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Carbamide Peroxide Teeth Bleaching

[Why bother ? Just brush your teeth with your piss ... don't forget to rinse with fresh water ...]

http://en.wikipedia.org/wiki/Carbamide_peroxide

Carbamide Peroxide

Systematic (IUPAC) name -- hydrogen peroxide; urea
CAS number 124-43-6
PubChem -- 31294
Formula -- CH6N2O3
Mol. mass -- 94.07 g·mol?1
Routes -- topical (teeth or mouth)

Carbamide peroxide, also called urea peroxide, urea hydrogen peroxide, and percarbamide, is an oxidising agent, consisting of hydrogen peroxide compounded with urea. The molecular formula is CH6N2O3, or CH4N2O.H2O2. It is a white crystalline solid that releases oxygen in contact with water.

The chemical is a skin, eye and respiratory irritant. It is also corrosive and causes burns. It doesn't hurt at 10% concentration (3% hydrogen peroxide equivalent) but it might hurt at 35% (12% equivalent), causing white chemical burns on skin and gums alike.

Pure carbamide peroxide has the form of white crystals or crystal powder, is slightly soluble in water (0.05 g/mL)[1], and contains approximately 35% hydrogen peroxide.

Uses

Carbamide peroxide is used to

* whiten teeth [2] [3];
* relieve minor inflammation of gums, oral mucosal surfaces and lips including canker sores and dental irritation[4]; and to
* emulsify and disperse ear wax.[4]

Carbamide peroxide is commonly encountered in cosmetic dentistry, where it is used to "bleach" teeth. The active ingredient is hydrogen peroxide, which acts to oxidise interprismatic extrinsic staining within tooth enamel. There are several methods of applying the peroxide gel to the tooth ranging from night-guard application at home or in-surgery application. The bleaching obtained is proportional to the length of time the peroxide is applied to the tooth, and the concentration used. The concentration most commonly used for tooth whitening purposes is 15%.

A 10% solution in glycerol is used to treat ulcers and other lesions in the mouth.

A 6.5% concentration solution is used to loosen and remove earwax.

References

1. Sigma-Aldrich specification sheet -- http://www.sigmaaldrich.com/catalog/search/SpecificationSheetPage/ALDRICH/289132

2 "A CLINICAL EVALUATION OF CARBAMIDE PEROXIDE AND HYDROGEN PEROXIDE WHITENING AGENTS DURING DAYTIME USE". American Dental Association. -- http://jada.ada.org/cgi/content/full/131/9/1269.

3. Toothwhitening from the UMD of New Jersey website -- http://dentalschool.umdnj.edu/patients/dental-bytes.htm

4. Center for Integrative Medicine: Carbamide Peroxide from the University of Maryland Medical Center website -- http://www.umm.edu/altmed/drugs/carbamide-peroxide-021300.htm

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http://www.animated-teeth.com/teeth_whitening_effects/a1_dental_work.htm

Are tray-based teeth whitening systems utilizing a 10% carbamide peroxide whitener safe to use?

While it is important to know that a teeth whitening system can be effective, it is clearly much more important to know that it is safe to use. At-home tray-based teeth whitening (teeth bleaching) methodology using a 10% carbamide peroxide tooth whitener was first introduced to the dental community in a paper published in 1989. Since that time numerous of dental studies have investigated safety considerations that might be associated with the use of this technique.

This research has led to the general consensus that while this technique is not without side effects, dentist-dispensed at-home tray-based teeth whitening systems utilizing a 10% carbamide peroxide whitener are safe to use. And, in fact, this type of whitening system has gained wide acceptance by the dental community as a whole. The overwhelming majority of dentists in this country do offer tray teeth whitening systems to their patients because they know it has been time tested to be both safe and effective.

Why should tooth whiteners used with tray-based whitening technique be formulated with carbamide peroxide?

Throughout our text we have made reference to the use of a carbamide peroxide whitener with tray-based teeth whitening technique. You might ask yourself, what is carbamide peroxide and why is it used in tooth whitener formulations?

As you can discern from its name, carbamide peroxide is a type of peroxide. Peroxides are a class of compounds, the most well known one probably being hydrogen peroxide. You may already be familiar with hydrogen peroxide. Hydrogen peroxide is sold as a household antiseptic. Usually it comes in a brown bottle and has a concentration of 3%.

In the case of tooth whiteners it is their peroxide component that is their active ingredient. Peroxide molecules break down (oxidize) pigmented compounds trapped in a tooth's enamel into colorless byproducts, thus producing a lightening effect. As it happens, the peroxide that is counted upon to perform this oxidation process is hydrogen peroxide. So, right now you may be wondering why, since it is hydrogen peroxide that does the work, do our pages stress the use of carbamide peroxide tooth whiteners?

