

Chapter 1 : USA - Oxidative hair dye compositions - Google Patents

hair dye: 2,4-diaminoanisole and its salts This substance was considered by previous working groups, in (IARC,), (IARC,) and (IARC,). Since that time, new data have become available, and these have been incorporated into the monograph and taken into consideration in the present evaluation.

The compositions of the invention contain as a primary intermediate at least one aminophenol of the formulas: STR1 or a cosmetically acceptable salt thereof, and at least one pyrazolone coupler of the formulas: STR2 or a cosmetically acceptable salt thereof. The compositions may also contain one or more other primary intermediates and conventional coupling compounds, in addition to an oxidizing agent and other components typically used in oxidative hair dye preparations. The present invention more particularly relates to oxidative hair dye compositions and methods comprising particular aminophenols and phenylpyrazolones in addition to other conventionally-used additives and components. The hair dyeing process is achieved, in general, by the reaction of certain developing compounds with certain coupling compounds in the presence of a suitable oxidizing agent or compound, such as hydrogen peroxide. When oxidation dye precursors such as those comprising primary intermediates and couplers are used in the dyeing of human hair, the procedure may involve the use of a two part system. In general, one part can be a formulation which contains a variety of ingredients, including oxidation dye precursors. The other part is a developer formulation containing a suitable oxidizing agent. Immediately prior to application to the hair, the two parts are mixed to form a thickened liquid solution, for example, a lotion or a gel. As a consequence of the oxidizing properties of the oxidizing agent, some of the natural melanin pigment of the hair may be bleached. The dye precursors in the thickened solution. Such systems generally contain a proportion of organic solvents and surfactants and contain relatively high levels of dye precursors to produce the desired color. In order for procedures using permanent oxidative dyes to work properly, a number of parameters and conditions are important to consider in the use of the permanent oxidative dye intermediates in admixture with couplers in hair color preparations for human hair. In addition, the dye must have virtually no allergenicity or dermal or systemic toxicity. The hair coloring industry is searching for a p-phenylenediamine alternative which possesses a better allergenic profile than p-phenylenediamine. German Patent , discloses that coupling 4-amino-2,6-dichlorophenol with 2,4-diaminoanisole dyed hair blue black. German Patent 3,, discloses oxidative dyeing compositions containing 4-amino-2,6-dichlorophenol, as the developer, and at least one of 1-naphthol, 1,5-dihydroxynaphthalene, m-aminophenol and N,N-bis 2-hydroxyethyl -m-phenylenediamine, as the coupler. These compositions provide deep blue to black blue colorations which do not change when subjected to permanent waving treatments using thioglycolate or sulfite. However, the usefulness of this compound has not been demonstrated in the prior art. Prior art references which mention 4-aminochlorophenol include: GB 2,, A describes a dyeing composition for keratinous fibers, and especially for human hair. The composition contains at least one oxidation dye precursor and at least one water-soluble bio-heteropolysaccharide and an oxidizing agent. Substituted catechol derivatives together with p-phenylenediamine derivatives can be employed to impart permanent dark or intense colors to the hair in the absence of a peroxide or metal peroxide. Color is generated in the presence of atmospheric oxygen. In this patent, 3-methylphenylpyrazolinone is described as an antioxidant. With tetraaminopyrimidine, they produce a wide range of colors ranging from brownish orange to red, brick red, tomato red and reddish brown. DE 2,, covers 2,3,4,6-tetraaminopyridine as a primary intermediate. It couples with 3-methylphenylpyrazolinone and 3-aminophenylpyrazolinone to produce red brown and bloody red respectively. However, its use as a hair dye was not appreciated by those skilled in the art. SUMMARY OF THE INVENTION It is an object of the invention to provide oxidative hair dye compositions comprising as primary dye intermediates 2,6-dichloroaminophenol, 2-chloroaminophenol, or a mixture thereof, and 3-methylphenylpyrazolinone, 3-aminophenylpyrazolinone, 3-acetaminophenylacetoxy-1H-pyrazole, or a mixture thereof as coupling agents, oxidizing agents and other adjuvant substances and methods for the oxidative dyeing of hair employing such compositions. The present invention relates to a dyeing composition for dyeing keratinous fibers and in particular for human keratinous

