

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
13 June 2002 (13.06.2002)

PCT

(10) International Publication Number  
**WO 02/45663 A1**

(51) International Patent Classification<sup>7</sup>: **A61K 7/043**

(21) International Application Number: PCT/US00/42513

(22) International Filing Date: 4 December 2000 (04.12.2000)

(25) Filing Language: English

(26) Publication Language: English

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(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ,  
DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR,  
HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,  
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,  
NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM,  
TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian  
patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European  
patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,  
IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF,  
CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

*For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.*

(54) Title: NAIL ENAMEL COMPOSITION CONTAINING A UREA-MODIFIED THIXOTROPIC AGENT

(57) Abstract: A nail enamel composition which contains, in a cosmetically acceptable solvent, at least one film-forming substance and at least one urea-modified thixotropic agent. The use of such a thixotropic agent gives nail enamel compositions with higher gloss, high clarity, improved aesthetics in the bottle, excellent thixotropic properties, and improved application properties.



**WO 02/45663 A1**

## NAIL ENAMEL COMPOSITION CONTAINING A UREA-MODIFIED THIXOTROPIC AGENT

### FIELD OF THE INVENTION

The present invention relates to a nail enamel composition with at least one of improved thixotropic properties and improved clarity in the bottle. More specifically, the invention relates to the use of a urea-modified compound as a thixotropic agent in a nail enamel composition.

### BACKGROUND

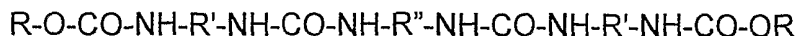
Various nail enamel compositions are known in the art. Nail enamel compositions typically contain, in an organic solvent or mixture of solvents, film-forming ingredients, plasticizing ingredients, and colorants. Generally, the composition also contains a thixotropic agent, which may act to thicken the composition in order to allow better spreading on the nail. The thixotropic agent may also act to suspend the colorant.

The classic thixotropic agent used in the prior art is a bentonite clay. Aromatic organic solvents in particular may cause these clays to swell, thus providing a gel with good thixotropic properties, *i.e.*, rendering the composition capable of passing from a gelled state to a liquid state simply by stirring and capable of going from liquid to gel after standing. A composition containing such a gel thus may exhibit relatively good dispersion stability without sedimentation or separation over a long period. Further, such compositions may not require the vigorous shaking that other compositions often require after extended periods of storage.

The clay thixotropes, however, may produce cloudy suspensions, rendering the composition opaque and often giving it a more or less yellowish color inside the bottle, unpleasant to the eye. Although this opacity is generally masked by the presence of colorants and/or pigments in the composition, the use of the clay thixotropes may diminish gloss in the final formulated nail enamel product. Thus the need remains for a thixotropic agent that will not affect the glossiness of the nail enamel and yet will have sufficient thixotropic properties such that the stability of the composition is not compromised.

**SUMMARY OF THE INVENTION**

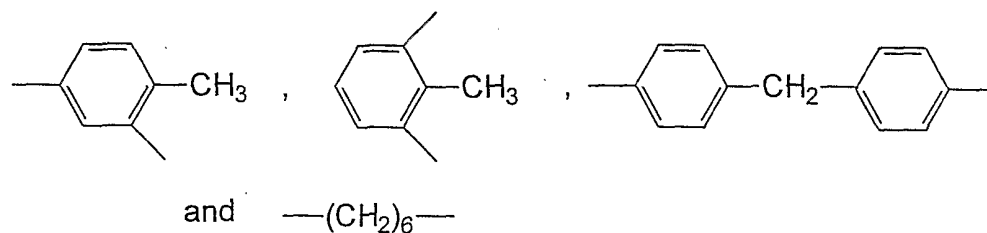
Accordingly, the present invention is drawn to a novel nail enamel composition containing, in a cosmetically acceptable solvent, at least one film-forming substance and at least one urea-modified thixotropic agent wherein the urea-modified thixotropic agent is a urea urethane having the following formula:



