate, and preferably, is at least one type selected from sodium hydroxide, potassium hydroxide, calcium hydroxide, magnesium hydroxide, aluminum hydroxide, ammonia water, monoethanolamine, diethanolamine, and triethanolamine.

[0060]

{15}

The aerosol cosmetic product as set forth in any one of clauses {1} to {14}, wherein the component (B) is an oily agent having a viscosity of 2000 mPa·s or greater under conditions of 25°C and 1013.25 hPa, the oily agent including agents that are

completely solid and agents with a viscosity too high to be measurable.

{16}

The aerosol cosmetic product as set forth in any one of clauses {1} to {15}, wherein the viscosity of the component (B) is preferably 4000 mPa·s or greater, more preferably 7000 mPa·s or greater, even more preferably 10,000 mPa·s or greater.

{17}

The aerosol cosmetic product as set forth in any one of clauses {1} to {16}, wherein the component (B) is at least one type selected from hydrocarbons, ester oils, ether oils, waxes, and higher alcohols, having a viscosity of 2000 mPa·s or greater.

[0061]

{18}

The aerosol cosmetic product as set forth in any one of clauses {1} to {17}, wherein the foaming composition includes, as the component (B), at least one type selected from: waxes such as ceresin, solid paraffin, polyethylene powder, microcrystalline wax, Vaseline, myristyl myristate, cetyl palmitate, decyl oleate, cetyl octanoate, beeswax, spermaceti wax and lanolin; lauryl alcohol; cetyl alcohol; stearyl alcohol; and behenyl alcohol.

{19}

The aerosol cosmetic product as set forth in any one of clauses {1} to {17}, wherein the content of the component (B) in the total amount of the foaming composition excluding the component (D) is preferably 0.05 mass% or greater, more preferably 0.08 mass% or greater, even more preferably 0.1 mass% or greater, and preferably 0.6 mass% or less, more preferably 0.5 mass% or less, even more preferably 0.4 mass% or less.

{20}

The aerosol cosmetic product as set forth in any one of clauses {1} to {19}, wherein the content of the component (B) in the total amount of the foaming composition excluding the component (D) is preferably from 0.05 to 0.6 mass%, more preferably from 0.08 to 0.5 mass%, even more preferably from 0.1 to 0.4 mass%.

[0062]

{21}

The aerosol cosmetic product as set forth in any one of clauses {1} to {20}, wherein the content ratio of the component (B) (excluding the component (A)) with respect to the amount of the component (A) in terms of fatty acid is preferably 0.015 or greater, more preferably 0.021 or greater, even more preferably 0.025 or greater, and preferably 0.15 or less, more preferably 0.08 or less, even more preferably 0.05 or less.

{22}

The aerosol cosmetic product as set forth in any one of clauses {1} to {21}, wherein the content ratio of the component (B) (excluding the component (A)) with respect to the amount of the component (A) in terms of fatty acid is preferably from 0.015 to 0.15, more preferably from 0.021 to 0.08, even more preferably from 0.025 to 0.05.

[0063]

{23}

The aerosol cosmetic product as set forth in any one of clauses {1} to {22}, wherein the content of water of the component (C) in all components of the foaming composition excluding the component (D) of the foaming composition is preferably 60 mass% or greater, more preferably 65 mass% or greater, even more preferably 70 mass% or greater, and preferably 92 mass% or less, more preferably 90 mass% or less, even more preferably 88 mass% or less.

{24}

The aerosol cosmetic product as set forth in any one of clauses {1} to {23}, wherein the content of water of the component (C) in all components of the foaming composition excluding the component (D) of the foaming composition is preferably from 60 to 92 mass%, more preferably from 65 to 90 mass%, even more preferably from 70 to 88 mass%.

{25}

The aerosol cosmetic product as set forth in any one of clauses {1} to {24}, wherein the propellant of the component (D) is at least one type selected from propane, n-butane, isobutane, dimethyl ether, methylethyl ether, diethyl ether, carbonic acid gas, nitrogen gas, and oxygen gas.

{26}

The aerosol cosmetic product as set forth in any one of clauses {1} to {25}, wherein the inner pressure within the aerosol container at 20°C is preferably 0.2 MPa or

greater, more preferably 0.3 MPa or greater, even more preferably 0.35 MPa or greater, and preferably 0.65 MPa or less, more preferably 0.55 MPa or less, even more preferably 0.45 MPa or less.

{27}

The aerosol cosmetic product as set forth in any one of clauses {1} to {26}, wherein the inner pressure within the aerosol container at 20°C is preferably from 0.2 to 0.65 MPa, more preferably from 0.3 to 0.55 MPa, even more preferably from 0.35 to 0.45 MPa.

[0064]

{28}

The aerosol cosmetic product as set forth in any one of clauses {1} to {26}, wherein the foaming composition further contains (E) a polyol.

{29}

The aerosol cosmetic product as set forth in any one of clauses {1} to {28}, wherein the component (E) is at least one type selected from sorbitol, maltitol, erythritol, xylitol, trehalose, raffinose, glycerol, diglycerol, propanediol, butylene glycol, propylene glycol, dipropylene glycol, isoprene glycol, hexylene glycol, octanediol, pentanediol, glycerinmono 2-ethylhexyl ether, polyethylene glycol, and polypropylene glycol.

{30}

The aerosol cosmetic product as set forth in any one of clauses {1} to {29}, wherein the component (E) is at least one type selected from glycerol, diglycerol, polyethylene glycol, polypropylene glycol, sorbitol, maltitol, erythritol, xylitol, and trehalose.

{31}

The aerosol cosmetic product as set forth in any one of clauses {1} to {30}, wherein the content of the component (E) in all components of the foaming composition excluding the component (D) of the foaming composition is preferably 1 mass% or greater, more preferably 3 mass% or greater, even more preferably 4 mass% or greater, and preferably 15 mass% or less, more preferably 10 mass% or less, even more preferably 8 mass% or less.

{32}

The aerosol cosmetic product as set forth in any one of clauses {1} to {31},

wherein the content of the component (E) in all components of the foaming composition excluding the component (D) of the foaming composition is preferably from 1 to 15 mass%, more preferably from 3 to 10 mass%, even more preferably from 4 to 8 mass%.

[0065]

{33}

The aerosol cosmetic product as set forth in any one of clauses {1} to {32}, wherein the foaming composition further contains (F) a N-acyl amino acid salt.

{34}

The aerosol cosmetic product as set forth in clause {33}, wherein the amino acid in the N-acyl amino acid of the component (F) is at least one type selected from glutamic acid, aspartic acid, glycine, alanine, threonine, methylalanine, sarcosine, lysine, and arginine, and preferably, is one or two types selected from glutamic acid and glycine.

