

OIL-IN-WATER STICK TYPE COMPOSITION

BACKGROUND OF THE INVENTION

Field of the Invention

The present specification discloses an oil-in-water stick type composition comprising an aqueous phase and an oil phase containing wax; and polysorbate and a sorbitan ester derivative at a weight ratio of 1 : 0.86 to 3.

Description of the Related Art

Recently, as the interest in beauty of modern people has increased, cosmetics having various functions related to this have been developed and released. Among these, there is a growing interest in stick type makeup products that enable easy and quick makeup anytime and anywhere without any hassle of touching the cosmetics with hands, paying attention to the difficult hygiene management of cosmetic tools such as sponges and brushes, and the like.

Water-in-oil emulsion is a formulation to be easily manufactured into a stick type composition but is inferior in the feel of freshness and remarkably inferior in the coloring effect by dyes. There has been thus an attempt to manufacture stick type products through a saponification reaction for the purpose of enhancing the feel of moistness. The saponification reaction proceeds using stearic acid and the frame is formed using wax to make a stick. However, sticks made using stearic acid are inconvenient due to poor moisturizing power thereof, the pH of the manufactured materials generally exceeds 10, thus severe skin irritation is caused, and there are a number of problems to be solved, such as violation of the cosmetics law in order to actually commercialize the materials.

Hence, the present inventors have carried out a

variety of researches in order to manufacture a stick type product exhibiting feel of moistness at the time of use while being safe, as a result, confirmed that a composition prepared by containing polysorbate and a sorbitan ester derivative at a weight ratio of 1 : 0.86 to 3 is an oil-in-water and stick-shaped composition and exhibits feel of moistness at the time of use, and thus completed the present invention.

Citation List

Patent Literature

Patent Literature 1: KR Unexamined Patent
Publication No. 10-2018-0047530

Patent Literature 2: KR Unexamined Patent
Publication No. 10-1999-0050828

SUMMARY OF THE INVENTION

In an aspect, an object of the present disclosure is to provide an oil-in-water stick type composition.

In order to achieve the above object, in an aspect, the present disclosure provides an oil-in-water stick type composition comprising an aqueous phase and an oil phase, in which the oil phase contains wax; and polysorbate and a sorbitan ester derivative, in which the polysorbate and the sorbitan ester derivative are contained at a weight ratio of 1 : 0.86 to 3.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Hereinafter, the present disclosure will be described in detail.

In an aspect, the present disclosure provides an oil-in-water stick type composition comprising an aqueous phase and an oil phase, in which the oil phase contains wax; and polysorbate and a sorbitan ester derivative, in

which the polysorbate and the sorbitan ester derivative are contained at a weight ratio of 1 : 0.86 to 3. As an example, the weight ratio of the polysorbate to the sorbitan ester derivative may be polysorbate : sorbitan ester derivative = 1 : 0.86 or more, 0.9 or more, 0.95 or more, 1.00 or more, 1.05 or more, 1.10 or more, 1.15 or more, 1.20 or more, 1.25 or more, 1.30 or more, 1.35 or more, 1.40 or more, 1.45 or more, 1.50 or more, 1.55 or more, 1.60 or more, 1.65 or more, 1.70 or more, 1.75 or less, 1.80 or less, 1.85 or less, 1.90 or less, 1.95 or less, 2.00 or less, 2.05 or less, 2.10 or less, 2.15 or less, 2.20 or less, 2.25 or less, 2.30 or less, 2.35 or less, 2.40 or less, 2.45 or less, 2.50 or less, 2.55 or less, 2.60 or less, 2.65 or less, 2.70 or less, 2.75 or less, 2.80 or less, 2.85 or less, 2.90 or less, 2.95 or less, or 3.00 or less.

In an aspect, the wax may contain a branched hydrocarbon wax. In an aspect, the branched hydrocarbon wax is a concept that includes any wax having a hydrocarbon skeleton of a branched shape without limitation. The 60° gloss as measured on PARAFILM using micro-TRI-gloss may be as high as 100 GU or more, 110 GU or more, 120 GU or more, 130 GU or more, 140 GU or more, 150 GU or more, 160 GU or more, 170 GU or more, 180 GU or more, 190 GU or more, 200 GU or more, 210 GU or more, 220 GU or more, 230 GU or more, 240 GU or more, 250 GU or less, 260 GU or less, 270 GU or less, 280 GU or less, 290 GU or less, 300 GU or less, 310 GU or less, 320 GU or less, 330 GU or less, 340 GU or less, 350 GU or less, 360 GU or less, 370 GU or less, 380 GU or less, 390 GU or less, or 400 GU or less by the addition of branched hydrocarbon wax. The present invention is not limited to the gloss levels presented above.

In an aspect, the branched hydrocarbon wax may have

a saturated hydrocarbon structure.

