

AS. 117.839

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



No. 11-114818- -00002-0000

Fecha: 2012-01-06 16:09:23 Dep. 2020 DIR.NUEVASCR
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Act. 444 RESPUESTAREQUE Folios: 20

Señor Director
DIRECCIÓN DE NUEVAS CREACIONES
SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
E. S. D.

RESPUESTA A OFICIO 17628 DEL 11 DE NOVIEMBRE DE 2011

REF.: Expediente No. 11 114.818 – Solicitud de Patente FASE NACIONAL
Corresp. a la Solicitud Internacional No. PCT/US2009/039198
a favor de: **COLGATE-PALMOLIVE COMPANY**
Titulada: COMPOSICIONES DENTÍFRICAS PARA LA PREVENCIÓN DEL
DETERIORO DE LAS SUPERFICIES DENTALES

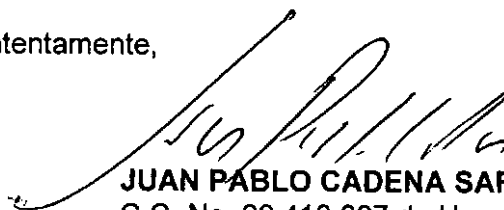
JUAN PABLO CADENA SARMIENTO, vecino de Bogotá, portador de la tarjeta profesional No. 57492, obrando como apoderado de la sociedad **COLGATE-PALMOLIVE COMPANY** según lo acredita el documento de poder presentado en esa Dirección, para dar cumplimiento al requerimiento notificado por fijación en lista el 11 de noviembre de 2011 de acuerdo con los Artículos 38 y 39 de la Decisión 486 de la comisión de la Comunidad Andina me permito allegar:

1. Nuevo resumen de la invención:

La presente invención divulga composiciones orales que previenen el deterioro de las superficies dentales. Dichas composiciones incluyen silicatos contentivos de calcio y magnesio o sílice, sílice modificada con un polímero catiónico o sus combinaciones. Al ser aplicada a los dientes o a la superficie de un diente, la composición se deposita sobre estas superficies a los fines de reparar el deterior del esmalte producto de los ácidos y de impedir una mayor erosión de la superficie dental. Las composiciones reivindicadas son particularmente útiles en el campo de las composiciones para el cuidado oral.

2. Copia del Informe Preliminar Internacional sobre Patentabilidad (Forma PCT/IPEA/409).

Del señor Director atentamente,


JUAN PABLO CADENA SARMIENTO
C.C. No. 80.410.337 de Usaquén
Calle 70A No. 4-41

Bogotá, 06 de enero de 2012
JPC/jpg
Folios: 20

PATENT COOPERATION TREATY

RECEIVED

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

SEP 07 2011

To:

COLGATE-PALMOLIVE COMPANY
Patent Department
909 River Road
Piscataway NJ 08855
ETATS-UNIS D'AMERIQUE

PCT

Colgate-Palmolive
Patent Department

PATENT DOCKETING

SEP 09 2011

DOCKETED BY: [Signature]

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY

(PCT Rule 71.1)

Date of mailing
(day/month/year)

30.08.2011

Applicant's or agent's file reference
8712-00-WO-OC

IMPORTANT NOTIFICATION

International application No.
PCT/US2009/039198International filing date (day/month/year)
01.04.2009

Priority date (day/month/year)

Applicant

Colgate-Palmolive Company

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international
preliminary examining authority:European Patent Office Gitschiner Str. 103
D-10958 Berlin
Tel. +49 30 25901 - 0
Fax: +49 30 25901 - 840

