

【DESCRIPTION】

【Invention Title】

COSMETIC COMPOSITION COMPRISING POWDER AND
PRODUCTION METHOD THEREFOR

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【Technical Field】

The present disclosure relates to a cosmetic composition containing powder and a method for preparing the same.

10 【Background Art】

A cosmetic composition for make-up or the like contains powdery ingredients as base ingredients. Particular examples of such powdery ingredients include nylon-, silica-, silicone-based powder, etc. In addition, a cosmetic composition contains a binder for formulation and the powdery
15 ingredients are bound among themselves by the binder.

In general, powder type cosmetic compositions are classified into pressed formulations and cream-like formulations. Conventional powder type cosmetic compositions have the following problems depending on their formulations. In the case of pressed formulations, they have some
20 disadvantages related with dust flying, color sustainability, forming stability, or the like. In the case of cream-like formulations, they have an advantage of soft spreadability but show some disadvantages, including poor skin adhesion and a greasy feeling of use.

Further, conventional powder type cosmetic compositions have a problem in that they are limited in content of powder, when using spherical powder, such as silica, to realize a feeling of use as powder. For example, when the content of spherical powder is maximized in a pressed formulation, it is difficult to obtain a desired level of forming strength due to the repulsion force among spherical powder particles and a large size of spherical powder particles.

Meanwhile, a method of using an excessive amount of oil or wax as a binder may be considered to improve formability. However, in this case, there is another problem in that a caking phenomenon occurs in the cosmetic composition, resulting in significant degradation of a feeling of use.

Moreover, there has been an attempt to incorporate a thickener or volatile solvent as a binder in addition to an oil binder. However, in this case, there is a difficulty in formulation due to the problem of compatibility between powder and the binder, and a problem of an insufficient feeling of use and color developability still remains.

[References]

[Patent Document]

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【Disclosure】

【Technical Problem】

A technical problem to be solved by the present disclosure is to provide

a cosmetic composition that allows incorporation of a large amount of powdery ingredients, and has excellent skin adhesion, spreadability, feeling of use and forming stability so that it may be formulated into a pressed formulation, as well as a method for preparing the same.

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【Technical Solution】

In one general aspect, there is provided a cosmetic composition including powdery ingredients, an emulsion binder and an acrylic polymer.

In another general aspect, there is provided a method for preparing a
10 cosmetic composition, including the steps of:

(1) preparing an emulsion binder including at least one oil phase component selected from wax, oil and a surfactant, and starch; and

(2) mixing powdery ingredients, an acrylic polymer and the emulsion binder.

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【Advantageous Effects】

According to the embodiments of the present disclosure, the cosmetic composition includes an acrylic polymer, and thus allows the powdery ingredients to be bound stably among themselves, thereby providing excellent
20 formability. In addition, since the cosmetic composition includes an acrylic polymer, it solves the problems of conventional powder binders, talc or mica used for improvement of formability, including degradation of a feeling of use and deterioration of a pore-covering effect of powder, while providing excellent forming stability. Particularly, the cosmetic composition may contain a large

amount of powdery ingredients, such as spherical powder, stably, may retain a spherical shape even when applying pressure thereto during the formulation into a pact type formulation by virtue of the high elasticity of an acrylic polymer, and may provide excellent spreadability. Therefore, when the cosmetic composition is mixed with spherical powder, it may retain excellent skin sebum adsorption effect, make-up durability and skin irregularity-covering effect provided by the spherical powder.

As a result, the cosmetic composition overcomes a limitation in formulation to a loose powder formulation, caused by the conventional problems of formability and feeling of use occurring when powder is incorporated into a cosmetic composition. In addition, the cosmetic composition may be formulated into a pact formulation having excellent portability, skin adhesion and durability, and may retain the unique functions of spherical powder.

【Best Mode】

Exemplary embodiments now will be described more fully hereinafter.

In one aspect, there is provided a cosmetic composition including powdery ingredients, an emulsion binder and an acrylic polymer.

According to an embodiment, the powdery ingredients are in a powder state and may include those currently used in a cosmetic composition. For example, it is possible to use at least one type of spherical powder selected from inorganic particles, organic particles and organic/inorganic composite particles. In addition, the powdery ingredients may have a function, such as color (hue) development, fluorescence, cubic effect, moisturizing effect,

whitening improvement, anti-wrinkling, UV protection, anti-aging and pearlescence, when applied onto the skin. Particularly, the powdery ingredients may have a function, such as skin irregularity-covering, wrinkle-covering, make-up film retention and fluorescence. For example, the powdery ingredients may include at least one selected from the group consisting of crosspolymer-based powder, such as silica and polymethyl methacrylate (PMMA).