fibers comprising 4-amino-2,6-dichlorophenol 1 or 4-aminochlorophenol 2 and 3-methylphenylpyrazolinone 3 or 3-aminophenylpyrazolinone 4 or 3-acetaminophenylacetoxo-1H-pyrazole 5 and a dyeing process using such combination. Magenta dyes are produced when the magenta couplers react with quinone diamines derived from oxidation of p-phenylenediamine derivatives such as N-ethyl-N-2-hydroxyethyl-p-phenylenediamine CD-4, N,N-diethylmethyl-p-phenylenediamine monohydrochloride CD2, Activol No. The usefulness of formulations using 1 or 2 in combination with magenta couplers to oxidative hair coloring was not appreciated in the prior art prior to the present invention. When hair was dyed, under oxidative conditions with a mixture of 4-aminophenol, 4-aminomethylphenol or 4-amino-2,6-dimethylphenol and pyrazolone couplers, as described above, very little color was developed in the hair fibers. It has been surprisingly found that 4-amino-2,6-dichlorophenol 1 couples well with 3-methylphenylpyrazolinone 3 to color hair red Table 1, A compositions. This red color is very unique. Thus, the compounds of the invention considerably increase the possibilities for formulating varying shades without relying on p-phenylenediamine. The hair color obtained from 4-amino-2,6-dichlorophenol 1 and 3-methylphenylpyrazolinone 3 is very similar to that of hair dyed with p-phenylenediamine and 5-aminomethylphenol. This finding allows one to formulate dark red and burgundy shades without relying on p-phenylenediamine. For example, a combination of 4-aminophenol, 4-amino-2,6-dichlorophenol, 5-aminomethylphenol and 3-methylphenylpyrazolinone colors hair red plum see Table 2, D composition infra. The usefulness of the present invention is demonstrated by formulating a neutral dark blond shade with conventional primary intermediate and couplers see Table 2, E composition infra. In addition to at least one of the dye molecules encompassed by the present invention, the hair dyeing compositions described herein may also contain at least one other known and usual dye ingredient i. Illustrative component dye ingredients that are conventionally admixed and employed as constituents of customary hair dye formulations and that can be considered suitable for use in the compositions of the present invention are set forth hereinbelow. Preferred p-phenylenediamine derivatives include: Preferred p-aminophenol derivatives include: Preferred ortho developers include: Phenols and resorcinol derivatives include: Preferred phenols and resorcinol derivatives include: Preferred heterocyclic derivatives include: The additional dye compounds, e. Before mixing of the color precursors with the oxidative developer, the total quantity of the primary intermediate s and coupler s in the composition suitably amounts to approximately 0. In the compositions of the present invention, the coupler s is generally used in approximately equimolar amounts relative to the primary intermediate s. However, it will be appreciated that the primary intermediate s, in relation to the coupler s, may be present either in increased or decreased amounts depending upon the formulation and the desired color, intensity or effect. In general terms, the primary intermediate s and coupler s, or cosmetically acceptable salts thereof, will be present in amounts such that in the presence of the oxidizing developer they produce a tinctorially effective amount of oxidative hair dye to color a hair fiber. The hair dye preparations of the present invention may be formulated into cosmetic preparations such as a solution, cream, lotion, gel or emulsion. Also, in accordance with the invention, the compositions may represent a mixture of the coloring components i. For example, components such as wetting agents or emulsifying agents from the categories of anionic or non-ionic surfactants, such as sulfates of fatty alcohols, alkanolamides of fatty alcohols, alkyl sulfonates, alkylbenzene sulfonates, oxyethylated fatty alcohols, oxyethylated nonylphenols. Thickeners, such a fatty alcohols, starch, cellulose derivatives, paraffin oil and fatty acids, as well as hair-care substances such as lanolin derivatives, cholesterol and pantothenic acid, may also be formulated into the compositions of the invention. As an example, if formulated as a lotion, the compositions of the invention may contain organic solvents to assist in dissolving the dye precursors. Typically useful solvents include alcohols containing up to three carbon atoms such as ethanol and isopropanol, polyhydroxy alcohols such as propylene or hexylene glycol and lower alkyl ethers thereof, such as ethoxy ethers e. In addition, the hair dyeing compositions in accordance with the present invention may optionally contain conventionally-used adjuvants and cosmetic additives, or mixtures thereof, to achieve the final formulations. Examples of such additives include, but are not limited to, anti-oxidants, e. The list of optional ingredients is not intended as limiting. Other suitable adjuvants for inclusion in the hair dye compositions of the invention are disclosed, for example, in Zviak, *The Science of Hair Care* and in Balsam and Sagarin, *Cosmetics: Science*

and Technology, Vol. Thickeners that may be used in the compositions of the present invention include a variety of fatty acid soaps and associative polymeric thickeners. The fatty acid soaps are alkali metal salts or alkanolamine salts of C10 -C18 fatty acids. The preferred fatty acids include oleic acid, myristic acid and lauric acid, which are generally present in the compositions of the invention at about 0. Associative thickeners are polymers that can thicken solutions at low concentrations. Another class of associative thickeners that is useful in the compositions of the present invention include the copolymers of polyurethane and polyethylene glycol or polyether urethanes. One such material is sold by Rohm and Haas under the tradename Aculyn The associative polymeric thickeners are generally present in the compositions of the invention at about 0. The oxidative coupling, i. However, chemical oxidizing agents are suitably and preferably used. Although other oxidizing agents can be employed, hydrogen peroxide is a preferred oxidizing compound for use as a developer with the primary intermediate and coupler dye precursors of the invention. Other suitable oxidizing agents include, for example, urea peroxide, melamine peroxide, perborates and percarbonates such as sodium perborate or percarbonate. The amounts of such oxidizing agents can be routinely determined by one having skill in the art, without requiring any inventive skill. The compositions of the invention may include a typical anionic, cationic, nonionic or amphoteric surfactant. The anionic surfactants include the variety of alkyl sulfates, alkylether sulfates, alkyl sulfonates, alkyl sulfosuccinates and N-acyl sarcosinates. The commonly-used anionic surfactants are sodium and ammonium lauryl sulfates, sodium and ammonium laureth sulfate and alpha olefin sulfonates. Anionic surfactants are generally present in the compositions of the present invention at about 0. The nonionic surfactants that can be used in the present invention include the wide variety of ethoxylated alcohols, nonoxynols, alkanolamides, alkyl stearates, alkyl palmitates and alkylpolyglucosides. Examples of the commonly-used nonionic surfactants are cetyl alcohol, stearyl alcohol, oleyl alcohol; the various types of ethoxylated alkylphenols; lauramide diethanolamide; lauramide monoethanolamide; isopropyl palmitate, isopropyl stearate and decylpolyglucoside. Nonionic surfactants are generally present in the compositions of the present invention at about 0. The compositions in accordance with the present invention may also contain one or more quaternary ammonium compounds that provide hair conditioning effects. The quaternary ammonium compounds can be monomeric or polymeric quaternary ammonium compounds. Nonlimiting examples of such compounds include cetyltrimonium chloride, stearyl trimonium chloride, benzalkonium chloride, behentrimonium chloride and a variety of polyquaterniums. The quaternary ammonium compounds are generally present in the compositions of the present invention at about 0. Amphoteric surfactants that can be incorporated in the compositions of the present invention belong to the class of surface active chemicals that possess a positive and a negative charge in the same molecule and behave as a cation, an anion, or both, depending upon the pH of the medium and the nature of the amphoteric molecule. In general, the positive charge is located on a nitrogen, while the negative charge is carried by a carboxyl or sulfonate group. There are a large number of amphoteric surfactants that are suitable for use in the present invention, including, for example, the well-known betaines, sultaines, glycinate and propionates that may generally be represented by the following structural formulae shown below: STR4 In these formulae, R is an alkyl or alkylamide group containing from about 10 to about 20 carbon atoms. R1 and R2 are alkyl or hydroxyalkyl groups, which may be the same or different, and contain up to about five carbon atoms; n is a positive integer from one to about five. The selection of the amphoteric surfactant or mixture of surfactants for use in the present compositions and methods is not critical. The surfactant may be selected from among those suggested above, or from any of a number of other known amphoteric surfactants. The amount of amphoteric surfactant in the compositions of the present invention is normally from about 0. Depending on the final formulated preparation, the compositions in accordance with invention may be weakly acidic, neutral or aikaine. In particular, the pH of the prepared compositions can range from about 5 to about

Colorless solid (needles). [Note: The primary use (including its salts such as 2,4-diaminoanisole sulfate) is a component of hair & fur dye formulations.]

