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COSMETIC CREAM CONTAINER
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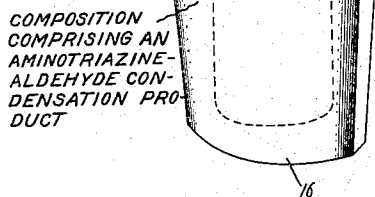
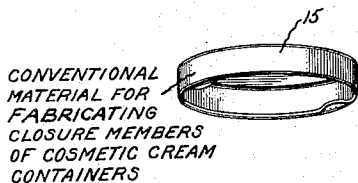
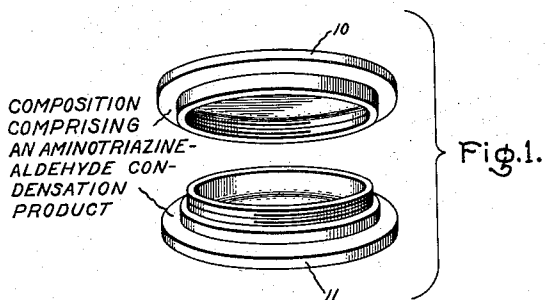
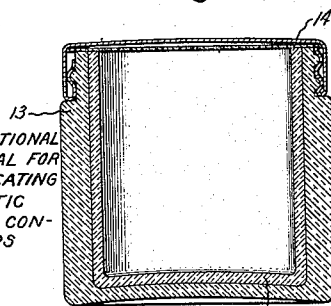


Fig. 2.



COMPOSITION COMPRISING AN
AMINOTRIAZINE-ALDEHYDE
CONDENSATION PRODUCT

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COSMETIC CREAM CONTAINER

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7 Claims. (Cl. 215—1)

This invention relates to cosmetic cream containers in which at least the inner surfaces that contact the cosmetic cream packaged therein comprise essentially a modified or unmodified aminotriazine-aldehyde condensation product in an insoluble, infusible state. More particularly the invention is concerned with containers for cosmetic creams such as cold cream, hand cream, vanishing cream, toning cream, rouge, lipstick and the like, which containers are composed or formed of a hardened composition comprising a heat-hardened (heat-set) resinous condensation product of a mixture comprising an aminotriazine, e. g., melamine, and an aldehyde, e. g., formaldehyde.

The novel aspects of my invention are set forth in the appended claims. The invention itself, however, better will be understood from the following description and the accompanying drawing forming a part of this application. In this drawing Fig. 1 is a perspective view of a cosmetic cream container produced in accordance with one embodiment of my invention; Fig. 2 is a view in section of a cosmetic cream container made in accordance with another embodiment of the invention; and Fig. 3 is a perspective view of a cosmetic cream container illustrating another embodiment of the invention.

In the art of packaging cosmetic materials and especially cosmetic creams, that is, cosmetic preparations containing substantial proportions of oils, fats or the like, there long has been need for such containers that would be relatively inexpensive, mechanically strong, less brittle than glass, of lighter weight than either metals or glass, warm to the touch, resistant to the solvent action of the cream contained therein, light-resistant in pastel shades, and crack- and strain-free over a prolonged period, that is, at least until the cosmetic preparation has been packaged, sold and used. The containers also should be odorless and in certain cases (e. g., containers for lipstick creams) should be tasteless. Furthermore, the material from which the container is shaped should lend itself to high speed production methods.

Phenolic resins have been suggested as materials for the manufacture of cosmetic cream containers but have been found to be unsuitable for numerous reasons. Primarily such resins are not light-resistant and, if made in pastel shades, undergo serious discoloration during display of the cosmetic in the stores and after purchase. Another objection is that a phenolic odor and taste eventually develop in the cream on stand-

ing. Attempts also have been made to use urea-formaldehyde resins for producing cosmetic cream containers. Such resins, although light-resistant, deteriorate with shelf life of the cosmetic container made therefrom due, for one reason, to differences in moisture content between the inside and outside of the container. This difference in moisture content causes the formation of fissures and cracks and often results in such swelling of the walls of the container that it ruptures. Containers made of protein resins are even more affected upon prolonged shelf life than those made of urea resins. Containers formed of aniline-aldehyde resins impart taste, odor and color to the creams. Containers made from the vinyl-type resins usually are swollen by the softening action of the cream. Cosmetic cream containers formed of styrene tend to craze during shelf life. To the best of my knowledge and belief, none of the synthetic resins heretofore suggested or tried as fabrication materials for cosmetic cream containers has been able fully to meet the above-mentioned requisites for such containers. Each one has been deficient in one or another, or several, of the requirements.