The powdery ingredients function to adsorb the sebum secreted from the skin, enhance duration of a make-up film and improve skin darkening caused by skin irregularities. While the powdery ingredients have an excellent skin irregularity-covering effect, they have a difficulty in forming. Therefore, in a cosmetic composition according to the related art, there has been a problem in that it is difficult to formulate such powdery ingredients into a pact type formulation other than a loose powder formulation. However, according to an embodiment of the present disclosure, the powdery ingredients are used in combination with an acrylic polymer and emulsion binder. Thus, it is possible to provide good forming stability, while avoiding the addition of materials, such as a powdery binder, talc or mica, having good formability but causing degradation of the functions unique to powdery ingredients. As a result, it is possible to formulate powder into a pact type formulation, thereby providing a cosmetic composition having good portability and excellent pore-covering effect.

According to another embodiment, the acrylic polymer is one derived from the basic form of acrylic acid ($\text{H}_2\text{C}=\text{CH}-\text{COOH}$) and includes polyacrylic acid, polymethacrylic acid and polyamide. According to still another

embodiment, an acrylic crosspolymer may be used as an acrylic polymer, and the acrylic crosspolymer may include at least one selected from the group consisting of crosslinked polyesteracrylate, acrylate/bis-hydroxypropyl dimethicone crosspolymer, acrylate/C10-C30 alkyl acrylate crosspolymer, 5 acrylate/C12-C13 alkyl methacrylate/methoxyethyl acrylate crosspolymer, ethylhexyl acrylate crosspolymer, acrylate/ethylhexyl acrylate crosspolymer, acrylate/lauryl methacrylate/tridecyl methacrylate crosspolymer, acrylate/PEG-4 dimethacrylate crosspolymer, acrylate/*Rhus Verniciflua* Sap extract crosspolymer, acrylate/steareth-20 methacrylate crosspolymer, acrylate/vinyl 10 acrylate (VA) crosspolymer, acrylate/vinyl isodecanoate crosspolymer, and acrylate/vinyl neodecanoate crosspolymer.

More particularly, the acrylic polymer according to an embodiment of the present disclosure is a crosslinked polyesteracrylate and any ester of acrylic acid having crosslinked polymer chains with alcohol may be used with no 15 particular limitation. Particularly, the acrylic polymer may be porous spherical microparticles of a crosslinked polyesteracrylate from which the residual monomers are removed. The crosslinked polyesteracrylate may have an average particle diameter of 5-25 μm , more particularly 10-20 μm , 13-17 μm or 15 μm . Particular examples of the crosslinked polyesteracrylate include 20 ACX/ACP series, such as ACX-1502C, available from SEKISUI Chemical Industry Co. Ltd., and Makibeads available from DAITOKASEI Chemical Industry Co. Ltd.

The crosslinked polyesteracrylate has characteristics as porous particles, shows higher elasticity as compared to the other microparticles, and

may impart a soft touch feel in addition to adsorptive property. Therefore, when adding the crosslinked polyestheracrylate to a cosmetic composition, it is possible to provide excellent spreadability and a mild color tone. In addition, since the crosslinked polyestheracrylate has elasticity, it can maintain its spherical shape when applying pressure thereto during the formulation of a cosmetic composition into a pact type formulation. Thus, the crosslinked polyestheracrylate shows excellent forming stability, while not adversely affecting the pore-covering effect of the powdery ingredients also contained in the composition.

According to still another embodiment, the emulsion binder includes an aqueous phase part and oil phase part, wherein the oil phase part includes at least one oil phase component selected from wax, oil and a surfactant, and starch.

The aqueous phase part includes at least one aqueous phase component, such as water, and may further include a water soluble hydrocarbon, such as alcohols and ketones, as an additional aqueous phase component other than water.

The oil phase part is for use in an emulsion formulation, and includes at least one oil phase component selected from the group consisting of wax, oil and a surfactant, and starch. The oil phase part may include wax, oil and a surfactant at the same time as oil phase components, wherein the surfactant may also function as an emulsifying agent in the formulation.

For example, the wax may be at least one selected from ester-, silicone- and hydrocarbon-based wax. In addition, at least one wax selected from the

group consisting of *euphorbia cerifera* (candelilla), ozokerite, dipentaerythrityl hexahydroxystearate/hexastearate/hexarosinate, bis-diglycerylpolyacyladipate-2, microcrystalline wax and dipentaerythrite fatty acid ester may be used, but the type of wax is not limited thereto.

5 The oil may be one currently used in the art. For example, at least one oil selected from ester oil, hydrocarbon oil and silicone oil may be used. Particularly, the oil may be at least one selected from ester oil, such as hexyl laurate, dicaprylyl carbonate, diisostearyl malate, butylene glycol dicaprylate/dicaprate, cetyl ethyl hexanoate, triethyl hexanoin, dicetearyl dimer
10 dilinoleate, caprylic/capric triglyceride, polyglyceryl-2-triisostearate, or pentaerythrityl tetraisostearate; hydrocarbon oil, such as polybutene, hydrogenated polyisobutene or phytosqualane; and silicone oil, such as phenyl trimethicone or dimethicone, or a combination of at least two of them. However, the type of oil is not limited thereto.