Thank you so much for the article, it has been extremely helpful. I recently went from bleached yellowish white to dark blue Manic Panic: Beautiful colour but dark colours look horrible on me. So to lighten it up I used your Vitamin C technique. I used 2 1,mg tablets and a fair amount of anti-dandruff shampoo no brand name on the bottle, it was the cheapest one I found. Rubbed it in pretty good and left for 20 mins under plastic bag and a towel. I do want to lighten it a bit more so will repeat the process when my hair gets dirty. Colour comes off so well that I would recommend using gloves through the entire process! Thank you so much for this technique, and sorry for such a long post! My natural hair colour is blonde but ive always dyed my hair since the age of 10, ive dyed it back blonde loads of time using bleach etc or going to the hair dressers, but ive also been many other colours and constantly dying my hair. I used Bi-Carb Soda, Shampoo and salt. Mixed it together into a paste and applied it in to the roots of my hair. I did this twice and left it in my hair until it turned hard. My hair is now lighter, more a strawberry blonde. I was just wondering how do you do the lemon juice and baking soda? Also i was wondering if you could recommend something that would work on my extensions there naturally blonde but now there pastel pink too and its not fading as quick as my own hair. OK so a month ago I bleached my whole head like times which I know is a bad idea then I put in splats blue envy dye. The colour did not turn out that great so now I am wanting to change it before school starts. I am wanting to do half black and half red so I am going to have to remove the blue from one half of my hair. The problem is my hair is still pretty damaged from bleaching it a month ago and some parts of it stretch like elastic. What can I do to get my hair light enough to put a bright red over it? Is there any way I can totally heal my hair In a couple weeks and have it ready to bleach again? I have about 4 weeks to do this, so if you have any advice on how to safely fade the colour or how to heal my hair enough so I can bleach it again, please tell me. This gives me this peachy, pink blondish hair. However, today I added too much of fuschia and my hair is way too pink for my liking. Any idea which of the 10 ways should I use to fade the pink out of my hair? It is really pastel-ish, but i want it to be more blondish rather pink? I had it unwashed for three days then finally washed it. Almost all the dye came out in the first wash and it left it a really awful cotton candy pink. I am just about to go into big meetings for work so this cannot work and I am on travel and away from my stylist. I bought a bottle of vitamin c pills and took 11 and smashed them up. I just did 1 hour of the vitamin c plus shampoo and conditioner 5 times. The pink has seriously almost completely left my hair. I think about 3 more times and the pink will be gone completely and it will be hopefully a brighter blond then it is now. Slowly but surely it works so have faith. I also feel no damage at all. It just feels dry Hope this helps someone because I sure was on panic mode. I dyed it teal using crazy colour -worst mistake of my life- and tried using colour B4 on it a couple of times to remove the green, though it lightened the green it was still there -. I read the article and tried the vitamin c and bleach and water methods and they really helped although the green has yet again come through so now im going to have to try another method to try and lift it , any suggestions? Hayleyboo I used colour freedom magenta dream about two and a half weeks ago. When I used the pink it washed out really well, the magenta is proving harder to budge! Also used washing up liquid and baking soda- found this harsh on my skin. I did a strand test of colour b4- turned my hair purple!!! Will q Keep on going and hopefully be a blonde again lol krod3 how long does the baking soda lemon juice and water take i have my hair aqua i havent retouched it with in almost 2 months and its still pretty dark i have hair above my shoulder blade how long do yall think it would take me to do that??? Ljoy So my hair is normally dark brown with purple highlights. I got a last minute salon apt for a cut a color a few days ago to put purple all throughout my hair with blue highlights. I ended up with about 5 different colors in my hair with the main one being green. I was so devastated to see this happen. I woke up yestersay and tried everything I can think of to get it to a somewhat normal state! I used color fix to try and get the color out, which it did with the green, returning it to an orange color on some areas. Then I tried dying the orange with colorsilk dark brown and it ended up turning my hair

dark green. I then tried manic panic violet on it to try and see if I could get it to be purple instead, and it still did absolutely nothing. Washed my hair like 7 times with a dandruff shampoo to try and strip the color, but it is just not budging. Finally I tried the Vitamin C and Dandruff shampoo last night and it burned so severely that my scalp is still burning this morning! I am so beyond words sad at the moment! I have a really important event on Wednesday and I have no idea what to do! I have an apt with a color specialist tomorrow but I am so embarrassed to even go looking like this. So sorry for this epic message but I am at an extreme loss right now and could use any guidance you guys might have! Really looking forward to hearing back from you! Princabella I used color oops then even bleach to try to get the color out of my hair and both failed to get the purple out of my hair I read your article and honestly it was a life saver for me as my natural hair shade is strawberry blonde and I wanted to return to my hair color I used baking soda, lemon juice and enough dawn dish soap to make a lather then poured it over my hair and lathered it up I covered it with a shower cap and let it sit on my hair for about a half hour then washed it out and used my own shampoo and conditioner afterward all of the pink was gone and I was left with the bleached out blonde I started with

Chapter 3 : 10 Ways To Remove Stubborn Blue Hair Dye

2,4-DIAMINOANISOLE is a colorless needles. Primarily used (along with salts such as 2,4-diaminoanisoole sulfate) as a component of hair & fur dye formulations.(NIOSH,