{35}

The aerosol cosmetic product as set forth in clause {33} or {34}, wherein the amino acid in the N-acyl amino acid of the component (F) is a L-form.

{36}

The aerosol cosmetic product as set forth in any one of clauses {33} to {35}, wherein the number of carbon atoms of the acyl group in the N-acyl amino acid of the component (F) is preferably 10 or greater, more preferably 12 or greater, even more preferably 14 or greater, and preferably 24 or less, more preferably 22 or less, even more preferably 20 or less.

{37}

The aerosol cosmetic product as set forth in any one of clauses {33} to {36}, wherein the number of carbon atoms of the acyl group in the N-acyl amino acid of the component (F) is preferably from 10 to 24, more preferably from 12 to 22, even more preferably from 14 to 20.

{38}

The aerosol cosmetic product as set forth in any one of clauses {33} to {37}, wherein the acyl group in the N-acyl amino acid of the component (F) is a saturated straight-chain or saturated branched-chain acyl group.

{39}

The aerosol cosmetic product as set forth in any one of clauses {33} to {38},

wherein the acyl group in the N-acyl amino acid of the component (F) is at least one type selected from a decanoyl group, a lauroyl group, a myristoyl group, a palmitoyl group, a stearoyl group, an oleoyl group, and a linoleyl group.

[0066]

{40}

The aerosol cosmetic product as set forth in any one of clauses {33} to {39}, wherein the acyl group in the N-acyl amino acid of the component (F) is at least one type selected from coconut oil fatty acid, castor oil fatty acid, olive oil fatty acid, and palm oil fatty acid.

{41}

The aerosol cosmetic product as set forth in any one of clauses {33} to {40}, wherein a salt of the amino acid in the N-acyl amino acid of the component (F) is at least one type selected from sodium salt, potassium salt, calcium salt, magnesium salt, aluminum salt, ammonium salt, monoethanolamine salt, diethanolamine salt, triethanolamine salt, arginine salt, and lysine salt.

{42}

The aerosol cosmetic product as set forth in any one of clauses {33} to {41}, wherein a salt of the amino acid in the N-acyl amino acid of the component (F) is at least one type selected from sodium salt, potassium salt, calcium salt, magnesium salt, aluminum salt, ammonium salt, monoethanolamine salt, diethanolamine salt, and triethanolamine salt.

{43}

The aerosol cosmetic product as set forth in any one of clauses {33} to {42}, wherein the N-acyl amino acid salt of the component (F) is at least one type selected from sodium N-lauroyl glutamate, potassium N-lauroyl glutamate, triethanolamine N-lauroyl glutamate, sodium N-myristoyl glutamate, potassium N-myristoyl glutamate, triethanolamine N-myristoyl glutamate, sodium N-stearoyl glutamate, potassium N-stearoyl glutamate, triethanolamine N-stearoyl glutamate, sodium N-cocoyl glutamate, potassium N-cocoyl glutamate, and triethanolamine N-cocoyl glutamate.

{44}

The aerosol cosmetic product as set forth in any one of clauses {33} to {43}, wherein the content of the component (F) in all components of the foaming composition

excluding the component (D) of the foaming composition is preferably 0.1 mass% or greater, more preferably 0.4 mass% or greater, even more preferably 0.7 mass% or greater, and preferably 5 mass% or less, more preferably 3 mass% or less, even more preferably 1.5 mass% or less.

{45}

The aerosol cosmetic product as set forth in any one of clauses {33} to {44}, wherein the content of the component (F) in all components of the foaming composition excluding the component (D) of the foaming composition is preferably from 0.1 to 5 mass%, more preferably from 0.4 to 3 mass%, even more preferably from 0.7 to 1.5 mass%.

[0067]

{46}

The aerosol cosmetic product as set forth in any one of clauses {1} to {45}, wherein the foaming composition contains at least one type selected from anionic surfactants excluding the component (A) and the component (F), cationic surfactants, nonionic surfactants, and amphoteric surfactants.

{47}

The aerosol cosmetic product as set forth in clause {46}, wherein the total content of anionic surfactants excluding the component (A) and the component (F), cationic surfactants, nonionic surfactants, and amphoteric surfactants, in all components of the foaming composition excluding the component (D) of the foaming composition is preferably less than 5 mass%, more preferably 3 mass% or less, even more preferably 1 mass% or less, more preferably 0.5 mass% or less, further more preferably 0.1 mass% or less.

[0068]

{48}

The aerosol cosmetic product as set forth in any one of clauses {1} to {47}, wherein the foaming composition contains a liquid oil excluding the component (A).

{49}

The aerosol cosmetic product as set forth in clause {48}, wherein at least one type

selected from hydrocarbons, ester oils, and higher alcohols having a viscosity of less than 2000 mPa·s is/are contained as the liquid oil excluding the component (A).

{50}

The aerosol cosmetic product as set forth in clause {49}, wherein at least one type selected from α -olefin oligomers, light isoparaffins, light liquid isoparaffins, and liquid paraffins is/are contained as the hydrocarbon.

{51}

The aerosol cosmetic product as set forth in clause {49} or {50}, wherein at least one type selected from esters of a fatty acid and a monovalent alcohol, dibasic acid esters, and esters of a fatty acid and a polyol is contained as the ester oil.

{52}

The aerosol cosmetic product as set forth in any one of clauses {49} to {51}, wherein at least one type selected from straight-chain saturated alcohols having from 6 to 10 carbon atoms, straight-chain/branched aliphatic alcohols having from 10 to 24 carbon atoms, and unsaturated aliphatic alcohols having from 10 to 24 carbon atoms is contained as the higher alcohol.

{53}

The aerosol cosmetic product as set forth in any one of clauses {49} to {52}, wherein the content of the liquid oil excluding the component (A) in all components of the foaming composition excluding the component (D) of the foaming composition is preferably less than 5 mass%, more preferably 3 mass% or less, even more preferably 1 mass% or less, more preferably 0.5 mass% or less, further more preferably 0.1 mass% or less.

[0069]

{54}

The aerosol cosmetic product as set forth in any one of clauses {1} to {53}, wherein the foaming composition contains a coloring agent.

{55}

The aerosol cosmetic product as set forth in clause {54}, wherein the content of the coloring agent in all components of the foaming composition excluding the component (D) of the foaming composition is preferably 0.001 mass% or greater, more preferably 0.005 mass% or greater, even more preferably 0.01 mass% or greater, and preferably 4

mass% or less, more preferably 2 mass% or less, even more preferably 1 mass% or less.