15 In addition, the surfactant may be one currently used in the art, and non-limiting examples thereof include at least one selected from sorbitans, amides, amines and derivatives thereof. Particularly, the surfactant may be at least one selected from sorbitan monooleate, sorbitan monolaurate, lauryl diethyl amine oxide, coconut oil alkyl dimethylamine oxide, coconut oil fatty acid diethanol
20 amide, coconut oil fatty acid monoethanol amide and derivatives thereof, or a combination of at least two of them. Further, the surfactant may be at least one selected from glyceryl stearate, PEG-100 stearate, PEG-100 dimethicone, polyethylene glycol monoisostearate, cetearyl olivate, sorbitan olivate, hydrogenated lecithin, arachidyl glucoside, cetearyl alcohol, cetearyl glucoside,

Polysorbate 80 and Polysorbate 60, or a combination of at least two of them. Other examples of the surfactant include at least one selected from sorbitan stearate, glyceryl monostearate/PEG-100 stearate, PEG-10 dimethicone and polysorbate, but the type of surfactant is not limited thereto.

5 The starch may be at least one selected from the group consisting of modified corn starch, sodium carboxymethyl starch, sodium polyacrylate starch and aluminum starch octenyl succinate, particularly aluminum starch octenyl succinate, but is not limited thereto.

 The starch may be incorporated into the oil phase component. The
10 starch may absorb the residual oil in the emulsion binder and may function as a binder, thickener and emulsion stabilizer. Thus, it is possible to ensure forming stability in a formulation, to allow the cosmetic composition to be adhered homogeneously and mildly to the skin, and to enhance make-up durability.

 According to still another embodiment, the aqueous phase part may
15 further include a moisturizing agent. Any moisturizing agent may be used with no particular limitation, as long as it has a moisturizing function of supplying and maintaining moisture content on the skin. For example, oil, such as vegetable oil or animal oil, may be used. In addition, the moisturizing agent may include a polyol, particularly at least one polyol selected from the group consisting of
20 butylene glycol, propanediol, dipropylene glycol and pentylene glycol. The moisturizing agent may include a polyol alone, or a combination of a polyol with another moisturizing ingredient (e.g. oil). When using a polyol as a moisturizing agent, it is possible to provide an excellent moisturizing effect, such as wetness, and to improve formulation stability of emulsion by virtue of good

compatibility with the powdery ingredients contained in the cosmetic composition.

According to still another embodiment, the emulsion binder may be provided in an oil-in-water (O/W) type or water-in-oil (W/O) type. More particularly, it may be provided in an O/W type having a larger amount of aqueous phase as compared to oil phase.

According to still another embodiment, the emulsion binder may have a composition including 40-95 parts by weight of aqueous phase part and 5-60 parts by weight of oil phase part, but is not limited thereto. In other words, the aqueous phase part and the oil phase part may be mixed with each other in a weight ratio of 40-95:5-60. When the amount of oil phase part is less than 5 parts by weight, a dust flying phenomenon may occur. When the amount of oil phase part is larger than 60 parts by weight, a caking phenomenon may occur, resulting in degradation of formulation stability. Particularly, the emulsion binder according to an embodiment of the present disclosure may include 60-90 parts by weight of aqueous phase part and 10-40 parts by weight of oil phase part (i.e. weight ratio of aqueous phase part:oil phase part = 60-90:10-40), more particularly 70-80 parts by weight of aqueous phase part and 20-30 parts by weight of oil phase part (i.e. weight ratio of aqueous phase part:oil phase part = 70-80:20-30).

According to still another embodiment, the amount of oil or wax as an oil phase component is not particularly limited, but each may be used in an amount of 0.1-30 wt%, particularly 1-20 wt% based on the total weight of the emulsion binder. In addition, the amount of a surfactant as an oil phase component may

be 5-15 wt%, particularly 7-13 wt%, based on the total weight of the emulsion binder, but is not limited thereto. Herein, when the amount of oil or wax is excessively small or large, formulation stability may be degraded. In the case of a surfactant, an excessively small amount thereof makes it difficult to carry out emulsification and an excessively large amount thereof cannot provide any additional effect.

According to still another embodiment, the starch may be used in an amount of at least 3 wt% and less than 20 wt% based on the total weight of the emulsion binder composition. When the amount of starch is less than 3 wt%, it is not possible to provide a sufficient effect of improving a feeling of use. When the amount of starch is larger than 20 wt%, emulsion stability may be degraded.

In addition, when the aqueous phase part includes a moisturizing agent, the moisturizing agent may be used in an amount of 0.1-20 wt%, particularly 1-10 wt%, based on the total weight of the emulsion binder, but is not limited thereto. When the amount of moisturizing agent is less than 1 wt%, it is not possible to provide a sufficient moisturizing effect (wetness, etc.). When the amount of moisturizing agent is larger than 10 wt%, emulsion stability may be degraded.