Authorized Officer

Flohr, Chantal

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PATENT COOPERATION TREATY
PCT
INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 8712-00-WO-OC	FOR FURTHER ACTION See Form PCT/PEA/416																	
International application No. PCT/US2009/039198	International filing date (day/month/year) 01.04.2009	Priority date (day/month/year)																
International Patent Classification (IPC) or national classification and IPC INV. A61K8/25																		
Applicant Colgate-Palmolive Company																		
1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36. 2. This REPORT consists of a total of <u>9</u> sheets, including this cover sheet. 3. This report is also accompanied by ANNEXES, comprising: a. ☒ (sent to the applicant and to the International Bureau) a total of <u>9</u> sheets, as follows: ☒ sheets of the description, claims and/or drawings which have been amended and/or sheets containing rectifications authorized by this Authority, unless those sheets were superseded or cancelled, and any accompanying letters (see Rules 46.5, 66.8, 70.16, 91.2, and Section 607 of the Administrative Instructions). ☐ sheets containing rectifications, where the decision was made by this Authority not to take them into account because they were not authorized by or notified to this Authority at the time when this Authority began to draw up this report, and any accompanying letters (Rules 66.4bis, 70.2(e), 70.16 and 91.2). ☐ superseded sheets and any accompanying letters, where this Authority either considers that the superseding sheets contain an amendment that goes beyond the disclosure in the international application as filed, or the superseding sheets were not accompanied by a letter indicating the basis for the amendments in the application as filed, as indicated in item 4 of Box No. I and the Supplemental Box (see Rule 70.16(b)). b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see paragraph 3bis of Annex C of the Administrative Instructions).																		
4. This report contains indications relating to the following items: <table style="width: 100%; border: none;"><tr><td style="width: 10%;">☒ Box No. I</td><td>Basis of the report</td></tr><tr><td>☐ Box No. II</td><td>Priority</td></tr><tr><td>☒ Box No. III</td><td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td></tr><tr><td>☒ Box No. IV</td><td>Lack of unity of invention</td></tr><tr><td>☒ Box No. V</td><td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td></tr><tr><td>☒ Box No. VI</td><td>Certain documents cited</td></tr><tr><td>☐ Box No. VII</td><td>Certain defects in the international application</td></tr><tr><td>☐ Box No. VIII</td><td>Certain observations on the international application</td></tr></table>			☒ Box No. I	Basis of the report	☐ Box No. II	Priority	☒ Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	☒ Box No. IV	Lack of unity of invention	☒ Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	☒ Box No. VI	Certain documents cited	☐ Box No. VII	Certain defects in the international application	☐ Box No. VIII	Certain observations on the international application
☒ Box No. I	Basis of the report																	
☐ Box No. II	Priority																	
☒ Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability																	
☒ Box No. IV	Lack of unity of invention																	
☒ Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement																	
☒ Box No. VI	Certain documents cited																	
☐ Box No. VII	Certain defects in the international application																	
☐ Box No. VIII	Certain observations on the international application																	
Date of submission of the demand 01.02.2011	Date of completion of this report 30.08.2011																	
Name and mailing address of the international preliminary examining authority:  European Patent Office Gitschiner Str. 103 D-10958 Berlin Tel. +49 30 25901 - 0 Fax: +49 30 25901 - 840	Authorized officer Pelli Wablat, B Telephone No. +49 30 25901-335 																	

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/US2009/039198

Box No. I Basis of the report

1. With regard to the **language**, this report is based on
 - ☒ the international application in the language in which it was filed
 - ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.3(a) and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4(a))
 - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a) and (b))
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1-27 as originally filed

Claims, Numbers

1-17, 21-36 filed with telefax on 01-02-2011

- ☐ a sequence listing - see Supplemental Box Relating to Sequence Listing.
3. ☒ The amendments have resulted in the cancellation of:
 - ☐ the description, pages
 - ☒ the claims, Nos. 18-20
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
 4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since either they are considered to go beyond the disclosure as filed, or they were not accompanied by a letter indicating the basis for the amendments in the application as filed, as indicated in the Supplemental Box (Rules 70.2(c) and (c-bis)):
 - ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 5. ☐ This report has been established:
 - ☐ taking into account the rectification of an obvious mistake authorized by or notified to this Authority under Rule 91 (Rules 66.1(d-bis) and 70.2(e)).
 - ☐ without taking into account the rectification of an obvious mistake authorized by or notified to this Authority under Rule 91(Rules 66.4bis and 70.2(e)).
 6. ☐ Supplementary international search report(s) from Authority(ies) has/have been received and taken into account in establishing this report (Rule 45bis.8(b) and (c)).