At-home tray based teeth whitening products. Carbamide peroxide is a compound composed of hydrogen peroxide and urea. In the presence of water carbamide peroxide breaks down into its

component parts, thus providing the hydrogen peroxide needed to perform the tooth whitening process (the urea plays no role). The reason carbamide peroxide is used in whiteners is because it is a relatively more stabile molecule than hydrogen peroxide. By using carbamide peroxide in their whitener formulations manufacturers can deliver the hydrogen peroxide needed to produce the lightening effect yet create a product that has a more predictable and longer shelf life.

Along these same lines, when the compound hydrogen peroxide is formulated into a whitener it will decompose almost immediately. The net result is that it will have finished producing its oxidation effects within the first hour of being placed into the bleaching tray. In comparison, carbamide peroxide degrades more slowly. Studies have shown that a carbamide peroxide tooth whitener it will release about 50% of its hydrogen peroxide in the first two to four hours and then the remainder over the next two to six hours. This slower release of peroxide and creation of a more gradual oxidation process is thought to help to minimize whitening side effects.

What are the safety concerns associated with the use of 10% carbamide peroxide teeth whiteners?

As we state in our section titled "About at home teeth whitening products: Know what you are buying.", all references to teeth whiteners
, bleaches, bleaching agents, bleaching gels, etc... found on the pages of this topic refer to 10% carbamide peroxide whitening products. With the continued accumulation of data by dental researchers over the last 15 years, it has become generally accepted by the dental community that 10% carbamide peroxide whiteners (when utilized in conjunction with tray-based whitening technique) are safe to use (when these products are used as directed by both the product's manufacturer and the person's dentist).

Will 10% carbamide peroxide teeth whiteners cause cancer?

Concerns have been postulated that teeth whiteners can possibly cause cancer of the soft tissues of the mouth. These concerns are related to the fact that the peroxide contained in teeth whiteners breaks down to form molecules called "free radicals." Free radicals are capable of causing cellular damage.

The appropriate use of dentist-monitored at-home teeth whiteners containing 10% carbamide peroxide have not been shown to produce a carcinogenic risk.

* The concentration of hydrogen peroxide produced by these whiteners is low, on the order of 3.5%. Studies involving hydrogen peroxide at about this same concentration (actually 3.0%) have not shown a carcinogenic risk.

* When using custom bleaching trays fabricated by a dentist the contact between the tooth whitener and a person's soft tissues ("gums") is minimal.

* One of the human body's main defenses against the adverse effects of peroxide is a compound found in saliva. This compound has been calculated to be able to effectively neutralize about 30mg of peroxide in one minute. The typical single application of carbamide peroxide tooth whitener is only 3.52 mg.

* Calculations have estimated that on average the total amount of peroxide that a person is exposed to each day when bleaching their teeth is less than .1% of the daily production of peroxide created by their liver.

Will 10% carbamide peroxide teeth whiteners damage tooth enamel?

Studies evaluating 10% carbamide peroxide whiteners have found minimal or no effect on the microhardness or mineral content of tooth enamel surfaces. Scanning electron microscope studies of the enamel of teeth that have been bleached have typically not shown damage either. As a point

of comparison, studies have shown that exposure to soft drinks and fruit juices can cause comparable or greater alteration of tooth enamel than tooth whiteners.
Two clinical cases have been documented in dental literature where the use of an over-the-counter teeth whitener has adversely affected the enamel of a person's teeth. These cases involved whiteners that had either: a high peroxide content, an acidic pre-rinse, or the whitener itself was acidic. These whiteners were purchased and used without the oversight of a dentist.

The tooth damage caused by these whiteners was irreversible and the dental treatment needed to repair the damage involved significant effort and cost. If you haven't already, please read our discussion titled: "About at home teeth whitening products: Know what you are buying."

Will 10% carbamide peroxide teeth whiteners damage the nerve in my tooth?

Research studies and the clinical observation of the dental community as a whole have not identified a problem associated with the use of dentist-dispensed at-home tray-based teeth whitening systems utilizing a 10% carbamide peroxide whitener and the health of the nerve tissue found in the user's teeth. One study's specific findings were that no one in their 4.5 and 7-year follow up groups reported requiring root canal treatment for any tooth that had received whitening treatments.

Will peroxide-based teeth whiteners damage my existing dental restorations?