According to still another embodiment, the emulsion binder may further include other additive ingredients as desired, in addition to the aqueous phase part and oil phase part. Particular examples of the additive ingredients may include functional ingredients or additives, such as an emulsifying agent, emulsion stabilizer, thickener, antioxidant, UV protecting agent, pigment, fragrance or preservative. There is no limitation in particular types of such

additive ingredients. For example, the additive ingredients may be mixed with the oil phase part first, and then with the aqueous phase part, followed by emulsification.

The balance of the emulsion binder according to an embodiment of the present disclosure, except the contents of the moisturizing agent, oil phase component and urethane powder, includes water or water and additive ingredients, such as additives.

Although there is no particular limitation, the cosmetic composition according to an embodiment of the present disclosure may include the acrylic polymer and powdery ingredients in an amount of 40-80 wt% based on the total weight of the cosmetic composition, and the emulsion binder composition in an amount of 20-60 wt% based on the total weight of the cosmetic composition. Herein, when the amount of emulsion binder is less than 20 wt%, the powdery ingredients cannot be wetted with the emulsion binder sufficiently, thereby decreasing formulation stability and making it difficult to form a desired slurry formulation. When the amount of emulsion binder is larger than 60 wt%, it is difficult to form a slurry formulation due to low viscosity and to carry out forming due to the agglomeration disturbing an injection process.

According to yet another embodiment, the acrylic polymer may be used in an amount of 0.1-30 wt%, 1-20 wt% or 3-15 wt% based on the total weight of the cosmetic composition. When the amount of acrylic polymer is larger than 30 wt% based on the weight of the cosmetic composition, the proportion of powdery ingredients is decreased relatively, resulting in degradation of pore-covering effect. When the amount of acrylic polymer is less than 1 wt%, skin

adhesion is degraded, thereby decreasing make-up durability, and a desired level of formability and formulation stability cannot be obtained.

When the cosmetic composition includes the powdery ingredients, acrylic polymer and emulsion binder within the above-defined ranges, it is possible to form a slurry formulation sufficiently and to obtain good formability, and thus it is possible to prepare powder type cosmetics, particularly a make-up product, such as a pact type formulation. In addition, the cosmetic composition according to the present disclosure may further include functional ingredients or additives currently used in the art, such as a fragrance, preservative, pigment, solvent, thickener, UV protecting agent or anti-oxidant. There is no limitation in particular types of such functional ingredients or additives.

In addition, the formulation of the cosmetic composition according to an embodiment of the present disclosure is not particularly limited. For example, the cosmetic composition may be formulated into make-up products, including color make-up products, such as eyeshadow or blusher, loose powder, pact, or the like.

In another aspect, the cosmetic composition according to the present disclosure can be obtained by the method as described hereinafter.

The cosmetic composition according to an embodiment of the present disclosure can be obtained by the method including the steps of:

- (1) preparing an emulsion binder including at least one oil phase component selected from wax, oil and a surfactant, and starch; and
- (2) mixing powdery ingredients, an acrylic polymer and the emulsion binder.

Herein, according to an embodiment, the emulsion binder obtained from step (1) of preparing an emulsion binder is used as a binder for binding the powdery ingredients of the cosmetic composition. The emulsion binder may be obtained by the following method. Hereinafter, the method for preparing an emulsion binder according to an embodiment will be explained.

According to an embodiment, the emulsion binder can be obtained by the method for preparing an emulsion binder, including the steps of:

(a) preparing an aqueous phase part;

(b) preparing an oil phase part including at least one oil phase component selected from wax, oil and a surfactant, and starch;

(c) mixing and emulsifying the aqueous phase part with the oil phase part, thereby providing an emulsion; and

(d) stabilizing the resultant emulsion.

In step (a), the aqueous phase part may include water and may further include a moisturizing agent. Particularly, step (a) may be carried out by mixing water with a moisturizing agent, followed by heating. When mixing water with a moisturizing agent and heating them, the moisturizing agent can be dissolved homogeneously into water. Herein, the heating temperature may be 60-90°C, more particularly 70-80°C. When the heating temperature is lower than 60°C, it is difficult to carry out homogeneous dissolution. When the heating temperature is higher than 90°C, water may evaporate. In addition, the moisturizing agent may include a polyol and particular examples of the polyol are the same as described above.

In step (b), at least one oil phase component selected from wax, oil and

a surfactant is mixed with starch and then heated to obtain an oil phase part. Particular examples of the wax, oil and surfactant are the same as described above. Herein, heating may be carried out upon the mixing of the oil phase component with starch. In this case, the oil phase component may be mixed
5 with starch more effectively. The heating temperature may be the same as or similar to the heating temperature of the aqueous phase part. For example, the heating temperature may be 40-100°C, more particularly 60-90 or 70-80°C. When the heating temperature is lower than 40°C, it is difficult to carry out homogeneous mixing. When the heating temperature is higher than 100°C,
10 the oil phase component may evaporate.

