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(54) Title: POWDERY COSMETIC COMPOSITION

(57) **Abstract**: Disclosed is a powdery cosmetic composition comprising: (i) at least 50 wt% of a cosmetically acceptable powdery base; (ii) 2 wt% to 40 wt% precipitated calcium carbonate; and, (iii) 0.0001 wt% to 5 wt% fragrance ingredient wherein said precipitated calcium carbonate is uncoated and of calcite form. The invention provides talcum powder composition having longer lasting fragrance.



POWDERY COSMETIC COMPOSITION

FIELD OF THE INVENTION

The invention relates to powdery cosmetic compositions.

BACKGROUND OF THE INVENTION

Talcum or talc is a naturally occurring mineral which is hydrated magnesium silicate, and it is a major ingredient of talcum powder compositions. It has a sheet silicate structure having platy morphology and is oleophilic/hydrophobic. Talc provides good lubricity and slip but it has limited ability to retain fragrance and provide lingering or longer-lasting fragrance. Commercial talcum powder compositions have a lot of variation in the formulations from being merely a blend of talc and fragrance to those having numerous other components such as starch, calcium carbonate, zinc oxide and other active ingredients for particular effects.

US4485092 B1 (Johnson & Johnson Baby Products Company, 1984) discloses talcum powder compositions having excellent moisture absorbency. The composition has talc and pregelatinized cornstarch.

US6132744B1 (Unilever) discloses a cosmetic talcum powder composition having hydrophobic or hydrophilic talc which is coated with a porous silica. The silica is precipitated through acidification onto wet talc. The process leads to an improvement in lubrication, moisture adsorption capacity, oil retention capacity and fragrance retention.

US6074672B1 (Chesebrough-Pond's USA Co, 1997) discloses a cosmetic powder having crosslinked non-emulsifying siloxane elastomer, a powdered inorganic material and a skin treatment agent. The elastomer allows for coupling of water as well as water soluble salts into the cosmetic powder.

MULTIFEX-MM® is a Precipitated Calcium Carbonate (PCC) manufactured by Specialty Minerals Inc. These particles have extremely small particle size, which results

in high surface area, but only moderate oil absorption. It is an uncoated material, said to be useful as a carrier for fragrances and to provide thixotropic rheology in filled systems and contributes to polymer reinforcement.

US 2003/0161894 A1 (Isaac Yaniv) discloses particulate precipitated aragonite and a new process for producing it. It has been disclosed that Aragonite forms crystals having a length/width ratio (hereinafter--"aspect ratio") in the range between >1:1 and 100:1 of which a typical aspect ratio is 10, in which case the aragonite forms long, thin needles. The particular aragonite is characterized by its high hiding power (a result of high effective refractive index), low bulk density (apparent (loose) bulk density (L.B.D.) and tapped bulk density (T.B.D))

Consumers are increasingly demanding functionally superior cosmetic compositions. Therefore, in addition to the basic ingredients and fragrance, often a lot of other additives are also included in talcum powder compositions. For instance some compositions contain skin conditioning agents and some have silicones. Lubricity of talc is affected by repeated exposure to moisture, constant wetting and due to the formation of a thin layer of fragrance molecules on the surface of platelets of talc. This causes certain morphological changes. Talc changes from plate like structure to aggregates or globules which retard the flowability and hamper the spreadability (surface coverage). It is believed that this effect is responsible for non-lasting fragrance.

While it is generally observed that the intensity of fragrance is very high at the time of application, it decreases drastically after application and within some time, generally after about 20 minutes, the fragrance is barely noticeable even by the wearer. This effect is believed to become increasingly acute in the case of talcum powder compositions containing other additives such as zinc stearate. Traditional talcum powder manufacturers have used super absorbent materials such as cross linked carboxymethyl cellulose and derivatives of starch to overcome the technical problem. However, these additives do not demonstrate significant improvement over talcum powders formulated without such additives.

Almost all commercial talcum powder compositions contain precipitated calcium carbonate in its coated form. The carbonate is generally coated with Sodium stearate. US1620269 B1 (Kolmar Labs, 1927) discloses that chalk (precipitated calcium carbonate) improves appearance of the skin and provides consistency.

Further, a suggestion has been made in the publication "Chemical Weekly" (2001, Aug 2001, pp 151 to 155) that use of about 5% precipitated calcium carbonate provides absorbency and fluffiness.

In spite of the advancement in technology and the availability of newer additives, there still is an unmet need for talcum powder compositions with improved fragrance intensity, especially post-use lingering fragrance.

Accordingly, it is an object of the present invention to provide a powdery cosmetic composition having improved fragrance intensity, not only at the time of application but also for a significant period of time after application onto skin.

