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PROCESS AND COMPOSITIONS FOR MENDING FINGERNAILS

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This invention relates to the repair of broken fingernails and has particular reference to a composition and process for mending broken fingernails which do not impart a change in the appearance of the nail after it has been mended or, in the alternative, impart only such a change as would be normally desired, e.g., such as that imparted by conventional fingernail polish.

One of the principal objects of the present invention is to provide a mending composition and process for broken fingernails which do not alter the appearance of the nail after it has been repaired.

Another object of this invention is to provide a composition and process for repairing broken fingernails which make it possible for conventional nail polish to be applied to the nail after it has been repaired.

A further object of the present invention is to provide a composition and process for the repair of broken fingernails comprising the application of a mixture of colorless lacquer, water and colorless fibers.

A still further object of the present invention is to provide a composition and process for the repair of broken fingernails, comprising the application of a mixture of colorless lacquer, water, a wetting agent and colorless fibers.

Another object of the present invention is to provide a composition and process for the repair of broken fingernails which make it possible to simultaneously repair the broken fingernail and apply a conventional nail polish.

A still further object of the present invention is to provide a composition and process for the repair of broken fingernails comprising the application of a mixture of colored nail polish, water and colored or colorless fibers.

Still another object of the present invention is to provide a composition and process for the repair of broken fingernails comprising the application of a mixture of colored nail polish, water, a wetting agent and colored or colorless fibers.

Other objects and advantages of the present invention will be readily apparent from the following detailed description of the preferred embodiments thereof.

Briefly, the present invention comprises a composition comprising a colorless nail lacquer, water, short-length colorless fibers and, optionally, a wetting agent, and the process of applying this composition to broken fingernails in order to mend them. The present invention also includes a colored nail polish containing colored or colorless fibers and, optionally, water with or without the addition of a wetting agent, and the process of applying this composition to a broken fingernail to simultaneously mend and color the fingernail.

The following specific examples are illustrative of the composition and process of this invention, but it is to be understood that the invention is not to be limited to the specific details thereof:

EXAMPLE I

The following composition was prepared:

Nylon fibers (three denier, one-eighth inch length) 1%.
Clear lacquer 89%.
Water 10%.

The clear nail lacquer used in this example was a nail base coat, i.e., a solution of nitro-cellulose in suitable organic solvents. It is available commercially as Nail Satin Base Coat, manufactured by Max Factor & Co.

EXAMPLE II

The following composition was prepared:

Nylon fibers (three denier, one-eighth inch in length) 1%.
Clear nail lacquer 89%.
5% aqueous solution of stearyl dimethyl hydroxethyl ammonium stearate 10%.

The clear nail lacquer used in this example was the same as that used in Example I.

The nylon fibers used in Examples I and II were colorless.

EXAMPLE III

The following composition was prepared:

Nylon fibers (three denier, one-eighth inch in length) 1%.
Nail polish 99%.

The nail polish used in this example had the following composition:

	Percent
Nitrocellulose	12.5
Santolite MHP (an aryl sulfonamide formaldehyde resin)	10.0
Camphor	3.0
Dibutylphthalate	5.0
Ethyl acetate	25.0
Butyl acetate	23.5
Toluene	20.0
Titanium dioxide	0.5
Amaranth (C.I. No. 184)	0.5

The nylon fibers used in this example were colored so as to blend with the colored nail polish.

EXAMPLE IV

Nylon fibers (three denier, one-eighth inch in length) 1%.
Water 10%.
Colored nail polish 89%.

The colored nail polish and nylon fibers used in this example were the same as those used in Example III.

EXAMPLE V

Nylon fibers, (three denier, one-eighth inch in length) 1%.
5% aqueous solution of stearyl dimethyl hydroxyethyl ammonium stearate 10%.
Colored nail polish 89%.

The colored nail polish and nylon fibers were the same as those used in Example IV.

EXAMPLE VI

Nylon fibers 1%.
Clear nail lacquer 99%.

The clear nail lacquer used in this example was the same as that used in Example I.

The compositions described in the examples were applied to broken fingernails in amounts ranging from 0.02 gram to about 0.08 gram with satisfactory results. It was found that for the normal broken fingernail, about 0.04 gram gave satisfactory results. The mending compositions were applied to a split or cracked nail in the usual manner of applying lacquer or nail polish to the surface of fingernails. Of course, if the nail was broken, such that it was hanging loosely, it was necessary to

hold the broken pieces of the nail in their unbroken position during the application of the mending composition. When the mending composition dried, the sides of the crack or split were securely held in position.

