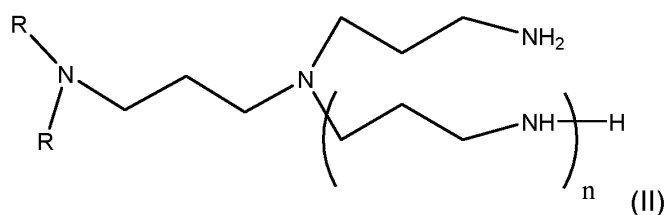
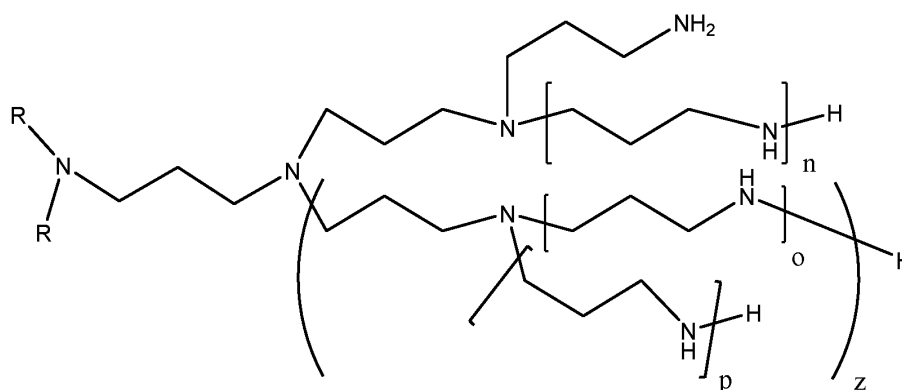


Claims

1. Di-fatty-alkyl(ene) polyalkylamine composition which comprises a mixture of polyalkylamines selected from products with formulae (I) and (II),



wherein each R is, independent of the other R, an alkyl or alkylene moiety with 8-22 carbon atoms, n and z are independent of each other either 0, 1, 2, or 3, and when  $z > 0$  then o and p are independent of each other either 0, 1, 2, or 3, or derivatives thereof, whereby said mixture comprises a) a total of at least 3 % by weight of branched compounds of formula (I) with at least one of n and  $z \geq 1$  and products of formula (II) with  $n \geq 1$ , and b) a total of at least 5 % by weight of products of formula (I) with n and  $z = 0$ , and compounds of formula (II) with  $n = 0$ .

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2. Polyalkylamines composition according to claim 1 comprising a total of at least 4 %w/w, at least 5 %w/w, at least 6 %w/w, at least 7 %w/w, at least 7.5 %w/w, at least 10 %w/w, or at least 20 %w/w, of branched compounds of formula (I) with at least one of  $n$  and  $z \neq 0$  and compounds of formula (II) with  $n \neq 0$ .
3. Polyalkylamines composition according to claim 1 or 2 comprising at least 5% by weight of products of formulae (I) and (II) with a linear structure with  $n$  is 0 in formulae (I) and (II) and  $z$  is 0 in formula (I).
4. Polyalkylamines composition of any of the previous claims comprising derivatives of di-fatty-alkyl(ene) polyalkylamines, wherein the derivatives are alkoxylates which are optionally methylated.
5. Polyalkylamines composition of any of the previous claims comprising derivatives of di-fatty-alkyl(ene) polyalkylamines, wherein the derivatives are methylated.
6. A process for making the polyalkylamines compositions of any one of the previous claims wherein a di-fatty-alkyl(ene) alkyldiamine is reacted in two or more cycles whereby each cycle comprises a cyanoethylation step and a subsequent hydrogenation step.
7. A process of claim 6 wherein an acidic catalyst is used during the cyanoethylation steps, preferably HCl or acetic acid.

8. A process of claim 6 or 7 wherein the reaction temperature during a later cyanoethylation step is higher than the temperature in an earlier cyanoethylation step.

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9. A process of any one of claims 6-8 wherein more than 1 mole of acrylonitrile is used per mole of the starting polyamine.

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10. A process for making the polyalkylamines compositions of any one of claims 1-5 wherein a di-fatty-alkyl(ene) alkyldiamine is subjected to a cyanoethylation step and a subsequent hydrogenation step, whereby in the cyanoethylation step at least 2 mole of acrylonitrile is used per mole of di-fatty-alkyl(ene) alkyldiamine and an acidic catalyst is used.

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11. A process of claim 10 wherein the product is subjected to one or more further cycles comprising a cyanoethylation and subsequent hydrogenation step.

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12. A process according to any one of claims 6-11 wherein one or more solvents selected from C<sub>1-4</sub> alcohol and C<sub>2-4</sub> diols is present in the cyanoethylation step.

13. A process of claim 12 wherein the amount of solvent is from 0.1 to 50 % by weight of the liquid reaction mixture.

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14. A process to make the derivatives of claim 4 or 5, being the process of any one of claims 6-13, with an additional step wherein the di-fatty-alkyl(ene) polyalkylamines are methylated, alkoxyated, or both.

- 5      15. Use of di-fatty-alkyl(ene) polyalkylamine compositions of any one of claims 1-5 as demulsifiers for oil-in-water emulsions, corrosion inhibitor, fuel additive, anti-scaling agent, asphalt additive, enhanced oil recovery agent for oil-wells, cutting-oil additive, and anti-static agent.