

DESCRIPTION

MOUSSE-TYPE UV BLOCKING COSMETIC COMPOSITION

Technical Field

5 The present invention relates to a mousse-type UV-blocking cosmetic composition, and more particularly, to a mousse-type UV-blocking cosmetic composition that has a high sun protection factor and a light touch feeling, is in the form of a mousse that is easily used repeatedly and easily
10 applied to a large area, and has enhanced water resistance.

Background Art

A mousse-type cosmetic composition has characteristics in that, because the content can be sprayed as foam, the
15 composition can be easily applied not only to the face, but also to a large area of the skin, and because the touch feeling of the composition is light, a UV-blocking product comprising the composition is easily applied and easily used repeatedly. However, this mouse-type cosmetic composition has
20 low resistance to water or sweat due to a surfactant that is essentially included in view of the characteristics of the mousse formulation, and thus it is less persistent. For this reason, in spite of the advantages in that the composition has a light touch feeling and can be used repeatedly and easily
25 applied to a large area, the composition can be used only in

daily life, and the use thereof for leisure and sports is limited due to its low water resistance.

Due to this problem, the development of mousse-type UV-blocking products has not been activated, unlike general
5 cream- or lotion-type UV-blocking products.

Prior Art Documents

Patent Document 1: Korean Patent Publication No. 2010-0031097

10 **Disclosure**

Technical Problem

Accordingly, the present inventors have prepared a mousse-type UV-blocking composition by suitably combining a wax component and a thickener component without using a
15 surfactant to provide a mousse-type cosmetic formulation, and stabilizing an organic UV-blocking agent and an inorganic UV-blocking agent in the mousse-type formulation to provide a mousse-type UV-blocking cosmetic composition that has a high sunscreen factor.

20 Therefore, it is an object of the present invention to provide a mousse-type UV-blocking cosmetic composition that has a high sunscreen factor and, at the same time, has water resistance.

25 **Technical Solution**

In order to accomplish the above objects, the present invention provides a UV-blocking cosmetic composition containing: at least one wax selected from among a fatty alcohol-based wax and a fatty acid-based wax; and a thickener.

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Advantageous Effects

The mousse-type UV-blocking cosmetic composition that is provided according to the present invention can be easily used repeatedly while maintaining a sun protection factor of 50 or more and a protection grade of UVA (PA) of +++, and is in the form of a mousse that can be easily applied to a large area. In addition, it is highly resistant to sweat and water, and thus can be used not only in daily life, but also for leisure and sports.

15

Best Mode

The present invention relates to a UV-blocking cosmetic composition, and more particularly, to a mousse-type UV-blocking cosmetic composition that contains no surfactant as a result of using a specific combination of a wax and a thickener.

The composition according to the present invention contains an organic UV-blocking agent, an inorganic UV-blocking agent, an oil, an alcohol, a polyol, a powder, a wax and a thickener. Particularly, the composition according to

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the present invention has characteristics in that it contains both an organic UV-blocking agent and an inorganic UV-blocking agent, and has a high sun protection factor, preferably a sun protection factor of 50 or more, and a protection grade of UVA
5 of PA+++, but is in the form of a mousse that has a light touch feeling, is easily used repeatedly and can be easily applied even to a large area.

The organic UV-blocking agent that is used in the composition of the present invention is preferably at least one
10 selected from the group consisting of ethylhexyl methoxycinnamate, isoamyl-P-methoxycinnamate, butyl methoxy dibenzoylmethane, ethylhexyl salicylate, octocrylene, homosalate, bis-ethylhexyloxyphenol methoxyphenyl triazine, ethylhexyl triazone, phenylbenzimidazole sulfonic acid and
15 diethylamino hydroxybenzoyl hexyl benzoate. The composition of the present invention may contain the organic UV-blocking agent in an amount of 1 wt% or more, preferably 10 wt% or more, more preferably 20 wt% or more, and even more preferably 25 wt% or more, based on the total weight of the composition. Also, the
20 composition of the present invention may contain the organic UV-blocking agent in an amount of 40 wt% or less, preferably 35 wt% or less, and more preferably 33 wt% or less, based on the total weight of the composition. Further, the composition of the present invention may contain the organic UV-blocking agent
25 in an amount of 1-40 wt%, preferably 10-35 wt%, more preferably

25-33 wt%, and even more preferably about 30 wt%, based on the total weight of the composition. If the content of the organic UV-blocking agent is less than 1 wt%, the desired UV-blocking effect cannot be obtained, and if the content of the organic
5 UV-blocking agent is more than 40%, it can cause a problem in term of formulation stability.