At home teeth whitening cannot be expected to lighten fillings. Teeth can be whitened using an at-home bleaching system employing a 10% carbamide peroxide whitener with little concern about significant damage to a person's existing fillings. More than 15 years of clinical use of these products has not revealed any significant problems or concerns.

Some studies have suggested that some degree of interaction or change might occur with white dental fillings, amalgam dental fillings, and some types of dental cements. However, the clinical significance of these effects is still considered to be inconclusive. (Our "Effects of peroxide whiteners on existing dental work." page discusses some of the findings related to the effect peroxides can have on various types of dental materials.) Your dentist can address any specific concerns you may have during your pre-whitening dental examination.

The main difficulty encountered in conjunction with existing dental work is that it does not lighten during the whitening process (with the exception that the color of porcelain veneers may be affected). This means that pre-existing dental work will usually have to be replaced so to match a person's new, post bleaching tooth shade.

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http://www.drugs.com/sfx/carbamide-peroxide-side-effects.html

Side Effects of Carbamide peroxide - for the consumer

Carbamide Peroxide Solution

All medicines may cause side effects, but many people have no, or minor, side effects. When used in small doses, no COMMON side effects have been reported with Carbamide Peroxide Solution. Seek medical attention right away if any of these SEVERE side effects occur when using Carbamide Peroxide Solution:

Severe allergic reactions (rash; hives; itching; difficulty breathing; tightness in the chest; swelling of the mouth, face, lips, or tongue).

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http://chemicalland21.com/specialtychem/perchem/UREA%20HYDROGEN%20PEROXIDE.htm

UREA HYDROGEN PEROXIDE

Carbamide peroxide; Urea peroxide; Percarbamide; Hydrogen Peroxide, Compounded With Urea (1:1); Hydroperit; Hyperol; Ortizon; Percarbamide; Perhydrit; Perhydrol-urea; Thenardol; Urea, Compounded With Hydrogen Peroxide (1:1); Urea Hydroperoxide;

PHYSICAL STATE -- white crystal
MELTING POINT -- 75 - 85 C (Decomposes)
SOLUBILITY IN WATER -- 80 (g/l at 20 C)
NFPA RATINGS -- Health: 3; Flammability: 1; Reactivity: 0
STABILITY -- Stable under ordinary conditions, Air &moisture sensitive.
APPLICATIONS -- Urea Hydrogen Peroxide is an unstable combination of urea and hydrogen peroxide in equal amounts. It is soluble in water, alcohol, and ethylene glycol. It decomposes at 75-85 C or by moisture. It's application is on the release hydrogen peroxide as a source of water-free hydrogen peroxide. It is used as a disinfectant, bleaching agent, catalyst in organic synthesis, blueprint developer, modifier of starches and antistatic agent. It is used as an oxygen source for crops.it is used in formulating oral and dental care products and ear wax removers.

PATENTS

METHOD AND APPARATUS FOR ELECTROCHEMICALLY WHITENING TEETH
WO2008001388

Abstract -- Electrochemically whitening of teeth whereby a metal salt solution is applied to the teeth, followed by applying an oxidizing agent to the teeth, and transmitting electrical current to the teeth so as to activate and reduce the oxidizing agent for effecting whitening of the teeth. The device comprises an applicator (100) for applying a substance to the teeth, applicator (100) having a first end (112) and a second end (114), with a first electrode (118), preferably, positively charged, attached to first end (112) and a second electrode (122), preferably, negatively charged, attached to second end (114), configured to transmit electrical current through applicator (100), and an oxidizing agent for placement within applicator (100), wherein the oxidizing agent undergoes activation and reduction upon transmission of the electrical current there through.; The oxidizing agent used can be any of a whitening solution, whitening gel, solution or gel of or including any of : hydrogen peroxide, carbamide peroxide, or sodium perborate.

Peroxide Gel Compositions
US2007183987

Abstract -- The present invention is the use of Poly(2-ethyl-2-oxazoline) in the creation of peroxide gels for various applications. Such applications include bleaching of hair, teeth, laundry or any other bleachable item. Blending of the gel is accomplished by mixing the Poly(2-ethyl-2-oxazoline) with a peroxide such as hydrogen peroxide, carbamide peroxide, sodium perborate, or sodium percarbonate, usually also with water or an appropriate organic solvent. Peroxide concentrations in these new gels can reach a 30% concentration of hydrogen peroxide while maintaining a shelf life of six months at room temperature without developing peroxide decomposition.