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/US2009/039198

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 17, 21-36

because:

☒ the said international application, or the said claims Nos. 17, 21-36 relate to the following subject matter which does not require an international preliminary examination (*specify*):

see separate sheet

- ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed (*specify*):
- ☐ no international search report has been established for the said claims Nos.
- ☐ a meaningful opinion could not be formed without the sequence listing; the applicant did not, within the prescribed time limit:
- ☐ furnish a sequence listing on paper complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Preliminary Examining Authority in a form and manner acceptable to it.
- ☐ furnish a sequence listing in electronic form complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Preliminary Examining Authority in a form and manner acceptable to it.
- ☐ pay the required late furnishing fee for the furnishing of a sequence listing in response to an invitation under Rules 13ter.1(a) or (b) and 13ter.2.
- ☐ See separate sheet for further details

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/US2009/039198

Box No. IV Lack of unity of invention

1. ☒ In response to the invitation to restrict or pay additional fees, the applicant has, within the applicable time limit:
- ☐ restricted the claims.
 - ☐ paid additional fees.
 - ☐ paid additional fees under protest and, where applicable, the protest fee.
 - ☐ paid additional fees under protest but the applicable protest fee was not paid.
 - ☒ neither restricted the claims nor paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is:
- ☐ complied with.
 - ☒ not complied with for the following reasons:
see separate sheet
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☐ all parts.
 - ☒ the parts relating to claims Nos. 1-16.

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	<u>3-10</u>
	No: Claims	<u>1, 2, 11-16</u>
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-16</u>
Industrial applicability (IA)	Yes: Claims	<u>1-16</u>
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

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**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/US2009/039198

Box No. VI Certain documents cited

1. Certain published documents (Rule 70.10)
and /or

2. Non-written disclosures (Rule 70.9)
see separate sheet

**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/US2009/039198

Reference is made to the following documents:

D1: WO-A-2007/059438

D2: GB-A-1506045

D3: WO-A-2006/100071

D4: US-A-5989524

D5: US-A-4640943

D6: WO-A-2009/103651 (2009-08-27)

Re Item III

Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

Since the Applicant did not pay additional fees, the examination is restricted to the first invention, as defined below under item IV.

Re Item IV

Lack of unity of invention

The problem underlying the present application is the provision of dentifrice compositions for treating and preventing dental erosion (see page 2, paragraph 5).

The proposed solutions are:

- 1) -a dentifrice according to claim 1 (a dentifrice composition containing a cationically modified silica)
- 2) -a dentifrice according to independent claim 17 (a dentifrice comprising calcium containing silicate and silica, magnesium silicate and silica and combinations thereof).

The common inventive concept is the presence of silica in the dentifrice compositions.

This feature is already known from the prior art documents D1, D2 and D3 (see D1, page 3, lines 2-10, page 17, example 1; D2 page 8, example III, claims 1-5, 9 and 15; D3 page 4, lines 9-13, abstract, claim 1).

**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/US2009/039198

In view of the prior art D1, D2 and D3, the above common concept is not new and the problem underlying the application can therefore be redefined as the provision of further dentifrice compositions useful for treating and preventing dental erosion.

Inventions 1 and 2 as defined below are separate solutions to this problem.

As no other technical features can be distinguished which, in the light of the prior art could be regarded as special technical features in the sense of rule 13.2 PCT, the ISA is of the opinion that there is no single inventive concept underlying inventions 1 and 2 in the sense of Rule 13.1 PCT. Consequently there is lack of unity and the different inventions, not belonging to a common inventive concept, can be formulated as follows:

Invention 1 (claims 1-16)

a dentifrice composition containing a cationically modified silica in an amount to treat or prevent erosive damage to an enamel surface of a tooth.

invention 2 (claims 17, 21-36)

a dentifrice composition comprising calcium containing silicates or calcium containing silica and magnesium containing silicates or magnesium containing silica in an amount to treat or prevent erosive damage to an enamel surface of a tooth.

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Art. 33(2) PCT and Art. 33(3) PCT

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1,2, 11-16 is not new in the sense of Article 33(2) PCT.

**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/US2009/039198

1.1. D2 describes abrasive particles coated with cationic polymers and their use in oral compositions (see claims 1-9, 14 and 15).