More particularly, it concerns compositions of this character containing as para components compounds of formula: SPC2 Or their acid addition salts, in which: In addition, this invention relates to certain of these p-phenylenediamine derivatives which are novel compounds. It has long been a practice in the hair dyeing art to employ p-phenylenediamine or p-toluenediamine in hair dye compositions. These are ordinarily contained in so-called "oxidation dye mixtures" and are sometimes referred to as the "para components". They are dye intermediates rather than dyes, since their color must still be developed by reaction with another kind of dye intermediate called a "coupling component" also contained in the oxidation dye mixture by means of an oxidizing agent. The "oxidation dye mixture" is generally employed by mixing it with a solution of an oxidizing agent, generally hydrogen peroxide, just prior to the application of the "oxidation dye mixture" to the head. This serves to effect the oxidative coupling of the para components present with the coupling components, thereby producing a variety of colored products e. One chief disadvantage of the conventionally employed "para components" is that the colors developed by them with various coupling components undergo marked changes under conditions to which hair is ordinarily subjected. These developed colors do not show sufficient resistance to shampooing, do not exhibit good resistance to acid or alkaline perspiration and are not sufficiently fast to light. When these para components are used in hair dyeing compositions, the shades undergo very substantial changes in the strength and hue of dyeing. In particular, the shades become "warmer" or redder and the strengths weaken. It has been found that these disadvantages of the prior art "para components" tend, to a large degree, to be eliminated by employing compounds defined in Formula I above as the "para components". It is accordingly an object of the present invention to provide oxidative hair dyeing compositions suitable for dyeing hair including "living" human hair which employ said para components. It is also an object of the present invention to provide a method for dyeing hair which employs the aforesaid compositions. It is a further object of the present invention to provide certain new para components for use in said compositions. Other and more detailed objects of this invention will be apparent from the following description and claims. Although Applicants do not want to be bound by any theory, it is their belief that the resistance to change exhibited by the colors developed by their para components, at least in the case of the preferred compounds, is due in large measure to the presence of a either two substituent groups on the amine nitrogen bonded to the number-1 carbon atom of the benzene ring in Formula I above, or b the presence of one substituent group on the amine nitrogen and one substituent ortho to the amine nitrogen on the aforesaid benzene ring. The presence of these substituents interferes sterically with the normal resonance of the resulting indamine and indophenol coupling products; in particular, their presence makes less probable the assumption of a quinoid structure by that ring bearing said substituents. This in turn makes less probable the further reaction of the indamines and indophenols as by cyclization to produce a change of color generally to be redder than the original indamine or indophenol. In those less favorable cases where there is only one substituent on the 1-amino group, and no substituent on the ring ortho to that group, there is no inhibition of resonance, but further reaction of the indophenols and indamines by cyclization is diminished when there is also a substituent R. A few compounds, somewhat related to those defined in Formula I above, are known in the prior art as components of hair dyeing compositions. These, however, have certain disadvantages which make them unsuitable as hair dye components. Thus, for example, German Pat. This compound, although it shows advantages over p-phenylenediamine or p-toluenediamine, is unsuitable because of its toxicity. As a matter of fact, it is more toxic than the p-phenylenediamine which the present invention seeks to replace. In contrast to this, the N,N-bis 2-hydroxyethyl -p-phenylenediamine structurally related thereto and encompassed by the present invention has been found to be safe. This is an isomer of one of the species of the present invention; namely, N,2-dimethyl-p-phenylenediamine. The latter, however, has the distinct advantage of giving a bluish violet brown color when coupled with resorcinol, as compared with the less desirable

yellowish brown color obtained with the prior art 2,6-dimethyl derivative. Resorcinol is a universal component of oxidation dye mixtures. Since the brown coupling product with resorcinol is the principal ingredient of the oxidized mixture, and the greatest contributor to the final shade, it is important that it be as blue as possible, in order to maintain the drabness of the shade as long as possible during wear. Moreover, it is common practice to add to oxidation dye mixtures a so called "meta components" e. This is used for shading purposes and is known to be relatively unstable to wearing. By using N,2-dimethyl-p-phenylenediamine as para component, in line with this invention, as distinguished from the 2,6-dimethyl derivative, a portion of the undesirable meta component may be eliminated since part of the blue color needed is supplied by the N,2-dimethyl-p-phenylenediamine resorcinol coupling product. Any compound falling within the definition of Formula I above is suitable for the present purposes. Thus, it may be a straight chain or branched chain alkyl radical which is preferably lower alkyl, e. By way of illustration, the following alkyl groups may be mentioned as typical examples: In the case where R. The alkyl chain is preferably a lower alkyl chain having from 2 to 6 carbon atoms. Typical mono and polyhydroxyalkyl radicals of this character are 2-hydroxyethyl; 3-hydroxypropyl; 2-hydroxypropyl; tris hydroxymethyl methyl; 1,3-dihydroxymethyl-propyl; 2,3-dihydroxypropyl; 1,3-dihydroxypropyl, etc. Cl, Br, I, or F. When it is alkoxy, the alkoxy group will usually contain 1 to 6 carbon atoms, e. A large number of compounds that are useful as "para components" in compositions of the present invention are well-known compounds which can be prepared by any of a variety of known procedures. Their preparation is illustrated in examples below. In addition a number of these "para components" are novel compounds. These may be described generally by the formula: The alkyl moiety of the hydroxyalkyl radical will ordinarily be a lower alkyl chain and will preferably contain from 2 to 6 carbon atoms. Typical hydroxyalkyl radical include 2-hydroxyethyl; 3-hydroxypropyl; tris hydroxymethyl methyl; 1,3-dihydroxymethyl-propyl; 2,3-dihydroxypropyl and 1,3-dihydroxypropyl etc. When it is halogen it may be Cl, Br, I, F. In addition to using the para components in the form of their free bases, it is also possible in accordance with this invention to make compositions using the acid addition salts of these free bases. This is, in fact, desirable when the free base is inherently unstable to air oxidation. Among the acid salts which can be used one may mention the acid hydrogen sulfate, the neutral sulfate, the monohydrochloride, the dihydrochloride, the hydrobromide, the toluenesulfonate, the acetate, the citrate, the tartrate, and the like. In any case, whether the free base or its salt with an acid is used, the final pH of the composition is preferably adjusted so as to be alkaline, as hereinafter described, and the composition is essentially the same. In preparing the "oxidation dye mixture" of this invention one or more of the dye intermediates defined by said Formula I may be incorporated in the mixture. The quantity of dye intermediate, i. Ordinarily, it will constitute in the free base form from between 0. Generally, when these are present the combined quantity of new and known para components will fall within the range mentioned above. In addition to para components, the hair dyeing compositions of this invention contain one or more coupling components, which react with the para compounds under oxidative conditions. These coupling components comprise a well-known class of compounds of the hair dye art which are known to react oxidatively i. A number of very different types of chemical compounds are known to function as coupling components. The most important are phenols, m-phenylenediamines, m-aminophenols and compounds containing active methylene groups. Phenols react with para components, in the presence of oxidizing agents, to produce indophenols. These are usually blue or violet compounds, although resorcinols give yellow or brown colored compounds under these conditions. The brown colors obtained from the reaction of resorcinols are commonly used to produce the depth of a shade. Examples of phenols useful in oxidation dye compositions of this invention are pyrogallol, resorcinol, pyrocatechol and alpha-naphthol. Examples of m-phenylenediamines commonly useful in the present oxidation dye compositions are m-phenylenediamine, 2,4-diaminoanisole and m-toluenediamine. The products are usually violet in color and are used in modifying shades. Examples of aminophenols useful herein are 2,4-diaminophenol, m-aminophenol, aminoresorcinol, 1,5-aminohydroxynaphthalene and 1,8-aminohydroxynaphthalene. Compounds containing active methylene groups are also capable of reacting with the oxidatively activated para components. The products are imino compounds of various types and are yellow or red in color. Examples of active methylene compounds employable in the present invention are

