Claims:

1. A method of hydrolyzing a polyurethane, preferably produced by reacting an active hydrogen containing polyether and an organic polyisocyanate, which comprises contacting said polyurethane with water in the presence of a base, the base comprising an alkali metal cation and/or an ammonium cation and having a pK_b value at 25°C of from 1 to 10, preferably 1 to 8, more preferred 1 to 7 and most preferred 1.5 to 6, and a catalyst selected from the group consisting of quaternary ammonium salts containing an ammonium cation containing 6 to 30 carbon atoms and organic sulfonates containing at least 7 carbon atoms to yield an active hydrogen containing polyether, preferably polyether polyol, and an organic polyamine.

2. The method of claim 1 wherein the base is selected from the group consisting of alkali metal phosphates, alkali metal hydrogen phosphates, alkali metal carbonates, alkali metal silicates. alkali metal hydrogen carbonates, alkali metal acetates, alkali metal sulfites, ammonium hydroxide, and mixtures thereof.

3. The method of claim 2 wherein the alkali metals are selected from the group consisting of Na, K and Li and mixtures thereof, most preferred Na and K and mixtures thereof.

4. The method of any one of claim 1 to 3 wherein the catalyst is a quaternary ammonium salt having the general structure R_1 R_2 R_3 R_4 NX wherein R_1,R_2,R_3, and R_4 are the same or different and are hydrocarbyl groups selected from alkyl, aryl, and arylalkyl and X is selected from the group consisting of halide, preferably chloride and/or bromide, hydrogen sulfate, alkyl sulfate, preferably methylsulfate and ethylsulfate, carbonate, hydrogen carbonate, carboxylate, preferably acetate, or hydroxide.

5. The method of claim 4, wherein
   - R_1 and R_2 are the same or different and are alkyl groups with 1 to 12, preferably 1 to 10, more preferred 1 to 7, even more preferred 1 to 6, especially preferred 1 to 5 and most preferred 1 to 4 carbon atoms, wherein the alkyl groups may be linear, branched, cyclic, saturated or unsaturated, most preferred are linear, saturated alkyl groups,
   - R_3 is selected from the group consisting of alkyl groups with 1 to 12, preferably 1 to 10, more preferred 1 to 7, even more preferred 1 to 6, especially preferred 1 to 5 and most preferred 1 to 4 carbon atoms, aryl groups with 6 to 14, preferably 6 to 12, and most preferred 6 to 10 carbon atoms, and aralkyl groups with 7 to 14, preferably 7 to 12, and most preferred 7 to 10 carbon atoms, wherein the alkyl groups may be linear, branched, cyclic, saturated or unsaturated, most preferred linear and,

- R_4 is selected from the group consisting of alkyl groups with 3 to 12, preferably 3 to 10, more preferred 3 to 7, most preferred 4 to 6 carbon atoms, aryl groups with 6 to 14, preferably 6 to 12, and most preferred 6 to 10 carbon atoms, and aralkyl groups with 7 to 14, preferably 7 to 12, and most preferred 7 to 10 carbon atoms, wherein the alkyl groups may be linear, branched, cyclic, saturated or unsaturated, most preferred linear and saturated, and
- X is selected from the group consisting of halide, preferably chloride and/or bromide, hydrogen sulfate, alkyl sulfate, preferably methylsulfate and ethylsulfate, carbonate, hydrogene carbonate, acetate or hydroxide.

6. The method of claim 4 or 5 wherein

R_1 to R_4 are selected such that the sum of carbon atoms in the quaternary ammonium cation is 6 to 14, preferably 7 to 14, more preferred 8 to 13

or

R_1 to R_4 are selected such that the sum of carbon atoms in the quaternary ammonium cation is 15 to 30, preferably 15 to 28, more preferred 15 to 24, even more preferred 16 to 22 and most preferred 16 to 20.

7. The method of claims 4 or 5 wherein

R_1 to R_4 and X are selected such that the sum of carbon atoms in the quaternary ammonium salt is 6 to 14, preferably 7 to 14, more preferred 8 to 13,

or

R_1 to R_4 and X are selected such that the sum of carbon atoms in the quaternary ammonium salt is 15 to 30, preferably 15 to 28, more preferred 15 to 24, even more preferred 16 to 22 and most preferred 16 to 20.

8. The method of any one of claims 1 to 3, wherein the catalyst is an organic sulfonate selected from the group consisting of alkyl aryl sulfonates, alpha-olefin sulfonates, petroleum sulfonates and naphthalene sulfonates.

9. The method of any one of claims 1 to 8 comprising the additional steps of separating and recovering the organic polyamine and active hydrogen containing polyether, preferably polyether polyols.

10. The method of any one of claims 1 to 9 wherein the polyurethane is foamed.

11. The method of any one of claims 1 to 10, wherein the polyurethane is reacted with water, the base and the catalyst,

at a temperature of from 80°C to 200°C, preferably 90°C to 180°C, more preferred 95°C to 170°C and most preferred 100°C to 160°C

and/or

for 1 minute to 14 hours, preferably 1 minute to 12 hours, more preferred 5 minutes to 12 hours, even more preferred 10 minutes to 12 hours, particular preferred 20 minutes to 12 hours, especially preferred 20 minutes to 11 hours and most preferred 30 minutes to 10 hours

and/or

at atmospheric pressure.

12. The method of any one of claims 1 to 11 wherein at least 0.5 weight percent catalyst, based on the weight of the polyurethane is used, more preferably 0.5 to 15 weight percent, even more preferred 1 to 10 weight percent, particular preferred more 1 to 8 weight percent, especially preferred 1 to 7 and most preferred 2 to 6 weight percent.

13. The method of any one of claims 1 to 12 wherein the weight ratio base to polyurethane is in the range of from 0.01 to 50, preferably 0.1 to 25, more preferred 0.5 to 20.

14. The method of any one of claims 1 to 13 wherein a base solution comprising a base and water, preferably a saturated base solution in water, is used, more preferred a saturated base solution, in an amount such the weight ratio of the saturated base solution to polyurethane is in the range of from 0.5 to 25, more preferred 0.5 to 15, even more preferred 1 to 10 and most preferred 2 to 7.