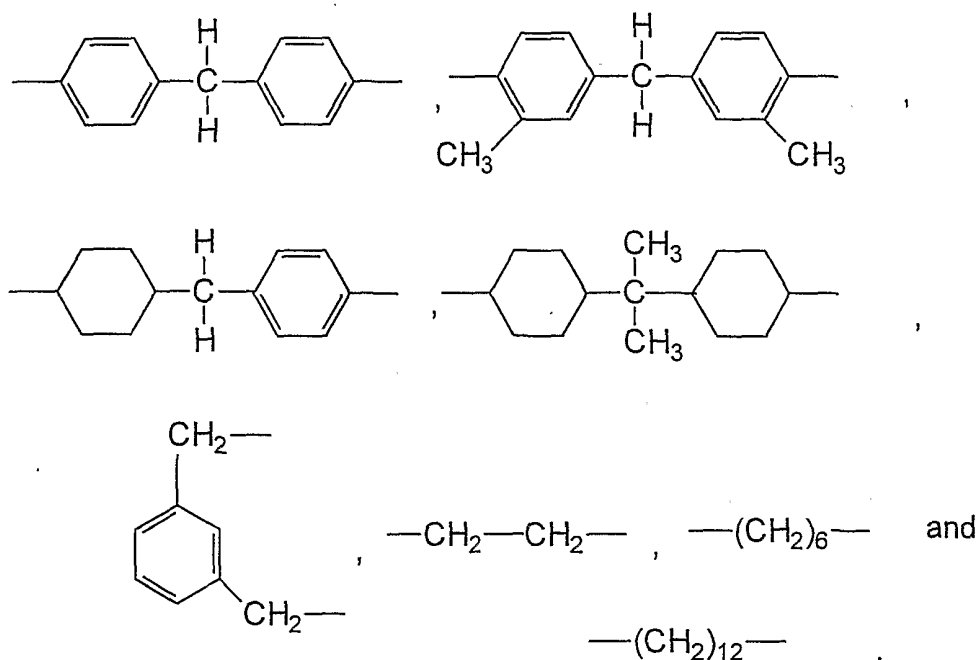
wherein

R is chosen from  $\text{C}_n\text{H}_{2n+1}-$  and  $\text{C}_m\text{H}_{2m+1}(\text{C}_p\text{H}_{2p}\text{O})_r-$ ; n is an integer having a value of from 4 to 22; m is an integer having a value of from 1 to 18; p is an integer having a value of from 2 to 4; and r is an integer having a value of from 1 to 10;

R' is chosen from:



and R'' is chosen from:



In one embodiment, the cosmetically acceptable solvent is a solvent system comprising diacetone alcohol and at least one additional solvent chosen from  $\text{C}_1$ - $\text{C}_6$  alkyl acetates and  $\text{C}_1$ - $\text{C}_6$  alkyl alcohols.

The nail enamel composition of the invention may also contain a plasticizer and optionally a coloring agent.

The present inventors have discovered that the use of a urea-modified thixotropic agent in place of, or in conjunction with, the clay thixotropes of the prior art, may result in a clear suspension with improved gloss and have further discovered that the clarity of the suspension may be further enhanced when the urea-modified thixotropic agent is present in a solvent system comprising diacetone alcohol and at least one additional solvent chosen from  $\text{C}_1$ - $\text{C}_6$  alkyl acetates and  $\text{C}_1$ - $\text{C}_6$  alkyl alcohols. In general, nail enamel compositions containing clay thixotropes only are difficult to process because their creation requires a great deal of high shear. Also, since the clay thixotropes are naturally occurring products, they can vary in quality and consistency. In contrast, the presently claimed compositions utilizing the urea-modified thixotrope, and in one embodiment, the urea-modified thixotrope in a specific solvent system, may be easy to produce consistently

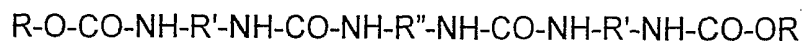
at optimum conditions because their creation may not require high shear processing.

### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Reference will now be made in detail to the embodiment(s) of the invention.

The presently claimed invention is drawn to a nail enamel composition which contains, in a cosmetically acceptable solvent, at least one film-forming substance and at least one urea-modified thixotropic agent. The use of such a thixotropic agent can give nail enamel compositions at least one of higher gloss, high clarity, improved aesthetics in the bottle, excellent thixotropic properties, and improved application properties. It has been discovered that at least one of these properties may be even more greatly enhanced where the cosmetically acceptable solvent is a solvent system comprising diacetone alcohol and at least one additional solvent chosen from  $C_1$ - $C_6$  alkyl acetates and  $C_1$ - $C_6$  alkyl alcohols.

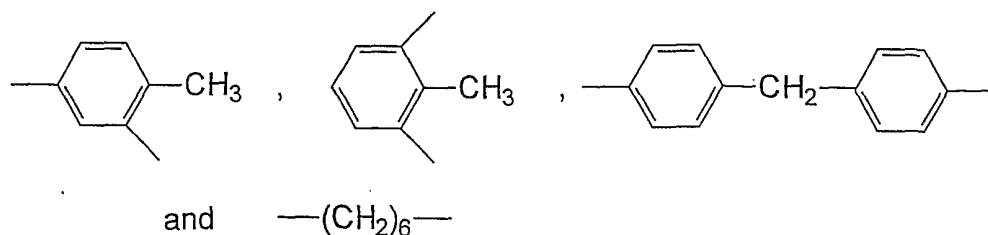
The urea-modified thixotropic agents used in the present invention are urea urethanes having the following formula:



