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(57) Abstract

A zinc oxide-coated body pigment of the present invention is excellent in dispersibility, has excellent ultraviolet dispersibility, and can attain an excellent sunscreensing effect upon blending into a cosmetic or the like. Preferably, it is characterized in that a body pigment is treated with acid and alkali under the presence of plate-type zinc oxide, so that the plate-type zinc oxide is stuck to the surface of the body pigment.
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ZINC OXIDE-COATED BODY PIGMENT AND COSMETIC MATERIAL CONTAINING THE SAME

FIELD OF INVENTION

The present invention relates to a zinc oxide-coated body pigment which can be employed as raw material for cosmetics and a method of preparing the same, and a cosmetic comprising the same.

BACKGROUND OF THE INVENTION

It is well known that ultraviolet rays reaching the ground include mid ultraviolet radiation (290 to 320 nm: UV-B), which causes erythema on the skin upon excessive exposure to result in inflammation and melanism and is regarded as one of the causes for carcinoma cutaneum, and near ultraviolet radiation (320 to 400 nm: UV-A), which hardly causes erythema but oxidizes reduced melanin of the skin to cause melanin chromatosis and melanism and is regarded as a cause for early aging of the skin resulting from prolonged exposure.

As such influences exerted by the ultraviolet rays on the skin have been clarified, demands for sunscreening cosmetics are now being increased. A SPF (sun protector factor) value is generally employed as an index for protecting the skin against ultraviolet rays, on the assumption that the sunscreening effect is improved as the SPF value is increased.

In general, a sunscreening cosmetic is blended with an ultraviolet absorbent and an ultraviolet scattering agent for cutting off ultraviolet rays, in order to attain a high SPF value.

As a general ultraviolet absorbent, derivatives of benzophenone, derivatives of cinnamic acid, derivatives of benzoic acid or the like, is known. While a cosmetic composition must be blended with a relatively large amount of ultraviolet absorbent in order to attain an excellent sunscreening effect, various problems are caused in this case.

For example, a large amount of ultraviolet absorbent results in problems of solubility with other bases, bad influences such as denaturation exerted on other bases, reduction of ultraviolet absorption power and coloring caused by decomposition of the ultraviolet absorbent, inferior safety such as increase of skin irritation, and the like. Thus, the ultraviolet absorbent is considerably problematic as cosmetic raw material, and cosmetics containing a large amount of such raw material may be improper as cosmetics.
On the other hand, as a general ultraviolet scattering agent, zinc oxide, titanium oxide, zirconium oxide, kaolin or the like is known. Such an inorganic pigment exhibits an ultraviolet scattering effect over a wide range with small denaturation caused by the ultraviolet rays, and has a small problem as to skin irritation due to non-percutaneous absorption. However, this pigment has such high masking power that the same whitely remains on the skin upon application, to result in an inferior appearance. Such tendency is remarkable in zinc oxide, in particular.

In order to overcome such disadvantages, Japanese Patent Laid-Open Nos. 60-231607, 1-175921 and the like disclose fine zinc oxide, titanium oxide, zirconium oxide and so on. When such a fine inorganic pigment is blended into cosmetics, however, secondary aggregation is disadvantageously caused and no sufficient effect is attained as sunscreens of cosmetics. Further, the cosmetics spread inferiorly, and those color are darkened with time, to result in inconvenient problems for serving as cosmetics.

As examples of cosmetic raw material which can solve such problems, Japanese Patent Laid-Open Nos. 5-156174, 5-17329, 5-246823 and the like disclose pigment compositions prepared by coating surfaces of scale pigments such as mica, sericite and talc with titanium oxide or zinc oxide. Further, Japanese Patent Laid-Open No. 5-230394 discloses a composite body pigment which is prepared by coating plate type powder of mica, talc, sericite, etc., or spherical powder of silica, alumina, zirconia, etc., with titanium oxide or zirconium oxide and further coating the same with zinc oxide.

While a safe and natural makeup can be attained by employing such a body pigment composition, a sufficient sunscreens effect cannot be attained if the composition is independently employed or combined with a general ultraviolet absorbent which is in an amount causing no problem in safety.