The inorganic UV-blocking agent that is used in the present invention is preferably at least one selected from the group consisting of titanium dioxide, zinc oxide and iron
10 oxide. The composition of the present invention may contain the inorganic UV-blocking agent in an amount of 1 wt% or higher, preferably 5 wt% or more, more preferably 10 wt% or more, and even more preferably 15 wt% or more, based on the total weight of the composition. Also, the composition of the
15 present invention may contain the inorganic UV-blocking agent in an amount of 30 wt% or less, preferably 25 wt% or less, and more preferably 20 wt% or less, based on the total weight of the composition. Further, the composition of the present invention may contain the inorganic UV-blocking agent in an
20 amount of 1-30 wt%, preferably 5-25 wt%, and more preferably 10-20 wt%, based on the total weight of the composition. If the content of the inorganic UV-blocking agent is less than 1 wt%, the desired UV-blocking effect cannot be obtained, and if the content is more than 30%, the touch feeling of the
25 composition will be reduced.

The oil that is used in the composition of the present invention is preferably at least one selected from the group consisting of hydrocarbon-based oils including squalane or mineral oil; ester-based oils including isopropyl palmitate, 2-octyldodecyl myristate, isopropyl myristate or butyloctyl salicylate; vegetable oils including castor oil, olive oil or jojoba oil; and silicone oils including cyclomethicone or dimethicone. The composition of the present invention may contain the oil in an amount of 1 wt% or more, preferably 5 wt% or more, more preferably 10 wt%, and even more preferably 15 wt% or more, based on the total weight of the composition. Also, the composition of the present invention may contain the oil in an amount of 30 wt% or less, preferably 25 wt% or less, and more preferably 20 wt% or less, based on the total weight of the composition. Further, the composition of the present invention may contain the oil in an amount of 1-30 wt%, preferably 5-25 wt%, and more preferably 10-20 wt%. The content of the oil in the composition is less than 1 wt%, the spreadability of the composition will be reduced, and if the content of the oil is more than 30 wt%, it can cause a problem in terms of formulation stability.

In the composition of the present invention, an alcohol is used to give a cool feeling, and the alcohol is preferably at least one of isopropyl alcohol and ethanol. The composition of the present invention may contain the alcohol in an amount of 1

wt% or more, preferably 2 wt% or more, and more preferably 4 wt% or more, based on the total weight of the composition. Also, the composition of the present invention may contain the alcohol in an amount of 10 wt% or less, preferably 8 wt% or less, and more preferably 6 wt% or less, based on the total weight of the composition. Further, the composition of the present invention may contain the alcohol in an amount of 1-10 wt%, preferably 2-8 wt%, and more preferably 4-6 wt%, based on the total weight of the composition. If the content of the alcohol is less than 1 wt%, the cool feeling cannot be felt, and if the content of the alcohol is more than 10 wt%, it can cause a problem in terms of formulation stability.

The polyol that is used in the composition of the present invention is preferably at least one selected from the group consisting of butylene glycol, glycerin, propylene glycol, dipropylene glycol and propanediol. The composition of the present invention may contain the polyol in an amount of 1 wt% or more, preferably 2 wt% or more, and more preferably 4 wt% or more, based on the total weight of the composition. Also, the composition of the present invention may contain the polyol in an amount of 10 wt% or less, preferably 8 wt% or less, and more preferably 6 wt% or less, based on the total weight of the composition. Further, the composition of the present invention may contain the polyol in an amount of 1-10 wt%, preferably 2-8 wt%, and more preferably 4-6 wt%, based on the total weight of

the composition. If the content of the polyol is less than 1 wt%, there will be a problem in terms of preservation, and if the content is more than 10 wt%, foam will not be properly formed.