Dental formulation
US2007098650

Abstract -- An orally absorbable improved dental formulation is provided. The dental formulation, which reduce the occurrence of oral plaque, reduce gingival inflammation and bleeding, and whiten the user's teeth, may be a toothpaste or a rinse which comprises the following active ingredients:

carbamide peroxide, papain, xylitol, and coenzyme Q10 (ubiquinone)

Method and composition for preventing tooth hypersensitivity when using passive bleaching agents

Abstract -- Dental bleaching compositions, for example in the form of liquids, gels, creams, pastes and ointments, comprising a peroxide releasing compound and from 1% to 35% by weight of a potassium-containing compound such as potassium nitrate, wherein the potassium nitrate is present in a safe and effective amount to prevent tooth hypersensitivity in the patient during the bleaching process. The potassium nitrate contemplated by the invention is compatible with peroxide yielding bleaching compounds such as peroxide, carbamide peroxide, calcium peroxide, zinc peroxide, magnesium peroxide and sodium perborate. Potassium nitrate is complimentary and synergistic with the peroxide bleaching agents contemplated by the invention and enhances the release of oxygen to the tooth enamel. Also contemplated are methods of bleaching teeth comprising application of the dental bleaching compositions of the invention.

Method and device for whitening teeth
US2007009857

Abstract -- Method rapidly whitens teeth by using whitening compound containing an oxidizing agent, such as carbamide peroxide, hydrogen peroxide, sodium chlorite, and/or chlorine dioxide. Sonic device emits sonic waves directly to the tooth, transfers the sonic waves through a medium which may be a mist, an encapsulated liquid, a solid, a sponge, or any combination. Device may have a heat source which has controlled temperature of 1 DEG -3 DEG F. to increase the temperature of the tooth whitening compound. Sonic device sonic energy emission to whitening compound applied to teeth, and temperature increase, increases the kinetics, and speeds up the tooth whitening process.; A pH adjusting agent included in the whitening compound or directly applied to the teeth may be a pre-treatment rinse, or be via a coating in an encapsulated bag, or within a moistened sponge-like material for releasing onto teeth when the sponge material is pressed against teeth.

DENTAL FORMULATION
WO2006110183

Abstract -- An orally absorbable improved dental formulation is provided. The detal formulation, which reduce the ocurrence of oral plaque, reduce gingival inflammation and bleeding, and whiten the user's teeth, may be a toothpaste or a rinse which comprises the following active ingredients: carbamide peroxide, xylitol, and coenzyme Q10 (ubiquinone).

DRY AND THIN FILM TYPED DELIVERY SYSTEM FOR WHITENING TEETH
KR20030059552

Abstract -- PURPOSE: A system for delivering a tooth whitening substance to a plurality of adjacent teeth is provided, wherein the tooth whitening substance is dispersed within a polymer. Therefore, the system is not sticky when applied, does not need to be removed after use thereof and is conveniently used. CONSTITUTION: A thin film typed delivery system contains 5 to 80% by weight of a polymer, 0.1 to 50% by weight of a tooth whitening substance and additionally a protective film layer(2) with a thickness of 5 to 150[mu]m. The polymer has an adhesion property to the teeth when hydrated by saliva, but no adhesion property thereto when stored.; The polymer is one or two or more kinds selected from hydroxypropylmethyl cellulose, hydroxyethyl cellulose, polyvinyl alcohol, polyvinylpyrrolidone, hydropropyl cellulose, carbomer, a copolymer of methyl

vinyl ether and maleic anhydride and polyethylene oxide. The tooth whitening substance is hydrogen peroxide, carbamide peroxide or the mixture thereof.

TABLET TYPE ORAL RINSE COMPOSITION FOR WHITENING TEETH
KR20030003476

Abstract -- PURPOSE: An oral rinse composition for whitening teeth containing peroxide as a main material is provided. It is in a tablet form and can be used by mixing with water within a desired period while exhibiting excellent teeth whitening effect, therefore it is conveniently used and excellent in form stability.; CONSTITUTION: The oral rinse composition comprises 0.1 to 75% by weight of one or more peroxides selected from the group consisting of hydrogen peroxide, carbamide peroxide, calcium peroxide, sodium percarbonate, sodium perborate and tetrasodium pyrophosphate peroxide, 1 to 55% by weight of a foaming agent, 0.1 to 20% by weight of a dehumidifying agent, 0.1 to 5% by weight of a pH controller, 1 to 5% by weight of a foaming agent, 0.1 to 10% by weight of a binder, 0.05 to 3% by weight of a lubricating agent, 0.1 to 15% by weight of a flavoring agent, 0.1 to 15% by weight of a solvent and 0.001 to 10% by weight of a medicinal component.