In order to solve the aforementioned problems of the prior art, an object of the present invention is to provide a body pigment which brings safe usage and excellent application feeling, which can be blended into cosmetics or the like in a large amount, and has a high sunscreens effect, and a cosmetic comprising the body pigment.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a SEM photograph showing the grain mode of zinc oxide-coated talc according to Example of the present invention.

Fig. 2 is a SEM photograph showing the grain mode of zinc oxide-coated mica according to Example of the present invention.

Fig. 3 is a SEM photograph showing the grain mode of zinc oxide-coated
sericite according to Example of the present invention.

Fig. 4 is a SEM photograph showing the grain mode of plate-type zinc oxide serving as raw material employed in the present invention.

Fig. 5 is a SEM photograph showing the grain mode of talc serving as raw material employed in the present invention.

Fig. 6 is a SEM photograph showing the grain mode of mica serving as raw material employed in the present invention.

Fig. 7 is a SEM photograph showing the grain mode of sericite serving as raw material employed in the present invention.

DETAILED DESCRIPTION OF THE INVENTION

A zinc oxide-coated body pigment in the present invention comprises treatment of sticking plate-type zinc oxide to the surface of a body pigment.

In a more preferred embodiment of the present invention, a zinc oxide-coated body pigment comprises sticking the plate-type zinc oxide to the surface of a body pigment by treating the body pigment with acid and alkali under the presence of plate-type zinc oxide.

A convenient method for preparing such a zinc oxide-coated body pigment according to the preferred embodiment comprises the steps of mixing plate-type zinc oxide with a body pigment in water, adding acid to the mixture for treating the same with the acid, adding alkali to the acid-treated mixture for treating the same with the alkali, and washing the alkali-treated mixture with water and thereafter drying the same.

It is conceivable that impurities etc. are removed from the surface of the body pigment by the acid treatment and the alkali treatment, so that the plate-type zinc oxide is more strongly and more homogeneously stuck to the active surface of the body pigment.

The acid employed for the acid treatment is not particularly restricted but sulfuric acid, nitric acid, hydrochloric acid or a combination of these acids, can be used.

The alkali employed for the alkali treatment is not particularly restricted but sodium hydroxide, aqueous ammonia, basic sodium carbonate or the like, can be used.

In the method according to the present invention, an oxidant such as aqueous hydrogen peroxide can be added and treated after the alkali treatment as needed.

The plate-type zinc oxide employed in the present invention includes one also called flake zinc oxide, and ones which has a mean thickness of 0.1 to 0.5 μm, preferably 0.1 to 0.3 μm, and a mean diameter of 1 to 100 μm, preferably 1 to 80 μm, and most preferably about 2 to 5 μm. The zinc oxide has superior ultraviolet scatterability due to the plate shape. Such plate-type zinc oxide generally
has high spreadability and is excellent in adhesion and feeling. Further, the plate-type zinc oxide has high transmittance in the visible light region, and is superior in transparency to that which is not plate-shaped.

Such plate-type zinc oxide can be used from that disclosed in Japanese Patent Laying-Open No. 6-72821 or the like, for example. According to a method disclosed in this Laid-Open, such plate-type zinc oxide can be obtained by mixing a zinc salt solution with a solution containing ammonium ion or a compound which is decomposed to generate ammonium ion, carrying out neutralization reaction for depositing flake basic zinc salt or flake zinc hydroxide under the presence of 0.0001 to 0.5 moles of metal atom of aluminum and/or iron per one mole of zinc atom in the solution, filtering, washing and drying the deposit resulting from the neutralization reaction, and firing the same in an oxidizing atmosphere. Alternatively, the plate-type zinc oxide is obtained by mixing the flake basic zinc salt or flake zinc hydroxide deposited by the neutralization reaction with a metal containing metal atom of aluminum and/or iron by the aforementioned prescribed amount or a metal compound thereof, thereafter filtering and drying the mixture as needed, and firing the same in an oxidizing atmosphere.