5 In the composition of the present invention, a powder is used to improve the stickiness of the composition, and the powder is preferably at least one selected from the group consisting of polystyrene powder, polymethylmethacrylate powder, polyethylene powder, nylon powder,
10 polymethylsilsesquioxane powder and silicone powder. The composition of the present invention may contain the powder in an amount of 1 wt% or more, preferably 2 wt% or more, and more preferably 4 wt% or more, based on the total weight of the composition. Also, the composition of the present invention
15 may contain the powder in an amount of 10 wt% or less, preferably 8 wt% or less, and more preferably 6 wt% or less, based on the total weight of the composition. Further, the composition of the present invention may contain the powder in an amount of 1-10 wt%, preferably 2-8 wt%, and more preferably
20 4-6 wt%, based on the total weight of the composition. If the content of the powder is less than 1 wt% or less, the stickiness of the composition will be severe, and if the content is more than 10 wt%, the spray stability of the composition will be reduced.

25 In the composition of the present invention, a wax is used

to enhance the water resistance of the composition and to stabilize the organic UV-blocking agent and the inorganic UV-blocking agent in the composition to thereby provide a higher UV-blocking effect, and the wax is at least one selected from the group consisting of behenyl alcohol, stearyl alcohol, cetyl alcohol and cetearyl alcohol, which are fatty alcohol-based waxes, and stearic acid and palmitic acid, which are fatty acid-based waxes. The composition of the present invention may contain the wax in an amount of 0.1 wt% or more, preferably 0.3 wt% or more, more preferably 0.5 wt% or more, and even more preferably 1 wt% or more, based on the total weight of the composition. Also, the composition of the present invention may contain the wax in an amount of 5 wt% or less, preferably 4.5 wt% or less, more preferably 4 wt%, and even more preferably 3 wt%, based on the total weight of the composition. Further, the composition of the present invention may contain the wax in an amount of 0.1-5 wt%, preferably 0.3-4 wt%, and more preferably 0.5-3 wt%, based on the total weight of the composition. If the content of the wax is less than 0.1 wt%, the foam stability of the composition will be reduced, and if the content of the wax is more than 5 wt%, the formulation stability of the composition will be reduced.

The thickener that is used in the composition of the present invention is preferably at least one, more preferably at least two selected from the group consisting of xanthan gum,

carbomer, sepigel and hydroxyethyl cellulose. The composition of the present invention may contain the thickener in an amount of 0.1 wt% or more, preferably 0.3 wt% or more, and more preferably 0.5 wt% or more, based on the total weight of the composition. Also, the composition of the present invention may contain the thickener in an amount of 5 wt% or less, preferably 4 wt% or less, more preferably 3.5 wt% or less, even more preferably 3 wt% or less, and even more preferably 2 wt%, based on the total weight of the composition. Further, the composition of the present invention may contain the thickener in an amount of 0.1-5 wt%, preferably 0.3-4 wt%, more preferably 0.5-3 wt%, and even more preferably 0.5-2 wt%, based on the total weight of the composition. If the content of the thickener is less than 0.1 wt%, the formulation stability of the composition will be reduced, and if the content of the thickener is more than 5 wt%, foam will not be properly formed.

Generally, a surfactant is essentially used in mousse formulations. However, the composition according to the present invention contains no surfactant, and is in the form of a mousse as a result of suitably combining the wax and thickener components in the above-described amounts in a surfactant-free pickering formulation. In addition, the composition of the present invention has enhanced water resistance due to the wax and thickener components so that it can maintain 50% or more of the initial sun protection factor

(SPF) even after it is immersed twice in water for 20 minutes. This confirms that the composition of the present invention has water resistance.

In addition to the above-described components, the
5 composition of the present invention may further contain perfume, a pigment, a preservative, a sterilizer, an oxidation stabilizer and a pearl agent within the range that does not impair the effects of the present invention.

10 **Mode for Invention**

Hereinafter, the present invention will be described with reference to examples and comparative examples. These examples and comparative examples are provided in order to more clearly explain the present invention, and the scope of
15 the present invention is not limited to these examples and comparative examples.

Reference Example: Preparation of examples and comparative examples

According to the compositions shown in Table 1 below,
20 mousse-type UV-blocking compositions having a sun protection factor (SPF) of 50 and a protection grade of UVA (PA) of +++ were prepared. Examples 1 to 5 are mousse-type UV-blocking compositions having various contents of wax and a thickener, and Comparative Example 1 is a formulation containing no wax,
25 and Comparative Example 2 is a UV-blocking formulation

containing a surfactant (lauryl PEG/PPG-18/18 methicone).