3-methylpyrazolone-5, 1-phenylmethylpyrazolone-5, 1,3-dimethylpyrazolone-5, acetoacetic acid anilide, benzoylacetotoluide and nicotinoylacetanilide. Still other oxidation dye intermediates may be present in the compositions of this invention which produce colored products under oxidative conditions by more complex mechanisms. This may include one or more self-coupling, or coupling with the para components or with other intermediates present. Among these may be mentioned hydroquinone, catechol, 1,5-naphthalenediol, o-phenylenediamine, o-aminophenol. The quantity of coupling components and other dye intermediates contained in the oxidation dye mixture will vary depending on the shade desired. In general, the combined intermediates other than para will constitute between about 0. It is sometimes desirable to add to said "oxidation dye mixture" dyes which are already colored. These are generally added for blending purposes to obtain natural-looking colors in the final dyeing operation. One class of dyes which may be used for this purpose is the nitro dyes and this component is generally referred to herein as the "nitro dye component". The only limitation that is placed on a nitro dye to be useful in the present invention is that it be one whose color is not destroyed by the oxidizing agent used in the final color development of the oxidizable components. By way of illustrating suitable nitro dyes, mention may be made of the following: The quantity of "nitro dye component" is usually, however, when it is employed it will comprise from about 0. In addition to the above components, the oxidation dye mixture of the present invention may contain other ingredients commonly found in prior art mixtures of this character. These include dispersing or surface active agents, soaps, solvents, thickeners, conditioning agents, alkaline agents, buffers, antioxidants, sequestering agents, perfumes, etc. The pH of the oxidation dye mixture of this invention will generally be on the basic side. It is preferred, however, that this pH be in the range of about 8 to 12. Any of a wide variety of alkalizing agents can be used to adjust the pH of the dyeing composition on the basic side. Ammonium hydroxide, because of its freedom from toxicity over a wide concentration range and its economy, is an acceptable alkalizing agent. However, there can be used in place of, or together with, ammonia any other compatible ammonia derivative as an alkalizing agent, such as an alkylamine, such as ethylamine, or triethylamine; or alkanolamine, such as monoethanolamine or diethanolamine. Likewise, any other of the common alkalizing agents may be used, such as sodium or potassium hydroxide, sodium or potassium carbonate, sodium phosphate, sodium hydrogen phosphate, sodium silicate, and the like. Among the soaps which may be present in the compositions of this invention may be mentioned the sodium, ammonium or potassium salts of lauric, stearic, palmitic, oleic, linoleic or ricinoleic acid. Among the surface active agents useful in the present invention, mention may be made of the water-soluble surface-active agents. These can be anionic, non-ionic or cationic. Illustrative of the various types of water soluble surface active agents there can be mentioned: Illustrative of specific surfactants there can be mentioned; sodium lauryl sulfate; polyoxyethylene lauryl ester; myristyl sulfate; glyceryl monostearate; sodium salt of palmitic methyl taurine; cetyl pyridinium chloride; lauric diethanolamide; polyoxyethylene stearate; stearyl dimethyl benzyl ammonium chloride; dodecyl benzene sodium sulfonate; nonyl naphthalene sodium sulfonate; dioctyl sodium sulfosuccinate; sodium N-methyl-N-oleoyl taurate; oleic acid ester of sodium isothionate; sodium dodecyl sulfate; the sodium salt of 3,9-diethyl-tridecanolsulfate and the like. The quantity of water-soluble surface-active agent when present can vary over a wide range, such as that of from about 0. Various organic solvents may also be present in the oxidation dye mixture for the purpose of solubilizing a dye intermediate or any other component which may be insufficiently soluble in water. Generally, the solvent selected is such as to be miscible with water and innocuous to the skin, and includes for example, ethanol, isopropanol, glycerine, ethylene glycol, propylene glycol, ethylene glycol monoethyl ether, diethylene glycol, diethylene glycol monoethyl ether, etc.

Chapter 4 : 10 Ways to Remove Hair Colour - blog.quintoapp.com

[Note: The primary use (including its salts such as 2,4-diaminoanisole sulfate) is a component of hair & fur dye formulations.] MW:

