

【DESCRIPTION】

【Invention Title】

HAIR CONDITIONING COMPOSITION

【Technical Field】

The present application claims the benefit of priority based on Korean Patent Application No. 10-2016-0120224 filed on September 20, 2016, all the contents of which are incorporated herein by reference.

The present invention relates to a hair conditioning composition, and more particularly, to a hair conditioning composition which comprises a high molecular weight non-volatile silicone oil and thus exhibits excellent hair conditioning effect and persistence while exhibiting a light and refreshing feeling of use by reducing the content of non-volatile oil in the composition.

【Background Art】

The demand and preference of consumers for conditioning (hair condition improvement) products that improve and facilitate the appearance and tactility of hair are increasing day by day.

In general, a product that imparts a conditioning feeling to hair can be divided into a product that needs to be washed and a product that does not need to be washed. Specifically, examples of the product that needs to be washed may include hair rinses, hair treatments, hair packs, hair masks, hair ampoules, etc., and examples of the product that does not need to be washed may include hair mists, hair essences, hair serum, and hair oil. Among them, the product that does not need to be washed has the effect of instantly improving the appearance and tactility of the hair and is easy to use, and thus the demand therefor is on the rise.

A hair conditioning composition that does not need to be washed is composed of higher alcohol, surfactant, silicone oil and natural oil and thus contains a large amount of sticky non-volatile oil components such as silicone oil and natural oil to impart shine and smoothness to hair and improve persistence. However, in this case, it is inconvenient to clean hands after use due to oil-specific stickiness, and there are disadvantages of being not easy to apply when applied

to hair and showing a wet and sticky feeling of use.

In order to solve these problems, the composition of the type of aqueous emulsion that improves the feeling of use has been proposed. However, in the case of such a composition, the persistence of smoothness or tenderness of the hair is remarkably lowered, and there are problems that it is difficult to achieve sufficient hair setting feel, smoothness, and gloss in severely damaged hair.

Therefore, it is necessary to develop a new hair conditioning composition that shows a light and refreshing feeling of use while exhibiting excellent conditioning effect and persistence.

[Prior Art Document]

(Patent Document 1) Korean Patent No. 1029665, A hair conditioning composition in the form of aqueous emulsion.

【Disclosure】

【Technical Problem】

In order to solve the above problems, the inventors of the present invention have studied various non-volatile oil components contained in the hair conditioning composition, and as a result, have completed the present invention.

Accordingly, it is an object of the present invention to provide a hair conditioning composition having excellent feeling of use while exhibiting improved hair conditioning effect and persistence.

【Technical Solution】

In order to accomplish the above object, the present invention provides a hair conditioning composition comprising a non-volatile oil and a volatile oil, wherein the non-volatile oil includes a high molecular weight non-volatile silicone oil having a weight average molecular weight of 700,000 to 1,500,000 g/mol.

【Advantageous Effects】

The hair conditioning composition of the present invention comprises high molecular weight non-volatile silicone oil and thus by lowering the content of the non-volatile oil in the composition, exhibits an improved hair conditioning effect

and has excellent persistence of effect, while showing a refreshing and light feeling of use and excellent applicability.

【Description of Drawings】

FIG. 1 is a surface scan image of the hair applied with the hair conditioning composition of Example 1 and Comparative Example 1.

FIG. 2 is a graph comparing the smoothness of the hair applied with the hair conditioning composition of Example 1 and Comparative Example 1.

FIG. 3 is a graph comparing the persistence of gloss of the hair conditioning composition of Example 1 and Comparative Example 1.

FIG. 4 is a graph comparing the persistence of gloss of hair conditioning compositions of Examples 1 to 5, and Comparative Examples 2 and 3.

FIG. 5 is a graph showing the results of the sensory evaluation of Example 2 and Comparative Examples 2 and 3.

【Best Mode】

Hereinafter, the present invention is described in detail so that those skilled in the art can easily carry out the present invention. However, the present invention may be embodied in many different forms and should not be construed as limited to the embodiments set forth herein.