{56}

The aerosol cosmetic product as set forth in clause {54} or {55}, wherein the content of the coloring agent in all components of the foaming composition excluding the component (D) of the foaming composition is preferably from 0.001 to 4 mass%, more preferably from 0.005 to 2 mass%, even more preferably from 0.01 to 1 mass%.

{57}

The aerosol cosmetic product as set forth in any one of clauses {1} to {56}, wherein the viscosity, under conditions of 25°C and 1013.25 hPa, of foam immediately after being discharged from the aerosol container is preferably 10,000 mPa·s or greater, more preferably 12,000 mPa·s or greater, even more preferably 14,000 mPa·s or greater, and preferably 50,000 mPa·s or less, more preferably 35,000 mPa·s or less, even more preferably 20,000 mPa·s or less.

[0070]

{58}

The aerosol cosmetic product as set forth in any one of clauses {1} to {57}, wherein, by pressing down a stem of the aerosol container, the foaming composition is ejected and is discharged from the discharging surface of the foam discharging member as a foam body.

{59}

The aerosol cosmetic product as set forth in clause {58}, wherein the foam discharging member includes a press-down operation portion, and the stem is pressed down by pressing the press-down operation portion.

{60}

The aerosol cosmetic product as set forth in any one of clauses {1} to {59}, wherein, in the multi-hole region, preferably 4 or more, more preferably 5 or more, and preferably 9 or fewer, more preferably 8 or fewer, even more preferably 7 or fewer, of the discharging holes are present independently of one another in the radial direction.

{61}

The aerosol cosmetic product as set forth in any one of clauses {1} to {60}, wherein, in the multi-hole region, preferably from 3 to 9, more preferably from 4 to 8, even more preferably from 5 to 7, of the discharging holes are present independently of

one another in the radial direction.

[0071]

{62}

The aerosol cosmetic product as set forth in any one of clauses {1} to {61}, wherein, on the discharging surface, the entire region of the discharging surface in the circumferential direction is the multi-hole region.

{63}

The aerosol cosmetic product as set forth in any one of clauses {1} to {62}, wherein the angular range in which the multi-hole region is present on the discharging surface is preferably 135° or greater, more preferably 180° or greater, even more preferably 225° or greater, further more preferably 270° or greater, and preferably 360° or less.

{64}

The aerosol cosmetic product as set forth in any one of clauses {1} to {63}, wherein the angular range in which the multi-hole region is present on the discharging surface is preferably from 135° to 360° , more preferably from 180° to 360° , even more preferably from 225° to 360° , further preferably from 270° to 360° , and further more preferably 360° .

{65}

The aerosol cosmetic product as set forth in any one of clauses {1} to {64}, wherein the discharging hole formed in the discharging surface, preferably in the multi-hole region, is arc-shaped, and is arranged along an arc of a discretionary circle centered about the center portion of the discharging surface.

{66}

The aerosol cosmetic product as set forth in any one of clauses {1} to {65}, wherein the length L3 of the discharging hole formed in the discharging surface, preferably in the multi-hole region, is preferably 10 times or greater, more preferably 12 times or greater, even more preferably 15 times or greater, the width W3 thereof, and the length L3 is preferably 250 times or less, more preferably 180 times or less, even more preferably 100 times or less, further more preferably 50 times or less, the width W3.

{67}

The aerosol cosmetic product as set forth in any one of clauses {1} to {66},

wherein the length L3 of the discharging hole formed in the discharging surface, preferably in the multi-hole region, is preferably from 10 to 250 times, more preferably from 12 to 180 times, even more preferably from 15 to 100 times, further more preferably from 15 to 50 times, the width W3 thereof.

{68}

The aerosol cosmetic product as set forth in any one of clauses {1} to {67}, wherein the shape of the discharging hole formed in the discharging surface, preferably in the multi-hole region, is long and narrow, and may be rectangular or elliptic, and a portion thereof may be curved or bent or may have projections and depressions.

[0072]

{69}

The aerosol cosmetic product as set forth in any one of clauses {1} to {68}, wherein the width W3 of the discharging hole formed in the discharging surface, preferably in the multi-hole region, is preferably 0.1 mm or greater, more preferably 0.4 mm or greater, and preferably 1.5 mm or less, more preferably 0.9 mm or less.

{70}

The aerosol cosmetic product as set forth in any one of clauses {1} to {69}, wherein the width W3 of the discharging hole formed in the discharging surface, preferably in the multi-hole region, is preferably from 0.1 to 1.5 mm, more preferably from 0.4 to 0.9 mm.

{71}

The aerosol cosmetic product as set forth in any one of clauses {1} to {70}, wherein the length L3 of the discharging hole formed in the discharging surface, preferably in the multi-hole region, is preferably 5 mm or greater, more preferably 6 mm or greater, and preferably 25 mm or less, more preferably 18 mm or less.

{72}

The aerosol cosmetic product as set forth in any one of clauses {1} to {71}, wherein the length L3 of the discharging hole formed in the discharging surface, preferably in the multi-hole region, is preferably from 5 to 25 mm, more preferably from 6 to 18 mm.

{73}

The aerosol cosmetic product as set forth in any one of clauses {1} to {72},

wherein it is preferable that there are 7 or more, preferably 10 or more, more preferably 15 or more discharging holes, and preferably 35 or fewer, more preferably 30 or fewer, even more preferably 25 or fewer discharging holes in the discharging surface.

{74}

The aerosol cosmetic product as set forth in any one of clauses {1} to {73}, wherein it is preferable that there are preferably from 7 to 35, more preferably from 10 to 30, even more preferably from 15 to 25 discharging holes in the discharging surface.

[0073]

{75}

The aerosol cosmetic product as set forth in any one of clauses {1} to {74}, wherein, as for the discharging holes formed in the discharging surface, preferably in the multi-hole region, the distance between the discharging holes adjacent to one another in the radial direction is preferably 1.5 times or greater, more preferably 2 times or greater, and preferably 7.5 times or less, more preferably 6 times or less, the width of the discharging hole on the center portion side.

{76}

The aerosol cosmetic product as set forth in any one of clauses {1} to {75}, wherein, as for the discharging holes formed in the discharging surface, preferably in the multi-hole region, the distance between the discharging holes adjacent to one another in the radial direction is preferably from 1.5 to 7.5 times, more preferably from 2 to 6 times, the width of the discharging hole on the center portion side.

{77}

The aerosol cosmetic product as set forth in any one of clauses {1} to {76}, wherein the area of the discharging surface is preferably 500 mm² or greater, more preferably 1000 mm² or greater, and preferably 3000 mm² or less, more preferably 1500 mm² or less.

{78}

The aerosol cosmetic product as set forth in any one of clauses {1} to {77}, wherein the area of the discharging surface is preferably from 500 to 3000 mm², more preferably from 1000 to 1500 mm².