This recommendation is based primarily upon a preliminary analysis of National Cancer Institute data indicating laboratory rats and mice fed 2,4-diaminoanisole sulfate experienced a statistically significant excess of site-specific malignant tumors as compared to controls. Caution is also indicated by NIOSH epidemiologic studies which suggest an elevated incidence of cancer among cosmetologists. As an interim measure, pending further evaluation of the carcinogenic potential of 2,4-diaminoanisole in the workplace, NIOSH believes it would be prudent to minimize occupational exposure to 2,4-diaminoanisole. This Bulletin summarizes the results of the National Cancer Institute animal study, the NIOSH epidemiologic studies, other pertinent data, their implications for occupational health, and precautions for handling products containing 2,4-diaminoanisole in the workplace. Approximately three-quarters of the current oxidation hair dye formulations contain 2,4-diaminoanisole in concentrations ranging from approximately 0. The concentration is determined by the shade of the dye. NIOSH is unaware of any current domestic production of 2,4-diaminoanisole. Imports of 2,4-diaminoanisole are on the order of 25, pounds per year. Potential Occupational Exposures NIOSH estimates that approximately , workers have potential occupational exposure to 2,4-diaminoanisole. Hairdressers and cosmetologists comprise the largest portion of workers with potential exposure. Gloves are usually worn by hairdressers when applying hair dyes. A relatively small number of fur dyers are probably exposed to higher levels of 2,4-diaminoanisole. A report 1 based on data from a case-control study of 25, hospital admissions between and at Roswell Park Memorial Institute suggests an excess of cancer of specific genital sites corpus uteri, ovaries among hairdressers and cosmetologists. Another study currently being conducted by NIOSH is also suggestive of excess cancer among cosmetologists. This study involves a sample of 53, records which are representative of the , Social Security disability awards made to female workers between and Thus, the preliminary analysis of the Social Security Administration disability data is consistent with the hypothesis that persons employed in occupations classified within the broad category of cosmetology may be at elevated risks of developing a neoplasm due to exposures of occupational origin. Other relevant epidemiologic studies with conflicting results have been reported. NIOSH believes that its studies do suggest an association between cancer and employment as cosmetologists and hairdressers. However, it is recognized that cosmetologists and hairdressers are exposed to a large variety of substances, and it is difficult at this time to attribute any excess incidence of cancer to either hair dyes in general or 2,4-diaminoanisole in particular. Laboratory Studies Preliminary analyses of National Cancer Institute data indicate that male and female laboratory rats and mice fed 2,4-diaminoanisole sulfate in their diets for seventy-eight weeks experienced a statistically significant excess of site-specific malignant tumors as compared to controls. Groups of fifty male and fifty female Fisher rats and B6C3Fl mice were used in the test. Fifty animals of each sex of each species served as controls. After the seventy-eight week treatment period, observation of the mice continued for an additional thirteen weeks and observation of the rats continued for an additional twenty-six weeks. Significant excess cancer was observed in the thyroid gland and integumentary system skin of high dose exposed rats of both sexes, as well as in the thyroid gland of high dose exposed mice, and in the lymphatic system of low dose exposed mice. In other studies, diaminoanisole was tested by skin application to laboratory rodents. Testing by skin application has considerable merit since this route of administration approximates that resulting from the use of hair dyes. Laboratory mice and rats painted with 2,4-diaminoanisole have been reported to experience no statistically significant excess of cancer. NIOSH understands that recent and still unpublished data acquired by the Food and Drug Administration indicate that 2,4-diaminoanisole penetrates the skin and thereby enters the system of both man and rhesus monkey. This indicates that skin contact with diaminoanisole must be avoided in the workplace. There are reports indicating that 2,4-diaminoanisole is mutagenic in bacterial systems 9 and in drosophila. In addition, empirical correlations have suggested a relationship between mutagenicity, especially in bacterial strains, and

carcinogenicity in higher animals. Substances that cause cancer in experimental animals must be considered to pose a potential cancer risk in man. Although safe levels of exposure to carcinogens have not yet been demonstrated, decreasing exposure to carcinogens does reduce their probability of initiating cancer development. While the carcinogenicity of 2,4-diaminoanisole is being further evaluated, the National Institute for Occupational Safety and Health recommends, as an interim and prudent measure, that occupational exposure to 2,4-diaminoanisole and its salts be minimized. Exposures should be limited to as few employees as possible while minimizing workplace exposure levels with engineering and work practice controls. In particular, skin exposures should be avoided. Although substitution is a possible control measure, NIOSH recommends that caution be exercised in selecting a substitute for hair and fur dye formulations containing 2,4-diaminoanisole. Alternatives should be fully evaluated with regard to possible human health effects. This is particularly important in view of the many questions which have been raised recently regarding the safety of numerous components of hair dye formulations. National Cancer Institute, 58, , National Cancer Institute, 59, ,

Chapter 5 : CDC - NIOSH Pocket Guide to Chemical Hazards - 2,4-Diaminoanisoole (and its salts)

2,4-Diaminoanisoole and its sulfate salt have been used in the preparation of dyes, especially hair and fur dyes, as an intermediate in the production of C.I. Basic Brown 2 and as a corrosion inhibitor for steel (Budavari,).

It works best on semi-permanent colours and can remove levels of tone. It will not affect your natural colour. You will need effervescent Vitamin C tablets powder is fine but tablets work slightly better and shampoo. Use 1 or 2 1,mg tablets or g of Vitamin C powder. If using tablets crush them between two spoons and collect up the powder in a bowl. I recommend you use an old towel to catch any colour run-off and a plastic cap. Mix your powdered Vitamin C with a large squirt of cheap shampoo. Apply this to your hair immediately and work it through your hair ensuring every strand is covered. Cover your hair with a plastic cap to prevent it from dripping into your eyes. Check your hair every minutes and leave it on your hair for a maximum of 20 minutes before rinsing out. I tried both Emergen-C powder which I had on hand and went out an bought the tablets. I think maybe they were using it on hair that had been dyed within a few weeks€ unlike me where my hair was blue for many months. If your blonde hair has gone too ashy or you still have a slight tint from your last colour hanging around, a few washes with an anti-dandruff shampoo will lighten it up significantly. Many hair dye removal tips online discuss using anti-dandruff shampoo. I tried this 3 times across 2 days with no big results. Simply mix up some bleach powder and 20 volume peroxide in a 1: Apply to your hair immediately and take all the precautions you would when dealing with bleach to protect your skin and clothing. Check your hair every 5 minutes, up to around 30 minutes before washing out the mixture. A bleach bath will lighten up your existing colour but may also affect your natural colour. Swimming in the sea can also lighten your colour. If you can safely give your hair a little bit of sun exposure over a few days you will notice a difference in colour. Bath salts are a mixture of soluble minerals that are added to bath water and usually include Epsom salts and sodium bicarbonate. To use, just run a bath, sprinkle in some bath salts and soak your hair for as long as possible. From the comments I got the remaining 3 methods I would try before giving in and just waiting for the blue to fade naturally. So, I went with a method covered in this youtube video that suggests using a color opposite of the blue on the color wheel. I mixed about a 1: Then I hopped in the shower and lathered it up. I let it sit on the hair for minutes while I finished showering and shaving€ then I rinsed€. Seriously, the tiny dime sized amount of dish soap that washes your dishes x20 was in my hair. So well, I wish I had tried it first to see how it would affect my hair before all the other fading techniques I tried. Just take a look at the before and after pics below. Since it worked so well, the next day, I did the same thing and ended up with a very light shade of sky blue the rest of my hair was completely blonde.