Table 1

Components (wt%)		Example 1	Example 2	Example 3	Example 4	Example 5	Comparative Example 1	Comparative Example 2
Organic UV-blocking agent	Ethylhexyl salicylate	4.00	4.00	4.00	4.00	4.00	4.00	4.00
	Octylhexyl methoxy cinnamate	7.00	7.00	7.00	7.00	7.00	7.00	7.00
	Bis-ethylhexyloxyphenol methoxyphenyl triazine	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Oil phase	Behenyl alcohol/hydrogenated vegetable oil/stearic acid/cetearyl alcohol	1.00	-	1.00	1.00	1.00	-	-
	Cetyl alcohol	-	1.00	-	-	-	-	-
	Phenyl trimethicone	1.00	1.00	1.00	1.00	1.00	1.00	-
	Ozokerite	-	-	-	-	-	-	5.00
	Dicaprylyl carbonate	-	-	-	-	-	-	5.00
	Cyclopentasiloxane/triethyl citrate/ disteardimonium hectorite	-	-	-	-	-	-	5.00
	Lauryl PEG/PPG-18/18 methicone	-	-	-	-	-	-	1.00
Water phase	Purified water	To 100	To 100	To 100	To 100	To 100	To 100	To 100
	EDTA	0.05	0.05	0.05	0.05	0.05	0.05	0.05
	Ethanol	2.00	2.00	2.00	2.00	2.00	2.00	2.00
	Butylene glycol	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Inorganic UV-blocking agent	Purified water/titanium oxide/silica/butylene glycol/glycerin/phenoxyethanol	10.00	10.00	10.00	10.00	10.00	10.00	10.00
	Titanium dioxide/stearic acid/alumina	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Powder	Silica	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Thickener	Carbomer	0.05	0.05	0.05	-	-	0.05	0.05
	Xanthan gum	0.10	0.10	-	0.10	-	0.10	0.10
	Polyacrylate-13/polyisobutene/polysorbate (sepigel)	0.50	0.50	0.50	0.50	0.50	0.50	0.50

Preparation Method

According to the composition ratios shown in Table 1 below, organic UV-blocking agent and oil phase components are dissolved at 80°C. The mixture of the organic UV-blocking agent and oil phase components is slowly added to a mixture of water phase components at room temperature, followed by stirring. Next, the remaining components are added to the stirred mixture to prepare an oil-in-water (O/W) emulsion. Then, the emulsion and LPG are packed in a can at a ratio of emulsion: LPG (propane: butane = 30:70 wt%):=90:10 wt%.

Test Example 1: Measurement of sun protection factor (SPF) and protection grade of UVA (PA)

According to a "UV-blocking functionality testing method" of "functional cosmetic standards and testing methods" provided by the Korea Food & Drug Administration, the sun protection factor (SPF) was measured by attaching a transparent plastic tape (Transpore Tape; 3M, USA) to a prepared cast, and then applying 2 mg/cm² of each of the cosmetic compositions of Examples 1 to 4 and Comparative Examples 1 and 2, followed by measurement of the SPF with an SPF 290 Analyzer. In addition, to measure the protection grade of UVA (PA) for the compositions of Examples 1 to 5 and Comparative Examples 1 and 2, a Multi-port Solar simulator 601-300 W (Solar Light, USA) equipped with a 300W xenon arc lamp was used as a light source, and the intensity of light was measured with a 3D UV meter

(Solar Light, USA). The sun protection factor was recorded as the average of three measurements, and the results of the measurement are shown in Table 2 below.

Table 2

	Example 1	Example 2	Example 3	Example 4	Example 5	Comparative Example 1	Comparative Example 2
SPF	52.8±2.3	52.5±3.4	51.5±3.6	50.6±3.5	49.6±2.5	45.6±2.5	52.4±3.7
PA	+++	+++	+++	+++	+++	++	+++

5 As can be seen from the results in Table 2 above, for the compositions of the Examples of the present invention and Comparative Example 2 containing the surfactant, all the sun protection factor (SPF) and the protection grade of UVA (PA) were measured to be high, but the sun protection factor of the composition of Comparative Example 1 containing no wax was
10 lower than the standard to be provided by the composition of the present invention. In addition, in the case of the composition of Example 5 containing only one kind of thickener, it can be seen that the protection grade of UVA (PA) was high,
15 but the sun protection factor (SPF) was slightly lower than 50.