{79}

The aerosol cosmetic product as set forth in any one of clauses {1} to {78},

wherein the total area of the discharging holes present in the discharging surface is preferably 100 mm^2 or greater, more preferably 150 mm^2 or greater, and preferably 300 mm^2 or less, more preferably 250 mm^2 or less.

{80}

The aerosol cosmetic product as set forth in any one of clauses {1} to {79}, wherein the total area of the discharging holes present in the discharging surface is preferably from 100 to 300 mm^2 , more preferably from 150 to 250 mm^2 .

[0074]

{81}

The aerosol cosmetic product as set forth in any one of clauses {1} to {80}, wherein, as for the discharging hole formed in the discharging surface, preferably in the multi-hole region, on the outer circumferential portion side in the radial direction, preferably more toward the outer circumferential portion side than a position at half the radius, the outer side surface, of the side surfaces of the discharging hole, is inclined outwardly with respect to the vertical direction.

{82}

The aerosol cosmetic product as set forth in clause {81}, wherein:

there are a plurality of the discharging holes whose outer side surface is inclined outwardly with respect to the vertical direction; and

the closer the discharging hole is to the outer circumferential portion, the greater the angle of inclination.

{83}

The aerosol cosmetic product as set forth in clause {81} or {82}, wherein, as for the discharging hole whose outer side surface is inclined outwardly with respect to the vertical direction, the inner side surface, of the side surfaces of the discharging hole, is either a vertical side surface or is inclined outwardly at an inclination smaller than that of the outer side surface.

{84}

The aerosol cosmetic product as set forth in any one of clauses {1} to {83}, wherein, as for the discharging hole formed in the discharging surface, preferably in the multi-hole region, on the center portion side in the radial direction, preferably within a section between a position at one-fifth the radius from the center portion C and a position

at half the radius, the inner side surface, of the side surfaces of the discharging hole, is inclined inwardly with respect to the vertical direction.

{85}

The aerosol cosmetic product as set forth in clause {84}, wherein, as for the discharging hole whose inner side surface is inclined inwardly with respect to the vertical direction, the outer side surface, of the side surfaces of the discharging hole, is either a vertical side surface or is inclined inwardly at an inclination smaller than that of the inner side surface.

{86}

The aerosol cosmetic product as set forth in any one of clauses {1} to {85}, wherein the aerosol cosmetic product forms a foam body having a three-dimensional shape, such as a three-dimensional shape like a flower, a three-dimensional geometric shape, or a three-dimensional shape of a fruit of a plant, a vehicle, the entirety or a portion (e.g. the face) of an animal, or a character.

{87}

The aerosol cosmetic product as set forth in any one of clauses {1} to {86}, wherein the aerosol cosmetic product is used for cleansers, disinfectants for the hands and fingers, cosmetics for the head and hair, cosmetics for the skin, and shaving foams.

{88}

The aerosol cosmetic product as set forth in any one of clauses {1} to {87}, wherein foam bodies discharged in a wall-like shape respectively from the plurality of discharging holes are integrated together after being discharged, to form a foam body with a predetermined three-dimensional shape.

{89}

The aerosol cosmetic product as set forth in any one of clauses {1} to {88}, wherein the foaming composition further contains a perfume.

{90}

A method for providing fragrance and a three-dimensional foam body, the method comprising

employing the aerosol cosmetic product as set forth in clause {89} to form the three-dimensional foam body and release the fragrance.

[0075]

{91}

A method for manufacturing the aerosol cosmetic product as set forth in any one of clauses {1} to {89}, the aerosol cosmetic product manufacturing method comprising:

step 1 of mixing the components (A) to (C), excluding the component (D), and optional components blended as necessary, to prepare a stock solution;

step 2 of charging the stock solution of the step 1 into an aerosol container;

a step involving step 3 of charging, under pressure, a prescribed amount of the component (D) into the aerosol container; and

step 4 of attaching, to an upper portion of the aerosol container, the foam discharging member having the discharging surface.

{92}

The method for manufacturing the aerosol cosmetic product as set forth in clause {91}, wherein, in the step 1, mixing is conducted under heating at 50°C or higher, preferably 55°C or higher, and 90°C or lower, preferably 85°C or lower.

{93}

The method for manufacturing the aerosol cosmetic product as set forth in clause {91} or {92}, wherein the step 1 involves:

step 1a of mixing, under heating, the component (A2) which is a base, the component (C), and other optional water-soluble components blended as necessary;

step 1b of mixing, under heating, the component (A1) which is a fatty acid, the component (B), and other optional oil-soluble components;

step 1c of adding the preparation of the step 1b to the preparation of the step 1a and mixing until uniform; and

step 1d of cooling the preparation of the step 1c to 30°C or lower.

{94}

The method for manufacturing the aerosol cosmetic product as set forth in clause {93}, wherein the heating condition for the step 1a and the step 1b is equal to or higher than the dissolution temperature of the component (A1), preferably 70°C or higher, more preferably 75°C or higher, and preferably 90°C or lower, more preferably 85°C or lower.

Examples

[0076]

The invention is further described below by employing Examples thereof. The

invention, however, is not limited to the Examples.

{Examples 1 to 7 and Comparative Examples 1 to 8}

Respective aerosol containers were produced according to the following manufacturing method, each container being charged with a foaming composition containing a stock solution and a propellant according the respective formulas shown in Table 1. Table 1 shows the contents of the respective components in mass% with respect to the total amount of the foaming composition.

[0077]

{Manufacturing method}

(1) Potassium hydroxide, which is component (A2), component (C), component (E), component (F), disodium edetate, phenoxyethanol, and a perfume are heated to 80°C and mixed.

(2) Myristic acid and stearic acid, which are components (A1), and component (B) are heated to 80°C and mixed.

(3) Preparation 2 obtained in the above (2) is added to preparation 1 obtained in the above (1) and mixed until uniform.

(4) The stock solution is cooled to 30°C.

(5) The stock solution is charged into an aerosol can, and an aerosol valve is clinched onto the aerosol container.

(6) A prescribed amount of component (D) is charged under pressure from a stem into the aerosol container.

[0078]

A foam discharging member having a discharging surface with discharging holes arranged according to one of the respective patterns described below was attached to the respective aerosol container charged with one of the respective foaming compositions, and a foam body was discharged from the discharging surface.

In Examples 1 to 6 and Comparative Examples 2 to 5, the foam discharging member illustrated in Figs. 1 to 3 was used, wherein the discharging holes 33 were arranged as illustrated in Fig. 4 (referred to as Discharging hole No. 1 in Table 1).

Example 7 used a member having a discharging surface provided with discharging

holes 33 shaped and arranged as illustrated in Fig. 5 (referred to as Discharging hole No. 2 in Table 1), instead of the foam discharging member used in Example 1.