SUMMARY OF THE INVENTION

We have determined that talcum powder compositions containing uncoated precipitated calcium carbonate of the calcite form provides superior fragrance intensity. The effect is perceived not only immediately after application of the composition, but also for a significant period of time after application.

In accordance with a first aspect is disclosed a powdery cosmetic composition having:

- (i) at least 50 wt% of a cosmetically acceptable powdery base;
- (ii) 2 wt% to 40 wt% of precipitated calcium carbonate; and,
- (iii) 0.0001 wt% to 5 wt% fragrance ingredient,

wherein said precipitated calcium carbonate is uncoated and of calcite form.

Preferably the powdery base is made of at least one of talc, starch, clay, silica or microcrystalline cellulose.

In accordance with a second aspect is disclosed the use of uncoated calcite form of precipitated calcium carbonate in a fragrant powdery cosmetic composition for providing longer lasting fragrance.

In accordance with a third aspect is disclosed a method of providing longer lasting fragrance through a fragrant powdery cosmetic composition, said method comprising the use of uncoated calcite form of precipitated calcium carbonate in said composition.

DETAILED DESCRIPTION OF THE INVENTION

Powdery cosmetic compositions which improve the appearance of skin are increasingly popular with consumers. For example, some consumers seek to minimize the "oily skin" look, resulting from sebum production in the sebaceous glands of the skin. Some seek to alleviate or delay the signs of aged or photo-aged skin as well as dry and sagging skin. Further, consumers concerned with the degree of pigmentation of their skin due to age spots or freckles often wish to eliminate or reduce the pronouncement of such spots. Others may wish to lighten their natural skin or reduce skin darkening caused by exposure to sunlight. In addition to application on the face, cosmetic powders, more so, the talcum powders are also applied liberally on the body and underarms after a bath. Application of the powder provides fresh and clean feeling and it also, to some extent, helps counteract body odour and excessive sweating.

Such compositions can take a number of different forms ranging from loose powders in canisters to those that are molded or compressed into cakes and inserted into mirrored compact cases, typically supplied with an applicator, usually a pad, a puff or other implement.

The cosmetically acceptable powdery base:

The compositions in accordance with this invention comprise at least 50 wt% of a cosmetically acceptable powdery base. The term "cosmetically acceptable" means that the ingredients used to form the base are fit enough for being used for cosmetic purposes. While there are certain basic minimum requirements which are common

across most countries of the world, each country or region has its own set of rules to regulate the use of cosmetic ingredients.

Preferred compositions have 60 wt% to 90 wt% of the cosmetically acceptable powdery base. More preferred compositions have 65 wt% to 85 wt% of the cosmetically acceptable powdery base.

It is preferred that the powdery base is made of at least one of talc, starch, clay, silica or microcrystalline cellulose. These ingredients especially talc and starch and more particularly talc are most widely used as the base ingredients in talcum powder compositions. Talc is the most preferred material forming the cosmetically acceptable powdery base.

The base can be made of only one of the above ingredients or it could be formed of combination of ingredients forming at least 50 wt% of the composition.

Talc is generally known to those skilled in the art as a natural, powdered hydrous magnesium silicate. Talc can be ground into various particle sizes and acts as an anti caking agent that has a very smooth feel on the skin. Talc is available from a number of commercial suppliers such as Whittaker, Clark and Daniels Inc., South Plainfield N.J. and Cyprus Industrial Minerals Company, Englewood, Colo.

Starch is also used as a cosmetically acceptable powdery base. The term starch refers to natural starch from sources such as sago, corn, rice, potato, tapioca, wheat and other forms of chemically treated starch like octenyl starch. The term silica includes fumed and precipitated silica. Clay includes powdery materials like kaolin, bentonite and calomine.

Precipitated calcium carbonate:

The powdery cosmetic compositions of the invention contain 2 wt% to 40 wt% precipitated calcium carbonate. The precipitated calcium carbonate is uncoated and of calcite form. Preferred compositions have 4 wt% to 25 wt% of the precipitated calcium

carbonate. Further preferred embodiments have 5 to 15 wt% of the precipitated calcium carbonate. Excess carbonate is avoided as it may cause abrasion.

It is usually found that the commercial talcum powder compositions have coated calcium carbonate. This coating, generally of stearic acid, apparently provides oil and sweat absorption.

Calcium carbonate is usually found in two polymorphic forms – aragonite and calcite.

The crystal lattice of aragonite differs from that of calcite, resulting in a different crystal shape, an orthorhombic system with acicular crystals. Aragonite forms naturally in almost all mollusc shells, as well as the calcareous endoskeleton of warm- and cold-water corals.

Aragonite is thermodynamically unstable at standard temperature.

The carbonate mineral calcite is a chemical or biochemical calcium carbonate corresponding to the formula CaCO_3 and is one of the most widely distributed minerals on the Earth's surface.

Calcite crystals are trigonal-rhombohedral. Calcite may occur as fibrous, granular, lamellar, or compact.