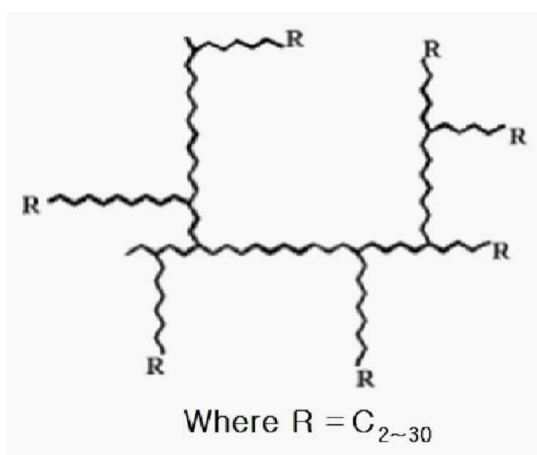
In an aspect, the branched hydrocarbon wax may be a branched synthetic wax or a hydrogenated styrene/methyl styrene/indene copolymer.

In an aspect, the branched hydrocarbon wax may be contained at 5% by weight or more, 6% by weight or more, 7% by weight or more, 8% by weight or more, 9% by weight or more, 10% by weight or more, 11% by weight or more, 12% by weight or more, 13% by weight or more, 14% by weight or more, 15% by weight or more, 16% by weight or more, 17% by weight or more, 18% by weight or more, 19% by weight or more, 20% by weight or more, 21% by weight or more, 22% by weight or more, 23% by weight or more, 24% by weight or more, 25% by weight or more, 26% by weight or more, 27% by weight or more, 28% by weight or more, 29% by weight or more, 30% by weight or more, 31% by weight or more, 32% by weight or less, 33% by weight or less, 34% by weight or less, 35% by weight or less, 36% by weight or less, 37% by weight or less, 38% by weight or less, 39% by weight or less, 40% by weight or less, 41% by weight or less, 42% by weight or less, 43% by weight or less, 44% by weight or less, or 45% by weight or less with respect to the entire composition weight, but the content is not limited thereto.

In the present specification, the term 'synthetic wax' refers to wax which is produced through an artificial petrochemical process or is produced as a by-product in the synthesis process of polyethylene (PE), polypropylene (PP) and the like. The term 'branched synthetic wax' refers to a synthetic wax having a branched shape but not a linear shape. As an example, if this is schematized, this may be expressed as Chemical Formula 1. At this time, R in Chemical Formula 1 may be C₂ alkyl, C₃ alkyl, C₄ alkyl, C₅ alkyl, C₆ alkyl, C₇ alkyl,

C₈ alkyl, C₉ alkyl, C₁₀ alkyl, C₁₁ alkyl, C₁₂ alkyl, C₁₃ alkyl, C₁₄ alkyl, C₁₅ alkyl, C₁₆ alkyl, C₁₇ alkyl, C₁₈ alkyl, C₁₉ alkyl, C₂₀ alkyl, C₂₁ alkyl, C₂₂ alkyl, C₂₃ alkyl, C₂₄ alkyl, C₂₅ alkyl, C₂₆ alkyl, C₂₇ alkyl, C₂₈ alkyl, C₂₉ alkyl, or C₃₀ alkyl, and the respective Rs may be alkyls having the same number of carbon atoms or alkyls having different numbers of carbon atoms.

[Chem. 1]



In an aspect, the molecular weight of the branched synthetic wax may be more than 800 g/mol, 801 g/mol or more, 810 g/mol or more, 820 g/mol or more, 830 g/mol or more, 840 g/mol or more, 850 g/mol or more, 860 g/mol or more, 870 g/mol or more, 880 g/mol or more, 890 g/mol or more, 900 g/mol or more, 910 g/mol or more, 920 g/mol or more, 930 g/mol or more, 940 g/mol or more, 950 g/mol or more, 960 g/mol or more, 970 g/mol or more, 980 g/mol or more, 990 g/mol or more, 1000 g/mol or more, 1010 g/mol or more, 1020 g/mol or more, 1030 g/mol or more, 1040 g/mol or more, 1050 g/mol or more, 1060 g/mol or more, 1070 g/mol or more, 1080 g/mol or more, 1090 g/mol or less, 1100 g/mol or less, 1110 g/mol or less, 1120 g/mol or less, 1130 g/mol or less, 1140 g/mol or less, 1150 g/mol or less, 1160 g/mol or less, 1170 g/mol or less, 1180 g/mol or less, 1190 g/mol or less, 1200 g/mol or less, 1210 g/mol or less, 1220 g/mol or less, 1230 g/mol

or less, 1240 g/mol or less, 1250 g/mol or less, 1260 g/mol or less, 1270 g/mol or less, 1280 g/mol or less, 1290 g/mol or less, 1299 g/mol or less, or less than 1300 g/mol but is not limited thereto.