In step (c), the oil phase part may be added to the aqueous phase part or the aqueous phase part may be added to the oil phase part, followed by agitation, thereby carrying out emulsification. Herein, when mixing the aqueous phase part with the oil phase part, other additive ingredients may be
15 added. Particular examples of such additive ingredients may include functional ingredients or additives, such as an emulsifying agent, emulsion stabilizer, thickener, antioxidant, UV protecting agent, pigment, fragrance and preservative. Particular types of additive ingredients are not limited. The additive ingredients may be mixed with the oil phase part first, and then the
20 resultant mixture may be mixed and emulsified with the aqueous phase part.

In addition, when mixing and emulsifying the aqueous phase part with the oil phase part in step (c), heating may be carried out so as to obtain a homogeneous emulsion formulation. Herein, the heating temperature may be 60-90°C, more particularly 70-80°C. When the heating temperature is lower

than 60°C, it is difficult to carry out homogeneous emulsification. When the heating temperature is higher than 90°C, water may evaporate.

Further, in step (c) according to an embodiment of the present disclosure, 40-95 parts by weight of the aqueous phase part may be mixed with 5-60 parts by weight of the oil phase part, particularly 60-90 parts by weight of the aqueous phase part may be mixed with 10-40 parts by weight of the oil phase part, and more particularly, 70-80 parts by weight of the aqueous phase part may be mixed with 20-30 parts by weight of the oil phase part, and then emulsification may be carried out. In addition, the moisturizing agent, oil phase component, starch and acrylic polymer may be incorporated so that the above-defined amount of each component may be obtained based on the total weight of the emulsion binder.

In step (d), the emulsion obtained from the emulsification of step (c) is stabilized. For example, the stabilization may be carried out by allowing the emulsion to stand at room temperature or by cooling the emulsion. Particularly, the emulsion may be stabilized by cooling it to 25-50°C, 30-45°C or 35-40°C.

According to an embodiment of the present disclosure, particular types and amounts of the powdery ingredients and acrylic polymer used in step (2) are the same as described above.

Additionally, in step (2), conventional functional ingredients or additives, such as a fragrance, preservative, pigment, solvent, thickener, UV protecting agent and antioxidant, may be incorporated. Particular types of such functional ingredients or additives are not limited.

According to another embodiment of the present disclosure, the acrylic polymer in step (2) may include at least one selected from the group consisting of crosslinked polyestheracrylate, acrylate/bis-hydroxypropyl dimethicone crosspolymer, acrylate/C10-C30 alkyl acrylate crosspolymer, acrylate/C12-C13 alkyl methacrylate/methoxyethyl acrylate crosspolymer, ethylhexyl acrylate crosspolymer, acrylate/ethylhexyl acrylate crosspolymer, acrylate/lauryl methacrylate/tridecyl methacrylate crosspolymer, acrylate/PEG-4 dimethacrylate crosspolymer, acrylate/*Rhus Verniciflua* Sap extract crosspolymer, acrylate/steareth-20 methacrylate crosspolymer, acrylate/vinyl acrylate (VA) crosspolymer, acrylate/vinyl isodecanoate crosspolymer, and acrylate/vinyl neodecanoate crosspolymer. The amount of acrylic polymer is the same as described above.

According to still another embodiment, step (2) may further include:

mixing the powdery ingredients, acrylic polymer and emulsion binder and subjecting the mixture to primary agitation; subjecting the resultant mixture to secondary agitation; and drying the resultant mixture to remove water contained in the mixture.

Herein, the secondary agitation may be carried out at a higher speed as compared to the primary agitation. Particularly, the powdery ingredients, acrylic polymer and emulsion binder are mixed and then subjected to primary agitation at a low speed. Then, the agitation speed is increased to carry out secondary agitation at a high speed. The powdery ingredients are wetted gradually with the acrylic polymer and emulsion binder during the primary agitation at a low speed. In addition, homogeneous mixing is accomplished by

the secondary agitation at a high speed, thereby facilitating formation of a stable cosmetic agent formulation.

More particularly, a high-viscosity mixer may be used when carrying out mixing with the emulsion binder in order to minimize the loss of powdery ingredients. Herein, the powdery ingredients are introduced first into the high-viscosity mixer, and then the emulsion binder is introduced at a desired ratio. Then, primary agitation (low-speed agitation) is carried out so that the powdery ingredients may be wetted gradually with the acrylic polymer and emulsion binder, and secondary agitation (high-speed agitation) is carried out to finish formulation.

There is no limitation in speed during the primary agitation and secondary agitation. For example, the primary agitation may be carried out at a speed of 100 rpm to 800 rpm. When the primary agitation speed is less than 100 rpm, an excessively long agitation time is required. When the primary agitation speed is higher than 800 rpm, dust flying of powdery ingredients may occur, leading to a deviation in formulation. In addition, the secondary agitation (high-speed agitation) may be carried out at a speed of 1,000 rpm to 5,000 rpm, but is not limited thereto. Within the above-defined range of speed, it is possible to mix the emulsion binder composition sufficiently with the acrylic polymer and powdery ingredients.