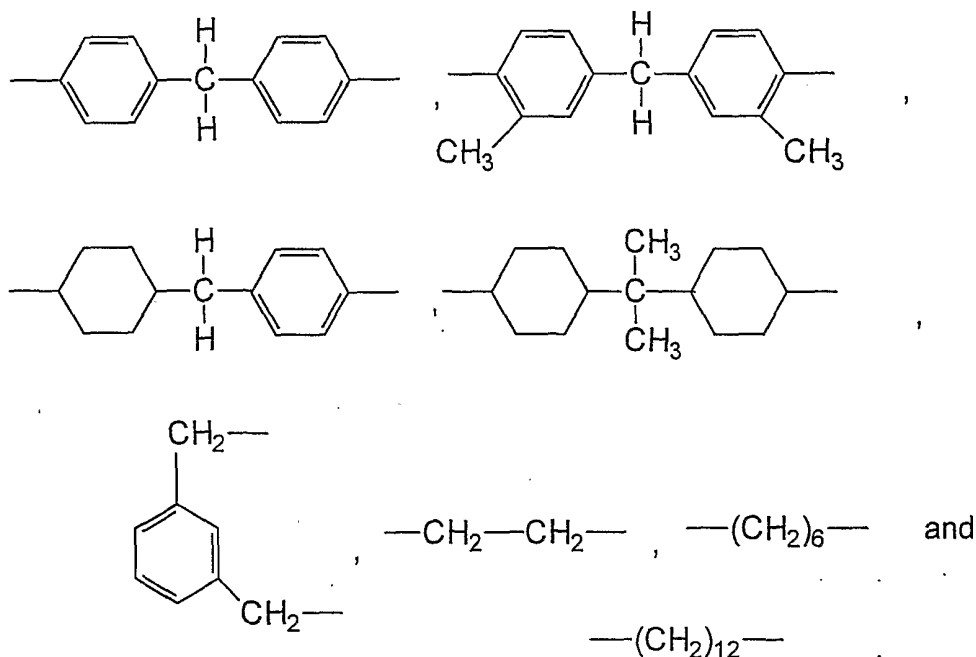
wherein

R is chosen from  $C_nH_{2n+1}$ - and  $C_mH_{2m+1}(C_pH_{2p}O)_r$ -; n is an integer having a value of from 4 to 22; m is an integer having a value of from 1 to 18; p is an integer having a value of from 2 to 4; and r is an integer having a value of from 1 to 10;

R' is chosen from:



and R'' is chosen from:



Such a urea-modified product can be purchased from BYK-Chemie in a dilute solution with N-methyl-pyrrolidone as solvent under the trade name of BYK®-410 and is generally described in U.S. Patent No. 4,314,924, the disclosure of which is hereby incorporated by reference herein. In one embodiment, the at least one urea-modified thixotropic agent may be present in an amount of from about 0.05 to about 1.00% relative to the weight of the composition. In another embodiment, the at least one urea-modified thixotropic agent may be present in an amount of from about 0.25 to about 0.75% relative to the weight of the composition.

The nail enamel composition of the invention may contain at least one additional thixotropic agent, used in conjunction with the at least one urea-modified agent. When such an additional thixotropic agent is present, the composition may comprise from about 0.10 to about 0.30% of the at least one urea-modified thixotropic agent relative to the weight of the composition and up to about 1.0% of the additional thixotropic agent. The additional thixotropic agent(s) may be chosen from conventional silica and bentonite clay agents. In one embodiment, the additional thixotropic agent is stearylalkonium hectorite, sold by RHEOX as BENTONE 27.

Film forming substances useful in the present invention include, but are not limited to, conventional film-forming agents such as nitrocellulose, other cellulose derivatives, such as cellulose acetate, cellulose acetate butyrate, and ethyl cellulose; polyesters; resins, such as polyurethane resins, alkyd resins, and polyvinyl resins such as polyvinyl acetate, polyvinyl chloride, polyvinylbutyrate; (meth)acrylic and vinyl copolymers such as styrene/butadiene copolymers, acrylate/vinyl acetate copolymers, acrylonitrile/butadiene copolymers, and ethylene/vinyl acetate copolymers.

In one embodiment, the primary film-forming agent may be nitrocellulose, which is known to give hardness and resistance to abrasion. If a second film-forming substance is present, this second film-forming substance may, for example, be chosen from cellulose acetate butyrate, polyesters, polyurethanes, and acrylates. In one embodiment, the film-forming substance may be present in an amount of from about 5% to about 20% by weight relative to the weight of the composition, for example, from about 10% to about 14%. Suitable modifiers for the primary film-forming agent include arylsulfonamide resins such as arylsulfonamide formaldehyde or epoxy resins.

The presently claimed composition also may contain at least one plasticizer. Plasticizers useful in the presently claimed nail enamel composition include plasticizers commonly employed in nail varnish compositions. These plasticizers encompass, but are not limited to, dibutyl phthalate, dioctyl phthalate, tricresyl phthalate, butyl phthalate, dibutoxy ethyl phthalate, diamylphthalate, tosyl amide, N-ethyl-tosyl amide, sucrose acetate isobutyrate, camphor, castor oil, citrate esters, glyceryl diesters, glyceryl triesters, tributyl phosphate, tri-phenyl phosphate, butyl glycolate, benzyl benzoate, butyl acetyl ricinoleate, butyl stearate, and dibutyl tartrate. In one embodiment, a plasticizer used in the present invention may be the mixture of acetyl tributyl citrate and N-ethyl tosyl amide. The plasticizer may, for example, be present in an amount of from about 3% to about 12% by weight relative to the weight of the composition.