In an aspect, the branched synthetic wax may have a melting point of -1.5°C or more, -1°C or more, -0.5°C or more, 0°C or more, 0.5°C or more, 1°C or more, 1.5°C or more, 2°C or more, 2.5°C or more, 3°C or more, 3.5°C or more, 4°C or more, 4.5°C or more, 5°C or less, 5.5°C or less, 6°C or less, 6.5°C or less, 7°C or less, 7.5°C or less, 8°C or less, 8.5°C or less, 9°C or less, 9.5°C or less, 10°C or less, 10.5°C or less, 11°C or less, 11.5°C or less, 12°C or less, 12.5°C or less, 13°C or less, 13.5°C or less, 14°C or less, 14.5°C or less, 15°C or less, 15.5°C or less, 16°C or less, 16.5°C or less, 17°C or less, 17.5°C or less, 18°C or less, 18.5°C or less, 19°C or less, 19.5°C or less, 20°C or less, but the melting point is not limited thereto.

In an aspect, the wax may contain a linear hydrocarbon wax. In an aspect, the linear hydrocarbon wax is a concept that includes any wax having a hydrocarbon skeleton of a linear shape without limitation.

In an aspect, the linear hydrocarbon wax may contain a linear synthetic wax or a polyethylene wax. In an aspect, the linear synthetic wax refers to a synthetic wax having a structure of a linear shape but not a branched shape and may be a saturated hydrocarbon material having a structure of $(\text{CH}_3)-[\text{CH}_2]_n-(\text{CH}_3)$ (n is zero or a positive integer).

In an aspect, the molecular weight of the linear synthetic wax may be more than 150 g/mol, 160 g/mol or more, 170 g/mol or more, 180 g/mol or more, 190 g/mol or more, 200 g/mol or more, 230 g/mol or more, 250 g/mol or more, 270 g/mol or more, 300 g/mol or more, 330 g/mol or

more, 350 g/mol or more, 380 g/mol or more, 400 g/mol or more, 430 g/mol or more, 450 g/mol or more, 480 g/mol or more, 500 g/mol or more, 530 g/mol or less, 550 g/mol or less, 580 g/mol or less, 600 g/mol or less, 630 g/mol or less, 650 g/mol or less, 680 g/mol or less, 700 g/mol or less, 730 g/mol or less, 740 g/mol or less, or less than 750 g/mol but is not limited thereto.

In an aspect, the linear synthetic wax may be contained at 1% by weight or more, 1.5% by weight or more, 2% by weight or more, 2.5% by weight or more, 3% by weight or more, 3.5% by weight or more, 4% by weight or more, 4.5% by weight or more, 5% by weight or more, 5.5% by weight or more, 6% by weight or less, 6.5% by weight or less, 7% by weight or less, 7.5% by weight or less, 8% by weight or less, 8.5% by weight or less, 9% by weight or less, 9.5% by weight or less, 10% by weight or less, 10.5% by weight or less, or 11% by weight or less with respect to the entire composition weight, but the content is not limited thereto.

In an aspect, the polysorbate may be polysorbate 20 (polyoxyethylene (20) sorbitan monolaurate), polysorbate 40 (polyoxyethylene (20) sorbitan monopalmitate), polysorbate 60 (polyoxyethylene (20) sorbitan monostearate), or polysorbate 80 (polyoxyethylene (20) sorbitan monooleate) and preferably polysorbate 60 but is not limited thereto.

In an aspect, the sorbitan ester derivative may be sorbitan stearate but is not limited thereto.

In an aspect, the polysorbate and sorbitan ester derivative at a weight ratio of 1 : 1 to 3 may be contained at more than 6.5% by weight, 6.6% by weight or more, 6.7% by weight or more, 6.8% by weight or more, 6.9% by weight or more, 7% by weight or more, 7.1% by weight or more, 7.2% by weight or more, 7.3% by weight or