Method and composition for preventing tooth hypersensitivity when using passive bleaching agents
US2006013778

Abstract -- Dental bleaching compositions, for example in the form of liquids, gels, creams, pastes and ointments, comprising a peroxide releasing compound and from 1% to 35% by weight of a potassium-containing compound such as potassium nitrate, wherein the potassium nitrate is present in a safe and effective amount to prevent tooth hypersensitivity in the patient during the bleaching process. The potassium nitrate contemplated by the invention is compatible with peroxide yielding bleaching compounds such as peroxide, carbamide peroxide, calcium peroxide, zinc peroxide, magnesium peroxide and sodium perborate. Potassium nitrate is complimentary and synergistic with the peroxide bleaching agents contemplated by the invention and enhances the release of oxygen to the tooth enamel.; Also contemplated are methods of bleaching teeth comprising application of the dental bleaching compositions of the invention.

Bleaching preparation and applicators for the teeth
US2005196356

Abstract -- A preparation for bleaching teeth, comprising 0.3 to 30% by weight of a bleaching component selected from hydrogen peroxide or carbamide peroxide, 4 to 80% by weight of water, 0.05 to 1.00% by weight of a complexing agent selected from the group of the biphosphonates, and 0.1 to 3.0% by weight of a thickener, the preparation exhibiting a pH value in the range from 4 to 7 and a viscosity in the range from 1000 to 120 000 mPa.s (measured with a Brookfield RVF; up to 40 000 mPa.s spindle 4/4 rpm; from 40 000 mPa.s spindle TE/4 rpm; Helipath), the preparation being used in particular in an applicator which exhibits an applicator head which can be impregnated with the preparation to act upon the surfaces of the teeth of the user.

Peroxide tooth whitening composition
GB2412316 / GB2412315

Abstract -- An oral care composition comprising a peroxide containing compound dispersed in an orally acceptable carrier, wherein the carrier comprises a humectant and a combination of bioadhesive agents consisting essentially of at least one natural gum and a carbomer. The Preferred peroxide sources include hydrogen peroxide, carbamide peroxide, calcium peroxide and percarbonates. Preferred humectants include glycerine, sorbitol, propylene glycol, glucose, sucrose

and low molecular weight polyethylene glycols. Preferred gums include xanthan gum, carrageenan, alginates, gum karaya, guar gum, gum Arabic and pectins. Suitable carbomers homo- or copolymers are high molecular weight polymers of acrylic acid crosslinked with allylsucrose or allyl ethers of pentaerythritol. These carbomers may be partially or fully neutralised.; Compositions comprising carabamide peroxide or hydrogen peroxide, glycerine, xanthan gum and a carbomer copolymer are exemplified. Such compositions show excellent substantivity to the teeth as a result of a synergistic interation between the gelling agents.

Increased peroxide content tooth bleaching gel
US2004146467

Abstract -- A two-component tooth whitening system which incorporates an increased peroxide content, wherein the components are adapted to be mixed and applied to the teeth from a dental bleaching tray is provided. A first component includes both carbamide peroxide and hydrogen peroxide and a second component comprises an orally compatible activator gel.

Teeth whitening system based on the combination of hydrogen peroxide and carbamide peroxide
US2004202621

Abstract -- Disclosed are compositions for bleaching teeth, comprising a single component part or two or more components blended together before each application. The compositions offer extended shelf life and accelerated bleaching action while significantly reducing the possibility of user discomfort. In preferred embodiments, the composition or one of its parts comprises a blend of hydrogen peroxide and carbamide peroxide in a solution having the consistency of a gel or a viscous liquid. The inventive system allows for water in the composition to avoid tissue desiccation and associated user discomfort, without compromising the shelf life of the composition.

Increased peroxide content tooth bleaching gel
US6986883

Abstract -- A two-component tooth whitening system which incorporates an increased peroxide content, wherein the components are adapted to be mixed and applied to the teeth from a dental bleaching tray is provided. A first component includes both carbamide peroxide and hydrogen peroxide and a second component comprises an orally compatible activator gel.

INCREASED PEROXIDE CONTENT TOOTH BLEACHING GEL
WO03032857

Abstract -- A two-component tooth whitening system which incorporates an increased peroxide content, wherein the components are adapted to be mixed and applied to the teeth from a dental bleaching tray is provided. A first component includes both carbamide peroxide and hydrogen peroxide and a second component comprises an orally compatible activator gel.