In accordance with the present invention the above difficulties in the production of satisfactory cosmetic cream containers are obviated, and containers meeting the requirements stated in the second paragraph of this specification are obtained, by fabricating the container from a composition comprising a heat-hardenable (heat-curable) aminotriazine resin, more particularly a heat-hardenable composition comprising a thermosetting condensation product of a mixture comprising an aldehyde, e. g., formaldehyde, and an aminotriazine, e. g., melamine. Such heat-curable compositions may be molded under heat or under heat and pressure into cosmetic cream containers of the desired size and shape. At molding temperatures the thermosetting aminotriazine-aldehyde condensation product is converted into an insoluble and infusible state. Containers wherein at least the inner walls are surfaced with an insoluble and infusible composition comprising a cured aminotriazine-aldehyde resin, e. g., a cured melamine-formaldehyde resin, are highly resistant to the solvent action of cosmetic creams such as cold creams, vanishing creams, etc., and therefore are especially adapted for the packaging of such materials.

The aminotriazine resins used in manufacturing the cosmetic cream containers of this invention may be prepared, for example, by reacting to resin formation a mixture comprising an am-

inotriazine and an aldehyde. Illustrative examples of aminotriazines that may be used are triazines containing at least one amino group, for instance melamine, ammeline, ammelide, formoguanamine, 2-amino-1, 3, 5-triazine and their substitution products. Other examples are derivatives of melamine such as 2, 4, 6-trihydrazino-1, 3, 5-triazine, 2, 4, 6-trialkyltriamino-1, 3, 5-triazines (e. g., 2, 4, 6-triethyltriamino-1, 3, 5-triazine, etc.), 2, 4, 6-triaryltriamino-1, 3, 5-triazines (e. g., 2, 4, 6-triphenyltriamino-1, 3, 5-triazine, etc.), melam, melem, melon, etc. Nuclearily substituted aminotriazines also may be employed, e. g., 1-cyano-2-amino-4, 6-dimethyl-1, 3, 5-triazine, 2-chloro-4, 6-diamino-1, 3, 5-triazine, 6-methyl-2, 4-diamino-1, 3, 5-triazine, 2-alkyl-4-amino-6-hydroxy-1, 3, 5-triazines (for example, 2-methyl-4-amino-6-hydroxy-1, 3, 5-triazine, etc.), 2-aryl-4-amino-6-hydroxy-1, 3, 5-triazines (for example, 2-phenyl-4-amino-6-hydroxy-1, 3, 5-triazine, etc.) and the like. Additional examples of aminotriazines carrying various substituents that may be employed are the alicyclic substituted triazines and the substituted ammelines carrying acyl groups. Preferably I use melamine.

Formaldehyde or compounds engendering formaldehyde, e. g., paraformaldehyde, hexamethylene tetramine, etc., comprise the preferred aldehydic component in the preparation of the aminotriazine-aldehyde resinous condensation product. However, for some applications I may use, for instance, acetaldehyde, propionaldehyde, butyraldehyde, acrolein, methacrolein, crotonaldehyde, benzaldehyde, furfural, etc., mixtures thereof, or mixtures of formaldehyde (or compounds engendering formaldehyde) with one or more such aliphatic, aromatic or heterocyclic aldehydes.

In many cases the cosmetic container advantageously may be formed of a modified aminotriazine resin, for example a resinous condensation product (more particularly a co-condensation or inter-condensation product) of a mixture comprising an aldehyde, an aminotriazine and at least one other aldehyde-reactable (methylol-forming) organic compound, e. g., urea, dicyandiamide, malonic diamide, itaconic diamide, maleic diamide, etc. Resins comprising the product of reaction of a mixture comprising melamine, urea and formaldehyde, or of a mixture comprising melamine, dicyandiamide and formaldehyde are more specific examples of modified aminotriazine resins that may be employed. In producing containers for packaging certain cosmetic creams, the container may be fabricated from a composition comprising an aminotriazine resin and an other thermosetting resin. For example, the container may be formed by molding under heat and pressure a thermosetting composition comprising a heat-hardenable melamine-formaldehyde resin and a heat-hardenable urea-formaldehyde resin or, in lieu of the latter or in addition thereto, a heat-hardenable resin obtained by reaction of formaldehyde with one or more of the following: malonic diamide, itaconic diamide and maleic diamide.

The condensation reaction between the aldehyde and the aminotriazine (or aminotriazine and one or more other aldehyde-reactable organic compounds) may be carried out under acid, neutral or alkaline conditions, at atmospheric, sub-atmospheric or super-atmospheric pressure, and in the presence or absence of a solvent for the initial condensation product. I prefer to in-

itiate reaction between the components under alkaline conditions, that is, at a pH above 7.0, and to complete the reaction at a pH below 7.0. Various mol ratios of reactants may be employed, as desired or as conditions may require, but the proportions usually are within the range of 1 mol aminotriazine to from 1 to 4 or 5 mols formaldehyde. For example, the melamine-formaldehyde resins used in carrying the present invention into effect ordinarily are produced by reacting to resin formation a mixture comprising melamine and formaldehyde in the ratio of 1 mol melamine to from 1½ to ¾ mols formaldehyde.