The present invention relates to a hair conditioning composition comprising a non-volatile oil and a volatile oil, wherein the non-volatile oil includes a high molecular weight non-volatile silicone oil.

The high molecular weight non-volatile silicone oil gives an excellent hair conditioning effect even in a small amount compared with a non-volatile silicone oil having a low molecular weight and has excellent persistence of effect. Therefore, according to the present invention, since the content of non-volatile oil in the composition can be significantly reduced, it is possible to improve the wet and sticky feeling of use caused by the non-volatile oil.

In the present invention, the high molecular weight non-volatile silicone oil preferably has a weight average molecular weight of 700,000 to 1,500,000 g/mol.

In general, the hair conditioning composition comprises a non-volatile silicone oil having a weight average molecular weight in the range of 350,000 to

650,000 g/mol. The non-volatile silicone oil having such a molecular weight range is usually contained in a large amount in the composition to ensure the persistence of the hair conditioning effect.

However, when a high content of non-volatile oil is included, it is difficult to apply uniformly to the hair, a sticky feeling of use unique to non-volatile oil becomes conspicuous and it is troublesome to clean hands after use.

The present invention solves the above problems by using the high molecular weight non-volatile silicone oil instead of the conventional non-volatile silicone oil.

That is, the high molecular weight non-volatile silicone oil gives excellent persistence of gloss and smoothness even in a small amount compared with the existing non-volatile silicone oil. Therefore, when incorporating the high molecular weight non-volatile silicone oil, since the content of the sticky non-volatile oil in the composition can be significantly reduced, it is possible to improve the feeling of use while ensuring the hair conditioning effect.

The kind of the high molecular weight non-volatile silicone oil is not particularly limited in the present invention, and materials commonly used in the art can be used without limitation.

Specifically, the high molecular weight non-volatile silicone oil may be at least one selected from the group consisting of dimethiconol, cyclomethicone, polydimethylsiloxane, phenylsiloxane, alkylmethylsiloxane, dimethicone, dimethicone copolyol, silicone elastomer, and silicone resin. Among them, dimethiconol may be preferably used.

Dimethiconol has a hydroxyl group which is hydrophilic outside the compound, unlike dimethicone having only a methyl group, and thus has high polarity and compatibility, and the dimethiconol having a high molecular weight gives excellent hair setting feel even in small amounts.

The content of the high molecular weight non-volatile silicone oil is preferably 1 to 20% by weight, more preferably 5 to 10% by weight, based on the total weight of the composition. When the content of high molecular weight non-volatile silicone oil satisfies the above range, an excellent hair conditioning effect can be obtained and the total content of non-volatile oil can be lowered, so that the light and refreshing feeling of use and uniform applicability can be secured.

Meanwhile, the hair conditioning composition according to the present

invention may further comprise a hydrocarbon-based oil, in addition to the above-mentioned high molecular weight non-volatile silicone oil as a non-volatile oil.

When such a hydrocarbon-based oil is further included, it is advantageous that the effect of smoothness and gloss persistence of hair is improved, as compared with the case of using the high molecular weight non-volatile silicone oil alone.

The kind of the hydrocarbon-based oil that can be used in the present invention is not particularly limited, and examples thereof may include at least one selected from the group consisting of hydrocarbon-based oil having a low molecular weight of C10 to C20, mineral oil, squalane, alpha olefin oligomer, hydrogenated polydecene, and hydrogenated polyisobutene. Preferably, the hydrocarbon-based oil having a low molecular weight of C10 to C20 is used.

At this time, the hydrocarbon-based oil is preferably contained in the range of 0.1 to 10% by weight, more preferably 1 to 5% by weight in the composition, in order to ensure the above-mentioned effects.

The non-volatile oil contained in the hair conditioning composition according to the present invention may comprise a high molecular weight non-volatile silicone oil as described above, may additionally comprise a hydrocarbon-based oil, and may further comprise other non-volatile oils.