Comparative Example 1 used a member having a discharging surface provided with discharging holes 34 shaped and arranged as illustrated in Fig. 6(a) (referred to as Discharging hole No. 0 in Table 1), instead of the foam discharging member used in Example 1. Comparative Example 6 used a member having a discharging surface provided with discharging holes 33 shaped and arranged as illustrated in Fig. 6(b) (referred to as Discharging hole No. 3 in Table 1), instead of the foam discharging member used in Example 1. Comparative Example 7 used a member having a discharging surface provided with discharging holes 34 shaped and arranged as illustrated in Fig. 6(c) (referred to as Discharging hole No. 4 in Table 1), instead of the foam discharging member used in Example 1. Comparative Example 8 used a member having a discharging surface provided with discharging holes 34 shaped and arranged as illustrated in Fig. 6(d) (referred to as Discharging hole No. 5 in Table 1), instead of the foam discharging member used in Example 1.

The total area of the discharging holes in the discharging surface of the foam discharging member used in Example 1 was set to approximately 185 mm². In Comparative Examples 1 and 6 to 8, the total area of the discharging holes in the discharging surface of the respective foam discharging members was adjusted to be substantially the same as above. More specifically, the diameter of the discharging hole in the discharging surface used in Comparative Example 1 was set to approximately 15.2 mm. The diameter of the discharging hole in the discharging surface used in Comparative Example 7 was set to approximately 3.8 mm, and the pitches P1, P2 between discharging holes were both approximately 9 mm. The diameter of the discharging hole in the discharging surface used in Comparative Example 8 was set to approximately 3.1 mm, and the pitch between discharging holes was 9 mm.

[0079]

{Examples 8 to 14}

Respective aerosol containers, each being charged with a foaming composition having the respective formulas shown in Table 2, were produced similarly to Example 1, except that the component (B) was changed to the components and amounts shown in Table 2. The components (B) are all solid oils completely solid at 25°C. Table 2

shows the contents, in mass%, of the respective components in the foaming composition with respect to the total amount of the foaming composition.

[0080]

{Evaluation of softness to the touch and goodness of fragrance generation}

Five expert panelists conducted a sensory evaluation on (1) the softness to the touch and (2) the goodness of fragrance generation. The evaluation results for each evaluation item are shown in Tables 1 and 2.

[0081]

For Examples 1 to 7 and Comparative Examples 2 to 8, the softness to the touch and the goodness of fragrance generation when the discharged foam (1 g) was applied to the back of the hand were evaluated according to the following evaluation criteria in comparison to the sample of Comparative Example 1. The results are shown in Tables 1 and 2 as an average score of the five panelists (rounded at the second decimal place).

{Evaluation criteria}

5: Very good.

4: Good.

3: Neither good nor poor (same as Comparative Example 1).

2: Poor.

1: Very poor.

[0082]

{Evaluation of cleansing effect}

Artificial sebum colored with iron oxide was applied to the back of the hand. After 30 minutes, 1 g of the sample was used to massage the back of the hand for 1 minute at a constant force and speed, and then the sample was rinsed away with water. The cleansing effect after rinsing was evaluated on a scale from 1 to 4, with 4 indicating a state where the coloring caused by the artificial sebum was almost completely rinsed off, and 1 indicating a state where the coloring caused by the artificial sebum was hardly rinsed off. The results are shown in Tables 1 and 2 as an average score of the five panelists (rounded at the second decimal place).

[0083]

{Evaluation of foam durability (shape retainability)}

The foam body was left to stand for 3 minutes after being discharged. The change in shape of the foam body was visually observed, to evaluate the foam durability (shape retainability) according to the following evaluation criteria. The evaluation results are shown in Tables 1 and 2.

{Evaluation criteria}

A: Retains substantially the same shape as when discharged.

B: Overall shape is retained, although the foam tip has become rounder compared to when discharged.

C: Overall shape has deformed compared to when discharged.

X: The shape at the time of discharge cannot be retained at all.

*1: Evaluation of change in shape was not possible, as the foam was too soft and the foam body deformed immediately after discharge.

*2: The foam was too hard, and upon discharge, the foam was not discharged sufficiently and did not have a constant shape at every discharge.

[0084]

{Evaluation of unlikeliness of clogging}

The foam on the discharging surface was removed after form discharge, and the product was left to stand indoors. After a day, clogging of the discharging holes was observed, and in cases where clogging was observed, evaluation was also made on whether dischargeability was affected. The evaluation results according to the following evaluation criteria are shown in Tables 1 and 2.

{Evaluation criteria}

A: No clogging.

B: Clogging was observed, but foam was discharged from all discharging holes.

X: Clogging was observed, and there were discharging holes that did not discharge.

[0085]

{Foam hardness}

In a 100-mL beaker, the foam was discharged and charged up to 90 mL. The

viscosity of the foam was measured with a type-B viscometer (Vismetron viscometer; model VS-A1 from Shibaura Systems Co., Ltd.) using spindle No. 4 at 12 rpm (rotations/minute) for 30 seconds.

[0086]

{Neutralization rate}

The neutralization rate was calculated from the saponification value X of each fatty acid by employing the following equation.

Neutralization rate (%): $\text{Content of potassium hydroxide} / \Sigma((X/1000) \times \text{Content of fatty acid})$.

[0087]

[Table 1]