Fig. 4 is a scan electron microscopic (hereinafter referred to as SEM) photograph showing exemplary plate-type zinc oxide which can be employed in the present invention. As shown in Fig. 4, the plate-type zinc oxide, which consists of extremely fine grains, may be present in cosmetics as a secondary or tertiary aggregate. The aforementioned thickness and diameter of the plate-type zinc oxide do not express the sizes of such an aggregate.

The body pigment to which the plate-type zinc oxide is stuck according to the present invention is not particularly restricted so far as impurities can be removed from the same and its surface can be activated by acid treatment and alkali treatment, while the same includes talc, mica, sericite, titanium oxide, fine titanium oxide, kaolin, iron oxide red, iron oxide yellow, silicic anhydride, and iron oxide black.

In the zinc oxide-coated body pigment according to the present invention, the content of the plate-type zinc oxide is preferably 0.1 to 50 percent by weight, and more preferably 10 to 30 percent by weight. On the other hand, the content of the body pigment is preferably 50 to 99.9 percent by weight, and more preferably 70 to 90 percent by weight. If the content of the plate-type zinc oxide is too small, the ultraviolet scatterability may be so insufficient that a sun-screening effect etc. cannot be sufficiently attained. If the content of the plate-type zinc oxide is too large, on the other hand, this may lead to contamination with independent zinc oxide which is not stuck to the surface of the body pigment, to cause a problem in dispersibility etc.

A cosmetic material according to the present invention contains the aforementioned inventive zinc oxide-coated body pigment or a zinc oxide-coated body pigment which is prepared by the
aforementioned method. The present invention can be applied to any of various cosmetics such as loose powder, pressed powder, cake makeup, milky lotion and the like.

More specifically, the present invention can be applied to foundation, rouge, eye shadow, face powder, makeup base, cream foundation, liquid foundation, sunscreening cream/lotion or the like.

The inventive cosmetic contains components which are blended into a general cosmetic material, in addition to the aforementioned zinc oxide-coated body pigment according to the present invention. In typical examples, cosmetics such as cake makeup and lipstick contain 2 to 50 percent by weight and 80 to 95 percent by weight of oily components respectively. The cosmetics such as cake makeup and lipstick further contain 5 to 88 percent by weight and 2 to 20 percent by weight of pigments respectively. The oily components, the pigment and other components are now described.

**Oily Components**

The oily components employed in the present invention can be selected from a group consisting of solid oily component, liquid oil, oil gelatinizer and mixtures thereof. These components can be selected by those having ordinary skill, in accordance with a desired mode of the cosmetic composition. Preferably, a mixture of a solid oily component, liquid oil and oil gelatinizer is prescribed as to a cosmetic composition such as foundation, eye shadow or rouge, for example, containing at least about 10% of pigment.

**Solid Oily Component**

A solid oily component serves as a hardener in the cosmetic composition. This can assist formation of a solid structure of the composition. The solid oily component is a low melting point organic compound or a mixture of high molecular weight substances, and in the form of a solid or paste at the room temperature. The solid oily component is wax, hydrocarbon, fatty acid, aliphatic alcohol, natural fat or ester, but not restricted to these.

Natural, mineral or synthetic wax can be employed in the present invention. Examples of natural wax originating from animals are beeswax, spermaceti, lanolin and shellac wax, examples of natural wax originating from vegetables are carnauba wax, candellila wax, bayberry wax and sugarcane wax, and examples of natural wax originating from minerals are ceresin wax, montan wax, paraffin wax, microcrystalline wax, vaseline, petroleum and petrolatum wax, while the employable wax is not restricted to these. Examples of synthetic wax are polyol etherester such as carbowax or hydrocarbon type wax, silicone wax and polyethylene wax, while the employable synthetic wax is not restricted to these. Wax-type synthetic triglyceride such as ester of linear fatty acid is also useful. Most preferable examples of the wax are candellila wax, ceresin wax, lanolin, microcrystalline wax, carnauba wax, beeswax and paraffin wax.

The fatty acid employed in the present invention may be
saturated or unsaturated, and may have straight or side chains. Examples of the fatty acid are lauric acid, myristic acid, palmitic acid, stearic acid and behenic acid, while the employable fatty acid is not restricted to these.

