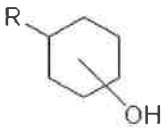
CLAIMS

1 - Water soluble polyurethane resulting condensation:

a) of at least one monomer with the formula (I):



(I)

where R designates an alkyl group with 10 to 15 carbon atoms,

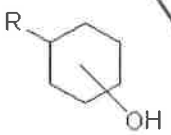
b) of at least one polyalkylene glycol,

and

c) and of at least one polyisocyanate.

2 - Polyurethanes according to claim 1 resulting from the condensation of:

a) a monomer of formula (I):



(I)

where R designates an alkyl group having 10 to 15 carbon atoms,

b) a polyalkylene glycol,

c) a polyisocyanate, and

d) an aliphatic alcohol having between 6 and 20 carbon atoms.

3 - Polyurethanes according to claim 1, resulting from the condensation of:

a) 1% to 29% by weight of at least one monomer of formula (I),

b) 70% to 98% by weight of at least one polyalkylene glycol, and

c) 1% to 29% by weight of at least one polyisocyanate

where the sum of these mass percentages is equal to 100%.

4 - Polyurethanes according to claim 1 or 3, resulting from the condensation of

a) 3% to 7% by weight of at least one monomer of formula (I),

b) 86% to 94% by weight of at least one polyalkylene glycol, and

c) 3% to 7% by weight of at least one polyisocyanate

where the sum of these mass percentages is equal to 100%.

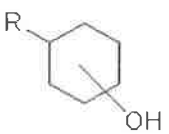
5 - Polyurethanes according to any of the previous claims, where the polylakylene glycol is preferentially polyethylene glycol the molecular mass by weight of which varies between 2,000 g/mol and 20,000 g/mol.

6 - Polyurethanes according to any of the previous claims, where the polyisocyanate is chosen from the group consisting of toluene diisocyanate, the toluene diisocyanate dimers, the toluene diisocyanate trimers, 1,4-butane diisocyanate, 1,6-hexane diisocyanate, isophorone diisocyanate, 1,3-cyclohexane diisocyanate, 1,4-cyclohexane diisocyanate, 4,4'diisocyanatodicyclohexylmethane, 1-methyl-2,4-diisocyanatocyclohexane, a blend of 1-methyl-2,4-diisocyanatocyclohexane and 1-methyl-2,6-diisocyanatocyclohexane, the biuret of hexamethylene diisocyanate, the dimers of the biuret of hexamethylene diisocyanate, the trimers of biuret of hexamethylene diisocyanate, and a blend of at least two of these compounds.

7 - Polyurethanes according to any of the previous claims, where the said monomer a) has a formula (I) where R designates a group having 12 carbon atoms.

8 - Polyurethanes according to claim 1 or 2, resulting from the condensation of:

a) 1 to 29% by weight of a monomer of formula (I):



(I)

where R designates an alkyl group having between 10 and 15 carbon atoms,

b) 70% to 98% by weight of polyalkylene glycol,

c) 1% to 29% by weight of a polyisocyanate, and

d) 1% to 29% by weight of an aliphatic alcohol having between 6 and 20 carbon atoms,

where the sum of these mass percentages is equal to 100%.

9 - Polyurethanes according to claim 8, resulting from the condensation of:

a) 1% to 29% by weight of a monomer of formula (I), where R designates an alkyl group having between 12 and 15 carbon atoms,

b) 70% to 98% by weight of a polyalkylene glycol,

c) 1% to 29% by weight of a polyisocyanate, and

d) 1% to 29% by weight of an aliphatic alcohol having between 10 and 15 carbon atoms,

where the sum of these mass percentages is equal to 100%.

10 - An aqueous composition including a polyurethane according to any of claims 1 to 9,

11 - An aqueous composition according to claim 10, also including water and a surfactant.

12 - An aqueous composition according to claim 10 or 11, also including at least one additive selected from the group consisting of a biocide, a solvent, an anti-foaming agent, a pH regulator, a coalescent agent and their blends.

13 - An aqueous composition according to any of the claims 10 to 12, containing:

1) 5% to 45% by weight of at least one polyurethane according to any of the claims 1 to 9,
2) 5% to 30% by weight of at least one surfactant,
3) 25% to 75% by weight of water, and
4) 0 to 5% by weight of at least one other additive chosen from the group consisting of a biocide, a solvent, an anti-foaming agent, a pH regulator, a coalescent agent and their blends,

where the sum of these mass percentages is equal to 100%.

14 - An aqueous formulation including a polyurethane according to any of the claims 1 to 9 or an aqueous composition according to any of the claims 10 to 13, where the said formulation is selected from the group consisting of a paint, a lacquer, a varnish, a paper coating, a cosmetic formulation and a detergent formulation.