The cosmetically acceptable solvents useful in the present invention are cosmetically acceptable organic solvents including, but not limited to toluene, xylene, C<sub>1</sub>-C<sub>6</sub> alkyl acetates, such as ethyl acetate, propyl acetate, and butyl acetate; ketones such as acetone or methyl ethyl ketone; alkanes such as hexane or heptane; C<sub>1</sub>-C<sub>6</sub> alkyl alcohols such as ethanol, isopropanol, and butanol; glycol ethers; N-methyl pyrrolidone; diacetone alcohol, and alkyl lactates. In one embodiment, the invention uses a solvent system comprising diacetone alcohol and at least one additional solvent chosen from C<sub>1</sub>-C<sub>6</sub> alkyl acetates and C<sub>1</sub>-C<sub>6</sub> alkyl alcohols. In another embodiment, the solvent system comprises diacetone alcohol, at least one C<sub>1</sub>-C<sub>6</sub> alkyl acetate and at least one C<sub>1</sub>-C<sub>6</sub> alkyl alcohol. The solvent or mixture of solvents may be present, in one embodiment, in an amount of from about 40% to about 80% by weight relative to the weight of the composition, and, in another embodiment, from about 65% to about 78%.

The nail enamel composition of the invention may also contain at least one coloring agent. Conventional coloring agents can be used, and examples include inorganic pigments such as titanium dioxide, iron oxides, titanated mica, iron oxide coated mica, ultramarine, chromium oxide, chromium hydroxide, manganese violet, bismuth oxychloride, guanine, and aluminum; pearlescent materials; and organic coloring agents such as ferric ammonium ferrocyanide, and D&C Red Nos. 6, 7, 34, Blue No. 1, Violet No. 2, and Yellow No. 5.

The inorganic pigments may be surface-treated as is customary to prevent migration or striation. Silicones and polyethylenes are most often used as the coatings for inorganic pigments and thus may be used according to the present invention. Colorant materials may also include chips or powder of mica or diamonds in the nail composition. Also useful are specialty materials giving rise to two-tone color effects such as liquid crystal silicones or multi-lamellar metallic particulates, which generally can be mixed with pigments or dyes to obtain a broader spectrum of brilliant color and increased luminous reflectance. Such materials are described in, e.g., U.S. Patent No. 3,438,796; U.S. Patent No. 4,410,570; U.S. Patent No. 4,434,010; U.S.



Patent No. 4,838,648; U.S. Patent No. 4,930,866; U.S. Patent No. 5,171,363; U.S. Patent No. 5,364,467; U.S. Patent No. 5,569,535; U.S. Patent No. 5,607,904; U.S. Patent No. 5,624,486; U.S. Patent No. 5,658,976; U.S. Patent No. 5,688,494; U.S. Patent No. 5,766,335; N. Häberle et al., "Right and Left Circular Polarizing Colorfilters made from Crosslinkable Cholesteric LC-Silicones," Conference Record of the 1991 International Display Research Conference (IEEE), pp. 57-59; R. Maurer et al., "Polarizing Color Filters made from Cholesteric LC-Silicones," SID 90 Digest (1990), pp. 110-113; H.-J. Eberle et al., "Inverse Angle Dependence of the Reflection Colours of Cholesteric Polymeric Liquid Crystals Mixed with Pigments," Liquid Crystals, 5(3), (1989), pp. 907-916; J. Pinsl et al., "Liquid Crystalline Polysiloxanes for Optical Once-Write Storage," J. Molec. Electr., Vol. 3 (1987), pp. 9-13; and D. Makow, "Reflection and Transmission of Polymer Liquid-Crystal Coatings and their Application to Decorative Arts and Stained Glass," Color Res. Applic. Vol. 11, No. 3, (1986), pp. 205-208, all of which are incorporated herein by reference in their entirety.

In one embodiment, the coloring agent may be present in the nail enamel composition in an amount up to about 5% by weight relative to the total weight of the composition. In another embodiment, the coloring agent is present in an amount of from 2% to 3% by weight.

The composition according to the invention may also include additives recognized by a person skilled in the art as being capable of incorporation into such a composition. For example, the composition may include at least one cosmetically active compound, which may be selected from vitamins, minerals, moisturizers, flavoring compounds, fragrances, masking agents, hardening agents such as silica and formaldehyde/glyoxal, UV absorbers, and fibers such as nylon and aramide fibers. Any art-recognized UV absorber can be used, both organic and inorganic. In one embodiment, inorganic UV absorbers include titanium dioxide and zinc oxide, both of which may be used in nanoparticulate form. In another embodiment organic UV absorbers include octocrylene, octylmethoxy cinnamate, and benzophenone.