Examples of aliphatic alcohol employed in the present invention are octyl alcohol, decyl alcohol, lauryl alcohol, miristyl alcohol, cetyl alcohol, stearyl alcohol and behenyl alcohol, while the employable aliphatic alcohol is not restricted to these.

Examples of natural fat employed in the present invention are palm oil, Japan wax, hardened castor oil and cholesterol, while the employable natural fat is not restricted to these.

Examples of ester which is useful for the present invention are miristyl miristate, miristyl palmitate, miristyl stearate, cetyl palmitate, cetyl stearate, cetyl lactate, stearyl lactate, cholesterol stearate, cholesterol oleate, cholesterol palmitate, cholesterol laurate, cholesterol miristate, cholesterol linolate and cholesterol ricinoleate, while the employable ester is not restricted to these.

**Liquid Oil**

The liquid oil serves as softener, to provide the cosmetics with spread and moisture. The liquid oil is a material which freely flows at room temperature. The liquid oil may be volatile. Examples of the liquid oil are hydrocarbon oil, natural oil, aliphatic alcohol, fatty acid ester and silicone oil, while the employable liquid oil is not restricted to these.

Examples of hydrocarbon oil which is useful for the present invention are liquid paraffin, squalane, liquid petrolatum, mineral oil and liquid polybutene, while the employable hydrocarbon oil is not restricted to these. Natural oil which is employed in the present invention is typically a mixture of saturated fatty acid and unsaturated fatty acid. Examples of natural oil derived from vegetables are almond oil, olive oil, sesame oil, safflower oil, avocado oil, cotton seed oil, jojoba oil, castor oil, rapeseed oil, soybean oil, Apricot Kernel oil, coconut oil, hardened vegetable oil and cocoa butter, while the employable natural oil is not restricted to these. Examples of natural oil which is derived from animal sources are mink oil and yolk oil, while the employable natural oil is not restricted to these.

Examples of aliphatic alcohol which is useful for the present invention are isostearyl alcohol, lanolin alcohol, oleyl alcohol, hexadecyl alcohol, octydodecanol alcohol, linoleyl alcohol, linolenyl alcohol and arachidyl alcohol, while the employable aliphatic alcohol is not restricted to these.

The fatty acid which is useful for the present invention may be natural or synthetic, and saturated or unsaturated, and may have straight or side chains. Examples of the fatty acid useful for the present invention are adipic acid, caprylic acid, capric acid, isostearic acid, linolenic acid, ricinoleic acid, oleic acid, elaidic acid and erucic acid, while the employable fatty acid is not restricted to these.

Examples of the fatty acid ester which is useful for the present invention are cetyl ricinoleate, cetyl oleate, cetyl octanoate, cetyl acetate, glyceryl trioctanoate, isopropyl lanolic fatty acid, isopropyl linoleate, isopropyl miristylate, isopropyl palmitate, isopropyl oleate, isopropyl stearate, ethyl lactate.
ethyl glutamate, ethyl laurate, ethyl linoleate, ethyl methacrylate, ethyl miristylate, ethyl palmitate, diisopropyl adipate, octylidodecyl miristylate, octyl palmitate, octylisopelargonate, octylidodecyl lactate, tridecyl isononanoate, isotridecyl isononanoate, hexadecyl stearate, oleyl oleate, isononyl isononanoate, isostearyl miristate, dipentaerythritol ester, neopentyl glycol dioctanoate and di(caprylic/capric acid) propylene glycol, while the employable fatty acid ester is not restricted to these. Other proper examples of the ester are triglyceride such as triglyceride caprylate, triglyceride caprate, triglyceride isostearate or triglyceride adipate, and a cholesterol derivative such as cholesteryl oleate. Non-volatile and volatile esters having straight and side chains and cyclic silicone such as dimethicon, phenyl dimethicon or cyclomethicon are also useful.