In addition, there is no limitation in time of primary agitation and secondary agitation. For example, the primary agitation may be carried out for 30 seconds to 5 minutes in view of wetting of powder. The secondary agitation may be carried out for 2-20 minutes, preferably 5-10 minutes, in view of

homogeneous mixing of the emulsion binder with powder ingredients.

Further, the method for preparing a cosmetic composition according to an embodiment of the present disclosure may further include, after mixing step (2), a step (water-removing step) of removing water from the mixture. The mixture obtained from step (2) contains water, which may be removed by evaporation of water during the water-removing step. Such a water-removing step is an additional step carried out as necessary, and may be carried out in the case of formulation of a cosmetic product requiring high viscosity, such as solid cosmetics (powder products) or make-up products (color make-up, eyeshadow, mascara, etc.)

The water-removing step does not mean completely removing water (moisture) from the mixture but includes removing a predetermined amount of water from the mixture, so that the resultant mixture may have a higher viscosity as compared to the mixture obtained from step (2). For example, the water-removing step may be carried out through evaporation of water by allowing the mixture to stand at room temperature or drying the mixture. Herein, the drying may be carried out by oven drying or hot air drying. Particularly, the drying temperature may be 30-90°C, particularly 40-70°C. When the drying temperature is lower than 30°C, the efficiency of drying may be degraded. When the drying temperature is higher than 90°C, the amount of water and solvent evaporating during the drying increases rapidly and a dust flying phenomenon occur, thereby adversely affecting forming stability. In addition, the drying may be carried out gradually for about 2 hours to 20 hours. The water-removing (drying) step may be carried out in a mold for forming the

mixture into a desired shape.

【Mode for Invention】

An oil-in-water type emulsion binder is obtained based on the composition of the following Table 1 according to the present disclosure.

In Example 1 and Comparative Example 1, the ingredients forming an oil phase are mixed according to the composition of Table 1, heated at 70°C, and added to an aqueous phase, followed by emulsification. Then, the emulsion is cooled to 30°C and stabilized.

[Table 1]

	Ingredients	Ex. 1	Comp. Ex. 1
Aqueous phase	Purified water	Balance	Balance
Oil Phase	<i>euphorbia cerifera</i> (candelilla) wax	2	2
	Phenyltrimethicone	15	15
	PEG-10 dimethicone	10	10
	Aluminum starch octenylsuccinate	5	-
Total		100	100

(Unit: wt%)

[Preparation Examples 1-4 and Comparative Preparation Examples 1-5]

Production of Make-up Cosmetic Agents

Each of the oil-in-water type emulsion binders obtained according to Example 1 and Comparative Example 1 is used to provide pact type formulations as make-up cosmetic agents according to the composition of the following Table 2.

5 In each of Preparation Examples 1-4 and Comparative Preparation Examples 1-5, the powdery ingredients and acrylic polymer as shown in Table 2 are introduced to a high-viscosity mixer, and then each of the oil-in-water type emulsion binders according to Example 1 and Comparative Example 1 is introduced thereto, followed by agitation under 500 rpm for 1 minute and under
10 3500 rpm for 10 minutes. After that, the agitated cosmetic compositions are dried at about 50°C for about 15 hours so that the water contained in the cosmetic composition may evaporate. Herein, the crosslinked polyestheracrylate contained in Preparation Example 1-4 is ACX-1502C available from SEKISUI Chemical Industry Co. Ltd.

15 Comparative Preparation Example 5 uses a currently used oil binder instead of the oil-in-water type emulsion binder and is provided as a conventional pressed pact type formulation.

[Table 2]

	Ingredie nts	Prep. Ex. 1	Prep. Ex. 2	Prep. Ex. 3	Prep. Ex. 4	Comp. Prep. Ex. 1	Comp. Prep. Ex. 2	Com p. Prep. Ex. 3	Com p. Prep. Ex. 4	Com p. Prep. Ex. 5
Powdery	Talc	-	-	-	-	40	-	-	-	-

ingredient s	Mica	-	-	-	-	-	-	-	-	-
	Silica	36	-	39.6	28	-	40	40	36	40
	PMMA	-	36	-	-	-	-	-	-	-
	Pearl	-	-	-	-	-	-	-	-	-
	Iron oxide	-	-	-	-	-	-	-	-	-
Binder ingredient s	Ex. 1	60	60	60	60	60	60	-	-	-
	Comp. Ex. 1	-	-	-	-	-		60	60	-
	Phenyl trimethic one	-	-	-	-	-	-	-	-	30
	Butylen e glycol caprylyl ate/dica prate	-	-	-	-	-	-	-	-	18
	Dicetear yl dimer dilinolea te	-	-	-	-	-	-	-	-	12
Crosslinked polyestheracrylate		4	4	0.4	12	-	-	-	4	-
Total		100	100	100	100	100	100	100	100	100

(Unit: wt%)

[Test Example 1] Evaluation for Formability

To investigate the formability of the make-up cosmetic composition
5 including an acrylic polymer according to the present disclosure, sensory
evaluation is carried out by using Preparation Examples 1-4 and Comparative
Preparation Examples 1-5.