Additional additive ingredients may include keratin and its derivatives, melanin, collagen, cystine, chitosan and its derivatives, ceramides, biotin, oligoelements, protein hydrolysates, and phospholipids.

A person skilled in the art can, without undue experimentation, select those optional additional compounds and/or their quantity, so that the advantageous properties of the composition according to the invention are not, or are not substantially, impaired by the inclusion of such additives.

The composition according to the invention may be prepared by a person skilled in the art on the basis of his or her general knowledge and according to the state of the art.

The composition according to the invention may be in the form of a product to be applied to the nails, such as a top coat, a base coat, or a pigmented nail lacquer or varnish.

The invention will be further clarified by the following examples, which are intended to be illustrative of the invention, but not limiting thereof.

### EXAMPLES

#### Example 1

Three compositions were formulated as set forth in the following table. The amounts listed are in grams.

INGREDIENTS	COMPOSITIONS		
	1	2	3
Ethyl Acetate	25.65	21	23.65
Butyl Acetate	25	24	25
Propyl Acetate	20	15	20
Nitrocellulose	10	14.7	10
Isopropyl Alcohol	5	5	5
Sucrose Acetate Isobutyrate	5	--	5
N-Ethyl Tosylamide	5	7.5	5
Tosylamide Epoxy Resin	2	9	2
Acrylates Copolymer	1.5	--	1.5
Stearalkonium Hectorite	--	1	--

INGREDIENTS	COMPOSITIONS		
	1	2	3
Etocrylene	0.5	0.5	0.5
Benzophenone-1	0.1	0.1	0.1
Colorants/Pearls	—	2	2
Modified Urea-Urethane (BYK 410)	0.25	0.2	0.25

Each of compositions 1-3 were visually compared with a "classic" nail enamel composition, *i.e.*, one containing only the traditional clay-based thixotrope. The comparisons are described below.

Composition 1, which was a formulation according to the invention but which contained no colorants, *i.e.*, was a clear top coat enamel. This formulation exhibited significantly improved body and viscosity, while maintaining excellent clarity, when compared to the "classic" composition.

Composition 2 was similar to composition 1 but did not contain sucrose acetate isobutyrate, one of the plasticizers, or acrylates copolymer, one of the film-formers. Composition 2 did contain, however, pigments and pearlescent colorants and, in addition to the urea-urethane (BYK-410) as a thixotrope, contained a clay-based thixotrope, stearalkonium hectorite. The result was a pigmented/pearlescent nail enamel with no perceptible (visual) differences over the "classic" compositions.

Finally, composition 3 was an inventive pigmented/pearlescent nail enamel utilizing only the modified urea-urethane as the thixotrope. This product displayed improved bottle aesthetics (gloss) and a smoother finish on the nail versus a "classic" nail enamel which utilized the clay type thixotropes.

Overall, the inventive compositions had higher gloss; better stability, *i.e.*, even with pigments that are normally difficult to suspend; and improved application properties, *e.g.*, almost no brush marks were perceptible on the nail after the composition dried, when compared to the "classic" compositions.

## Example 2

Four compositions were formulated as set forth in the following table. The amounts listed are in grams.

INGREDIENTS	COMPOSITIONS			
	4	5	6	7
Ethyl Acetate	24.8	22.8	24.4	23.8
Butyl Acetate	20.7	19.7	20.7	20.7
Propyl Acetate	9.7	9.7	9.7	9.7
Nitrocellulose	14	14	14	14
Isopropyl Alcohol	1.03	1.03	1.03	1.03
Butyl Alcohol	9	9	9	9
Diacetone Alcohol	4.5	4.5	4.5	4.5
Acrylates Copolymer	4.42	4.42	4.42	4.42
Triphenyl Phosphate	4.57	4.57	4.57	4.57
Tosylamide Epoxy Resin	2.4	2.4	2.4	2.4
Polyester Resin	2.4	2.4	2.4	2.4
Acetyl Tributyl Citrate	2	2	2	2
Polyethylene Teraphthalate	--	3	--	--
D&C Red #6 Barium Lake	--	--	0.3	--
D&C Red #34 Calcium Lake	--	--	0.1	--
D&C Red #7 Calcium Lake	--	--	--	0.1
Mica (Splendid Violet)	--	--	--	0.7
Ferric Ammonium Ferrocyanide	--	--	--	0.02
Modified Urea-Urethane (BYK 410)	0.5	0.5	0.5	0.5

Compositions 5, 6, and 7 are almost identical to inventive composition 4, but each contains a different colorant or additive.