At this time, the total content of the non-volatile oil preferably ranges from 1 to 30% by weight based on the total weight of the composition. If the content of the non-volatile oil is less than 1% by weight, the hair conditioning effect becomes insignificant. If the content of the non-volatile oil is more than 30% by weight, there is a problem that due to non-volatile oil, the wet and sticky feeling of use occurs and it is difficult to apply uniformly to the hair. Therefore, the content of non-volatile oil is properly adjusted within the above range.

The hair conditioning composition of the present invention comprises the volatile oil together with the non-volatile oil.

The volatile oil is contained in the composition in excess and serves as a dispersing agent for dispersing the non-volatile oil and gives a light and refreshing feeling of use.

The volatile oil used in the present invention is not limited as long as it is volatile, but the volatile oil having a viscosity of 0.5 to 5 cs is preferable.

The volatile oil may be at least one of a straight-chain polysiloxane oil or a

cyclic polysiloxane oil having a viscosity of 0.5 to 5 cs, but is not limited thereto.

The volatile oil is preferably included in an amount of 70 to 99% by weight of the total weight of the hair conditioning composition. When the volatile oil is contained in an amount of less than 70% by weight, it is difficult to obtain a refreshing feeling of use sufficiently. When the content of the volatile oil is more than 99% by weight, the flexibility and persistence of hair are deteriorated. Therefore, the content of volatile oil is appropriately controlled within the above range.

According to a preferred embodiment of the present invention, the volatile oil may be a mixture of cyclic polysiloxane, i.e. cyclomethicone, and a straight-chain polysiloxane oil, i.e. dimethicone. More specifically, the volatile oil may be a mixture of cyclomethicone having a viscosity of from 3.5 to 4.5 cs and dimethicone having a viscosity of from 0.5 to 1 cs.

The hair conditioning composition according to the present invention includes non-volatile oil and volatile oil, and thus has excellent feeling of use along with the freshness and smooth applicability due to the low stickiness, while immediately imparting gloss and smoothness to hair. Therefore, even when used on damaged hair, the excellent and immediate conditioning effect can be obtained.

The formulation of the hair conditioning composition according to the present invention is not particularly limited, but is preferably embodied in a hair conditioning formulation that does not need to be washed. Specifically, the hair conditioning composition of the present invention can be formulated into hair tonics, hair serum, hair mists, hair treatments, hair gels, hair waxes, hair oils, hair sprays and the like.

In addition, the hair conditioning composition of the present invention may further comprise components commonly used in the technical field of the present invention within a range not deteriorating the effect of the present invention. Examples of such components include, but are not limited to, fragrances, thickeners, dispersants, solubilizers, surfactants, moisturizers, preservatives, vitamins, proteins and the like.

In order to facilitate understanding of the present invention, preferred embodiments are described below. However, it will be apparent to those skilled in the art that the following examples are illustrative of the present invention and various changes and modifications can be made within the scope and spirit of the

present invention, and it is obvious that such changes and modifications fall within the scope of the appended claims.

Example

Preparation Example 1: Preparation of hair conditioning composition

A hair conditioning composition was prepared according to the composition of the following Table 1 (unit: wt.%).

In this case, dimethiconol was used as a raw material for the non-volatile silicone oil. However, in the Examples, the high molecular weight dimethiconol (Mw 800,000 ~ 1,100,000) was used, but in the comparative examples, the comparatively low molecular weight dimethiconol (Mw 400,000 ~ 600,000) which had been previously used was used.

Table 1:

Component	Example 1	Example 2	Example 3	Example 4	Example 5	Comparative Example 1	Comparative Example 2	Comparative Example 3
Cyclomethicone	To 100	To 100	To 100	To 100	To 100	To 100	To 100	To 100
Dimethiconol (high molecular weight)	5	5	5	5	5	-	-	-
Dimethiconol (low molecular weight)	-	-	-	-	-	5	5	5
Dimethicone	3	3	3	3	3	3	3	3
C12-C16 alkane	-	3	-	-	-	-	3	-
C12-C15 alkyl benzoate	-	-	3	-	-	-	-	3
Dicaprylyl ether	-	-	-	3	-	-	-	-
Caprylic/capric triglyceride	-	-	-	-	3	-	-	-
Fragrance	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5

The raw materials shown in Table 1 above were added sequentially and subjected to agitation (about 250 rpm). At this time, the mixing was performed for at least 1 minute at the time of input of each raw material, and the hair conditioning composition was prepared by mixing for 30 minutes after the final addition.