On page 8 (see example III, abrasive A,D and E) D2 discloses dentifrices containing silica particles coated with a cationic polymer named Busan 77. Thus the silica of D2 exhibits an overall positive surface charge.

D2 anticipates the subject-matter of claims 1, 11-16.

1.2. D5 relates to inorganic particles such as silica modified by an N-acylated lysine (see claims 1-3, col. 12 table 2 to col. 13, line 55). The particles can be used in cosmetic formulations such as dentifrice (see col. 6, line 66).

Consequently, D5 anticipates the subject-matter of claims 1 and 2.

1.3. D1 discloses particles comprising a core of oxide compound, and bioadhesive polymer attached to oxide compound for using in oral care compositions (see page 13, paragraph 45, claims 15-22). The oxide compound can be SiO₂ and among the valuable polymer chitosan is mentioned in claim 5. However, oral compositions containing SiO₂ modified with chitosan are not explicitly disclosed in D1.

On page 17, example 1 discloses cationically modified silica particles; the silica particles are modified by deposition of 3-aminopropyltriethoxysilane, the same compound as used in claim 8 of the present application. The cationically modified silica is then reacted with a polymer which could be positively charged (see page 5, par [0017]).

However, oral compositions containing the above mentioned modified silica particles are not explicitly disclosed in D1.

1.4. D4 also discloses dentifrices compositions comprising silica modified with a cationic organic compounds (see examples 3 and 4). Since the silica of D4 is first treated with an organic or inorganic acid, it can not be concluded that the modified silica exhibits an overall surface positive charge.

2. As long as the subject-matter of the claims is not novel an assessment of inventive step is not possible.

Re Item VI

**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/US2009/039198

Certain documents cited

Certain published documents

Application No Patent No	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (valid claim) (day/month/year)
WO2009/103651	27.08.2009	12.02.2009	21.02.2008

The above document (published after the international filing date) cited in the search report may become relevant with regard to novelty in the European Regional Phase.

Further Remarks

The expression in claim 1 "in an amount effective" is unclear in the sense of Art 6 PCT and should be corrected with respect to the amounts mentioned on page 5, paragraph [0032] and claim 11

Printed: 26-08-2011

1. Feb. 2011 10:10

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Page White & Farrer

PCT/US 2009/039 19
No. 2935 P. 7

Our Ref: 8712-00-OC

Your Ref:

Attn: International Preliminary Examining Authority
European Patent Office
P. B. 5818 Patentlaan 2
NL-2280 HV Rijswijk
Netherlands

1 February 2011

BY FAX ONLY

Dear Sirs,

Intl. Patent Appln. No. PCT/US2009/039198
Colgate-Palmolive Company

We refer to the Written Opinion of the International Searching Authority dated
3 May 2010 and to the above-identified application.

Amendments

We attach an amended set of claims both in final form and track changes
format.

Claim 17 has been amended so as to incorporate to features of claims 18 to 20,
which have been deleted. Consequential amendments have been made to claims
21 to 24. Claim 27 has been amended so as to be consistent with amended
claim 17.

Claims 17 and 27 have also been clarified to meet the objection in Item 5,
paragraph 2 of the Written Opinion.

Novelty

The International Searching Authority considered that claim 1 was anticipated
by documents D1, D2, D4 and D5.

2

Claim 1 requires a "cationically modified silica". That feature is defined precisely in paragraph [0061] of the patent specification. The silica must exhibit an overall positive surface charge.

It is submitted that there is no explicit or implicit objective disclosure in any of the cited references, such as D1, D2, D4 or D5, of a dentifrice composition incorporating such as specific component.

D1, D2, D4 or D5 may disclose modified silica, with the modifying component having a cationic component, but that does not objectively disclose or imply that the silica must exhibit an overall positive surface charge.

It is submitted that claim 1 is novel over the state of the art.

Claim 17 has been amended so as to recite the specific silicates previously recited in dependent claim 18. It is submitted that none of D7 to D9 discloses such specific calcium- or magnesium-containing silicates in a dentifrice composition.

Claim 17 has also been amended so as to recite that the silica is present as colloidal silica or silica gel, as previously recited in dependent claims 19 and 20 respectively. It is submitted that none of D10 to D12 discloses such specific calcium- or magnesium-containing colloidal silica or silica gel in a dentifrice composition.