more, 7.4% by weight or more, 7.5% by weight or more, 7.6% by weight or more, 7.7% by weight or more, 7.8% by weight or more, 7.9% by weight or more, 8% by weight or more, 8.1% by weight or more, 8.2% by weight or more, 8.3% by weight or more, 8.4% by weight or more, 8.5% by weight or more, 8.6% by weight or more, 8.7% by weight or more, 8.8% by weight or more, 8.9% by weight or more, 9% by weight or more, 9.1% by weight or more, 9.2% by weight or more, 9.3% by weight or more, 9.4% by weight or more, 9.5% by weight or more, 9.6% by weight or more, 9.7% by weight or more, 9.8% by weight or more, 9.9% by weight or more, 10% by weight or less, 10.1% by weight or less, 10.2% by weight or less, 10.3% by weight or less, 10.4% by weight or less, 10.5% by weight or less, 10.6% by weight or less, 10.7% by weight or less, 10.8% by weight or less, 10.9% by weight or less, 11% by weight or less, 11.1% by weight or less, 11.2% by weight or less, 11.3% by weight or less, 11.4% by weight or less, 11.5% by weight or less, 11.6% by weight or less, 11.7% by weight or less, 11.8% by weight or less, 11.9% by weight or less, 12% by weight or less, 12.1% by weight or less, 12.2% by weight or less, 12.3% by weight or less, 12.4% by weight or less, 12.5% by weight or less, 12.6% by weight or less, 12.7% by weight or less, 12.8% by weight or less, 12.9% by weight or less, 13% by weight or less, 13.1% by weight or less, 13.2% by weight or less, 13.3% by weight or less, 13.4% by weight or less, 13.5% by weight or less, 13.6% by weight or less, 13.7% by weight or less, 13.8% by weight or less, 13.9% by weight or less, 14% by weight or less, or less than 14.1% by weight with respect to the entire composition weight, but the content is not limited thereto.

In an aspect, the aqueous phase may contain water. In an aspect, the water may be at more than 15% by weight,

16% by weight or more, 17% by weight or more, 18% by weight or more, 19% by weight or more, 20% by weight or more, 21% by weight or more, 22% by weight or more, 23% by weight or more, 24% by weight or more, 25% by weight or more, 26% by weight or more, 27% by weight or more, 28% by weight or more, 29% by weight or more, 30% by weight or more, 31% by weight or more, 32% by weight or less, 33% by weight or less, 34% by weight or less, 35% by weight or less, 36% by weight or less, 37% by weight or less, 38% by weight or less, 39% by weight or less, 40% by weight or less, 41% by weight or less, 42% by weight or less, 43% by weight or less, 44% by weight or less, or less than 45% by weight with respect to the entire composition weight.

In an aspect, the hardness of the composition may be 20 gf or more, 25 gf or more, 30 gf or more, 35 gf or more, 40 gf or more, 45 gf or more, 50 gf or more, 55 gf or more, 60 gf or more, 65 gf or more, 70 gf or more, 75 gf or more, 80 gf or less, 85 gf or less, 90 gf or less, 95 gf or less, 100 gf or less, 105 gf or less, 110 gf or less, 115 gf or less, 120 gf or less, 125 gf or less, 130 gf or less, 135 gf or less, 140 gf or less, 145 gf or less, or 150 gf or less as an average value when the composition (cylindrical diameter: 1 cm) stored in a thermostat at 30°C is taken out therefrom and immediately stood, a 0.2 mm thick piano string is then placed at the center of the composition and moved at a speed of 20 mm/min, and the forces received at a point of 10 mm or more, 10.5 mm or more, 11 mm or more, 11.5 mm or more, 12 mm or more, 12.5 mm or more, 13 mm or more, 13.5 mm or more, 14 mm or more, 14.5 mm or less, 15 mm or less, 15.5 mm or less, 16 mm or less, 16.5 mm or less, 17 mm or less, 17.5 mm or less, 18 mm or less, 18.5 mm or less, 19 mm or less, or 19.5 mm or less in the moved distance are

measured using Rheometer CR-300.

In the present specification, the "coloring agent" refers to a colorant having the ability to color a part of the human body, and the composition of the present disclosure may further comprise a coloring agent. In an aspect, the coloring agent of the present disclosure may be contained at 0.05% by weight or more, 0.1% by weight or more, 0.5% by weight or more, 1% by weight or more, 1.5% by weight or more, 2% by weight or more, 2.5% by weight or more, 3% by weight or more, 3.5% by weight or more, 4% by weight or more, 4.5% by weight or more, 5% by weight or more, 5.5% by weight or more, 6% by weight or less, 6.5% by weight or less, 7% by weight or less, 7.5% by weight or less, 8% by weight or less, 8.5% by weight or less, 9% by weight or less, 9.5% by weight or less, 10% by weight or less, 10.5% by weight or less, 11% by weight or less, 11.5% by weight or less, 12% by weight or less, 12.5% by weight or less, 13% by weight or less, 13.5% by weight or less, 14% by weight or less, 14.5% by weight or less, 15% by weight or less, 15.5% by weight or less, 16% by weight or less, 16.5% by weight or less, 17% by weight or less, 17.5% by weight or less, 18% by weight or less, 18.5% by weight or less, 19% by weight or less, 19.5% by weight or less, or 20% by weight or less with respect to the entire composition weight.