In forming the cosmetic cream containers of this invention I may use the heat-convertible aminotriazine-aldehyde resins alone or mixed with organic or inorganic fillers, e. g., alpha cellulose, glass fibers, etc., dyes, pigments, opacifiers, lubricants, plasticizers or other effect agents. To accelerate molding of the compositions, curing catalysts or curing reactants, such as employed in accelerating the conversion of urea-formaldehyde resins to the insoluble, infusible state, are incorporated into the compositions at a suitable stage prior to molding. Such agents may be catalysts of the active or of the latent type, or they may be curing reactants capable of intercondensing with the other components to form a resin molecule capable of converting under heat or under heat and pressure to an insoluble, infusible state.

Molding (moldable) compositions comprising heat-hardenable aminotriazine-aldehyde condensation products, e. g., heat-hardenable melamine-formaldehyde condensation products, lend themselves to the high-speed production technique required for the economical manufacture of cosmetic cream containers. For example, such compositions may be molded under heat and pressure into the shape of cosmetic cream containers at molding cycles of from about 30 to 90 seconds, using molding temperatures of the order of about 150° to 180° C. The heat-hardened or heat-and pressure-hardened products (molded cosmetic cream containers) are light- and heat-resistant, have a high mechanical strength, are odorless, tasteless, show no signs of cracks when stored for long periods, are substantially unaffected by the conventional cosmetic creams and pastes, and otherwise satisfy the above-described requirements of a cosmetic cream container.

It will be understood, of course, that it is not essential that the entire cream container comprise an aminotriazine resin in an insoluble and infusible state. The only requirement is at least the surface which is in contact with the cream comprise such resin. The top or closure member of the container may be made of, or lined with, a composition comprising an aminotriazine resin. Or, it may be formed of metal or other natural or synthetic material. The bottom and side walls of the container may be formed solely of a composition comprising an aminotriazine-aldehyde condensation product. Or, in some cases, the container may be provided merely with an inner lining formed of a composition comprising an aminotriazine-aldehyde resinous reaction product in modified or unmodified form, while the external portions of the container not coming into contact with the cosmetic cream contained therein are formed of metal or other natural or synthetic material. These various modifications better will be understood by reference to the accompanying drawing. Fig. 1 illustrates a cosmetic cream container, specifically a rouge

(cream-type) container, wherein both the closure member 10 and the body portion 11 are formed of a composition comprising an aminotriazine-aldehyde condensation product. Fig. 2 illustrates a cosmetic cream container having a body portion comprising an inner wall or lining 12 formed of a composition comprising an aminotriazine-aldehyde condensation product and an outer wall 13 formed of metal, glass or other conventional material for fabricating cosmetic cream containers. The closure member 14 may be fabricated from metal or other conventional material or, if desired, it may be formed of a composition comprising an aminotriazine-aldehyde resin. Fig. 3 illustrates a type of cosmetic cream container wherein the closure member 15 is formed of metal or of other material commonly employed in fabricating closure members of cosmetic cream containers and the body portion 16 is molded or otherwise shaped from a composition comprising an aminotriazine-aldehyde condensation product. Of course, if desired, the closure member 15 also may be formed of a composition comprising an aminotriazine resin.

It also will be understood by those skilled in the art that the cosmetic containers are shaped, e. g., by molding, from a composition comprising a thermosetting aminotriazine-aldehyde condensation product and that at molding temperatures the thermosetting composition is heat-set to a hard, insoluble, infusible condition.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A cosmetic cream container in which at least the inner surfaces that contact the cosmetic

cream packaged therein comprise an aminotriazine-aldehyde condensation product in an insoluble, infusible state.

2. A cosmetic cream container as in claim 1 wherein the aminotriazine-aldehyde condensation product is a melamine-formaldehyde condensation product.

3. A container for cosmetic creams such as cold cream, vanishing cream, toning cream, rouge, lipstick and the like, said container being composed of a hardened composition comprising a heat-hardened condensation product of a mixture comprising an aminotriazine and an aldehyde.

4. A molded container for cosmetic creams obtained by molding under heat a heat-hardenable molding composition comprising a heat-hardenable resinous condensation product of a mixture comprising an aminotriazine and formaldehyde.

5. A molded cosmetic cream container obtained by molding under heat and pressure a heat-hardenable molding composition comprising a resinous condensation product of a mixture comprising melamine and formaldehyde.

6. A molded cosmetic cream container obtained by molding under heat and pressure a heat-hardenable molding composition comprising a resinous condensation product of a mixture comprising melamine, urea and formaldehyde.

7. A molded cosmetic cream container obtained by molding under heat and pressure a heat-hardenable molding composition comprising a resinous condensation product of a mixture comprising melamine, dicyandiamide and formaldehyde.

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