[Table 3]

Evaluation Criteria	
5	Excellent
4	Good
3	Satisfactory
2	Bad
1	Poor

10

[Table 4]

	Formability
Prep. Ex. 1	4
Prep. Ex. 2	4
Prep. Ex. 3	2
Prep. Ex. 4	5
Comp. Prep. Ex. 1	5
Comp. Prep. Ex. 2	2

Comp. Prep. Ex. 3	1
Comp. Prep. Ex. 4	4
Comp. Prep. Ex. 5	1

As shown in Table 4, it can be seen that Preparation Examples 1, 2 and 4 according to the present disclosure, except Preparation Example 3 containing a very small amount of acrylic polymer, have excellent formability. Particularly, Preparation Example 4 shows excellent formability like Comparative Preparation Example 1 using talc, even though it uses no talc. On the contrary, Comparative Preparation Examples 2-3 and 5 containing no acrylic polymer have poor formability.

[Test Example 2] Sensory Evaluation of Panels for Cosmetic Agents

To investigate the shrinkage, dust flying, stability against cracking and functionality (pore-covering effect) of raw materials of the make-up cosmetic composition including an acrylic polymer according to the present disclosure, sensory evaluation is carried out by using Preparation Examples 1-4 and Comparative Preparation Examples 1-5.

In this test, a consumer panel test is carried out by allowing 20 females in their 20s to 30s to use the cosmetic agents according to Preparation Examples 1-4 and Comparative Examples 1-5. Particularly, shrinkage is evaluated through the shrinkage of each sample on a forming dish when it is dried at about 50°C for about 15 hours. Dust flying is evaluated through the degree of dust flying when each sample is brushed ten times with a brush.

Stability against cracking is evaluated through the degree of cracking when each sample is dropped from a height of 20 cm. Functionality of raw materials is evaluated through the degree of covering pores transparently. Herein, shrinkage and dust flying are classified into 1-5, wherein the highest shrinkage or dust flying is represented by 5. Stability against cracking and functionality of raw materials are also classified into 1-5, wherein the highest stability or functionality is represented by 5. The results are averaged and shown in the following Table 5.

[Table 5]

	Shrinkage	Dust flying	Stability against cracking	Functionality of raw materials
Prep. Ex. 1	2	2	4	5
Prep. Ex. 2	2	2	4	5
Prep. Ex. 3	2	4	1	5
Prep. Ex. 4	2	2	5	5
Comp. Prep. Ex. 1	1	1	5	1
Comp. Prep. Ex. 2	2	4	2	5
Comp. Prep. Ex. 3	5	5	2	5
Comp. Prep. Ex. 4	5	5	4	5

Comp. Prep. Ex. 5	5	5	1	5
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As shown in Table 5, Preparation Examples 1, 2 and 4 according to the present disclosure, except Preparation Example 3 containing a very small amount of acrylic polymer, show a low degree of shrinkage and dust flying, while providing high stability against cracking and high functionality of raw materials. Thus, it is expected that they show excellent stability when formulated into a pact type formulation.

Particularly, Preparation Example 4 shows excellent stability against cracking, like Comparative Preparation Example 1 using talc. However, since Preparation Example 4 uses no talc, it provides an excellent pore-covering effect, unlike Comparative Preparation Example 1 that shows poor functionality (decreased pore-covering effect) of raw materials.

On the contrary, Comparative Preparation Examples 2-4 containing no acrylic polymer show severe shrinkage and dust flying and cause cracking, and thus cannot be expected to be formulated into a pact type formulation.

[CLAIMS]

【Claim 1】

A cosmetic composition comprising:

- 5 powdery ingredients;
 an emulsion binder; and
 an acrylic polymer,

wherein the emulsion binder comprises an aqueous phase part and an oil phase part,

- 10 wherein the oil phase part comprises starch and at least one oil phase component selected from wax, oil and a surfactant, and
 wherein the cosmetic composition is a pressed pact type formulation.

15 **【Claim 2】**

The cosmetic composition according to claim 1, wherein the powdery ingredients comprise at least one selected from the group consisting of silica and polymethyl methacrylate (PMMA).

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【Claim 3】

The cosmetic composition according to claim 1, wherein the acrylic polymer comprises spherical particles having an average particle diameter of 5-25 μm .