Test Example 2: Measurement of foam-forming ability

To measure the foam-forming ability of each composition, each emulsion and LPD were packed in a can at a ratio of emulsion: LPG (propane: butane =30:70 wt%)=90:10 wt%, and mixed
20 20 times. Then, the mixture was discharged as foam onto the palm, and the foam-forming ability was evaluated based on the following criteria: good = foam was maintained for 3 minutes

after discharge; moderate = foam was maintained for 30 seconds to less than 3 minutes after discharge; poor = foam was maintained for less than 30 seconds after discharge. The results of the evaluation are shown in Table 3 below.

5 Table 3

	Example 1	Example 2	Example 3	Example 4	Example 5	Comparative Example 1	Comparative Example 2
Foam-forming ability	Good	Good	Moderate	Moderate	Poor	Poor	Good

As can be seen from the results in Table 3 above, in the case of the composition of Example 5 containing only one kind of thickener and the composition of Comparative Example 1 containing no wax, the foam-forming ability was poor, and in the case of the compositions of Examples 3 and 4 containing wax, but not containing one of three thickeners, the foam-forming ability was inferior to those in Examples 1 and 2. Also, in the case of the composition of Comparative Example 1 that is a cream-type composition containing a surfactant, the foam-forming ability was good.

Test Example 3: Effect on water resistance

According to the COLIPA Guideline (December, 2005) for evaluating sunscreen product water resistance, the skin to which each of the UV-blocking compositions was applied was repeatedly immersed in water (water resistance: twice for 20 minutes each time; long-lasting water resistance: 4 times for

20 minutes each time), and then the sun protection factor was measured. The water resistance ratio of each subject was calculated in comparison with the sun protection factor of the skin which was not immersed in water, and when the 90% single-
 5 sided confidence interval calculated as the mean of the measurements of 10 persons or more was 50% or higher of the mean, the composition was determined to have water resistance (or long-lasting water resistance). The results of the evaluation are shown in Table 4 below.

10 Table 4

	Example 1	Example 2	Example 3	Example 4	Example 5	Comparative Example 1	Comparative Example 2
Water resistance	O	O	O	O	X	X	X

As can be seen from the results in Table 4 above, the composition of Example 5 containing only one kind of thickener, and the composition of Comparative Example 1 containing no wax,
 15 and the composition of Comparative Example 2 containing the surfactant, have no water resistance.

Test Example 4: Touch feeling (satisfaction)

Using thirty 25-45-year-old women as subjects, the overall satisfaction of foam-forming ability, spreadability, stickiness,
 20 glossiness and the like for the compositions of Examples 1 to 5 and Comparative Examples 1 and 2 was evaluated. Each of the formulations of Examples 1 to 5 and Comparative Examples 1 and

2 was squeezed onto the hand and immediately applied to the face, and the results of the evaluation are shown in Table 5 below.

Table 5

	Example 1	Example 2	Example 3	Example 4	Example 5	Comparative Example 1	Comparative Example 2
Touch feeling (satisfaction)	5	5	4	4	3	3	5

5 Criteria for evaluation were as follows.

1: very poor; 2: poor; 3: moderate; 4: good; 5: very good.

As can be seen from the results in Table 5, the composition of Example 5 containing only one kind of thickener, and the composition of Comparative Example 1 containing no wax,
10 showed a low score of touch feeling (satisfaction), and the compositions of Examples 3 and 4 not containing one of three thickeners showed a low score of satisfaction compared to the compositions of Examples 1 and 2.

As can be seen from the results of Test Examples 1 to 4
15 above, according to the present invention, a mousse formulation having a high sun protection factor and water resistance can be prepared by suitably combining wax and a thickener in a surfactant-free pickering formulation. Thus, the UV-blocking composition according to the present invention can be used not
20 only in daily life, but also for leisure or sports, while it has a cool feeling that is the advantage of conventional mousse formulations.