In an aspect, the coloring agent may contain a pigment or a dye. In an aspect, the pigment may be contained at 0.1% by weight or more, 0.5% by weight or more, 1% by weight or more, 1.5% by weight or more, 2% by weight or less, 2.5% by weight or less, 3% by weight or less, 3.5% by weight or less, or 4% by weight or less with respect to the entire composition weight. In an aspect, the dye may be contained at 0.01% by weight or more, 0.02% by weight or more, 0.03% by weight or more,

0.04% by weight or more, 0.05% by weight or more, 0.06% by weight or more, 0.07% by weight or more, 0.08% by weight or more, 0.09% by weight or more, 0.1% by weight or more, 0.3% by weight or more, 0.4% by weight or more, 0.5% by weight or less, 0.7% by weight or less, 0.9% by weight or less, 1% by weight or less, 1.1% by weight or less, 1.2% by weight or less, 1.3% by weight or less, 1.4% by weight or less, or 1.5% by weight or less with respect to the entire composition weight.

In the present specification, the "cosmetic composition" is a concept including all materials which make the appearance of the human body beautiful. In an aspect, the composition of the present disclosure may be a cosmetic composition, preferably a cosmetic composition for point makeup or lips, and more preferably lip tint, but is not limited thereto.

In an aspect, in addition to the active ingredient of the present disclosure, conventional auxiliary agents and carriers such as preservatives, antioxidants, stabilizers, solubilizers, vitamins, fragrances and the like commonly used in cosmetic compositions may be further contained in the composition. For example, the composition may further contain auxiliary ingredients such as glycerin, polyoxyethylene cured castor oil, tocopheryl acetate, citric acid, panthenol, squalane, sodium citrate, and allantoin.

Duplicate contents are omitted in consideration of the complexity of the present specification, and terms not otherwise defined herein have meanings commonly used in the art to which the present disclosure belongs. Moreover, "or" used herein is a concept including "and" unless the contents that are clearly contrary are stated.

Hereinafter, Examples and Comparative Examples will

be described in detail to help the understanding of the present disclosure. However, the following Examples and Comparative Examples are merely to illustrate the contents of the present disclosure and the scope of the present disclosure is not limited to the following Examples and Comparative Examples. Examples and Comparative Examples of the present disclosure are provided to more completely explain the present disclosure to those skilled in the art.

Preparation of stick type oil-in-water compositions of Example 1 and Comparative Examples 1 and 2 and examination of hardness and gloss thereof

Stick type oil-in-water compositions of Example 1 and Comparative Examples 1 and 2 were prepared by changing the combination ratio and total content of polysorbate 60 and sorbitan stearate which were emulsifiers. Specifically, the stick type oil-in-water compositions of Example 1 and Comparative Examples 1 and 2 were prepared by mixing the ingredients at the compositions (unit: % by weight) disclosed in the following Table 1 at room temperature according to the method generally used in the art. As branched synthetic wax, those purchased from Baker Hughes were used.

Thereafter, the stick type oil-in-water composition (cylindrical diameter: 1 cm) of Example 1 which was stored in a thermostat at 30°C and formed into a stick was taken out therefrom, the container was immediately stood, a piano string (thickness: 0.2 mm) was then placed at the center of the composition and moved at a speed of 20 mm/min, the forces received at a point of from 10 to 19.5 mm in the moved distance were measured using Rheometer CR-300 (SUN Scientific Co., Ltd.), and the average value thereof was determined to acquire the

hardness value of the composition. In addition, 0.5 g of the stick type oil-in-water composition of Example 1 was thinly applied to PARAFILM (PARA FILM, American National Can), and then the gloss value determined at an angle of 60 degrees was measured using micro-TRI-gloss (BYK Gardner). The results are presented in Table 1.

[Table 1]

Ingredients	Example 1	Comparative Example 1	Comparative Example 2
Synthetic wax (branched), molecular weight: 1,000	30	30	30
Hydrogenated styrene/methyl styrene/indene copolymer	-	-	-
Synthetic wax (linear), molecular weight: 600	6	6	6
Polysorbate 60	3.5	3.5	3.5
Sorbitan stearate	5.6	3	10.6
Color pigment	2	2	2
Other oils	11.5	14.1	6.5
Water	35	35	35
Butylene glycol	5	5	5
Color dye	0.4	0.4	0.4
Preservative	1	1	1
Hardness (gf)	45	Not measurable Not formed into stick	Not measurable Not formed into stick
Gloss (GU)	110	-	-

As presented in Table 1 above, a cream type composition which did not provide strong feel of moistness was prepared in Comparative Example 1 in which the combination ratio of polysorbate 60 to sorbitan stearate as emulsifiers was less than 1 : 1. In addition, in the composition of Comparative Example 2 in which the

combination ratio of polysorbate 60 to sorbitan stearate was more than 1 : 3, emulsion particles were not formed and a stick type formulation was not formed but a creamy formulation was formed by the inner phase wax. This indicates that the combination ratio of polysorbate 60 to sorbitan stearate which are emulsifiers added, is a factor affecting the formation of oil-in-water formulation into a stick.