Chapter 6 : 2,4-Diaminoanisole | C7H10N2O - PubChem

*2,4-Diaminoanisole Dyes. The National Institute for Occupational Safety and Health (NIOSH) recommends that 2,4-diaminoanisole (4-methoxy-m-phenylenediamine) and its salts * be handled in the workplace as if they were human carcinogens.*

Description United States Patent Brody et al. Clairol Incorporated, New York, [22] Filed: Mentis Oxidative hair dye composition containing as para component compounds of the formula: More particularly, it concerns compositions of this character containing as para components compounds of formula: R is alkyl or hydroxyalkyl, R is hydrogen or hydroxyalkyl; R is hydrogen, alkyl, alkoxy or halogen; and R occupies any one of the remaining positions on the benzene radical and is hydrogen, alkyl, alkoxy or halogen; providing that R is hydrogen when R, is alkyl, alkoxy or halogen and providing that at least two of R R R or R are other than hydrogen. In addition, this invention relates to certain of these pphenylenediamine derivatives which are novel compounds. It has long been a practice in the hair dyeing art to employ p-phenylenediamine or p-toluenediamine in hair dye compositions. These are ordinarily contained in so-called oxidation dye mixtures and are sometimes referred to as the para components. They are dye intermediates rather than dyes, since their color must still be developed by reaction with another kind of dye intermediate called a coupling component also contained in the oxidation dye mixture by means of an oxidizing agent. The oxidation dye mixture" is generally employed by mixing it with a solution of an oxidizing agent, generally hydrogen peroxide, just prior to the application of the oxidation dye mixture to the head. This serves to effect the oxidative coupling of the para components present with the coupling components, thereby producing a variety of colored products e. One chief disadvantage of the conventionally employed para components is that the colors developed by them with various coupling components undergo marked changes under conditions to which hair is ordinarily subjected. These developed colors do not show sufficient resistance to shampooing, do not exhibit good resistance to acid or alkaline perspiration and are not sufficiently fast to light. In particular, the shades become warmer or redder and the strengths weaken. It has now been found that these disadvantages of the prior art para components tend, to a large degree, to be eliminated by employing com pounds defined in Formula 1 above as the para components. It is accordingly an object of the present invention to provide oxidative hair dyeing compositions suitable for dyeing hair including living human hair which employ said para components. It is also an object of the present invention to provide a method for dyeing hair which employs the aforesaid compositions. It is a further object of the present invention to provide certain new para components for use in said compositions. Other and more detailed objects of this invention will be apparent from the following description and claims. The presence of these substituents interferes sterically with the normal resonance of the resulting indamine and indophenol coupling products; in particular, their pres ence makes less probable the assumption of a quinoid structure by that ring bearing said substituents. This in turn makes less probable the further reaction of the indamines and indophenols as by cyclization to produce a change of color generally to be redder than the original indamine or indiphenol. In those less favorable cases where there is only one substituent on the l-amino group, and no substituent on the ring ortho to that group, there is no inhibition of resonance, but further reaction of the indophenols and indamines by cyclization is diminished when there is also a substituent R in the meta-position 3- or 5- position in Formula I , since this is the position upon which cyclization occurs. A few compounds, somewhat related to those defined in Formula I above, are known in the prior art as components of hair dyeing compositions. These, however, have certain disadvantages which make them unsuitable as hair dye components. Thus, for example, German Pat. Thiszcompound, although it shows advantages over p-phenylenediamine or ptoluenediamine, is unsuitable because of its toxicity. As a matter of fact, it is more toxic than the pphenylenediamine which the present invention seeks to replace. In contrast to this, the N,N-bis 2-hydroxyethyl - p-phenylenediamine structurally related thereto and encompassed by the present invention has been found to be safe. This is an isomer of one of the species of the present invention; namely, N,2-dimethyl-pphenylenediamine. The latter, however, has the distinct advantage of giving a bluish violet brown color when coupled with resorcinol, as compared with the less desirable yellowish brown color

obtained with the prior art 2,6-dimethyl derivative. Resorcinol is a universal component of oxidation dye mixtures. Since the brown coupling product with resorcinol is the principal ingredient of the oxidized mixture, and the greatest contributor to the final shade, it is important that it be as blue as possible, in order to maintain the drabness of the shade as long as possible during wear. Moreover, it is common practice to add to oxidation dye mixtures a so called meta component e. This is used for shading purposes and is known to be relatively unstable to wearing. By using N,2-dimethyl-p-phenylenediamine as para component, in line with this invention, as distinguished from the 2,6-dimethyl derivative, a portion of the undesirable meta component may be eliminated since part of the blue color needed is supplied by the N,2-dimethyl-p-phenylenediamine resorcinol coupling product. Any compound falling within the definition of Formula I above is suitable for the present purposes. When R, R' or R'' is alkyl in said formula, it may be any of a variety of alkyl groups. Thus, it may be a straight chain or branched chain alkyl radical which is preferably lower alkyl, e. By way of illustration, the following alkyl groups may be mentioned as typical examples: In the case where R, or R' or R'' is a hydroxyalkyl radical in Formula I, it may be a monohydroxy, dihydroxy, trihydroxy, or other polyhydroxyalkyl radical. The alkyl chain is preferably a lower alkyl chain having from 2 to 6 carbon atoms. Typical mono and polyhydroxyalkyl radicals of this character are 2-hydroxyethyl; 3-hydroxypropyl; Z-hydroxypropyl; tris hydroxymethyl - methyl; 1,3-dihydroxy-Z-methyl-propyl; 2,3-dihydroxypropyl; 1,3-dihydroxypropyl, etc. When R or R' or R'' is halogen in Formula I, it can be any halogen atom, e. When it is alkoxy, the alkoxy group will usually contain 1 to 6 carbon atoms, e. A large number of compounds that are useful as para components" in compositions of the present invention are well-known compounds which can be prepared by any of a variety of known procedures. Their preparation is illustrated in examples below. In addition a number of these para components are novel compounds. These may be described generally by the formula: When R, R' or R'' is hydroxyalkyl in Formula II above it may be monohydroxy-, dihydroxy-, trihydroxy or other polyhydroxyalkyl radical. Typical hydroxyalkyl radical include Z-hydroxyethyl; 3,4-dihydroxypropyl; tris hydroxymethyl methyl; 1,3-dihydroxy-Z-methyl-propyl; 2,3-dihydroxypropyl and 1,3-dihydroxypropyl etc. When R is alkoxy in Formula II above it will usually contain 1 to 6 carbon atoms. When it is halogen it may be Cl, Br, I, F. In addition to using the para components in the form of their free bases, it is also possible in accordance with this invention to make compositions using the acid addition salts of these free bases. This is, in fact, desirable when the free base is inherently unstable to air oxidation. Among the acid salts which can be used one may mention the acid hydrogen sulfate, the neutral sulfate, the monohydrochloride, the dihydrochloride, the hydrobromide, the toluenesulfonate, the acetate, the citrate, the tartrate, and the like. In any case, whether the free base or its salt with an acid is used, the final pH of the composition is preferably adjusted so as to be alkaline, as hereinafter described, and the composition is essentially the same. In preparing the oxidation dye mixture of this invention one or more of the dye intermediates defined by said Formula I may be incorporated in the mixture. The quantity of dye intermediate, i. Ordinarily, it will constitute in the free base form from between 0.1 to 10 percent by weight of the composition. When the acid addition salt of the para component is used, the quantity will be larger depending on the particular salt used. In addition to the para components used in this invention, other known para components may also be present, as for example p-toluenediamine, p-aminophenol, p-aminodiphenylamine, 4,4'-diaminodiphenylamine, p-phenylenediamine, 2,6-dimethyl-p-phenylenediamine, 2,5-diaminopyridine, and the like. Generally, when these are present the combined quantity of new and known para components will fall within the range mentioned above. In addition to para components, the hair dyeing compositions of this invention contain one or more coupling components, which react with the para compounds under oxidative conditions. These coupling components comprise a well-known class of compounds in the hair dye art which are known to react oxidatively i. A number of very different types of chemical compounds are known to function as coupling components. The most important are phenols, m-phenylenediamines, m-aminophenols and compounds containing active methylene groups. Phenols react with para components, in the presence of oxidizing agents, to produce indophenols. These are shade; usually they are employed to make a shade less warm. Examples of m-phenylenediamines commonly useful in the present oxidation dye compositions are m-phenylenediamine, 2,4-diaminoanisole and m-toluenediamine. The products are usually violet in color and are used in modifying shades. Examples of aminophenols useful herein are 2,4-diaminophenol, m-aminophenol, aminoresorcinol,