Experimental Example 1: Evaluation of surface roughness (smoothness)

The following experiments were performed to evaluate the smoothness of the hair conditioning composition of Example 1 prepared in Preparation Example 1 above and Comparative Example 1.

Tress hair was cleaned using a basic shampoo without conditioning function, rinsed for 1 minute, and dried for 2 minutes, and then, 100 µl of hair conditioning composition was applied thereto. The hair cuticle layer was laser scanned using a 3D laser scanner (Olympus), and then the surface roughness value (Sa) was measured on the obtained image to evaluate the smoothness. FIG. 1 is a scan image, and FIG. 2 is a graph showing the smoothness of each composition.

As shown in FIG. 1, the hair conditioning composition of Example 1 showed a smooth surface as the coating film was continued from immediately after application to 5 hours after application. On the contrary, Comparative Example 1 showed a lower level of smoothness immediately after application as compared to Example 1. In addition, it can be seen that Comparative Example 1 showed a rough surface after 5 hours of application, and thus the persistence was also lower than Example 1.

This effect can be also seen in FIG. 2. Referring to FIG. 2, it can be seen that Example 1 is superior to Comparative Example 1 in smoothness, and shows a 45% improvement, especially in terms of persistence, compared with Comparative Example 1.

From the above results, it can be seen that the high molecular weight non-volatile silicone oil of the present invention can obtain excellent smoothness even in a small amount compared to a low molecular weight silicone oil and has excellent persistence.

Experimental Example 2: Evaluation of gloss persistence

The following experiment was conducted to confirm the gloss persistence of the hair conditioning composition prepared in Preparation Example 1.

100 µl of hair conditioning composition was applied to the washed and dried tress according to the same manner as in Experimental Example 1 above, and the hair gloss was measured. The measurement method is as follows. The hair was irradiated with light at an angle of -45 to +45 using a SAMBA Hair system (Bossa Nova Technologies) instrument, the maximum reflectance of the light was measured, and the reflectance was used as a measure of gloss.

(1) Comparison of the effect of non-volatile silicone oil depending on molecular weight

FIG. 3 is a graph showing the gloss persistence of the hair conditioning composition of Example 1 and Comparative Example 1.

Example 1 and Comparative Example 1 showed similar gloss immediately after application. However, it can be seen that in the case of Comparative Example 1 using dimethiconol having a low molecular weight, the gloss is decreased sharply according to the passage of time, whereas Example 1 using a high molecular weight dimethiconol exhibits 3.8 times better gloss persistence.

(2) Comparison of effects of composition of non-volatile oil

When including hydrocarbon-based oil (C12-C16 alkane), ester-based oils (C12-C15 alkyl benzoates), ether-based oil (dicaprylyl ether), or triglyceride-based oil (caprylic/capric triglyceride) as a non-volatile oil at the time of preparing the hair conditioning composition, the effect on gloss persistence was compared. The results are shown in FIG. 4.

As a result of the experiment, it was confirmed that in the case of using low molecular weight dimethiconol (Comparative Example 2), the synergistic effect was not significant even with the addition of hydrocarbon-based oil, and the gloss persistence is significantly reduced as compared with the Examples using the high molecular weight dimethiconol.

Meanwhile, it was confirmed that when comparing Examples 1 to 5 using the high molecular weight dimethiconol, when ester, ether, and triglyceride-based oils were further included, the persistence was somewhat reduced as compared with Example 1 using only high molecular weight dimethiconol as a non-volatile oil, but Example 2, which further includes a hydrocarbon-based oil, exhibits improved hair gloss and persistence.