Preparation of stick type oil-in-water compositions of Examples 2 and 3 and examination of hardness and gloss thereof

Stick type oil-in-water compositions of Examples 2 and 3 were prepared by changing the kind of ingredient for imparting glossiness. Specifically, the stick type oil-in-water compositions of Examples 2 and 3 were prepared by mixing the ingredients at the compositions (unit: % by weight) disclosed in the following Table 2 at room temperature according to the method generally used in the art.

Thereafter, the stick type oil-in-water compositions (cylindrical diameter: 1 cm) of Examples 2 or 3 which was stored in a thermostat at 30°C and formed into a stick were taken out therefrom, the containers were immediately stood, a piano string (thickness: 0.2 mm) was then placed at the center of the compositions and moved at a speed of 20 mm/min, the forces received at a point of from 10 to 19.5 mm in the moved distance were measured using Rheometer CR-300 (SUN Scientific Co., Ltd.), and the average values thereof were determined to acquire the hardness values of the compositions. In addition, 0.5 g of the stick type oil-in-water compositions of Examples 2 and 3 were thinly applied to PARAFILM (PARA FILM, American National Can), and then the gloss value

determined at an angle of 60 degrees was measured using micro-TRI-gloss (BYK Gardner). The results are presented in Table 2.

[Table 2]

Ingredients	Example 1	Example 2	Example 3
Synthetic wax (branched)	30	-	-
Polyglyceryl-2-diisostearate	-	30	15
Hydrogenated styrene/methyl styrene/indene copolymer	-	-	15
Synthetic wax (linear)	6	6	6
Polysorbate 60	3.5	3.5	3.5
Sorbitan stearate	5.6	5.6	5.6
Color pigment	2	2	2
Other oils	11.5	11.5	11.5
Water	35	35	35
Butylene glycol	5	5	5
Color dye	0.4	0.4	0.4
Preservative	1	1	1
Hardness (gf)	45	64	72
Gloss (GU)	110	66	101

As presented in Table 2 above, Example 2 prepared by adding polyglyceryl-2-diisostearate which was a material having a viscosity similar to that of branched synthetic wax instead of the branched synthetic wax which was an ingredient for imparting glossiness in the same amount as that of the branched synthetic wax exhibited slightly diminished glossiness and stronger sticky feel as compared to Example 1. In addition, it was confirmed that Example 3 prepared by adding a hydrogenated styrene/methyl styrene/indene copolymer of a branched type instead of branched synthetic wax exhibited a relatively excellent level of glossiness although it

exhibited a slightly lower level of glossiness than Example 1. This indicates that the kind of oil material added and the structure of oil added are factors affecting the formation of oil-in-water formulation into a stick and the glossiness thereof.

Preparation of stick type oil-in-water compositions of Example 4 and Comparative Examples 3 and 4 and examination of hardness and gloss thereof

Stick type oil-in-water compositions of Example 4 and Comparative Examples 3 and 4 were prepared by changing the content of water added. Specifically, the stick type oil-in-water compositions of Example 4 and Comparative Examples 3 and 4 were prepared by mixing the ingredients at the compositions (unit: % by weight) disclosed in the following Table 3 at room temperature according to the method generally used in the art.

Thereafter, the stick type oil-in-water composition (cylindrical diameter: 1 cm) of Example 4 which was stored in a thermostat at 30°C and formed into a stick was taken out therefrom, the container was immediately stood, a piano string (thickness: 0.2 mm) was then placed at the center of the composition and moved at a speed of 20 mm/min, the forces received at a point of from 10 to 19.5 mm in the moved distance were measured using Rheometer CR-300 (SUN Scientific Co., Ltd.), and the average value thereof was determined to acquire the hardness value of the composition. In addition, 0.5 g of the stick type oil-in-water composition of Example 4 was thinly applied to PARAFILM (PARA FILM, American National Can), and then the gloss value determined at an angle of 60 degrees was measured using micro-TRI-gloss (BYK Gardner). The results are presented in Table 3.

[Table 3]

Ingredients	Example 1	Comparative Example 3	Example 4	Comparative Example 4
Synthetic wax (branched)	30	50	45	20
Hydrogenated styrene/methyl styrene/indene copolymer	-	-	-	-
Synthetic wax (linear)	6	6	6	6
Polysorbate 60	3.5	3.5	3.5	3.5
Sorbitan stearate	5.6	5.6	5.6	5.6
Color pigment	2	2	2	2
Other oils	11.5	11.5	11.5	11.5
Water	35	15	20	45
Butylene glycol	5	5	5	5
Color dye	0.4	0.4	0.4	0.4
Preservative	1	1	1	1
Hardness (gf)	45	Not measurable Not formed into stick	50	Not measurable Not formed into stick
Gloss (GU)	110	-	113	-

As presented in Table 3 above, Comparative Example 3 in which the water content was relatively low was not favorably emulsified and Comparative Example 4 in which the water content was relatively high was present as an emulsified liquid but was not formed into a stick. This indicates that the water content in the entire composition is a factor affecting the formation of oil-in-water formulation into a stick.