Oil Gelatinizer

The oil gelatinizer is added in order to gelate the preparation or adjust the viscosity of the preparation. Examples of the oil gelatinizer which is useful for the present invention are a condensation product of benzaldehyde and polyhydric alcohol having at least five basic groups such as dibenzylidene xylitol or paratribenzylidene sorbitol, metallic soap such as calcium stearate, calcium palmitate, lithium salt of 2-ethylhexane or aluminum salt of 1,2,hydroxy stearate, amide, ester and amide derivatives of N-acyl amino acid such as lauroylglutamate dibutylamide, lauroylglutamate stearylamide, dicaproyllysine lauroylamide, dicaproyllisine lauroylamine salt, dicaproyllisine laurylster or dicaproyllisine lauroylphenyl alaninelaurylamine; dextrin fatty acid ester and 1,2-hydroxy stearic acid, while the employable oil gelatinizer is not restricted to these.

<Pigment>

Examples of the pigment which is employed in the present invention in addition to the aforementioned zinc oxide-coated body pigment are inorganic pigments such as talc, mica, clay, kaolin, zinc oxide, nylon powder, ultramarine, pearl pigments (bismuth oxychloride or guanine), iron oxide, titanium oxide, titanium mica and calcium carbonate, and organic pigments such as tar pigments, while the employable pigment is not restricted to these. Pigments which are surface-treated with silicone and its derivative, metallic soap, fluorne compounds and their derivative, lecithin and its derivative, amino acids and their salt and the like are also employable.

The pigment can also be dispersed in an oily medium which is disclosed in the above item of liquid oil before employment. The pigment can be purchased in a state previously dispersed in an oily medium such as castor oil, or as dry powder which is dispersed in a medium subsequently selected by the prescriber.

<Other Components>

The composition which is prepared by the inventive method can contain the following components, in addition to those already disclosed in this specification:

Namely, the components are an antioxidant, a preservative, an antiphlogistic, a converger, a pH buffer, perfume, ultraviolet and infrared screening agents, a nonionic surface active agent such as
fatty acid ester or polyoxyalkylene fatty acid ester, amphoteric and anionic surface active agents such as lecithin and phosphate, vitamins, and a skin conditioner.

The antioxidant and the preservative can be and are generally blended into the inventive composition in order to make a product which is attractive for the consumers. Useful antioxidants and preservatives are tocopherol, dibutylhydroxytoluene, methylparaben and propylparaben. Each of these components can be present typically in a value not exceeding 1%.

Useful skin conditioners are β-glycyrrhetic acid and its derivative, a vegetable extract, allantoin, collagen and its extract, and treated elastin fiber.

[Function]

In the zinc oxide-coated body pigment according to the present invention, plate-type zinc oxide is stuck to the surface of a body pigment. The plate-type zinc oxide itself has excellent ultraviolet scatterability and such plate-type zinc oxide is stuck to the surface of the body pigment, whereby the zinc oxide-coated body pigment according to the present invention has excellent ultraviolet scatterability, causes no secondary aggregation, and exhibits excellent dispersibility upon blending into a cosmetic material, for example. Therefore, the inventive body pigment can be blended into a cosmetic material or the like in a large amount, to attain a sufficient sunscreening effect etc.

Further, the cosmetic material according to the present invention can sufficiently cut off ultraviolet rays and provide a high SPF value without being blended with a large amount of ultraviolet absorbent.

Examples

Preparation of Zinc Oxide-Coated Talc

10 g of classified talc (trade name: P-2S by Kakuhachi Gyorinpaku Co., Ltd) having a mean particle diameter of about 10 μm was mixed with 20 g of plate-type zinc oxide (trade name: Luceslene FZ-200 by Sumitomo Chemical Co., Ltd., in the form of flakes of 2 to 5 μm in size and 0.2 μm in thickness), with addition of 100 cc of water. Then the mixture was stirred for 10 minutes with addition of 2 cc of nitric acid, followed by addition of 2 cc of 20 wt.% aqueous sodium hydroxide. The mixture was heated to at least 100°C by heat of neutralization, to form bubbles. The mixture was left intact for 5 to 6 hours, and thereafter dehydrated after further addition of 100 cc of water. Further, 100 cc of water was added to the dehydrated raw material, which was then stirred and dehydrated. This washing step was repeated 5 to 6 times.

