[0003] Manufacturers have sought other quaternary ammonium compounds that can deliver conditioning performance without the drawbacks of BTAC and CETAC. Esterquat quaternary ammonium compounds (esterquats) have been used as a hair conditioning active. Such esterquats are typically made from fatty acids reacted with an amine, such as triethanolamine (TEA) or methyl diethanolamine (MDEA) and then quaternized. Use of fatty acids allows better control over the fatty acid chains reacting with the alkanolamine to make the esteramine, whose amine portion is then quaternized, and provides a “pure” molecule compared with oils containing fatty acids in triglyceride form. Although esterquats are less toxic than BTAC and CETAC from an environmental standpoint, they do not perform as well as BTAC and CETAC as a hair conditioning agent. Esterquats are also usually in a solid or paste form, and require heating/melting or dilution with a solvent, such as IPA or ethanol, which could release volatile organic compounds (VOCs) into the environment.

[0004] There is a need in the art for esterquat compositions that can deliver hair care performance that is better than CETAC and at least equal to BTAC, but also has a better environmental profile than BTAC and CETAC. There is also a need for an esterquat composition that is in a liquid form at higher active levels, such as 50% active or more.

SUMMARY

[0005] In one aspect, the present disclosure refers to a composition comprising: (a) 30% to 100% by weight, based on the weight of the composition, of a mixture comprising: i. one or more esterquats, wherein the esterquats comprise 55% to 75% by weight of the mixture, and wherein the esterquats are the quaternized reaction product of (A) a fatty acid source having at least 50% by weight of unsaturated fatty acid groups reacted with (B) an alkanolamine, wherein the alkanolamine is triethanolamine (TEA) or methyldiethanolamine (MDEA) in a ratio of 1.5 to 3 moles of acyl groups per mole of alkanolamine; and ii. one or more glycerides, wherein the glycerides comprise 25% to 45% by weight of the mixture, wherein the glycerides comprise monoglycerides, diglycerides, or a combination thereof having carbon chain lengths of 8-32 carbon atoms and having at least 50% by weight of unsaturated fatty acid groups; and (b) 0% to 70% by weight of the composition of a solvent. In one example, the present technology is directed to a composition comprising:

(a) about 30% to about 100% by weight, based on the weight of the composition, of a mixture of one or more esterquats and one or more glycerides, wherein the esterquats comprise about 50% to about 80%, preferably about 55% to about 75% by weight of the mixture, and the glycerides comprise about 20% to about 50%, preferably about 25% to about 45% by weight of the mixture; and

(b) 0% to about 70% by weight, based on the weight of the composition, of a solvent suitable for personal care.

[0006] In some examples, the composition comprises about 30% to about 95%, alternatively about 30% to about 90% by weight of the mixture of one or more esterquats and one or more glycerides, and about 5% to about 70%, alternatively about 10% to about 70% by weight of solvent.

[0007] In another aspect, the present disclosure refers to a formulation comprising: (a) 0.01% to 30% by weight of a composition active comprising: i. one or more esterquats in an amount of 55% to 75% by weight based on the weight of the composition active, wherein the esterquats are the quaternized reaction product of (A) a fatty acid source having at least 50% by weight of unsaturated fatty acid groups, and (B) an alkanolamine, wherein the alkanolamine is triethanolamine or methyldiethanolamine in a ratio of 1.5 to 3 moles of acyl groups per mole of alkanolamine; and ii. one or more glycerides in an amount of 25% to 45% by weight based on the weight of the composition active, wherein the glycerides comprise monoglycerides, diglycerides, or a combination thereof having carbon chain lengths of 8-32 carbon atoms and at least 50% by weight of unsaturated fatty acid groups; and (b) diluent to balance the formulation to 100%. In another example, the present technology is directed to a composition that comprises 0.01% to about 30% by weight, based on the weight of the composition, of a composition active comprising one or more esterquats in an amount of about 50% to about 80%, preferably about 55% to about 75% by weight, based on the weight of the composition active, and one or more glycerides in an amount of about 20% to about 50%, preferably about 25% to about 45% by weight based on the weight of the composition active; optionally, one or more additional components; and diluent to balance the composition to 100%. In one example, the composition is a hair conditioning composition.