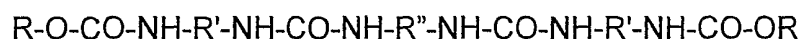
Specifically, composition 5 is a translucent nail enamel containing polyethylene teraphthalate, commonly known as "glitter" and having a particle size ranging from 100 microns to 0.32 cm. This composition displayed improved particle suspension and bottle aesthetics when compared to the "classic" composition. This example illustrates the ability of the present inventive compositions to suspend large particles even without the presence of the traditional clay or silica thixotropes, *i.e.*, using only the modified urea-urethane thixotrope and a solvent system comprising at least one C<sub>1</sub>-C<sub>6</sub> alkyl acetate, at least one C<sub>1</sub>-C<sub>6</sub> alkyl alcohol, and diacetone alcohol.

Composition 6 contains two red pigments. Composition 7 contains pearlescent pigments. Like the other inventive composition, suspension, gloss, and stability were all improved for compositions 6 and 7.

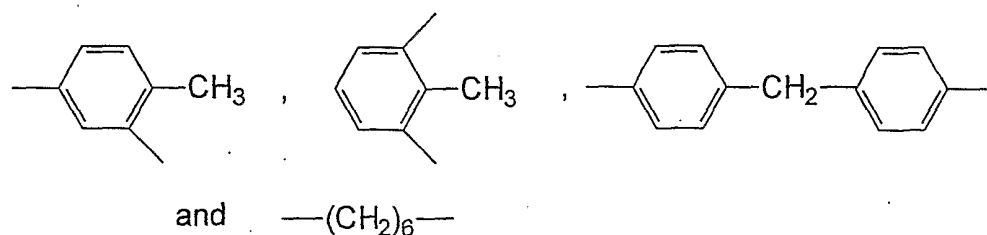
Overall, the inventive compositions had higher gloss; better stability, i.e., even with pigments that are normally difficult to suspend; and improved application properties, e.g., almost no brush marks were perceptible on the nail after the composition dried, when compared to the "classic" compositions.

What is claimed is:

1. A nail enamel composition comprising, in a cosmetically acceptable solvent:
  - at least one film-forming substance and
  - at least one urea-modified thixotropic agent, wherein said at least one urea-modified thixotropic agent is a urea urethane having the following formula:

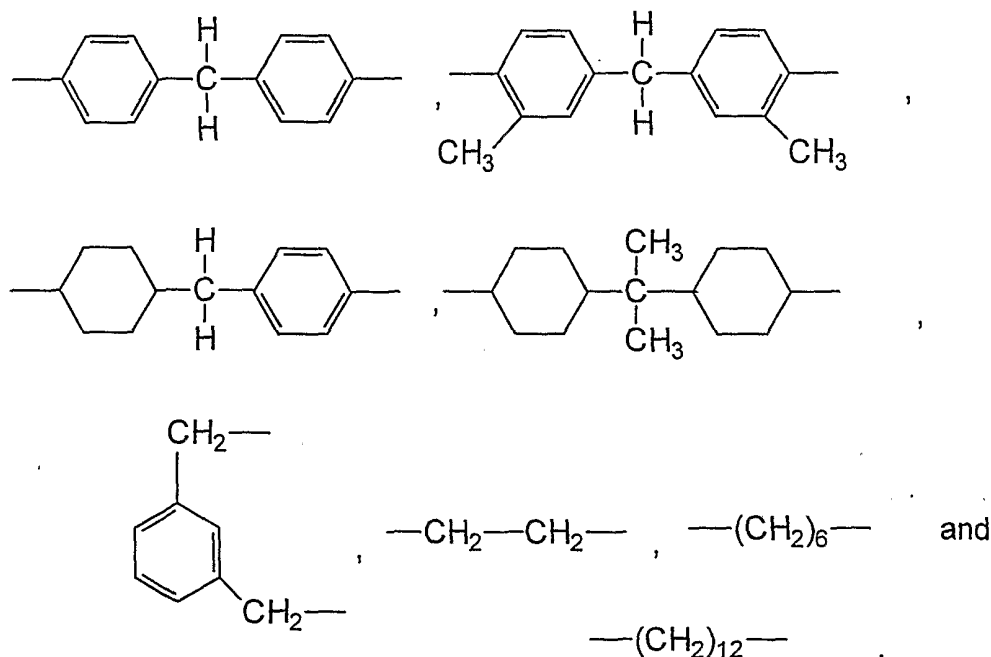


wherein: R is chosen from  $C_nH_{2n+1}-$  and  $C_mH_{2m+1}(C_pH_{2p}O)_r-$ ;  
 n is an integer having a value of from 4 to 22;  
 m is an integer having a value of from 1 to 18;  
 p is an integer having a value of from 2 to 4;  
 r is an integer having a value of from 1 to 10;  
 R' is chosen from:



and R'' is chosen from:

