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(54) Title: COMPOSITIONS AND METHODS FOR IMPROVING OVERALL TOOTH HEALTH AND APPEARANCE

(57) Abstract: Disclosed are oral care compositions comprising selected surface-active organophosphate compounds and methods of use to provide protection of teeth from erosion caused by the action of chemicals, such as harsh abrasives and acids. The surface-active organophosphate compounds are substantive to teeth, the phosphate groups binding the calcium in teeth and thus preventing loss of calcium from dissolution when contacted with acids. The organophosphate compound may also deposit a protective surface coating that prevents contact of teeth with erosive challenges. Selected organophosphate compounds contain one or more phosphate groups and are combined in the oral care composition with one or more of a fluoride ion agent, an antimicrobial agent preferably selected from quaternary ammonium compounds and polyvalent metal salts, an anticalculus agent and additional surfactant, to provide benefits including superior anti-erosion, anticaries, antiplaque and anti-staining as demonstrated by enhanced fluoride uptake, remineralization, resistance to acid demineralization and antimicrobial activities, resulting in improved overall tooth health, structural integrity and appearance.

**INTERNATIONAL SEARCH REPORT**

International application No  
PCT/IB2008/052562

**A. CLASSIFICATION OF SUBJECT MATTER**  
INV. A61Q11/00 A61K8/81  
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)

A61Q A61K

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 practical, search terms used)

EPO-Internal, WPI Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                               | Relevant to claim No. |
|-----------|--|-----------------------|
| X         | WO 2008/049878 A1 (GLAXO GROUP LTD [GB]; FOWLER CHRISTABEL [GB]; REES GARETH DAVID [GB]) 2 May 2008 (2008-05-02) | 1-9                   |
| Y         | claims 1-11<br>examples 1-2<br>examples 3-4<br>page 6, line 27 - page 6, line 29                                 | 1-9                   |
| X         | EP 0 569 666 A2 (KAO CORP [JP])<br>18 November 1993 (1993-11-18)   | 1,3,8,9               |
| Y         | claims 1-10<br>page 2, line 41 - line 45<br>page 2, line 12 - line 12; examples 1-11                             | 1-9                   |
|           | -/--   |                       |

Further documents are listed in the continuation of Box C.

See patent family annex.

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| C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT |   |                       |
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| X  | EP 0 555 864 A1 (KAO CORP [JP])<br>18 August 1993 (1993-08-18)  | 3,8,9                 |
| Y  | examples 5,8,9<br>page 8, line 14 - line 15<br>table 2<br>-----   | 1,2,4-7               |
| X  | US 5 824 289 A (STOLTZ EDWIN I [US])<br>20 October 1998 (1998-10-20)  | 1,3,8,9               |
| Y  | examples 2-5<br>column 4, line 20 - column 4, line 35<br>claims 1,14,15<br>-----                            | 2,4-7                 |
| X  | US 4 036 950 A (BAINES ERIC ET AL)<br>19 July 1977 (1977-07-19)   | 3,8                   |
| Y  | column 1, line 23 - line 26<br>column 3, line 6 - column 3, line 24<br>examples 1-6<br>claims 1-15<br>----- | 1,2,4-7,<br>9         |

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Information on patent family members

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| International application No<br>PCT/IB2008/052562 |
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