Preparation of stick type oil-in-water compositions of Examples 5 and 6 and Comparative Example 5 and examination of hardness and gloss thereof

Stick type oil-in-water compositions of Examples 5 and 6 and Comparative Example 5 were prepared by changing

the molecular weight of branched synthetic wax. Specifically, the stick type oil-in-water compositions of Examples 5 and 6 and Comparative Example 5 were prepared by mixing the ingredients at the compositions (unit: % by weight) disclosed in the following Table 4 at room temperature according to the method generally used in the art.

Thereafter, the stick type oil-in-water compositions (cylindrical diameter: 1 cm) of Examples 5 or 6 which was stored in a thermostat at 30°C and formed into a stick were taken out therefrom, the containers were immediately stood, a piano string (thickness: 0.2 mm) was then placed at the center of the compositions and moved at a speed of 20 mm/min, the forces received at a point of from 10 to 19.5 mm in the moved distance were measured using Rheometer CR-300 (SUN Scientific Co., Ltd.), and the average values thereof were determined to acquire the hardness values of the compositions. In addition, 0.5 g of the stick type oil-in-water compositions of Examples 5 and 6 were thinly applied to PARAFILM (PARA FILM, American National Can), and then the gloss value determined at an angle of 60 degrees was measured using micro-TRI-gloss (BYK Gardner). The results are presented in Table 4.

[Table 4]

Ingredients	Example 1	Example 5	Example 6	Comparative Example 5
Synthetic wax (branched), molecular weight: 1,000	30	-	-	-
Synthetic wax (branched), molecular weight: 800	-	30	-	-
Synthetic wax (branched), molecular	-	-	30	-

weight: 1,200				
Synthetic wax (branched), molecular weight: 1,300	-	-		30
Synthetic wax (linear)	6	6	6	6
Polysorbate 60	3.5	3.5	3.5	3.5
Sorbitan stearate	5.6	5.6	5.6	5.6
Color pigment	2	2	2	2
Other oils	11.5	11.5	11.5	11.5
Water	35	35	35	35
Butylene glycol	5	5	5	5
Color dye	0.4	0.4	0.4	0.4
Preservative	1	1	1	1
Hardness (gf)	45	51	38	Not measurable Not formed into stick
Gloss (GU)	110	89	107	

As presented in Table 4 above, the composition was formed into a stick while being an oil-in-water formulation and exhibited a high gloss level of 100 GU or more when the molecular weight of branched synthetic wax was between 1,000 and 1,200 g/mol. However, it was confirmed that Example 5 in which the molecular weight of branched synthetic wax was less than 1,000 g/mol only exhibited a low level of glossiness, and Comparative Example 5 in which the molecular weight of branched synthetic wax was more than 1,200 g/mol was not formed into a stick. This indicates that the molecular weight of branched synthetic wax is a factor affecting the formation of oil-in-water formulation into a stick and the glossiness thereof.

Preparation of stick type oil-in-water compositions

of Example 7 and Comparative Examples 6 and 7 and examination of hardness and gloss thereof

Stick type oil-in-water compositions of Examples 7 and Comparative Examples 6 and 7 were prepared by changing the molecular weight of linear synthetic wax. Specifically, the stick type oil-in-water compositions of Example 7 and Comparative Examples 6 and 7 were prepared by mixing the ingredients at the compositions (unit: % by weight) disclosed in the following Table 5 at room temperature according to the method generally used in the art.

Thereafter, the stick type oil-in-water composition (cylindrical diameter: 1 cm) of Example 7 which was stored in a thermostat at 30°C and formed into a stick was taken out therefrom, the container was immediately stood, a piano string (thickness: 0.2 mm) was then placed at the center of the composition and moved at a speed of 20 mm/min, the forces received at a point of from 10 to 19.5 mm in the moved distance were measured using Rheometer CR-300 (SUN Scientific Co., Ltd.), and the average value thereof was determined to acquire the hardness value of the composition. In addition, 0.5 g of the stick type oil-in-water composition of Example 7 was thinly applied to PARAFILM (PARA FILM, American National Can), and then the gloss value determined at an angle of 60 degrees was measured using micro-TRI-gloss (BYK Gardner). The results are presented in Table 5.