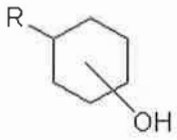
15 - Use of a polyurethane according to any of the claims 1 to 9 or an aqueous composition according to any of the claims 10 to 13, to thicken an aqueous formulation, where the said formulation is selected from the group consisting of a paint, a lacquer, a varnish, a paper coating, a cosmetic formulation and a detergent formulation.

16 - A method of preparation of a polyurethane according to any of the claims 1 to 9, consisting of a condensation of its various constituents.

CLAIMS

1 - Water soluble polyurethane resulting condensation:

a) of at least one monomer with the formula (I):



(I)

where R designates an alkyl group with 10 to 15 carbon atoms,

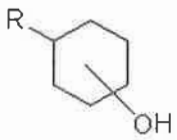
b) of at least one polyalkylene glycol,

and

c) and of at least one polyisocyanate.

2 - Polyurethanes according to claim 1 resulting from the condensation of:

a) a monomer of formula (I):



(I)

where R designates an alkyl group having 10 to 15 carbon atoms,

b) a polyalkylene glycol,

c) a polyisocyanate, and

d) an aliphatic alcohol having between 6 and 20 carbon atoms.

3 - Polyurethanes according to claim 1, resulting from the condensation of:

a) 1% to 29% by weight of at least one monomer of formula (I),

b) 70% to 98% by weight of at least one polyalkylene glycol, and

c) 1% to 29% by weight of at least one polyisocyanate

where the sum of these mass percentages is equal to 100%.

4 - Polyurethanes according to claim 1 or 3, resulting from the condensation of

a) 3% to 7% by weight of at least one monomer of formula (I),

b) 86% to 94% by weight of at least one polyalkylene glycol, and

c) 3% to 7% by weight of at least one polyisocyanate

where the sum of these mass percentages is equal to 100%.

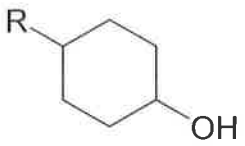
5 - Polyurethanes according to any of the previous claims, where the polylakylene glycol is preferentially polyethylene glycol the molecular mass by weight of which varies between 2,000 g/mol and 20,000 g/mol.

6 - Polyurethanes according to any of the previous claims, where the polyisocyanate is chosen from the group consisting of toluene diisocyanate, the toluene diisocyanate dimers, the toluene diisocyanate trimers, 1,4-butane diisocyanate, 1,6-hexane diisocyanate, isophorone diisocyanate, 1,3-cyclohexane diisocyanate, 1,4-cyclohexane diisocyanate, 4,4'diisocyanatodicyclohexylmethane, 1-methyl-2,4-diisocyanatocyclohexane, a blend of 1-methyl-2,4-diisocyanatocyclohexane and 1-methyl-2,6-diisocyanatocyclohexane, the biuret of hexamethylene diisocyanate, the dimers of the biuret of hexamethylene diisocyanate, the trimers of biuret of hexamethylene diisocyanate, and a blend of at least two of these compounds.

7 - Polyurethanes according to any of the previous claims, where the said monomer a) has a formula (I) where R designates a group having 12 carbon atoms.

8 - Polyurethanes according to claim 1 or 2, resulting from the condensation of:

a) 1 to 29% by weight of a monomer of formula (II):



(II)

where R designates an alkyl group having between 10 and 15 carbon atoms,

b) 70% to 98% by weight of polyalkylene glycol, and

c) 1% to 29% by weight of a polyisocyanate,

where the sum of these mass percentages is equal to 100%.

9 - An aqueous composition including a polyurethane according to any of claims 1 to 8,

10 - An aqueous composition according to claim 9, also including water and a surfactant.

11 - An aqueous composition according to claim 9 or 10, also including at least one additive selected from the group consisting of a biocide, a solvent, an anti-foaming agent, a pH regulator, a coalescent agent and their blends.

12 - An aqueous composition according to any of the claims 9 to 11, containing:

1) 5% to 45% by weight of at least one polyurethane according to any of the claims 1 to 8,
2) 5% to 30% by weight of at least one surfactant,
3) 25% to 75% by weight of water, and
4) 0 to 5% by weight of at least one other additive chosen from the group consisting of a biocide, a solvent, an anti-foaming agent, a pH regulator, a coalescent agent and their blends,

where the sum of these mass percentages is equal to 100%.

13 - An aqueous formulation including a polyurethane according to any of the claims 1 to 9 or an aqueous composition according to any of the claims 9 to 12, where the said formulation is selected from the group consisting of a paint, a lacquer, a varnish, a paper coating, a cosmetic formulation and a detergent formulation.

14 - Use of a polyurethane according to any of the claims 1 to 8 or an aqueous composition according to any of the claims 9 to 12, to thicken an aqueous formulation, where the said formulation is selected from the group consisting of a paint, a lacquer, a varnish, a paper coating, a cosmetic formulation and a detergent formulation.

15 - A method of preparation of a polyurethane according to any of the claims 1 to 8, consisting of a condensation of its various constituents.