Component				Example							Comparative Example							
				1	2	3	4	5	6	7	1	2	3	4	5	6	7	8
Foaming composition	Stock solution (all components excluding component (D))	Component (A)	Searic acid (saponification value: 207)	3	2.5	2	1	5	3	3	3	3	0.5	7.5	3	3	3	3
			Myristic acid (saponification value: 245.5)	3	2.5	2	1	5	3	3	3	3	0.5	7.5	3	3	3	3
			Potassium hydroxide	1.13	0.94	0.76	0.37	1.89	1.13	1.13	1.13	1.13	0.19	2.83	1.13	1.13	1.13	1.1
		Component (B)	Beeswax	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-	0.2	0.2	1	0.2	0.2	0.2
		Component (E)	Sorbitol	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
			Maltitol	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
		Component (F)	Sodium N- stearoyl-L- glutamate	1	1	1	1	1	-	1	1	1	1	1	1	1	1	1
			Disodium edetate	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
			Phenoxyethanol	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
			Perfume	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
		Component (C)	Purified water	80.87	82.06	83.24	85.63	76.11	81.87	80.87	80.87	81.07	86.81	70.17	80.07	80.87	80.87	80.87
	Propellant	Component (D)	Liquefied petroleum gas (LPG; 0.39 MPa; 20°C)	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
	Amount in terms of fatty acid in stock solution				6.25	5.21	4.17	2.08	10.42	6.25	6.25	6.25	6.25	1.04	15.63	6.25	6.25	6.25
Content of paste-form or solid oil in stock solution				0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	-	0.21	0.21	1.04	0.21	0.21	0.21
Content of water in stock solution				84.24	85.48	86.71	89.19	79.28	85.28	84.24	84.24	84.45	90.43	73.09	83.41	84.24	84.24	84.24
Content of polyol in stock solution				6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25
Content of N-acyl amino acid salt in stock solution				1.04	0.96	0.96	0.96	0.96	-	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Content ratio of paste-form or solid oil to amount of fatty acid or salt thereof in terms of fatty acid				0.03	0.04	0.05	0.10	0.02	0.03	0.03	0.03	-	0.20	0.01	0.17	0.03	0.03	0.03
Neutralization rate (%)				0.83	0.83	0.84	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Foam hardness (mPa·s)				15000	14500	15000	13500	30000	14500	15000	15000	21500	10000	Not measu- rable	10000	15000	15000	15000
Discharging hole No.				1	1	1	1	1	1	2	0	1	1	1	1	3	4	5
Evaluation			Softness to the touch	5	5	4.8	4.2	4	4	4	3	1.8	1.2	1.2	3.8	2	2.4	2.8
			Goodness of fragrance generation	5	5	4.8	4.8	5	5	4.4	3	3.8	1.2	1.2	3.8	1.8	2.4	1.8
			Cleansing effect	4	4	3.6	3.2	4	4	3.6	3.4	3	1	2	1	2	3	3
			Foam durability (shape retainability)	A	B	B	C	A	B	B	A	C	*1	*2	C	C	X	X
			Unlikelihood of clogging	A	A	A	A	B	A	A	A	A	A	X	A	A	A	A

[0088]

[Table 2]

Component				Example							
				8	9	10	11	12	13	14	
Foaming composition	Stock solution (all components excluding component (D))	Component (A)	Stearic acid (saponification value: 207)	3	3	3	3	3	3	3	
			Myristic acid (saponification value: 245.5)	3	3	3	3	3	3	3	
			Potassium hydroxide	1.13	1.13	1.13	1.13	1.13	1.13	1.13	
		Component (B)	Beeswax	0.01	0.1	0.4	0.8				
			Microcrystalline wax					0.2			
			Cetyl myristate						0.2		
			Behenyl alcohol								0.2
		Component (E)	Sorbitol	4	4	4	4	4	4	4	
			Maltitol	2	2	2	2	2	2	2	
		Component (F)	Sodium N-stearoyl-L-glutamate	1	1	1	1	1	1	1	
			Disodium edetate	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
			Phenoxyethanol	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
			Perfume	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
		Component (C)	Purified water	81.06	80.97	80.67	80.27	80.87	80.87	80.87	
	Propellant	Component (D)	Liquefied petroleum gas (LPG; 0.39 MPa; 20°C)	4	4	4	4	4	4	4	
Amount in terms of fatty acid in stock solution				6.25	6.25	6.25	6.25	6.25	6.25	6.25	
Content of paste-form or solid oil in stock solution				0.01	0.10	0.42	0.83	0.21	0.21	0.21	
Content of water in stock solution				84.44	84.34	84.03	83.61	84.24	84.24	84.24	
Content of polyol in stock solution				6.25	6.25	6.25	6.25	6.25	6.25	6.25	
Content of N-acyl amino acid salt in stock solution				1.04	0.96	0.96	0.96	0.96	0.96	0.96	
Content ratio of paste-form or solid oil to amount of fatty acid or salt thereof in terms of fatty acid				0.002	0.02	0.07	0.13	0.03	0.03	0.03	
Neutralization rate (%)				0.83	0.83	0.83	0.83	0.83	0.83	0.83	
Foam hardness (mPa·s)				22000	9500	18000	14000	4500	10000	9250	
Discharging hole No.				1	1	1	1	1	1	1	
Evaluation			Softness to the touch	5	4	5	4.8	4.8	4.6	4.6	
			Goodness of fragrance generation	5	5	4.8	5	4.8	4.6	4.6	
			Cleansing effect	4	3.2	4	3.8	4.4	4.6	3	
			Foam durability (shape retainability)	A	A	B	B	A	B	B	
			Unlikelihood of clogging	A	A	A	A	A	A	A	

[0089]

The results of Table 1 show that the aerosol cosmetic products of Examples 1 to 7 can form foam bodies that are softer to the touch compared to Comparative Example 1 and Comparative Examples 6 to 8 which do not have a multi-hole region in which at least three discharging holes are present independently of one another in a radial direction from the center portion toward an outer circumferential portion of the discharging surface. Further, the aerosol cosmetic products of Examples 1 to 7 are excellent in usability, fragrance generation, cleansing effect, and unlikeliness of clogging.

More specifically, a comparison between Example 1 and Comparative Examples 2 and 5 shows that, by including a specific amount of the component (A) in the cosmetic product, the foam hardness is reduced, and also, softness to the touch, fragrance generation, cleansing effect, and foam durability are improved, and further, clogging is suppressed.

Further, a comparison between Example 1 and Comparative Examples 3 and 4 shows that, by including a specific amount of the component (B) in the cosmetic product, softness to the touch, fragrance generation, cleansing effect, and foam durability are improved.

[0090]

The results of Table 2 show that the aerosol cosmetic products of Examples 8 to 14 can form foam bodies that are softer to the touch compared to Comparative Example 1 and Comparative Examples 6 to 8 which do not have a multi-hole region in which at least three discharging holes are present independently of one another in a radial direction from the center portion toward an outer circumferential portion of the discharging surface. Further, the aerosol cosmetic products of Examples 8 to 14 are excellent in usability, fragrance generation, cleansing effect, and unlikeliness of clogging.

[0091]

Formula examples of the invention are described below. These examples achieve effects equivalent to the present invention.

[0092]

Formula Example 1 (Cleanser):

Component: Content (mass%).

1. Stearic acid: 3.0.
2. Myristic acid: 3.0.
3. Potassium hydroxide: 0.5.
4. 2-Amino-2-methyl-1-propanol: 0.7.
5. Beeswax: 0.1.
6. Sorbitol: 10.0.
7. Glycerol: 5.0.
8. Sodium N-stearoyl-L-glutamate (Amisoft HS-11P; product of Ajinomoto Healthy Supply Co., Inc.): 1.0.
9. Dipentaerythrityl tripolyhydroxystearate (Salacos WO-6; product of the Nisshin Oillio Group, Ltd.): 0.1.
10. Rose extract liquid: 0.1.
11. Royal jelly extract: 0.1.
12. Water-soluble collagen: 0.1.
13. Sodium hyaluronate: 0.1.
14. Rice fermented liquid: 0.1.
15. Disodium edetate: 0.1.
16. Phenoxyethanol: 0.5.
17. Perfume: 0.2.
18. Purified water: 71.3.
19. Liquefied petroleum gas (LPG; 0.39 MPa (20°C)): 4.0.