A METHOD AND SYSTEM FOR TOOTH WHITENING FOR LONG TERM EFFICACY
WO03007680

Abstract -- A method and system for whitening teeth using at least a whitening gel, a whitening toothpaste, and a whitening rinse. Preferably the system employs a predetermined weight percentage of a peroxide based bleaching agent to effect tooth whitening. In certain formulations the components may use carbamide peroxide or hydrogen peroxide as a bleaching agent. The

system may be used at home and preferably does not require clinical visits. The method includes the steps of brushing the teeth daily and before each bleaching with a whitening toothpaste, bleaching the teeth with a whitening gel twice daily, and rinsing with a whitening rinse. Daily brushing with a whitening toothpaste and preferably rinsing with a whitening rinse follow these whitening treatments.; A system or kit for whitening teeth includes all of the components necessary to follow the aforementioned method, including a whitening gel, whitening toothpaste, a whitening rinse, and one or more mouth guard trays.

Process and composition for high efficacy teeth whitening
US7067115

Abstract -- Disclosed is a process and composition for bleaching teeth made up of two components blended together before each application. The method and composition offers faster results while significantly reducing the possibility of user discomfort. One of said components comprises carbamide peroxide, the other contains salts and hydroxides and/or oxides of metals belonging to the first or second group of the Periodic Table which stimulate the generation of radical oxygen. In one embodiment, the first part comprises up to 50% water by weight and optionally comprises a stabilizer. In some embodiments, the first component is substantially colorless and the second component comprises a dye indicator which discolors or loses color when exposed to radical oxygen generated by the mixing of the two components.

Two-part composition for high efficacy teeth whitening comprising a mixture of peroxides and/or percarbonates of metals
US6488913

Abstract -- Described herein is a novel high efficiency teeth bleaching system based on the synergetic action of the combination of hydrogen peroxide (in a free form or in the form of its adduct with urea) and peroxide and/or percarbonates of metals belonging to the first or second group of the periodic table. In one embodiment, the system of the preferred embodiment comprises two components, one containing hydrogen peroxide or carbamide peroxide (hydrogen peroxide/urea adduct), and the other containing metal peroxides and/or percarbonates. Mixing of the two components results in the accelerated generation of radical oxygen, which relates to faster teeth bleaching action.

Methods for bleaching, opacifying and desensitizing teeth
US6368576 / US6309625

Abstract -- Composition and methods that include potassium nitrate for whitening and/or reducing tooth sensitivity. The dental compositions may optionally include a dental bleaching agent, such as hydrogen peroxide or carbamide peroxide. The dental compositions may be applied directly to the person's teeth, or they may be loaded into a comfortable fitting, flexible, thin-walled dental tray and placed over the person's teeth. In that case, the dental compositions will include a tackifying agent, such as carboxypolymethylene, dispersed within a solvent, which assists the composition in retaining the dental tray over the person's teeth as a result of the adhesive properties of the dental composition rather than due to mechanical interlocking of the tray over the person's teeth. The dental compositions may further include anticariogenic and antimicrobial agents.

INCREASED PEROXIDE CONTENT TOOTH BLEACHING GEL
WO0117481

Abstract -- A two-component tooth whitening system which incorporates an increased peroxide content, wherein the components are adapted to be mixed and applied to the teeth from a dental bleaching tray is provided. A first component includes both carbamide peroxide and hydrogen

peroxide and a second component comprises an orally compatible activator gel.

Desensitizing bleaching gel
US6458340

Abstract -- A substantially anhydrous gel useful for bleaching teeth comprising: (i) at least 25% by weight of organic polyol; (ii) less than 3% by weight polyacrylic acid thickening agent; (iii) at least 10% by weight carbamide peroxide (or a chemically equivalent amount of another bleaching agent, such as 3% by weight hydrogen peroxide); (iv) neutralizing agent; (v) chelating agents; (vi) desensitizing agent; and (vii) miscellaneous ingredients such as Cirtoxain(R) and flavorants. The organic polyol is preferably glycerin. The polyacrylic acid thickening agent is preferably a carbomer. The desensitizing agent is preferably potassium nitrate, strontium chloride, potassium citrate, strontium nitrate, or a similarly effective alkali or alkaline earth metal salt of an organic or inorganic acid.