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【Claim 4】

- The cosmetic composition according to claim 1, wherein the acrylic polymer is at least one selected from the group consisting of crosslinked polyestheracrylate, acrylate/bis-hydroxypropyl dimethicone crosspolymer,
30 acrylate/C10-C30 alkyl acrylate crosspolymer, acrylate/C12-C13 alkyl

methacrylate/methoxyethyl acrylate crosspolymer, ethylhexyl acrylate crosspolymer, acrylate/ethylhexyl acrylate crosspolymer, acrylate/lauryl methacrylate/tridecyl methacrylate crosspolymer, acrylate/PEG-4 dimethacrylate crosspolymer, acrylate/*Rhus Verniciflua* Sap extract crosspolymer, acrylate/steareth-20 methacrylate crosspolymer, acrylate/vinyl acrylate (VA) crosspolymer, acrylate/vinyl isodecanoate crosspolymer, and acrylate/vinyl neodecanoate crosspolymer.

10 **【Claim 5】**

The cosmetic composition according to claim 1, wherein the starch is at least one selected from the group consisting of modified corn starch, sodium carboxymethyl starch, sodium polyacrylate starch and aluminum starch octenyl succinate.

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【Claim 6】

The cosmetic composition according to claim 1, wherein the emulsion binder comprises 60-90 parts by weight of the aqueous phase part and 10-40 parts by weight of the oil phase part.

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【Claim 7】

The cosmetic composition according to claim 1, wherein the emulsion binder comprises 3-20 wt% of starch based on the total weight of the emulsion binder.

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【Claim 8】

The cosmetic composition according to claim 1, wherein the wax is at

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least one selected from the group consisting of *euphorbia cerifera* (candelilla), ozokerite, dipentaerythrityl hexahydroxystearate/hexastearate/ hexarosinate, bis-diglycerylpolyacyladipate-2, microcrystalline wax and dipentaerythrite fatty acid ester.

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【Claim 9】

The cosmetic composition according to claim 1, wherein the oil is at least one oil selected from: ester oil selected from the group consisting of hexyl
10 laurate, dicaprylyl carbonate, diisostearyl malate, butylene glycol dicaprylate/dicaprate, cetyl ethyl hexanoate, triethyl hexanoin, dicetearyl dimer dilinoleate, caprylic/capric triglyceride, polyglyceryl-2-triisostearate and pentaerythrityl tetraisostearate; hydrocarbon oil selected from the group consisting of polybutene, hydrogenated polyisobutene and phytosqualane; and
15 silicone oil selected from the group consisting of phenyl trimethicone and dimethicone.

【Claim 10】

20 The cosmetic composition according to claim 1, wherein the surfactant is at least one selected from the group consisting of sorbitan stearate, glyceryl monostearate/PEG-100 stearate, PEG-10 dimethicone and polysorbate.

25 **【Claim 11】**

The cosmetic composition according to claim 1, wherein the aqueous phase part further comprises a moisturizing agent.

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【Claim 12】

The cosmetic composition according to claim 11, wherein the moisturizing agent is at least one polyol selected from the group consisting of butylene glycol, propanediol, dipropylene glycol and pentylene glycol.

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【Claim 13】

The cosmetic composition according to claim 11, wherein the emulsion binder comprises the moisturizing agent in an amount of 0.1-20 wt% based on the total weight of the emulsion binder.

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【Claim 14】

The cosmetic composition according to claim 1, which comprises the powdery ingredients and acrylic polymer in an amount of 40-80 wt% based on the total weight of the cosmetic composition.

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【Claim 15】

The cosmetic composition according to claim 1, which comprises the acrylic polymer in an amount of 0.1-30 wt% based on the total weight of the cosmetic composition.

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【Claim 16】

A method for preparing a cosmetic composition, comprising the steps of:
(1) preparing an emulsion binder including at least one oil phase component selected from wax, oil and a surfactant, and starch; and
(2) mixing powdery ingredients, an acrylic polymer and the emulsion

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binder,

wherein the cosmetic composition is a pressed pact type formulation.

5 **【Claim 17】**

The method for preparing a cosmetic composition according to claim 16, wherein the emulsion binder in step (1) is obtained by the method comprising the steps of:

- (a) preparing an aqueous phase part;
- 10 (b) mixing at least one oil phase component selected from wax, oil and a surfactant with starch, followed by heating, to obtain an oil phase part;
- (c) mixing and emulsifying the aqueous phase part with the oil phase part, thereby providing an emulsion; and
- (d) stabilizing the resultant emulsion.

15

【Claim 18】

The method for preparing a cosmetic composition according to claim 17, wherein step (a) is carried out by mixing water with a moisturizing agent,
20 followed by heating, to provide the aqueous phase part.

【Claim 19】

The method for preparing a cosmetic composition according to claim 16,
25 wherein step (2) further comprises:

- mixing the powdery ingredients, acrylic polymer and emulsion binder and subjecting the mixture to primary agitation;
- subjecting the resultant mixture to secondary agitation; and
- drying the resultant mixture to remove water contained in the mixture.

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【Claim 20】

The method for preparing a cosmetic composition according to claim 19, wherein the secondary agitation is carried out at a higher speed for a longer time as compared to the primary agitation.