[0008] In another example, the present disclosure refers to a hair care composition comprising: (a) about 0.01% to about 30% by weight of a composition active, wherein the composition active comprises: at least one esterquat derived from a fatty acid source having C8-C32 carbon chains, wherein the at least one esterquat is derived from a fatty acid source having at least 50% by weight of unsaturated fatty acid groups; and optionally, a glyceride component derived from a fatty acid source having C8-C32 carbon chains, wherein the glyceride component comprises at least one monoglyceride, or diglyceride, or a combination thereof; (b) optionally, one or more additional components; and (c) diluent to balance the formulation to 100%. In a further example, the present technology is directed to a process for preparing a liquid esterquat composition wherein the process comprises (a) reacting a natural oil with an alkanolamine to obtain an intermediate mixture comprising monoesteramines, diesteramines, monoglycerides, diglycerides, glycerin, and free amines; (b) combining the intermediate mixture with an alkylating agent and, optionally, a solvent to form a reaction mixture; and (c) quaternizing the esteramines in the intermediate mixture with the alkylating agent to form esterquats, wherein the resulting composition comprises (i) about 30% to about 100% by weight, based on the weight of the composition, of a mixture of about 50% to about 80% by weight esterquats and about

Claims

1. A composition comprising:

(a) 30% to 100% by weight, based on the weight of the composition, of a mixture comprising:

i. one or more esterquats, wherein the esterquats comprise 55% to 75% by weight of the mixture, and wherein the esterquats are the quaternized reaction product of (A) a fatty acid source having at least 50% by weight of unsaturated fatty acid groups reacted with (B) an alkanolamine, wherein the alkanolamine is triethanolamine (TEA) or methyldiethanolamine (MDEA) in a ratio of 1.5 to 3 moles of acyl groups per mole of alkanolamine; and

ii. one or more glycerides, wherein the glycerides comprise 25% to 45% by weight of the mixture, wherein the glycerides comprise monoglycerides, diglycerides, or a combination thereof having carbon chain lengths of 8-32 carbon atoms and having at least 50% by weight of unsaturated fatty acid groups; and

(b) 0% to 70% by weight of the composition of a solvent.

2. The composition of claim 1, wherein the fatty acid source is a natural oil is selected from the group consisting of sunflower oil, canola oil, soybean oil, walnut oil, jojoba oil, palm oil, borage oil, rapeseed oil, safflower oil, and mixtures thereof.

3. The composition of claim 1, wherein the fatty acid source for the esterquats comprises fatty acid methyl esters.

4. The composition of any one of claims 1-3, wherein the fatty acid source for the esterquats has carbon chain lengths of 8 to 32 carbon atoms.

5. The composition of claim 4, wherein the fatty acid source has a saponification value of less than 225 and an Iodine Value of 50 or greater.

6. The composition of any one of claims 1-5, wherein the quaternized reaction product is obtained by using an alkylating agent selected from the group consisting of dimethyl sulfate, methyl chloride, diethyl sulfate, benzyl chloride, ethyl benzyl chloride, methyl bromide, and epichlorohydrin.

7. The composition of any one of claims 1-6, wherein the glycerides are monoglycerides and diglycerides in a ratio of 3:1 to 1:3.

8. The composition of any one of claims 1-7, wherein the solvent is selected from the group consisting of propylene glycol, caprylate/caprate glyceryl esters, glycol ethers, glycerin, sunflower oil, jojoba oil, alkyl lactyl lactates, isopropyl alcohol, and combinations thereof.

9. The composition of claim 8, wherein the composition is a liquid.

10. The composition of claim 9, wherein the solvent is a mixture of alkyl lactyl lactate and glycerin.

11.The composition of claim 2, wherein the mixture is the quaternized direct esterification reaction product of sunflower oil reacted with methyl diethanolamine in a ratio of acyl groups to amine of 1.5:1 to 2:1.

12. A formulation comprising:

(a) 0.01% to 30% by weight of a composition active comprising:

i. one or more esterquats in an amount of 55% to 75% by weight based on the weight of the composition active, wherein the esterquats are the quaternized reaction product of (A) a fatty acid source having at least 50% by weight of unsaturated fatty acid groups, and (B) an alkanolamine, wherein the alkanolamine is triethanolamine or methyldiethanolamine in a ratio of 1.5 to 3 moles of acyl groups per mole of alkanolamine; and

ii. one or more glycerides in an amount of 25% to 45% by weight based on the weight of the composition active, wherein the glycerides comprise monoglycerides, diglycerides, or a combination thereof having carbon chain lengths of 8-32 carbon atoms and at least 50% by weight of unsaturated fatty acid groups;

and

(b) diluent to balance the formulation to 100%.