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2. A nail enamel composition according to claim 1, said composition further comprising at least one plasticizer.
3. A nail enamel composition according to claim 1, said composition further comprising an additional film-forming substance.
4. A nail enamel composition according to claim 1, said composition further comprising an additional thixotropic agent.
5. A nail enamel composition according to claim 1, said composition further comprising at least one coloring agent.
6. A nail enamel composition according to claim 1, wherein said at least one film-forming substance is chosen from nitrocellulose, other celluloses derivatives, resins, polyesters, and (meth)acrylic and vinyl copolymers.
7. A nail enamel composition according to claim 6, wherein said cellulose derivatives are chosen from cellulose acetate, cellulose acetate butyrate, and ethyl cellulose, said resins are chosen from alkyd resins, polyvinyl resins, and polyurethane resins, and said (meth)acrylic and vinyl copolymers are chosen from acrylonitrile/butadiene copolymers,

styrene/butadiene copolymers, acrylate/vinyl acetate copolymers, and ethylene/vinyl acetate copolymers.

8. A nail enamel composition according to claim 7, wherein said polyvinyl resins are chosen from polyvinyl acetate, polyvinyl chloride, and polyvinyl butyrate.

9. A nail enamel composition according to claim 6, wherein said at least one film-forming substance is nitrocellulose.

10. A nail enamel composition according to claim 3, wherein said additional film-forming substance is chosen from cellulose acetate butyrate, polyesters, polyurethanes, and acrylates.

11. A nail enamel composition according to claim 1, further comprising a modifier for said at least one film-forming substance, wherein said modifier is chosen from arylsulfonamide resins.

12. A nail enamel composition according to claim 1, wherein said cosmetically acceptable solvent is chosen from toluene; xylene; C<sub>1</sub>-C<sub>6</sub> alkyl acetates; ketones; alkanes; C<sub>1</sub>-C<sub>6</sub> alkyl alcohols; glycol ethers; N-methyl pyrrolidone; diacetone alcohol; and alkyl lactates.

13. A nail enamel composition according to claim 12, wherein said cosmetically acceptable solvent is a solvent system comprising diacetone alcohol and at least one additional solvent chosen from C<sub>1</sub>-C<sub>6</sub> alkyl acetates and C<sub>1</sub>-C<sub>6</sub> alkyl alcohols.

14. A nail enamel composition according to claim 13, wherein said C<sub>1</sub>-C<sub>6</sub> alkyl acetates are chosen from ethyl acetate, propyl acetate, and butyl acetate and said C<sub>1</sub>-C<sub>6</sub> alkyl alcohol is chosen from ethanol, isopropanol, and butanol.

15. A nail enamel composition according to claim 2, wherein said at least one plasticizer is chosen from dibutyl phthalate, dioctyl phthalate, tricresyl phthalate, butyl phthalate, dibutoxy ethyl phthalate, diamylphthalate, tosyl amide, N-ethyltosylamide, sucrose acetate isobutyrate, camphor, castor oil, citrate ester, glyceryl diester, glyceryl triester, tri-phenyl phosphate, butyl glycolate, benzyl benzoate, tributyl phosphate, butyl acetyl ricinoleate, butyl stearate, and dibutyl tartrate.



16. A nail enamel composition according to claim 15, wherein said at least one plasticizer is chosen from acetyl tributyl citrate and N-ethyl tosylamide.

17. A nail enamel composition according to claim 4, wherein said additional thixotropic agent is stearalkonium hectorite.

18. A nail enamel composition according to claim 1, wherein said cosmetically acceptable solvent is present in an amount ranging from about 40% to about 80% by weight relative to the total weight of the composition.

19. A nail enamel composition according to claim 1, wherein said at least one film-forming substance is present in an amount ranging from about 5% to about 20% by weight relative to the total weight of the composition.

20. A nail enamel composition according to claim 1, wherein said at least one plasticizer is present in an amount ranging from about 3% to about 12% by weight relative to the total weight of the composition.

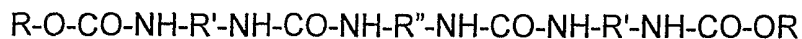
21. A nail enamel composition according to claim 1, wherein said at least one urea-modified thixotropic agent is present in an amount ranging from about 0.05% to about 1.00% relative to the total weight of the composition.

22. A nail enamel composition according to claim 21, wherein said at least one urea-modified thixotropic agent is present in an amount ranging from about 0.25% to about 0.75% relative to the total weight of the composition.

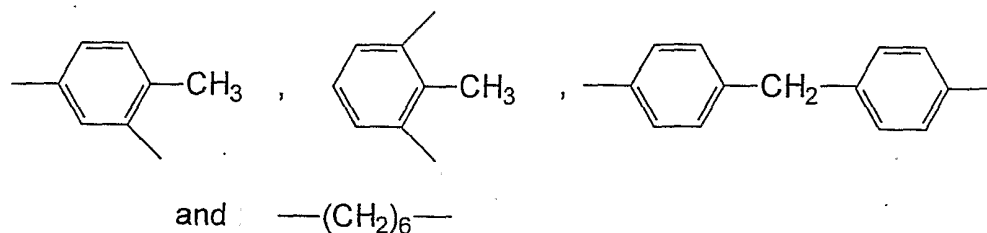
23. A nail enamel composition according to claim 21, wherein said composition comprises from about 0.10 to about 0.30% of said at least one urea-modified thixotropic agent and up to about 1% of an additional thixotropic agent, relative to the total weight of the composition.