COMPOSITIONS AND METHODS FOR WHITENING TEETH
WO0028953

Abstract -- A substantially anhydrous gel useful for bleaching teeth comprising: (i) at least 25% by weight of organic polyol; (ii) less than 3% by weight polyacrylic acid thickening agent; (iii) at least 10% by weight carbamide peroxide (or a chemically equivalent amount of another bleaching agent, such as 3% by weight hydrogen peroxide); (iv) neutralizing agent; (v) chelating agents; (vi) desensitizing agent; and (vii) miscellaneous ingredients such as Cirtoxain(R) and flavorants. The organic polyol is preferably glycerin. The polyacrylic acid thickening agent is preferably a carbomer. The desensitizing agent is preferably potassium nitrate, strontium chloride, potassium citrate, strontium nitrate, or a similarly effective alkali or alkaline earth metal salt of an organic or inorganic acid.

Light or heat activated dental bleaching compositions
US6387353

Abstract -- Dental bleaching compositions are made with a bleaching agent and a stable radiant-energy absorbing compound that acts as a bleaching agent activator. The dental bleaching compositions of the present invention can be one-part, pre-mixed compositions that do not require mixing at the time of treating a patient's teeth but which remain stable over time. The bleaching agent may consist of hydrogen peroxide, either in aqueous form or complexed with urea (carbamide peroxide) or sodium perborate. The bleaching agent activator includes hydrocarbons that are stable in the presence of the bleaching agent, which do not prematurely accelerate liberation of the bleaching agent, but which allow for selective activation of the bleaching agent by irradiation of the bleaching composition with radiant energy.; The bleaching composition may optionally include a neutralizing agent to adjust the pH, a carrier to help provide proper consistency and potency, and a stabilizing agent to maintain maximum potency of the bleaching agent over time. The bleaching composition may also include a thickening agent to achieve a selected viscosity. The dental bleaching compositions may be adapted to be loaded into and delivered from a syringe.

Compositions and methods for whitening and desensitizing teeth
US6306370

Abstract -- Composition and methods that include potassium nitrate for whitening and/or reducing tooth sensitivity. The dental compositions may optionally include a dental bleaching agent, such as hydrogen peroxide or carbamide peroxide. The dental compositions may be applied directly to the person's teeth, or they may be loaded into a comfortable fitting, flexible, thin-walled dental tray and

placed over the person's teeth. In that case, the dental compositions will include a tackifying agent, such as carboxypolymethylene, which assists the composition in retaining the dental tray over the person's teeth as a result of the adhesive properties of the dental composition rather than due to mechanical interlocking of the tray over the person's teeth. The dental compositions may further include anticariogenic and antimicrobial agents.

Film coating composition for whitening teeth
US6083421

Abstract -- The invention relates to a tooth-whitening varnish composition, comprising 6-20% of carbamide peroxide, 2-9% of film forming agent and 77-88% of volatile organic solvent, based on the total weight of the composition. The volatile organic solvent is selected from ether, ethylacetate, ethyl alcohol, or acetone. The film forming agent is artificial or natural material selected from cellulose, polyvinyl, butyral, coumarone resin or shellac. The composition can rapidly form films on dry tooth surfaces, and a remarkable tooth-whitening effect can be obtained.

DENTAL BLEACHING COMPOSITIONS WITH HIGH CONCENTRATION OF HYDROGEN PEROXIDE
WO9830494 / US5858332

Abstract -- Dental bleaching compositions that include a high concentration of bleaching agent and a bleaching agent stabilizer that maintains the potency of the bleaching agent over time. The dental bleaching compositions of the present invention may be one-part, pre-mixed compositions that do not require mixing at the time of treating a patient's teeth but which remain stable over time. The bleaching agent may consist of hydrogen peroxide, either in aqueous form or complexed with urea (carbamide peroxide) or sodium perborate. The bleaching agent stabilizer includes an impurity scavenger that binds or ties up impurities, such as errant or residual metal ions, that can cause decomposition of the bleaching agent. The bleaching agent stabilizer may include a carboxylic acid chelator or a tin salt.; The bleaching composition may include a thickening agent to achieve a selected viscosity and a neutralizing agent to adjust the pH and a carrier to help provide selected consistency and potency. The dental bleaching compositions may be adapted to be loaded into and delivered from a syringe.

STABLE LIGHT OR HEAT ACTIVATED DENTAL BLEACHING COMPOSITIONS
WO9830169 / US5785527

Abstract -- Dental bleaching compositions are made with a bleaching agent and a stable radiant-energy absorbing compound that acts as a bleaching agent activator. The dental bleaching compositions of the present invention can be one-part, pre-mixed compositions that do not require mixing at the time of treating a patient's teeth but which remain stable over time. The bleaching agent may consist of hydrogen peroxide, either in aqueous form or complexed with urea (carbamide peroxide) or sodium perborate. The bleaching agent activator includes hydrocarbons that are stable in the presence of the bleaching agent, which do not prematurely accelerate liberation of the bleaching agent, but which allow for selective activation of the bleaching agent by irradiation of the bleaching composition with radiant energy.; The bleaching composition may optionally include a neutralizing agent to adjust the pH, a carrier to help provide proper consistency and potency, and a stabilizing agent to maintain maximum potency of the bleaching agent over time. The bleaching composition may also include a thickening agent to achieve a selected viscosity. The dental bleaching compositions may be adapted to be loaded into and delivered from a syringe.