It is submitted that amended claim 17 is novel over the state of the art.

Since claim 27 recites the same composition as claim 17, it is correspondingly submitted that amended claim 27 is novel over the state of the art.

Inventive step

It is submitted that the subject matter of each of claim 1, amended claim 17 and amended claim 27 involves an inventive step over the state of the art.

3

The present invention seeks to prevent erosion damage to an enamel surface of a tooth.

In order to solve that problem, the invention of claim 1 provides a cationically modified silica which exhibits an overall positive surface charge.

As explained in paragraph [0060], the present invention encompasses compositions including cationically modified silica to provide enhanced surface adhesion and retention properties to the enamel or dentin surface to protect the enamel against acid induced erosive damage. This is achieved by providing the cationically modified silica which exhibits an overall positive surface charge.

The provision of such a component is not disclosed in or suggested by the cited references. There is no hint that such a component provides the technical effects disclosed in the specification.

It is submitted that claim 1 involves an inventive step over the state of the art.

In order to solve that problem, the invention of claim 17 provides specific calcium- or magnesium-containing silicates in a dentifrice composition and/or specific calcium- or magnesium-containing colloidal silica or silica gel in a dentifrice composition.

As explained in paragraph [0069], the present invention encompasses a chemical barrier technology that deposits minerals to damaged or softened enamel and forms a semi-impermeable coating on the dentition for the repair of damaged enamel and the prevention of further erosive damage to enamel by, for example, acids. In addition, the barrier of the invention acts as a proton sink to neutralize acid and prevent it from further dissolving native enamel. This is achieved by providing the specific calcium- or magnesium-containing silicates or and/or specific calcium- or magnesium-containing colloidal silica or silica gel.

The provision of such components is not disclosed in or suggested by the cited references. There is no hint that such a component provides the technical effects disclosed in the specification. Other silicates are disclosed, but there is no hint at the claimed compositions.

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Page White & Farrer

PCT/US 2009/039 15
No. 2935 P. 10

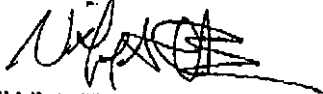
4

It is submitted that claim 17, and correspondingly claim 27, each involves an inventive step over the state of the art.

Summary

In light of the above, we look forward to receiving a favourable IPRP.

Yours faithfully,



Nikhil A. Heble
Colgate-Palmolive Company

CLAIMS

What is claimed is:

1. A dentifrice composition comprising a cationically modified silica in an amount effective to treat or prevent erosive damage to an enamel surface of a tooth.
2. The composition of claim 1, wherein the cationically modified silica comprises silica covalently bonded to positively charged amino acid.
3. The composition of claim 2, wherein positively charged amino acid is lysine.
4. The composition of claim 1, wherein the cationically modified silica comprises silica covalently bonded to positively charged peptide.
5. The composition of claim 1, wherein the positively charged peptide is polylysine.
6. The composition of claim 1, wherein the cationically modified silica comprises silica covalently bonded to a silane.
7. The composition of claim 1, wherein the silane includes aminosilanes, glycidoxysilanes, mercaptosilanes, and combinations thereof.
8. The composition of claim 1, wherein the aminosilane comprises (3-aminopropyl)-triethoxysilane, (3-aminopropyl)-diethoxy-methylsilane, (3-aminopropyl)-dimethyl-ethoxysilane, and combination thereof.

9. The composition of claim 1, wherein the glycidoxysilane comprises (3- glycidoxypropyl)-dimethyl-ethoxysilane.
10. The composition of claim 1, wherein the mercaptosilane comprises (3- mercaptopropyl)-trimethoxysilane, (3-mercaptopropyl)-methyl-dimethoxysilane, and combinations thereof.
11. The composition of claim 1, wherein the amount of cationically modified silica effective to treat or prevent erosive damage to an enamel surface of a tooth is 0.01 wt. % to 30 wt. % based on the weight of the composition.
12. The composition of claim 1, wherein the amount of cationically modified silica effective to treat or prevent erosive damage to an enamel surface of a tooth is 0.05 wt. % to 20 wt. % based on the weight of the composition.
13. The composition of claim 1, wherein the amount of cationically modified silica effective to treat or prevent erosive damage to an enamel surface of a tooth is 0.1 wt. % to 10 wt. % based on the weight of the composition.
14. The composition of claim 1, wherein the amount of cationically modified silica effective to treat or prevent erosive damage to an enamel surface of a tooth is 1 wt. % to 5 wt. % based on the weight of the composition.
15. The composition of claim 1 further comprising an abrasive, binder, surfactant, humectant, source of fluoride, and combinations thereof.
16. The composition of claim 1, wherein the composition is a toothpaste.