While the exact nature of the bonding mechanism of the composition and process of the present invention is not known, it is possible that the fibers provide a bridging structure between the sides of the crack or split in the broken fingernail.

It is a primary feature of the present invention that, after mending, the broken fingernail has an appearance substantially the same as that of a normal unbroken nail. Thus, there are no unsightly ridges or lumps of mending material on the nail. Furthermore, in those cases where a composition comprising clear nail lacquer was used, the nail was not discolored by the mending composition. In those cases where a composition comprising a colored nail polish was used, the appearance of the mended nail was virtually the same as that of a normal unbroken nail after application of conventional nail polish.

Where a composition comprising colorless nail lacquer was used, the mended nails were susceptible to the subsequent application of conventional fingernail polish.

While the compositions described in Examples III and VI gave satisfactory results, it was found that a vast improvement resulted from the addition of water to the composition. A further improvement was found where the wetting agent, as well as water, was added to the composition. This was highly surprising because water is generally considered to be extremely undesirable in nail lacquers and polishes and considerable effort is usually exerted to keep these substances as free from water as possible. Water is, of course, immiscible with nail lacquer or polish and forms a water-in-oil emulsion when added thereto. Such emulsions ordinarily have poor coating properties and are thus considered undesirable for application to fingernails.

However, the combination of the emulsion with the nylon fibers proved to have better coating properties than the mixture of fibers and nail polish or lacquer in the absence of water. The exact reasons for this improvement are not known, but it would seem that the emulsified water tends to hold the fibers in suspension, probably at the interfaces of the two phases of the emulsion. This, in turn, results in the improvement of the coating characteristics of the compositions of Examples I, II, IV and V because the fibers of these compositions are less apt to separate from the liquid phase of the composition during application. It has been found that, in the absence of water, a substantial amount of care must be exercised in applying the mending composition, e.g., the compositions of Examples III and VI, in order to prevent the fibers from separating from the remainder of the composition. Particular difficulty is encountered when a brush is used to apply these compositions because of a pronounced tendency of the fibers in the mending composition to adhere to the bristles of the brush rather than the broken fingernail which is to be mended. However, this difficulty is obviated by the addition of water, which is generally undesirable, to the mending composition.

A still further improvement in coating characteristics of the mending composition is exhibited by those compositions to which a wetting agent has been added, e.g., Examples II and V. It would appear that the wetting agent further enchances the property of the water of holding the fibers in suspension.

It has been found that highly satisfactory mending compositions result when about five to twenty percent by weight of water is added to the mending composition. It has also been found that further improvement in the mending composition results when about 0.01 to about 1% by weight of wetting agent is added.

Cationic wetting agents have been found best suited for the present invention, but anionic, nonionic and amphoteric wetting agents are also operable. Examples of the latter three types of wetting agents are, respectively, Alipal CO–436, ammonium salt of sulfate ester of and alkyl phenoxypolyoxyethylene ethanol, Triton X–200, sodium salt of an alkylaryl polyether sulfonate, and Deriphat 170C, an N alkyl amino propionic acid. Exemplary of the cationic wetting agents which may be used in the practice of the present invention are quaternary ammonium compounds in which the negative radical is a fatty acid, having from 12 to 16 carbon atoms. However, the present invention is not to be considered to be limited to any particular wetting agent.

The practice of the present invention is not limited to a specific size or type of fiber. For example, fibers comprising the following materials have been found to give satisfactory results: rayon, polyacrylonitrile, polyethylene terephthalate, cellulose acetate, polyolefines (e.g., polyethylene, polypropylene, etc.) polyurethanes, polyesters, vinyl polymers, copolymers of these polymers, e.g., a vinyl chloride-acrylonitrile copolymer, such as dynel, cotton and silk. It is, of course, required that the fibers be small enough so that they are not readily visible to the naked eye. In this regard, it has been found that fibers of about one-eighth inch in length and about 0.1 mm. in diameter are highly satisfactory. Furthermore, the fibers must, of course, be insoluble or only slightly soluble in the lacquer or polish phase of the composition.

The colorless lacquer used in the practice of this invention is preferably of the resin-base type. Exemplary of the synthetic resins which may be used for this purpose are: polyvinyl acetate, polyesters, aryl sulfonamides, ethyl cellulose, cellulose acetate butyrate, cellulose acetate, polyvinyl butyral, polyvinyl formal, glyceryl phthalate and methyl methacrylate. The following natural resins have also been found satisfactory: dammar, mastic, sandarac, benzoin and rosin (colophony). The solvent phase of the lacquers prepared from one or more of these or similar resins may be any suitable organic solvent, e.g., acetone, acetic acid, ethyl acetate, dioxane, pyridine, ethanol and tetrachlorothane have been found satisfactory.