We have found that the uncoated calcite form of calcium carbonate surprisingly provides longer lasting fragrance. On the other hand, even the uncoated aragonite form of calcium carbonate fails to show identical technical effect. Further, the technical effect is not as pronounced in case the calcite form is coated as usual. The reason for the differing effect between coated and uncoated variant of the same calcite form as also the reason for the differing effect of two forms of uncoated calcium carbonate, is unknown.

It is preferred that the particle size of the uncoated calcite form of calcium carbonate is less than 75 μm . It is further preferred that the bulk density of the uncoated calcite form of calcium carbonate is in the range of 0.6 to 0.8 g/cm^3 .

It is preferred that the powdery cosmetic composition as is anhydrous. By anhydrous is meant that the total moisture content of the composition is not more than 2 wt%.

Fragrance:

The compositions in accordance with the invention comprise 0.0001 wt% to 5 wt% fragrance ingredient. As used herein, "fragrance" broadly refers to any substance (including, for example, powders and/or liquid) that provides a scent to the cosmetic composition and it may be natural or artificial or partly natural and partly artificial. The fragrance may optionally be encapsulated in shear sensitive granules. Suitable fragrances include floral, citrusy, fruity, vanilla, lavender, chamomile, musk, jasmine or any other similar note. Examples of typical fragrance components which can give pleasant aroma include lemon oil, musk ketone, ionone, diphenyl oxide, cedarwood-terpeneless, geranyl acetate, ylang ylang oil; cedryl acetate, isoeugenol, cinnamic alcohol, aurantheol, methyl anthranilate, vanillin, oil bergamot, and oil of lavender.

Other preferred ingredients:

It is preferred that the cosmetic compositions include 0.05 wt% to 20 wt% zinc oxide. More preferred compositions have 0.1 wt% to 7 wt% zinc oxide.

The powdery cosmetic compositions may also comprise 0.1 wt% to 2 wt% titanium dioxide. Other ingredients normally found in talcum powder compositions may also be added to the compositions of the present invention if desired. Such constituents include, but are not limited to, flow agents, medicaments, deodorants, disinfectants, antifungal agents, skin protectants, antibacterial agents, anti-caking agents, colorizing agents, stabilizers, antiperspirants, emollients, binders, fillers, extenders, and mixtures and dilutions thereof. Preferably, such additives comprise up to 5 wt% of the composition. Other skin conditioning and protective material include, but, are not limited to panthenol, allantoin, aloe, aloe vera extract, PABA, tocopheryl, methylparaben, propylparaben, butylparaben, ethylparaben, potassium sorbate, trisodium EDTA, phenoxyethanol, ethyl alcohol, diazolidinyl urea, imidazolidinyl urea

and mixtures thereof. Sunscreens may be selected from 2-ethylhexyl p-methoxycinnamate, 4,4'-alpha.-t-butyl methoxydibenzoylmethane, 2-hydroxy-4-methoxybenzophenone, octyldimethyl p-aminobenzoic acid, digalloyltrioleate, 2,2-dihydroxy-4-methoxybenzophenone, ethyl-4-(bis(hydroxypropyl)) aminobenzoate, 2-ethylhexyl-2-cyano-3,3-diphenylacrylate, 2-ethylhexylsalicylate, glyceryl p-aminobenzoate, 3,3,5-trimethylcyclohexylsalicylate, methylanthranilate, p-dimethylaminobenzoic acid or aminobenzoate, 2-ethylhexyl p-dimethylaminobenzoate, 2-phenylbenzimidazole-5-sulfonic acid, 2-(p-dimethylaminophenyl)-5-sulfoniobenzoxazoic acid and mixtures thereof.

Use and method:

In a second aspect of the invention is disclosed the use of uncoated calcite form of precipitated calcium carbonate in a fragrant powdery cosmetic composition for providing longer lasting fragrance. Preferred compositions provide fragrance for 20 to 30 minutes after application on skin.

In a third aspect is disclosed a method of providing longer lasting fragrance through a fragrant powdery cosmetic composition, said method comprising the use of uncoated calcite form of precipitated calcium carbonate in said composition.

Packaging:

A wide variety of packaging can be employed to store and deliver the skin care compositions of this invention. Packaging is often dependent upon the type of personal care end-use. For instance, leave-on skin lotions and creams, shampoos, conditioners and shower gels generally employ plastic containers with an opening at a dispensing end covered by a closure.

EXAMPLES

The invention will now be explained in detail with the help of non-limiting examples.

Example 1:

A series of anhydrous talcum powder compositions (outside and inside the invention) were made by following a standard method. Details of the compositions can be seen in table 1.