Inclusion of tooth whitening oxidation chemistries into a tooth-paste composition

US5785957

Abstract -- A tooth-paste composition for whitening teeth and method for manufacture, the composition comprising a water-free, non-hygroscopic base and carbamide peroxide.

INCLUSION OF TOOTH WHITENING OXIDATION CHEMISTRIES INTO SLOW RELEASING FOOD PRODUCTS
WO9721417

Abstract -- A composition for whitening teeth for placing in the mouth and method for manufacture, the composition comprising a water-free, non-hygroscopic base and carbamide peroxide.

Method of whitening teeth and composition therefor
GB2309386 / US5500207

Abstract -- A chewing gum or wax base is mixed with a tooth whitening agent such as carbamide peroxide and is conditioned into pieces of chewing gum or wax. Mastication of these on a regular basis helps in whitening teeth in a person in need of a tooth whitening treatment.

METHOD FOR BLEACHING TOOTH
JP8113520 / US5409631

Abstract -- PROBLEM TO BE SOLVED: To provide an improved method for bleaching the surface of teeth of a person intending to make the appearance of the surface of the teeth beautiful. SOLUTION: A prescribed amount of a dental bleaching composition is placed in a dental tray, which is then arranged on the tooth surface so as to bring a part of the composition into contact with a tooth to be bleached. Thereby, the dental tray is arranged on the tooth surface. After the passage of a prescribed time, the dental tray is removed from the tooth to bleach the tooth. The dental bleaching composition comprises about 3 to about 20 wt.%, preferably about 4 to about 15 wt.% carbamide peroxide as a dental bleaching agent and a matrix material containing about 3.5 to about 12 wt.%, preferably about 4.5 to about 10 wt.% carboxypolypolymethylene as the matrix material for dispersing the bleaching agent therein.; The carboxypolymethylene contained therein at the concentration has a high viscosity and is hardened when brought into contact with a saliva to form a seal around the dental tray. Thereby, the composition is held in a state thereof in contact with the tooth surface.

DENTIFRICE COMPOSITION
JP9040539

Abstract -- PROBLEM TO BE SOLVED: To obtain a dentifrice composition having an action removing pigmentation of teeth and also promoting remineralization of the surface of the teeth. SOLUTION: This composition contains 0.1-90wt.% a calcium compound (e.g.; hydroxyapatite) and 0.05-10wt.% carbamide peroxide. Hydroxyapatite has an action performing remineralization of the surface enamel of teeth, carbamide peroxide has an action removing pigmentation of teeth and a synergistic effect is exhibited by mixing both, then a whitening and a removing action of pigmentation of the teeth are exceedingly increased and simultaneously a mineralization effect of the surface of the teeth is reserved. A mixture of more than two species of tricalcium phosphate, calcium hydrogen phosphate, calcium dihydrogen phosphate, octacalcium phosphate and calcium pyrophosphate can be used instead of hydroxyapatite as the calcium compound.

Toothpaste

ES2113272

Abstract -- Toothpaste. It comprises carbamide peroxide in a proportion between 0.1% and 20% weight/volume, glycerine in a proportion between 50% and 110% weight/volume and the thickener is a carboxyvinyl polymer in a proportion between 1% and 5% weight/volume. The carbamide peroxide is in the same phase as the other components of the toothpaste, the pH of which is between 3 and 6. It has a high antiseptic and whitening power and provides a chemicomechanical cleaning, whitening and débridement action with the aid of the brushing action. It is especially indicated in the prevention and relief of buccopharyngeal conditions and in the whitening of the teeth.

Method and material for brightening teeth
US4990089

Abstract -- There is disclosed a process and a material for brightening teeth. The process comprises the construction of a splint around the tooth or teeth to be brightened, followed by the insertion within the splint of a brightening agent selected from one of many peroxide groups. The splint is constructed so that the splint is relatively liquid tight to the gingiva. The brightening agent is periodically renewed and can be mixed with various other agents to increase the nascent oxygen release aerating factors. In one embodiment, the peroxide that is used is a 10% solution of carbamide peroxide mixed with a water free gel.
