Claims

1. A process for at least partially removing aldehydes from a composition, the process comprising the following steps:
a) contacting the composition with at least one cation exchanger at a temperature of 20.0 °C to 250.0 °C;
b) at least partially separating the aldehydes from the composition and, optionally, treatment of the separated aldehydes, selected from condensation, absorption, adsorption, chemical bonding, chemical reaction, oxidation and pyrolysis;
whereby a composition having a diminished content of aldehydes is obtained;
wherein the composition to be treated in step a) contains at least one compound having at least one alkylene oxide unit in its chemical structure and a molecular weight of 200 g/mol or more, and
3.5 wt% or less of alcohols having 1 to 6 carbon atoms, based on the total weight of the composition.

2. The process according to claim 1, **characterized in that** step a) is carried out at a temperature of 40 °C to 140 °C.

3. The process according to claims 1 or 2, **characterized in that** the cation exchanger used in step a) is an acidic cation exchanger containing acid groups selected from $-SO_3H$, -COOH and $-OP(OH)_3$.

4. The process according to any one of claims 1 to 3, **characterized in that** step b) is carried out by a thermal separation process, selected from the group consisting of distillation process, rectification process, stripping process and flash evaporation process.

5. The process according to any one of claims 1 to 3, **characterized in that** step b) is carried out by contacting an ion exchanger having amino or bisulfite functional groups, wherein step b) is preferably carried out at a temperature of 20 °C to 250 °C.

6. The process according to any one of claims 1 to 5, **characterized in that** the content of compounds having at least one alkylene oxide unit in their chemical structure and a molecular weight of 200 g/mol or more, is at least 10 wt% in the employed composition, based on the total weight of the composition.

7. The process according to any one of claims 1 to 6, **characterized in that** after step b) a composition is obtained the total aldehyde content of which is diminished by at least 10 % of the initial value.

8. The process according to any one of claims 1 to 7, **characterized in that** after step b) a composition is obtained the total aldehyde content of which is diminished to 1000 ppm or less.

9. The process according to any one of claims 1 to 8, **characterized in that** step b) is carried out by a thermal separation process selected from the group consisting of distillation process, rectification process, stripping process and flash evaporation process, wherein, after step b), a composition is obtained the dioxane content of which is diminished to 1000 ppm or less.

10. The process according to any one of claims 1 to 9, **characterized in that** the compounds having at least one alkylene oxide unit in their chemical structure and a molecular weight of 200 g/mol or more, have at least one (poly)alkylene oxide group, with at least 1, preferably with at least 2, preferably with at least 3, further preferably with at least 4, and even further preferably with at least 5 alkylene oxide units.

11. The process according to any one of claims 1 to 10, **characterized in that** the compounds having at least one alkylene oxide unit in their chemical structure and a molecular weight of 200 g/mol or more, represent (poly)alkylene oxide adducts having at least one further residue selected from the group consisting of carboxylic acid residues, carboxylic acid ester residues, carboxamide residues, phenol residues and alcohol residues.

12. The process according to any one of claims 1 to 10, **characterized in that** the compounds having at least one alkylene oxide unit in their chemical structure and a molecular weight of 200 g/mol or more, are selected from the group consisting of polyglycols, polyalkylene glycols, block copolymers, carboxylic acid alkoxylates, carboxylic acid polyglycol esters, alkoxylated carboxylic acid esters, alkoxylated carboxamides, alkoxylated phenols and alcohol alkoxylates.

13. A composition containing at least one compound having at least one alkylene oxide unit in its chemical structure and a molecular weight of 200 g/mol or more, **characterized in that** the total aldehyde content is 1000 ppm or less and the dioxane content is 1000 ppm or less.

14. The composition according to claim 13, **characterized in that** the metal ion content is 1000 ppm or less.