Then, the material was dried through a drier at about 120°C for about 12 hours and thereafter pulverized, and the particle diameters were regularized to about 5 μm by a classifier.

2 cc of methyl hydrogen polysiloxane and 10 cc of normal hexane were added to 100 g of the classified plate-type zinc oxide-coated talc pigment and rotated in Super Mixer at about 3000 rpm, to be mixed with each other for about 3 minutes. Thereafter the mixture was dried at about 150°C for about 5 hours, to obtain silicone-treated zinc oxide-coated talc.

Fig. 1 is a SEM photograph of the silicone-treated zinc
oxide-coated talc obtained in the aforementioned manner. Fig. 4 is a SEM photograph showing the plate-type zinc oxide employed in the aforementioned method. Further, Fig. 5 is a SEM photograph showing the raw material of talc employed in the aforementioned method.

Preparation of Zinc Oxide-Coated Mica

Zinc oxide-coated mica was prepared in a similar manner to the aforementioned method of preparing zinc oxide-coated talc, except that mica (trade name: R-1000-P-2S by Kakuhachi Gyorinpaku Co., Ltd.) was employed as a body pigment in place of talc.

Fig. 2 shows a SEM photograph of the obtained silicone-treated zinc oxide-coated mica. Fig. 6 is a SEM photograph of the mica employed as the raw material.

Preparation of Zinc Oxide-Coated Sericite

Zinc oxide-coated sericite was prepared in a similar manner to the aforementioned method of preparing zinc oxide-coated talc, except that sericite (trade name: Eight Pearl 300S-P-2S by Kakuhachi Gyorinpaku Co., Ltd.) was employed as a body pigment in place of talc.

Fig. 3 shows a SEM photograph of the obtained silicone-treated zinc oxide-coated sericite. Fig. 7 is a SEM photograph of the sericite employed as the raw material.

Preparation of Zinc Oxide-Coated Titanium Oxide

Zinc oxide-coated titanium oxide was prepared in a similar manner to the aforementioned method of preparing zinc oxide-coated talc, except that titanium oxide (trade name: Titan-P-2S by Kakuhachi Gyorinpaku Co., Ltd.) was employed as a body pigment in place of talc.

The silicone-treated zinc oxide-coated mica, silicone-treated zinc oxide-coated talc, silicone-treated zinc oxide-coated sericite and silicone-treated zinc oxide-coated titanium oxide obtained in the aforementioned manners were employed to prescribe the following cosmetics:

Preparation Example 1

A pressed cake makeup was prescribed by blending materials at the ratios of the following Example 1. For the purpose of comparison, a pressed cake makeup was prepared from raw materials of talc, sericite and mica which were subjected to silicone treatment with no zinc oxide coating, at blending ratios shown in the following table of comparative example 1. Plate-type zinc oxide in the blending of comparative example 1 is that of raw material employed for zinc oxide coating.

(Example 1)

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silicone oil 7.5 %
squalane 2.0 %
lanolin 2.0 %
antioxidant, paraben proper quantity

(Comparative Example 1)
silicone-treated talc 20.0 %
silicone-treated sericite 20.8 %
silicone-treated mica 8.0 %
plate-type zinc oxide 12.2 %
titanium oxide 10.0 %
plate-type titanium oxide 10.0 %
yarn powder 5.0 %
 pigment 2.5 %
silicone oil 7.5 %
squalane 2.0 %
lanolin 2.0 %
antioxidant, paraben proper quantity

As to the pressed cake makeups according to Example 1 and comparative example 1 obtained in the aforementioned manners, SPF values were measured. The SPF values were measured by a measuring method which is set in the SPF measuring method standard of Japan Cosmetic Industry Association. Table 1 shows the results.

[Table 1]

<table>
<thead>
<tr>
<th>SPF Value</th>
<th>Example 1</th>
<th>Comparative Example 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>17.1</td>
<td>11.5</td>
</tr>
</tbody>
</table>

As shown in Table 1, the cosmetic according to Example 1 employing the inventive zinc oxide-coated pigment exhibits an extremely high SPF value as compared with the cosmetic according to comparative example 1.