From this, it can be seen that even in the case of using only high molecular weight non-volatile silicone oil as a non-volatile oil, excellent hair conditioning properties can be obtained, but in addition, when using the hydrocarbon-based oil together, an even better effect can be obtained.

Experimental Example 3: Sensory evaluation

The sensory evaluation of the hair conditioning composition of Example 2, which showed the best effect in the evaluation of the gloss persistence of Experimental Example 2 above, was conducted on 11 women aged 25 to 35. Also,

in the same manner as in Example 2, Comparative Example 2 including a hydrocarbon-based oil and Comparative Example 3 including an ester-based oil were also evaluated.

For each item, the evaluation was made as a ten-point scale, wherein the higher the attribute is, the higher the number is. The results (average value) are shown in Table 2 below, and FIG. 5 is a graph showing the above results.

Table 2:

	Gloss	Smoothness	Calmness	Spreadability on hand	Hair applicability	Hair absorbency	Freshness
Comparative Example 2	6.87	6.79	6.42	7.11	7.13	7.05	7.09
Comparative Example 3	6.55	6.55	6.36	7.00	7.09	6.91	6.91
Example 2	7.00	7.18	6.64	7.27	7.36	7.18	7.18

As shown in Table 2 and FIG. 5, the composition of Example 2 was higher than that of Comparative Examples 2 and 3 in all items. Specifically, the composition of Example 2 was evaluated to be superior to the existing one in terms of hair conditioning effect such as gloss, smoothness and calmness, while having good feeling of use such as spreadability on hand, hair applicability, hair absorbency and freshness, by lowering the content of the non-volatile oil.

From the results of Experimental Examples 1 to 3, it can be seen that the hair conditioning composition of the present invention containing the high molecular weight non-volatile silicone oil exhibits an excellent hair conditioning effect, even though it contains a small amount of non-volatile oil, and exhibits excellent persistence and feeling of use. Such hair conditioning composition of the present invention can achieve a more enhanced effect when it further comprises a hydrocarbon-based oil.

【CLAIMS】

【Claim 1】

A hair conditioning composition comprising a non-volatile oil and a volatile oil, wherein the non-volatile oil includes a high molecular weight non-volatile silicone oil having a weight average molecular weight of 700,000 to 1,500,000 g/mol.

【Claim 2】

The hair conditioning composition according to claim 1, wherein the high molecular weight non-volatile silicone oil is at least one selected from the group consisting of dimethiconol, cyclomethicone, polydimethylsiloxane, phenylsiloxane, alkylmethylsiloxane, dimethicone, dimethicone copolyol, silicone elastomer, and silicone resin.

【Claim 3】

The hair conditioning composition according to claim 1, wherein the high molecular weight non-volatile silicone oil is dimethiconol.

【Claim 4】

The hair conditioning composition according to claim 1, wherein the high molecular weight non-volatile silicone oil is contained in an amount of 1 to 20 % by weight based on the total weight of the composition.

【Claim 5】

The hair conditioning composition according to claim 1, wherein the non-volatile oil further comprises a hydrocarbon-based oil.

【Claim 6】

The hair conditioning composition according to claim 5, wherein the hydrocarbon-based oil is at least one selected from the group consisting of hydrocarbon-based oil having a low molecular weight of C10 to C20, mineral oil, squalane, alpha olefin oligomer, hydrogenated polydecene, and hydrogenated polyisobutene.

【Claim 7】

The hair conditioning composition according to claim 5, wherein the hydrocarbon-based oil is contained in an amount of 0.1 to 10% by weight based on the total weight of the composition.

【Claim 8】

The hair conditioning composition according to claim 1, wherein the non-volatile oil is contained in an amount of 1 to 30% by weight based on the total weight of the composition.

【Claim 9】

The hair conditioning composition according to claim 1, wherein the volatile oil is a linear or cyclic polysiloxane oil having a viscosity of 0.5 to 5 cs.

【Claim 10】

The hair conditioning composition according to claim 1, wherein the volatile oil is contained in an amount of 70 to 99% by weight based on the total weight of the composition.