In addition, the embodiment of the mousse-type UV-blocking cosmetic composition according to the present invention may be modified in various forms, and it should be understood that such modified embodiments fall within the scope of the present
5 invention.

CLAIMS

1. A mousse-type UV-blocking cosmetic composition containing: at least one wax selected from among a fatty alcohol-based wax and a fatty acid-based wax; and a thickener.
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2. The UV-blocking cosmetic composition of claim 1, wherein the fatty alcohol-based wax is at least one selected from the group consisting of behenyl alcohol, stearyl alcohol, cetyl alcohol and cetearyl alcohol, and the fatty acid-based wax is at least one selected from stearic acid and palmitic acid.
10

3. The UV-blocking cosmetic composition of claim 1, wherein the wax is contained in an amount of 0.1-5 wt% based on the total weight of the composition.
15

4. The UV-blocking cosmetic composition of claim 1, wherein the thickener is at least two selected from the group consisting of xanthan gum, carbomer, sepigel and hydroxyethyl cellulose.
20

5. The UV-blocking cosmetic composition of claim 1, wherein the thickener is contained in an amount of 0.1-5 wt% based on the total weight of the composition.
25

6. The UV-blocking cosmetic composition of claim 1, further containing both an organic UV-blocking agent and an inorganic UV-blocking agent.

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7. The UV-blocking cosmetic composition of claim 6, which has a sun protection factor (SPF) of 50 or more and a protection grade of UVA (PA) of +++.

10 8. The UV-blocking cosmetic composition of claim 6, wherein the organic UV-blocking agent is at least one selected from the group consisting of ethylhexyl methoxycinnamate, isoamyl-P-methoxycinnamate, butyl methoxy dibenzoylmethane, ethylhexyl salicylate, octocrylene, homosalate, bis-
15 ethylhexyloxyphenol methoxyphenyl triazine, ethylhexyl triazone, phenylbenzimidazole sulfonic acid and diethylamino hydroxybenzoyl hexyl benzoate.

9. The UV-blocking cosmetic composition of claim 6,
20 wherein the organic UV-blocking agent is contained in an amount of 1-40 wt% based on the total weight of the composition.

10. The UV-blocking cosmetic composition of claim 6,
25 wherein the inorganic UV-blocking agent is at least one

selected from the group consisting of titanium dioxide, zinc oxide and iron oxide.

11. The UV-blocking cosmetic composition of claim 6,
5 wherein the inorganic UV-blocking agent is contained in an amount of 1-30 wt% based on the total weight of the composition.

12. The UV-blocking cosmetic composition of claim 1,
10 further containing an oil.

13. The UV-blocking cosmetic composition of claim 12,
wherein the oil is at least one from the group consisting of hydrocarbon-based oils, ester-based oils, vegetable oils, and
15 silicone oils.

14. The UV-blocking cosmetic composition of claim 13,
wherein the oil is contained in an amount of 1-30 wt% based on the total weight of the composition.

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15. The UV-blocking cosmetic composition of claim 1,
further containing an alcohol.

16. The UV-blocking cosmetic composition of claim 15,
25 wherein the alcohol is at least one of isopropyl alcohol and

ethanol.

17. The UV-blocking cosmetic composition of claim 15,
wherein the alcohol is contained in an amount of 1-10 wt%
5 based on the total weight of the composition.

18. The UV-blocking cosmetic composition of claim 1,
further containing a polyol.

10 19. The UV-blocking cosmetic composition of claim 18,
wherein the polyol is at least one selected from the group
consisting of butylene glycol, glycerin, propylene glycol,
dipropylene glycol and propanediol.

15 20. The UV-blocking cosmetic composition of claim 18,
wherein the polyol is contained in an amount of 1-10 wt% based
on the total weight of the composition.

21. The UV-blocking cosmetic composition of claim 1,
20 further containing a powder.

22. The UV-blocking cosmetic composition of claim 21,
wherein the powder is at least one selected from the group
consisting of polystyrene powder, polymethylmethacrylate
25 powder, polyethylene powder, nylon powder,

polymethylsilsesquioxane powder and silicone powder.

23. The UV-blocking cosmetic composition of claim 21,
wherein the powder is contained in an amount of 1-10 wt% based
5 on the total weight of the composition.

24. The UV-blocking cosmetic composition of claim 1,
which has excellent water resistance.