Table 1

Ingredient/wt%	Compositions outside the invention			Compositions inside the invention	
	C1	C2	C3	E1	E2
Talc	80.0	80.0	80.0	80.0	80.0
Calcite form of precipitated CaCO_3 (coated with stearic acid)	13.0	--	--	--	--
Uncoated aragonite form of precipitated CaCO_3	--	13.0	10.0	--	--
Uncoated calcite form of precipitated CaCO_3	--	--	--	13.0	10.0
Fragrance	0.2	0.2	0.2	0.2	0.2
Zinc oxide	0.5	0.5	0.5	0.5	0.5
Other minors to	100.0	100.0	100.0	100.0	100.0

Fragrance assessment by volunteers

All compositions of the above table were subjected to fragrance assessment by a group of nine volunteers. The initial (pre-use) fragrance intensity was assessed by dry sniff. The intensity was rated on a scale of 1 to 10, 1 being the least and 10 being the highest. Thereafter, the powder was applied on the forearm by each volunteer and the intensity was rated, as earlier, after 10, 20 and 30 minutes post application. The scores of all volunteers were subjected to statistical analysis and a summary of their preference is presented in table 2.

Table 2

	Number of volunteers preferring the composition /total volunteers				
	C1	C2	C3	E1	E2
Dry sniff pre-use	3/9	0/9	4/9	9/9	5/9
Sniff after 10 minutes post-use	--	1/9	4/9	8/9	5/9
Sniff after 20 minutes post-use	--	1/9	3/9	8/9	6/9
Sniff after 30 minutes post-use	4/9	1/9	--	8/9	--

The data indicates that compositions inside the invention were rated consistently better than the compositions outside the invention. This trend is seen “pre-use” as well as “post-use”. In other words, the compositions inside the invention which contain uncoated calcite form of precipitated calcium carbonate provide longer lasting fragrance as is evident from the scores provided by all the volunteers. Among the two compositions inside the invention, the composition E1 containing 13 wt% of the uncoated calcite form of calcium carbonate was better than the other composition E2 containing 10 wt% of the ingredient. On the other hand, all the compositions which were outside the invention failed to provide appreciable fragrance intensity and even their pre-use scores indicate lesser preference. The data pertaining to compositions C1 to C3 show the effect of coating on the calcite and the use of another form of calcium carbonate, namely aragonite, albeit in the uncoated form.

Claims:

1. A powdery cosmetic composition comprising:
 - (i) at least 50 wt% of a cosmetically acceptable powdery base;
 - (ii) 2 wt% to 40 wt% precipitated calcium carbonate; and,
 - (iii) 0.0001 wt% to 5 wt% fragrance ingredientwherein said precipitated calcium carbonate is uncoated and of calcite form.
2. A powdery cosmetic composition as claimed in claim 1 comprising 5 wt% to 20 wt% of said precipitated calcium carbonate.
3. A powdery cosmetic composition as claimed in claim 1 or 2 wherein particle size of said precipitated calcium carbonate is less than 75 μm .
4. A powdery cosmetic composition as claimed in any one of the preceding claims 1 to 3 wherein bulk density of said precipitated calcium carbonate is in the range of 0.6 to 0.8 g/cm^3 .
5. A powdery cosmetic composition as claimed in any one of the preceding claims 1 to 4 wherein said powdery base is made of at least one of talc, starch, clay, silica or microcrystalline cellulose.
6. A powdery cosmetic composition as claimed in any one of the preceding claims wherein said composition is anhydrous.
7. Use of uncoated calcite form of precipitated calcium carbonate in a fragrant powdery cosmetic composition for providing longer lasting fragrance.
8. A method of providing longer lasting fragrance through a fragrant powdery cosmetic composition, said method comprising the use of uncoated calcite form of precipitated calcium carbonate in said composition.

INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER		
INV.	A61K8/02 A61Q19/00	A61K8/19 A61Q11/00 A61Q13/00 A61Q15/00
ADD.		
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) A61K A61Q		
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) EPO-Internal, FSTA, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	Anonymous: "PERFORMANCE MINERALS FOR SPECIALTY APPLICATIONS MULTIFEX-MM - Precipitated calcium carbonate (PCC)", 14 July 2014 (2014-07-14), pages 1-2, XP055198138, Internet Retrieved from the Internet: URL: http://web.archive.org/web/20140724121627/http://www.brenntagsspecialties.com/en/downloads/Products/Multi_Market_Principals/SMI_Calcium_Carb/SMI_Multifex_MM_TDS.pdf [retrieved on 2015-06-24] page 2 - right-hand column ----- -/-	1-6
☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "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 19 January 2016		Date of mailing of the international search report 02/03/2016
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer Hörtner, Michael

INTERNATIONAL SEARCH REPORT

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	US 5 292 495 A (NAKAJIMA TAKAYUKI [JP] ET AL) 8 March 1994 (1994-03-08) Application Example 1 -----	1-8

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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