Preparation Example 2

Loose powder cosmetics were prescribed in accordance with the following blending of Example 2 and comparative example 2:
(Example 2)
silicone-treated zinc oxide-coated talc 82.0 %
silicone-treated zinc oxide-coated titanium oxide 3.0 %
silicone-treated zinc oxide-coated mica 15.0 %
antioxidant, paraben proper quantity
pigment proper quantity

(Comparative Example 2)
silicone-treated talc 65.6 %
silicone-treated titanium oxide 2.4 %
silicone-treated mica 12.0 %
plate-type zinc oxide 20.0 %
antioxidant, paraben proper quantity
pigment proper quantity

As to the cosmetics according to Example 2 and comparative example 2 obtained in the aforementioned manners, SPF values were measured similarly to the above. Table 2 shows the results of measurement.

[Table 2]

<table>
<thead>
<tr>
<th>SPF Value</th>
<th>Example 2</th>
<th>Comparative Example 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9.6</td>
<td>7.8</td>
</tr>
</tbody>
</table>

As clearly understood from Table 2, the cosmetic according to Example 2 of the present invention exhibits a high SPF value as compared with the cosmetic according to comparative example 2.

Preparation Examples of other cosmetics are now described.

Preparation Example 3 (Liquid Foundation)
octamethyl cyclotetrasiloxane 20.0 %
poly(oxyethylene oxypropylene) methylpolysiloxane
copolymer 0.5 %
sorbitan sesquioleate 2.0 %
methylphenyl polysiloxane 5.0 %
squalane 9.0 %
silicone-treated zinc oxide-coated talc 8.0 %
silicone-treated zinc oxide-coated titanium oxide 15.5 %
pigment 1.5 %
water 33.5 %
1,3 butylene glycol 5.0 %
antioxidant, paraben proper quantity

**Preparation Example 4 (Lipstick)**
ceresin 4.0 %
microcrystalline wax 2.0 %
candelilla wax 5.0 %
paraffin wax 3.0 %
castor oil 20.0 %
liquid lanolin 10.0 %
refined lanolin 10.0 %
glyceryl trioctanoate 21.3 %
Red No. 202 1.5 %
Red No. 201 0.5 %
Yellow No. 4 aluminum lake 1.0 %
titanium oxide 3.0 %
iron oxide red 2.0 %
silicone-treated zinc oxide-coated mica 10.0 %
liquid paraffin 6.7 %
antioxidant, paraben proper quantity

**Preparation Example 5 (Oily Foundation)**
silicone-treated zinc oxide-coated talc 25.0 %
silicone-treated zinc oxide-coated mica 10.0 %
silicone-treated zinc oxide-coated titanium oxide 13.0 %
pigment 3.0 %
liquid paraffin 15.0 %
isopropyl palmitate 13.0 %
lanolin alcohol 3.0 %
microcrystalline wax 7.0 %
ozokerite 8.0 %
antioxidant, paraben proper quantity
As hereinabove described, the zinc oxide-coated body pigment according to the present invention can be blended into various cosmetics, to attain an excellent sunscreening effect etc.

[Effect of the Invention]
The zinc oxide-coated body pigment according to the present invention, which is prepared by homogeneously sticking plate-type zinc oxide having excellent ultraviolet scatterability to the surface of a body pigment, has excellent ultraviolet scatterability. When the body pigment is blended into a cosmetic material or the like, therefore, an excellent sunscreening effect etc. can be attained without being blended with a large amount of organic ultraviolet absorbent. Therefore, it is possible to provide safe cosmetics having excellent application feeling and an excellent sunscreening effect.
WHAT IS CLAIMED IS:

1. A composition comprising a body pigment and a plate-type zinc oxide, wherein the body pigment is coated with the plate-type zinc oxide.

2. The composition of Claim 1, wherein the composition comprises from about 50 to about 99.9% of the body pigment, and from about 0.1 to about 50% of the plate-type zinc oxide.