24. A nail enamel composition according to claim 1, wherein said composition further comprises at least one cosmetically active compound selected from vitamins, minerals, moisturizers, flavoring agents, fragrances, masking agents, hardening agents, UV absorbers and fibers.

25. A nail enamel composition comprising, in a cosmetically acceptable solvent system comprising a diacetone alcohol and at least one additional solvent chosen from  $C_1$ - $C_6$  alkyl acetates and  $C_1$ - $C_6$  alkyl alcohols: at least one film-forming substance and at least one urea-modified thixotropic agent, wherein said at least one urea-modified thixotropic agent is a urea urethane having the following formula:

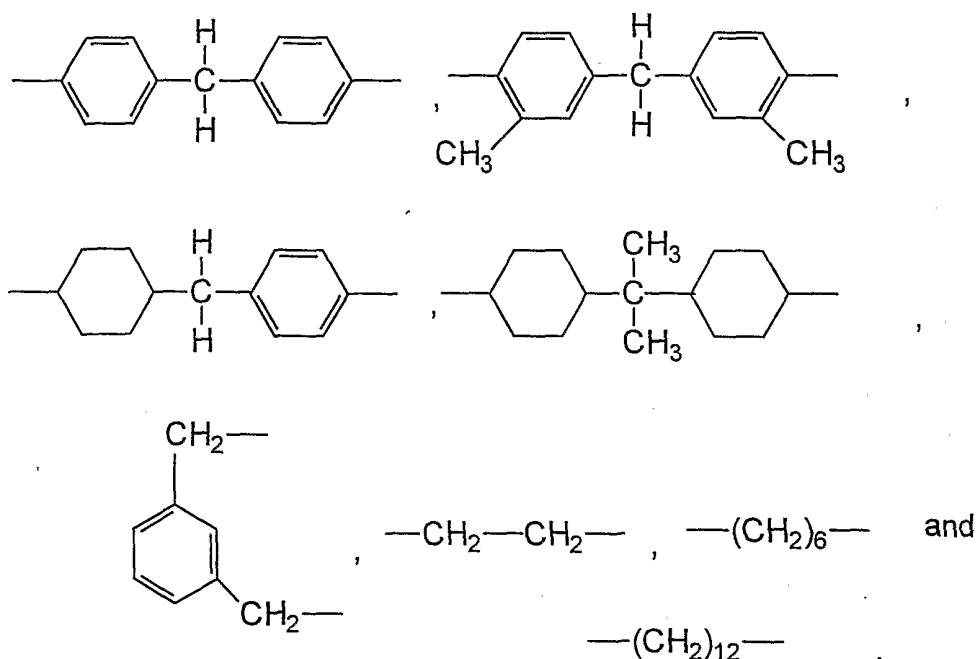


wherein: R is chosen from  $C_nH_{2n+1}-$  and  $C_mH_{2m+1}(C_pH_{2p}O)_r-$ ;  
 n is an integer having a value of from 4 to 22;  
 m is an integer having a value of from 1 to 18;  
 p is an integer having a value of from 2 to 4;  
 r is an integer having a value of from 1 to 10;  
 R' is chosen from:



and R'' is chosen from:

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26. A nail enamel composition according to claim 25, wherein said  $\text{C}_1$ - $\text{C}_6$  alkyl acetates are chosen from ethyl acetate, propyl acetate, and butyl acetate.

27. A nail enamel composition according to claim 25, wherein said  $\text{C}_1$ - $\text{C}_6$  alkyl alcohols are chosen from ethanol, isopropanol, and butanol.

28. A nail enamel composition according to claim 25, wherein said cosmetically acceptable solvent system comprises diacetone alcohol, at least one  $\text{C}_1$ - $\text{C}_6$  alkyl acetate, and at least one  $\text{C}_1$ - $\text{C}_6$  alkyl alcohol.

## INTERNATIONAL SEARCH REPORT

Inter 1al Application No

PCT/US 00/42513

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61K7/043

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	US 6 156 325 A (FARER ALAN ET AL) 5 December 2000 (2000-12-05) claims	1-28
A	WO 00 27347 A (OREAL ;COLEMAN NALLY DEBRA J (US); CARRION DANUVIO (US)) 18 May 2000 (2000-05-18) claims 1,8-14	1-11

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## ° Special categories of cited documents :

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\*&amp;\* document member of the same patent family

Date of the actual completion of the international search

27 July 2001

Date of mailing of the international search report

03/08/2001

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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 00/42513

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		EP 1043967 A	18-10-2000