FILED: 01/02/2011

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CEMSPAMU

Page White & Farrer

US2009039198

No. 2935 P. 13

PCT/US 2009/039 198 - 01-02-2011

17. (Amended) A dentifrice composition comprising (i) calcium-containing silicates, wherein the silicates are selected from nesosilicates (or orthosilicates), sorosilicates, cyclosilicates, tectosilicates, inosilicates (single chain), inosilicates (double chain), and phyllosilicates, and combinations thereof, or calcium-containing silica, wherein the silica is colloidal silica or silica gel, (ii) magnesium-containing silicates, wherein the silicates are selected from nesosilicates (or orthosilicates), sorosilicates, cyclosilicates, tectosilicates, inosilicates (single chain), inosilicates (double chain), and phyllosilicates, and combinations thereof, or magnesium-containing silica, wherein the silica is colloidal silica or silica gel, or a combination of (i) and (ii), in an amount effective to treat or prevent erosive damage to an enamel surface of a tooth.

18. (Deleted)

19. (Deleted)

20. (Deleted).

21. (Amended) The composition of claim 17, wherein the amount effective to treat or prevent erosive damage to an enamel surface of a tooth is 0.01 wt. % to 30 wt. % based on the weight of the composition.

22. (Amended) The composition of claim 17, wherein the amount effective to treat or prevent erosive damage to an enamel surface of a tooth is 0.05 wt. % to 20 wt. % based on the weight of the composition.

23. (Amended) The composition of claim 17, wherein the amount effective to treat or prevent erosive damage to an enamel surface of a tooth is 0.1 wt. % to 10 wt. % based on the weight of the composition.

24. (Amended) The composition of claim 17, wherein the amount effective to treat or prevent erosive damage to an enamel surface of a tooth is 1 wt. % to 5 wt. % based on the weight of the composition.
25. The composition of claim 17 further comprising an abrasive, binder, surfactant, humectant, source of fluoride, and combinations thereof.
26. The composition of claim 17, wherein the composition is a toothpaste.
27. (Amended) A method of treating or preventing erosive damage to an enamel surface of a tooth comprising administering to a subject in need thereof an effective amount of at least one material selected from a cationically modified silica, calcium-containing silicates, wherein the silicates are selected from nesosilicates (or orthosilicates), sorosilicates, cyclosilicates, tectosilicates, inosilicates (single chain), inosilicates (double chain), and phyllosilicates, and combinations thereof, or calcium-containing colloidal silica or silica gel, magnesium-containing silicates wherein the silicates are selected from nesosilicates (or orthosilicates), sorosilicates, cyclosilicates, tectosilicates, inosilicates (single chain), inosilicates (double chain), and phyllosilicates, and combinations thereof, or magnesium-containing colloidal silica or silica gel, and combinations thereof.
28. The method of claim 27, wherein the subject is a mammal.
29. The method of claim 27, wherein the subject is a human.
30. The method of claim 27, wherein the subject is a companion animal.

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31. The method of claim 27, wherein the effective amount is 0.01 wt. % to 30 wt. % based on the weight of the composition.
32. The method of claim 27, wherein the effective amount is 0.05 wt. % to 20 wt. % based on the weight of the composition.
33. The method of claim 27, wherein the effective amount is 0.1 wt. % to 10 wt. % based on the weight of the composition.
34. The method of claim 27, wherein the effective amount is 1 wt. % to 5 wt. % based on the weight of the composition.
35. The method of claim 27, wherein the composition further comprises an abrasive, binder, surfactant, humectant, source of fluoride, and combinations thereof.
36. The method of claim 27, wherein the composition is a toothpaste.