1,5-aminohydroxynaphthalene and 1,8-aminohydroxynaphthalene. Compounds containing active methylene groups are also capable of reacting with the oxidatively activated para components. The products are imino compounds of various types and are yellow or red in color. Examples of active methylene compounds employable in the present invention are 3-methylpyrazolone-5, 1-phenylmethylpyrazolone-5, 1,3-dimethylpyrazolone-5, acetoacetic acid anilide, benzoylacetotoluide and nicotinoylacetanilide. Still other oxidation dye intermediates may be present in the compositions of this invention which produce colored products under oxidative conditions by more complex mechanisms. This may include one or more of self-coupling, or coupling with the para components or with other intermediates present. Among these may be mentioned hydroquinone, catechol, 1,5-naphthalenediol, o-phenylenediamine, o-aminophenol. The quantity of coupling components and other dye intermediates contained in the oxidation dye mixture will vary depending on the shade desired. In general, the combined intermediates other than para will constitute between about 0. It is sometimes desirable to add to said oxidation dye mixture dyes which are already colored. These are generally added for blending purposes to obtain natural-looking colors in the final dyeing operation. One class of dyes which may be used for this purpose is the nitro dyes and this component is generally referred to herein as the nitro dye component. A large number of nitro dyes are known in the prior art which are suitable for this purpose. The only limitation that is placed on a nitro dye to be useful in the present invention is that it be one whose color is not destroyed by the oxidizing agent used in the final color development of the oxidizable components. By way of illustrating suitable nitro dyes, mention may be made of the following: The quantity of nitro dye component. Usually, however, when it is employed it will comprise from about 0. In addition to the above components, the oxidation dye mixture of the present invention may contain other ingredients commonly found in prior art mixtures of this character. These include dispersing or surface active agents, soaps, solvents, thickeners, conditioning agents, alkaline agents, buffers, antioxidants, sequestering agents, perfumes, etc. The pH of the oxidation dye mixture of this invention will generally be on the basic side. It is preferred, however, that this pH be in the range of about Any of a wide variety of alkalizing agents can be used to adjust the pH of the dyeing composition on the basic side. Ammonium hydroxide, because of its freedom from toxicity over a wide concentration range and its economy, is an acceptable alkalizing agent. However, there can be used in place of, or together with, ammonia any other compatible ammonia derivative as an alkalizing agent, such as an alkylamine, such as ethylamine, or triethylamine; or alkanolamine, such as monoethanolamine or diethanolamine. Likewise, any other of the common alkalizing agents may be used, such as sodium or potassium hydroxide, sodium or potassium carbonate, sodium phosphate, sodium hydrogen phos- Among the soaps which may be present in the compositions of this invention may be mentioned the sodium, ammonium or potassium salts of lauric, stearic, palmitic, oleic, linoleic or ricinoleic acid. Among the surface active agents useful in the present invention, mention may be made of the water-soluble surface-active agents. These can be anionic, non-ionic or cationic. Illustrative of the various types of water soluble surface active agents there can be mentioned: Illustrative of specific surfactants there can be mentioned:

Chapter 7 : 2,4-Diaminoanisole sulfate | C7H12N2O5S - PubChem

Colorless needles. Primarily used (along with salts such as 2,4-diaminoanisole sulfate) as a component of hair & fur dye formulations. (NIOSH,).

Chapter 8 : 2,4-Diaminoanisole and 2,4-Diaminoanisole Sulphate (IARC Summary & Evaluation, Volume 2

2,4-Diaminoanisole Sulfate is a synthetic, off-white to violet solid that is soluble in water and blog.quintoapp.com is used primarily as a component of oxidizing 'permanent' hair- and fur-dye formulations. 2,4-Diaminoanisole sulfate is also used as an intermediate in the production of C.I. Basic Brown 2, a dye commonly used in numerous consumer products.

Chapter 9 : IARC Publications Website - Some Thyrotropic Agents

DOWNLOAD PDF HAIR DYE: 2,4-DIAMINOANISOLE AND ITS SALTS

on all hair dyes containing 2,4-diaminoanisole or its sulfate was to become effective in April , and the chemicals were voluntarily removed from products before that time (IARC). 2,4-Diamino