{Manufacturing method}

1. All components other than liquefied petroleum gas are mixed at 80°C and stirred until uniform, to prepare a stock solution, and this is cooled to 30°C.
2. The stock solution is charged into an aerosol can, and an aerosol valve is clinched onto the aerosol container.
3. A prescribed amount of liquefied petroleum gas is charged under pressure from a stem into the aerosol container.

[0093]

Formula Example 2 (Cleanser):

Component: Content (mass%).

1. Stearic acid: 2.0.
2. Myristic acid: 2.0.
3. Lauric acid: 1.0.
4. Palmitic acid: 1.0.
5. Potassium hydroxide: 0.5.
6. Arginine: 0.5.
7. Beeswax: 0.1.
8. Sorbitol: 10.0.
9. Diglycerol: 5.0.
10. Dipropylene glycol: 1.0.
11. Sodium N-stearoyl-L-glutamate (Amisoft HS-11P; product of Ajinomoto Healthy Supply Co., Inc.): 1.0.
12. Potassium cocoyl glycinate (Amilite GCK-12; product of Ajinomoto Healthy Supply Co., Inc.): 5.0.
13. Di(phytosteryl/octyldodecyl) N-lauroyl L-glutamate (Eldew PS-203; product of Ajinomoto Healthy Supply Co., Inc.): 0.1.
14. Perilla extract (perilla extract liquid BG; product of Maruzen Pharmaceuticals Co., Ltd.): 0.1.
15. Sage extract (salvia extract liquid BG; product of Maruzen Pharmaceuticals Co., Ltd.): 0.1.
16. Whey extract (whey CPA; product of Ichimaru Pharcos Co., Ltd.): 0.1.
17. Soymilk fermented liquid (soymilk fermented liquid; product of Sansho Seiyaku Co., Ltd.): 0.1.
18. Honeysuckle extract (Japanese honeysuckle extract liquid; product of Maruzen Pharmaceuticals Co., Ltd.): 0.1.
19. Apricot fruit juice (apricot extract; product of Koei Kogyo Co., Ltd.): 0.1.
20. N-acetylglucosamine: 0.1.
21. Disodium edetate: 0.1.
22. Phenoxyethanol: 0.5.
23. Perfume: 0.2.
24. Purified water: 65.3.

25. Liquefied petroleum gas (LPG; 0.39 MPa (20°C)): 4.0.

{Manufacturing method}

1. All components other than liquefied petroleum gas are mixed at 80°C and stirred until uniform, to prepare a stock solution, and this is cooled to 30°C.

2. The stock solution is charged into an aerosol can, and an aerosol valve is clinched onto the aerosol container.

3. A prescribed amount of liquefied petroleum gas is charged under pressure from a stem into the aerosol container.

[0094]

The perfume used in the Examples, Comparative Examples, and Formula Examples is the floral-type blended perfume formula below. Note that the expressions “1% in DPG”, “5% in DPG” and “10% in DPG” described in the component names respectively refer to dipropylene glycol solutions in which the active ingredient content of the perfume is either 1 mass%, 5 mass% or 10 mass%.

[0095]

Formula for floral-type blended perfume:

Component: Content (mass%).

Bergamot oil (natural perfume): 2.0.

Linalool acetate: 1.5.

Methylantranilate: 0.2.

Petitgrain oil (natural perfume): 0.5.

Aurantol 10% in DPG (a Schiff base of hydroxycitronellal and methylantranilate): 1.0.

Amylallylglycolate 1% in DPG: 0.5.

Galbanum oil 1% in DPG (natural perfume): 0.1.

Blackcurrant bud absolute 10% in DPG (natural perfume): 1.5.

Tagetes oil 10% in DPG (natural perfume): 0.8.

Ilang-ilang oil extra (natural perfume): 2.0.

Benzyl acetate: 5.0.

Methyl dihydrojasmonate: 13.0.

Cis-jasmone 10% in DPG: 1.0.

Jasmine absolute (natural perfume): 0.5.

Indole 5% in DPG: 0.5.

Alpha-hexyl cinnamic aldehyde: 1.5.

L-Citronellol: 0.5.

Rose oil (natural perfume): 0.5.

Rose absolute (natural perfume): 0.5.

Damascenone 1% in DPG: 0.5.

L-Rose oxide 1% in DPG: 0.5.

Dimethylbenzyl carbonyl acetate: 1.0.

Hydroxycitronellal: 3.0.

Lyrall (compound name: 4-(4-hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxyaldehyde): 3.5.

Cyclamen aldehyde (compound name: 2-methyl-3-(4-isopropylphenyl)-propanol): 0.5.

Alpha-isomethyl ionone (compound name: 5-(2,2,6-trimethyl-2-cyclohexenyl)-3-methyl-3-buten-2-one): 4.0.

Orris concrete 10% in DPG (natural perfume): 0.8.

Methyl eugenol: 0.5.

Iso-E super (compound name: 7-acetyl-1,2,3,4,5,6,7,8-octahydro-1,1,6,7-tetramethylnaphthalene): 2.5.

Vertofix Coeur (compound name: 4-acetyl-trimethyl-6,8 α -ethano-1,2,3,5,6,7,8,8 α -octahydronaphthalenone): 4.0.

Vetiver acetate: 2.0.

Sandalwood oil (natural perfume): 1.5.

Bacdanol 10% in DPG (compound name: 2-ethyl-4-(2,2,3-trimethyl-3-cyclopenten-1-yl)-2-buten-1-ol): 1.0.

Patchouli oil 10% in DPG (natural perfume): 0.2.

Evernyl 10% in DPG (compound name: methyl-2,4-dihydroxy-3,6-dimethyl benzoate): 1.5.

Galaxolide 50% benzyl benzoate (compound name: 4,6,6,7,8,8-hexamethyl-1,3,4,6,7,8-hexahydrocyclopentabenzopyran): 10.0.

Cyclopentadecanolide: 4.0.

Heliotropin: 0.5.

Coumarin: 0.5.

Vanillin 10% in DPG: 0.5.

Ethyl vanillin 10% in DPG: 2.5.

Raspberry ketone 10% in DPG (compound name: 4-(4-hydrophenyl)-2-butanone): 0.5.

Gamma-undecalactone 10% in DPG: 1.5.

Gamma-decalactone 10% in DPG: 1.5.

