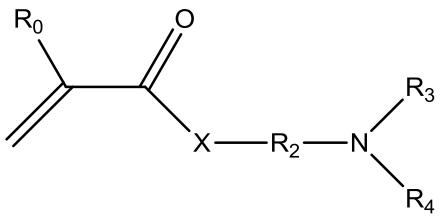
# Claims

1. A process for preparing N,N-(di)alkylaminoalkyl(meth)acrylamide or N,N-(di)alkylaminoalkyl (meth)acrylate, said process comprising:

reacting, in a liquid phase, an alkyl (meth)acrylate with an amine or an alcohol to prepare a product that comprises said N,N-(di)alkylaminoalkyl (meth)acrylamide or N,N-(di)alkylaminoalkyl (meth)acrylate;

wherein the oxygen concentration is <1000 ppm in the liquid phase, wherein said N,N-(di)alkylaminoalkyl (meth)acrylamide or N,N-(di)alkylaminoalkyl (meth)acrylate have formula (I)




(I)

where

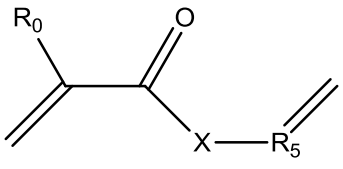
$R_0$ is hydrogen or methyl,

X is NH or O

$R_2$ is a linear, branched, or cyclic alkylene radical having 1-12 carbon atoms, or is an aryl radical that may also be substituted by at least one alkyl group,

$R_3$, $R_4$ are each a linear, branched, or cyclic alkyl radical having 1-12 carbon atoms, or is an aryl radical that may also be substituted by at least one alkyl group, and,

wherein the product has a content of less than 1200 ppm of a compound of formula (IV)




(IV)

wherein

$R_0$ is hydrogen or methyl,

X is NH or O

$R_5$ in each case is a linear, branched, or cyclic alkylene radical, an aryl radical which may also be substituted by at least one alkyl group, the linear, cyclic or branched alkyl radical having from 1-12 carbon atoms.

2. The process according to claim 1, wherein the N,N-(di)alkylaminoalkyl (meth)acrylamide or N,N-(di)alkylaminoalkyl (meth)acrylate or quaternary ammonium salts thereof have a content of less than 1200 ppm of the compound of the formula (IV) and are suitable for preparation of a soluble or non-coagulating polymer.

3. The process according to claim 2, wherein the N,N-(di)alkylaminoalkyl (meth)acrylamide or N,N-(di)alkylaminoalkyl (meth)acrylate or quaternary ammonium salts thereof have a content of less than 1000 ppm of the compound of the formula (IV).

4. The process according to claim 1, wherein the preparing is effected with exclusion of oxygen.

5. The process according to claim 1, wherein the preparing is conducted under a protective gas atmosphere.

6. The process according to claim 1, wherein a residence time is 0.1-11 h.

7. The process according to claim 1, wherein the preparing is conducted at temperatures between 70°C and 160°C.

8. The process according to claim 6, wherein the preparing is conducted under reduced pressure.

9. The process according to claim 1, wherein the alcohol is removed during the reaction.

10. The process according to claim 1, wherein said reacting is conducted in the presence of at least one inhibitor selected from the group consisting of bis(2-methoxycarbonylpropyl) sulphide, N,N-diethylhydroxylamine, phenothiazine, 4-hydroxy-2,2,6,6-tetramethylpiperidinooxyl, N,N'-diphenyl-p-phenylenediamine and derivatives thereof.

11. N,N-(di)alkylaminoalkyl (meth)acrylamide or N,N-(di)alkylaminoalkyl (meth)acrylate obtained by a process according to claim 1.

12. The N,N-(di)alkylaminoalkyl (meth)acrylamide or N,N-(di)alkylaminoalkyl (meth)acrylate according to claim 11 which are suitable for polymerization in the form of bulk polymerization, solution polymerization, dispersion polymerization or emulsion polymerization.

13. A thickener, gelling agent, haircare composition, fixative, styling polymer, film former, household/industrial and institutional cleaning, flocculant, water clarifier, paper auxiliary/additive, printing ink, flow improver in the oil & gas industry or a gas hydrate inhibitor, comprising: the N,N-(di)alkylaminoalkyl (meth)acrylamide or N,N-(di)alkylaminoalkyl (meth)acrylate according to claim 11.

14. A method of preparing a quaternary ammonium salt, comprising: reacting the N,N-(di)alkylaminoalkyl (meth)acrylamide or N,N-(di)alkylaminoalkyl (meth)acrylate according to claim 11 with an alkyl halide or an alkyl sulphonate to give a quaternary ammonium salt which is suitable for polymerization.