[Table 5]

Ingredients	Example 1	Comparative Example 6	Example 7	Comparative Example 7
Synthetic wax (branched), molecular weight: 1,000	30	30	30	30
Synthetic wax (linear),	6	-	-	-

molecular weight: 600				
Synthetic wax (linear), molecular weight: 150	-	6	-	-
Synthetic wax (linear), molecular weight: 200	-	-	6	-
Synthetic wax (linear), molecular weight: 750	-	-	-	6
Polysorbate 60	3.5	3.5	3.5	3.5
Sorbitan stearate	5.6	5.6	5.6	5.6
Color pigment	2	2	2	2
Other oils	11.5	11.5	11.5	11.5
Water	35	35	35	35
Butylene glycol	5	5	5	5
Color dye	0.4	0.4	0.4	0.4
Preservative	1	1	1	1
Hardness (gf)	45	Not measurable Not formed into stick	20	Not measurable Not formed into stick
Gloss (GU)	110		110	

As presented in Table 5 above, Examples 1 and 7 in which the molecular weight of linear synthetic wax was 200 g/mol and 600 g/mol were formed into a stick while being an oil-in-water formulation and exhibited a high gloss level of 100 GU or more. However, it was confirmed that Comparative Example 6 in which the molecular weight of linear synthetic wax was 150 g/mol and Comparative Example 7 in which the molecular weight of linear synthetic wax was 750 g/mol were not formed into a stick. This indicates that the molecular weight of linear synthetic wax is a factor affecting the formation of oil-in-water formulation into a stick.

What is claimed is:

1. An oil-in-water stick type composition comprising an aqueous phase and an oil phase, wherein the oil phase contains wax; and polysorbate and a sorbitan ester derivative, wherein the composition comprises the polysorbate and the sorbitan ester derivative in a weight ratio of 1 : 0.86 to 3.
2. The oil-in-water stick type composition according to claim 1, wherein the wax comprises a branched hydrocarbon wax.
3. The oil-in-water stick type composition according to claim 2, wherein a 60° gloss of the composition is 100 GU or more as measured on PARAFILM using micro-TRI-gloss.
4. The oil-in-water stick type composition according to claim 2, wherein the branched hydrocarbon wax has a saturated hydrocarbon structure.
5. The oil-in-water stick type composition according to claim 2, wherein the branched hydrocarbon wax is one or more of a branched synthetic wax and a hydrogenated styrene/methyl styrene/indene copolymer.
6. The oil-in-water stick type composition according to claim 2, wherein the composition comprises the branched hydrocarbon wax in the amount of 5% to 45% by weight with respect to an entire composition weight.
7. The oil-in-water stick type composition according to claim 4, wherein a molecular weight of the branched synthetic wax is more than 800 g/mol and less than 1300

g/mol.

8. The oil-in-water stick type composition according to claim 4, wherein a melting point of the branched synthetic wax is from -1.5°C to 20°C.

9. The oil-in-water stick type composition according to claim 1, wherein the wax comprises a linear hydrocarbon wax.

10. The oil-in-water stick type composition according to claim 9, wherein the linear hydrocarbon wax is one or more of a linear synthetic wax and a polyethylene wax.

11. The oil-in-water stick type composition according to claim 9, wherein a molecular weight of the linear hydrocarbon wax is more than 150 g/mol and less than 750 g/mol.

12. The oil-in-water stick type composition according to claim 9, wherein the content of the linear hydrocarbon wax in the composition is 1% to 11% by weight with respect to an entire composition weight.

13. The oil-in-water stick type composition according to claim 1, wherein the polysorbate is one or more of polysorbate 20, polysorbate 40, polysorbate 60, and polysorbate 80.

14. The oil-in-water stick type composition according to claim 1, wherein the sorbitan ester derivative is sorbitan stearate.

15. The oil-in-water stick type composition according to

claim 1, wherein the composition comprises the polysorbate and sorbitan ester derivative in the amount of more than 6.5% by weight and less than 14.1% by weight with respect to an entire composition weight.

16. The oil-in-water stick type composition according to claim 1, wherein the aqueous phase comprises water in the amount of more than 15% by weight and less than 45% by weight with respect to an entire composition weight.

17. The oil-in-water stick type composition according to claim 1, wherein a hardness of the composition is from 20 to 150 gf as an average value when a piano string having a thickness of 0.2 mm is placed at a center of the composition and then moved at a speed of 20 mm/min and forces received at a point of from 10 to 19.5 mm in a moved distance are measured using Rheometer CR-300.

18. The oil-in-water stick type composition according to claim 1, wherein the composition further comprises a coloring agent.

19. The oil-in-water stick type composition according to claim 18, wherein the composition comprises the coloring agent in the amount of 0.05% to 20% by weight with respect to an entire composition weight.

20. The oil-in-water stick type composition according to claim 1, wherein the composition is a cosmetic composition.