The colored nail polish used in the practice of this invention may be a resin-base lacquer pigmented with certified dye lakes or with suitable inorganic pigments.

The colored fibers used in the practice of this invention may be produced according to any of the conventional textile dyeing processes.

When using mending compositions comprising colored nail polish according to the practice of this invention, it has been found that colorless fibers may be used as well as fibers which are colored so as to blend with the nail polish. In general, however, it is preferred to use harmoniously colored fibers with colored nail polish compositions.

The amount of fiber used in the mending composition may be varied within limits which give good mending characteristics without undesirably thickening the composition. For example, it has been found that from about 0.1 to about 5% by weight of most conventional fibers may be used. Furthermore, it has been found that mending compositions of the present invention which contain nylon fibers have optimum application properties at 1%, by weight, nylon fibers.

Having fully described the present invention, it is to be understood that this invention is not to be limited to the details set forth, but is of the full scope of the appended claims.

We claim:

1. A fingernail repair composition comprising a fluid mixture of lacquer comprising nitrocellulose, short-length fibers and water, said fibers having a length and diameter such that they are not readily visible to the naked eye, and being present in an amount from about 0.1 to about 5% by weight of the composition.

2. The composition of claim 1 wherein the water is present in an amount from about 5 to about 20% by weight.

3. The composition of claim 1 wherein the fibers have a length of about one-eighth inch and a diameter of about 0.1 mm.

4. The composition of claim 1 wherein the fibers comprise nylon.

5. The composition of claim 1 wherein the fibers comprise a vinyl chloride-acrylonitrile polymer.

6. The composition of claim 1 wherein the lacquer is colorless and the fibers are colorless.

7. The composition of claim 1 wherein the lacquer is a colored nail polish and the fibers are of a color which blends with the polish.

8. The composition of claim 1 wherein the lacquer is a colored nail polish and the fibers are colorless.

9. The composition of claim 1 wherein the composition also comprises a wetting agent.

10. The composition of claim 9 wherein the wetting agent is present in an amount from about 0.01% to about 1% by weight.

11. The composition of claim 9 wherein the wetting agent is selected from the group consisting of anionic, cationic, nonionic and amphoteric wetting agents.

12. A fingernail repair composition comprising a mixture of 89% colorless lacquer comprising nitrocellulose, 10% water, and 1% short-length fibers, said fibers having a length and diameter such that they are not readily visible to the naked eye.

13. The composition of claim 12, wherein said composition contains 0.5% wetting agent.

14. A process for repairing broken fingernails comprising applying to the broken fingernail a composition comprising a fluid mixture of lacquer, short-length fibers and water, said fibers having a length and diameter such that they are not readily visible to the naked eye, and being present in an amount from about 0.1 to about 5% by weight of the composition.

15. The process of claim 14 wherein said lacquer comprises nitrocellulose.

16. The process of claim 14 wherein the composition is applied in an amount of about 0.04 gram.

17. A process for repairing broken fingernails comprising applying to the broken fingernails a composition comprising a fluid mixture of lacquer, short-length fibers and water, which composition also contains a wetting agent, said fibers having a length and diameter such that they are not readily visible to the naked eye, and being present in an amount from about 0.1 to about 5% by weight of the composition.

18. A process for repairing broken fingernails comprising applying to the broken fingernails a fluid composition comprising a colorless lacquer colorless short-length fibers and water, said fibers having a length and diameter such that they are not readily visible to the naked eye, and being present in an amount from about 0.1 to about 5% by weight of the composition.

19. A process for repairing broken fingernails comprising applying to the broken fingernails a fluid composition comprising a mixture of 89% colorless lacquer, 10% water and one percent short-length fibers, said fibers having a length and diameter such that they are not readily visible to the naked eye, and being present in an amount from about 0.1 to about 5% by weight of the composition.

20. A process for repairing broken fingernails comprising applying to the broken fingernails a fluid composition comprising a mixture of 89% colorless lacquer, 10% water and one percent short-length fibers, said composition also containing 0.5% wetting agent, based on the weight of the said mixture, said fibers having a length and diameter such that they are not readily visible to the naked eye, and being present in an amount from about 0.1 to about 5% by weight of the composition.

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