Labdanum absolute 10% in DPG (natural perfume): 0.5.

Dipropylene glycol: remainder.

Industrial Applicability

[0096]

According to the aerosol cosmetic product of the invention, a foaming composition having a specific composition containing components (A) to (D) is discharged from an aerosol container including a foam discharging member. Thus, foam bodies that are relatively hard and have a wall-like shape are discharged respectively from the plurality of long narrow discharging holes formed in the discharging surface of the foam discharging member. Since a plurality of discharging holes are present independently of one another in a radial direction from the center portion of the discharging surface toward an outer circumferential portion of the discharging surface and the foam bodies discharged from the respective discharging holes are foamed in a wall-like shape, the discharged foam bodies are integrated together, to form a foam body in a state where air is taken in between the walls or in a state with a low foam density.

Thus, the foam body formed by the aerosol cosmetic product of the invention becomes soft to the touch and also creamy and highly resilient. Herein, “creamy” refers to a state where the foam is rich and smooth. When the formed foam body is creamy, the foam bubbles last for a long time without being destroyed, which is advantageous in that the foam adheres tightly to the skin, thereby providing a lasting application effect. Further, when the formed foam body is highly resilient, the foam bubbles serve as a cushion and the hands do not touch the skin directly, which reduces friction between the hands and the face. This is advantageous in that massaging can be continued for a long time without burdening the skin, and cosmetic effect is enhanced.

Particularly, in cases where the aerosol cosmetic product is used as a cleanser, since the foam bubbles last for a long time without being destroyed, the skin can be cleaned thoroughly, and also, the foam bubbles serve as a cushion and the hands do not touch the skin directly, which reduces friction between the hands and the face, and thereby, a mild feel after washing and rinsing can be obtained without burdening the skin.

Furthermore, the foaming composition foams in a wall-like shape, and thus, the surface area of the foam body can be widened. This is advantageous in that, in cases where the foaming composition contains a perfume, the fragrance generation of the perfume is improved, solving the problem that odor originating from the propellant is perceived strongly at the time of ejection.

[0097]

The following effects are also achieved by the aerosol cosmetic product of the invention:

- it is easy to form a highly aesthetic foam body, such as a foam body having a three-dimensional shape like a flower, or a foam body having a three-dimensional geometric shape;

- the foam is less likely to drip down;

- the discharging holes are less likely to get clogged; and

- a sufficient amount of foam can be discharged simply by operating, e.g. pressing, a press-down operation portion for a short time.

CLAIMS

- [Claim 1] An aerosol cosmetic product comprising:
- an aerosol container including a foam discharging member; and
 - a foaming composition that is charged in the aerosol container, wherein:
 - the foam discharging member has a discharging surface for discharging a foam;
 - a plurality of long narrow discharging holes are formed around a center portion of the discharging surface;
 - a multi-hole region, in which at least three of the discharging holes are present independently of one another in a radial direction from the center portion toward an outer circumferential portion of the discharging surface, is formed in an entire region or in a portion, in a circumferential direction, of the discharging surface;
 - the foaming composition contains components (A) to (D) below:
 - (A) a fatty acid or salt thereof;
 - (B) a paste-form or solid oil (excluding the component (A));
 - (C) water; and
 - (D) a propellant;
 - the component (A) is contained in an amount from 1.1 to 15 mass%, in terms of fatty acid, in all components of the foaming composition excluding the component (D), and a neutralization rate of the fatty acid by a base is from 0.75 to 1 in terms of fatty acid; and
 - the component (B) is contained in an amount from 0.01 to 0.8 mass% in all components of the foaming composition excluding the component (D).

[Claim 2] The aerosol cosmetic product according to claim 1, wherein the foaming composition further contains (E) a polyol.

[Claim 3] The aerosol cosmetic product according to claim 1 or 2, wherein the foaming composition further contains (F) a N-acyl amino acid salt.

[Claim 4] The aerosol cosmetic product according to any one of claims 1 to 3, wherein the component (A) is at least one type of fatty acid selected from fatty acids having from 8 to 15 carbon atoms and at least one type of fatty acid selected from fatty acids having from 16 to 24 carbon atoms.

[Claim 5] The aerosol cosmetic product according to any one of claims 1 to 4, wherein a content ratio of the component (B) with respect to the amount of the component (A) in terms of fatty acid is from 0.015 to 0.15.

[Claim 6] The aerosol cosmetic product according to any one of claims 1 to 5, wherein a size of the discharging hole is from 5 to 25 mm in length and from 0.1 to 1.5 mm in width.

[Claim 7] The aerosol cosmetic product according to any one of claims 1 to 6, wherein the length of the discharging hole is from 10 to 250 times the width of the discharging hole.

[Claim 8] The aerosol cosmetic product according to any one of claims 1 to 7, wherein the discharging hole is arc-shaped, and is arranged along an arc of a discretionary circle centered about the center portion of the discharging surface.

[Claim 9] The aerosol cosmetic product according to any one of claims 1 to 8, wherein a distance between the discharging holes adjacent to one another in the radial direction is from 1.5 to 7.5 times the width of the discharging hole on the center portion side.

[Claim 10] The aerosol cosmetic product according to any one of claims 1 to 9, wherein there are from 7 to 35 of the discharging holes in the discharging surface.

[Claim 11] The aerosol cosmetic product according to any one of claims 1 to 10, wherein an angular range in which the multi-hole region is present on the discharging

surface is from 135° to 360°.

[Claim 12] The aerosol cosmetic product according to any one of claims 1 to 11, wherein, in the multi-hole region, there are from 3 to 9 of the discharging holes present independently of one another in the radial direction.

[Claim 13] The aerosol cosmetic product according to any one of claims 1 to 12, wherein a total area of the discharging holes is from 100 to 300 mm².

[Claim 14] The aerosol cosmetic product according to any one of claims 1 to 13, wherein the aerosol cosmetic product is used for cleansers, disinfectants for the hands and fingers, cosmetics for the head and hair, cosmetics for the skin, and shaving foams.

[Claim 15] The aerosol cosmetic product according to any one of claims 1 to 14, wherein the aerosol cosmetic product is used for cleansers.

[Claim 16] The aerosol cosmetic product according to any one of claims 1 to 15, wherein foam bodies discharged in a wall-like shape respectively from the plurality of discharging holes are integrated together after being discharged, to form a foam body with a predetermined three-dimensional shape.

[Claim 17] The aerosol cosmetic product according to any one of claims 1 to 16, wherein the foaming composition further contains a perfume.

[Claim 18] A method for providing fragrance and a three-dimensional foam body, the method comprising

employing the aerosol cosmetic product according to claim 17 to form the three-dimensional foam body and release the fragrance.