3. The composition of Claim 2, wherein the body pigment is talc, mica, sericite, titanium oxide, silicic anhydride, fine titanium oxide, kaolin, iron oxide red, iron oxide yellow, iron oxide black, or mixtures thereof.

4. The composition of Claim 3, wherein the body pigment is talc, mica, sericite, titanium oxide, silicic anhydride, or mixtures thereof.

5. The composition of Claim 1, further comprising an oily component selected from a solid oily component, a liquid oil, an oil gelatinizer, or mixtures thereof.

6. The composition of Claim 5, wherein the composition comprises from about 50 to about 99.9% of the body pigment, and from about 0.1 to about 50% of the plate-type zinc oxide.

7. The composition of Claim 6, wherein the body pigment is talc, mica, sericite, titanium oxide silicic anhydride, fine titanium oxide, kaolin, iron oxide red, iron oxide yellow, iron oxide black, or mixtures thereof.

8. The composition of Claim 7, wherein the body pigment is talc, mica, sericite, titanium oxide, silicic anhydride, or mixtures thereof.

9. A method of making a plate-type zinc oxide coated pigment composition, the method comprising:
   a) mixing a body pigment, a plate-type zinc oxide and water;
   b) mixing an acid with the mixture of step a);
   c) mixing an alkali with the mixture of step b);
   d) washing the mixture of step c);
   e) drying the mixture of step d).

10. The method of Claim 9, wherein the body pigment is talc, mica, sericite, titanium oxide, fine titanium oxide, kaolin, iron oxide red, iron oxide yellow, iron oxide black, or mixtures thereof.

11. The composition of Claim 10, wherein the body pigment is talc, mica, sericite, titanium oxide, silicic anhydride, or mixtures thereof.

13. The plate-type zinc oxide coated body pigment composition of Claim 12, wherein the body pigment is talc, mica, sericite, titanium oxide, fine titanium oxide, kaolin, iron oxide red, iron oxide yellow, iron oxide black, or mixtures thereof.

14. The composition of Claim 13, wherein the body pigment is talc, mica, sericite, titanium oxide, silicic anhydride, or mixtures thereof.

15. The composition of Claim 12, further comprising an oily component selected from a solid oily component, a liquid oil, an oil gelatinizer, or mixtures thereof.

16. The composition of Claim 15, wherein the composition comprises from about 50 to about 99.9% of the body pigment, and from about 0.1 to about 50% of the plate-type zinc oxide.

17. The composition of Claim 16, wherein the body pigment is talc, mica, sericite, titanium oxide, silicic anhydride, fine titanium oxide, kaolin, iron oxide red, iron oxide yellow, iron oxide black, or mixtures thereof.

18. The composition of Claim 17, wherein the body pigment is talc, mica, sericite, titanium oxide, silicic anhydride, or mixtures thereof.
INTERNATIONAL SEARCH REPORT

International application No.
PCT/US96/04434

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :C09C 1/02, 1/04, 1/36, 1/72; C04B 4/20
US CL :106/415, 416, 425, 426, 428, 437, 456, 469, 483, 486; 424/69

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 106/415, 416, 425, 426, 428, 437, 456, 469, 483, 486; 424/69

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category*</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>US, A, 5,156,678 (GLAUSCH) 20 OCTOBER 1992, see abstract.</td>
<td>1-18</td>
</tr>
<tr>
<td>A</td>
<td>US, A, 5,298,065 (HIRAOKA ET AL.) 29 MARCH 1994, see claim 1.</td>
<td>1-18</td>
</tr>
<tr>
<td>A</td>
<td>US, A, 5,344,488 (REYNERS ET AL.) 06 SEPTEMBER 1994, see example 1.</td>
<td>1-18</td>
</tr>
<tr>
<td>A</td>
<td>US, A, 4,956,019 (NOGUCCI ET AL.) 11 SEPTEMBER 1990, see example 1.</td>
<td>1-18</td>
</tr>
</tbody>
</table>

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

"*" Special categories of cited documents:

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
12 AUGUST 1996

Date of mailing of the international search report
20 AUG 1996

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