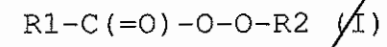
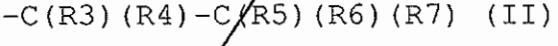
# C L A I M S

1. A process for the preparation of a polymer polyol having a solid polymer content which is at most 60 wt.%, which process comprises mixing a base polyol, one or more ethylenically unsaturated monomers, a polymerization initiator, optionally a macromer, and optionally a chain transfer agent, and polymerizing the mixture thus obtained at a temperature of below 120°C, wherein the initiator is of formula



wherein R1 is an alkyl group and R2 is an alkyl group of formula



wherein R3 and R4 are the same or different and are an alkyl group, R5, R6 and R7 are the same or different and are a hydrogen atom or an alkyl group.

2. The process of claim 1, wherein R1 is an alkyl group having up to 10 carbon atoms.

3. The process of claims 1 or 2, wherein at least one of R5, R6 and R7 is an alkyl group and is selected from a methyl group, an ethyl group or a tertiary butyl group

4. The process of any one of the preceding claims, wherein R2 is selected from: tertiary-butyl, 1,1-dimethylpropyl, 1,1-dimethylbutyl, 1,1,3-trimethylbutyl, 1,1,3,3-tetramethylbutyl, 1,1,2-trimethylpropyl, 1,1,2,2-tetramethylpropyl or 1,1,2,2-tetramethylbutyl.

5. The process of claim 1, wherein the polymerization temperature is optionally less than about 115°C, more suitably about 110°C or less.

6. A process for the preparation of a polymer polyol having a solid polymer content which is at most 60 wt.%, which process comprises mixing a base polyol, one or more ethylenically unsaturated monomers, a polymerization initiator, optionally a macromer, and optionally a chain transfer agent, and polymerizing the mixture thus obtained at a temperature of 50 to 200°C, wherein the initiator is of formula

R1-C(=O)-O-O-R2 (I)

wherein R1 is an alkyl group and R2 is an alkyl group of formula

-C(R3)(R4)-C(R5')(R6')-C(R7')(R8')(R9') (III)

wherein R3 and R4 are the same or different and are an alkyl group, R5' and R6' are the same or different and are a hydrogen atom or an alkyl group, R7', R8' and R9' are the same or different and are a hydrogen atom or an alkyl group, with the proviso that R7', R8' and R9' are not all hydrogen atoms in a case where both R5' and R6' are hydrogen atoms.

7. The process of claim 6, wherein R1 is an alkyl group having up to 10 carbon atoms.

8. The process of any one of claims 6 or 7, wherein R2 is 1,1-dimethylbutyl, 1,1,3-trimethylbutyl, 1,1,3,3-tetramethylbutyl, 1,1,2-trimethylpropyl, 1,1,2,2-tetramethylpropyl or 1,1,2,2-tetramethylbutyl.

9. The process of any of claims 6 to 8, wherein the polymerization temperature is below 120°C.

10. The process of any one of claims 1 to 9, wherein R2 is 1,1,3,3-tetramethylbutyl.

11. The process of any one of claims 1 to 10, wherein R1 is 1-ethylpentyl.

12. The process of any one of the preceding claims, wherein the base polyol has a nominal molecular weight in the range of from 350 to 15,000 and an average nominal functionality (Fn) of greater than 2.0, optionally at least 2.9.

13. The process of any one of the preceding claims, wherein a macromer is used and the macromer is obtained by reacting a polyol with a cyclic dicarboxylic acid anhydride not containing any polymerizable double bond, and subsequently reacting the adduct thus obtained with an epoxide compound containing a polymerizable double bond.

14. A process for preparing a polyurethane foam by foaming a composition comprising a polymer polyol obtainable by the process according to any one of claims 1 to 13 and a polyisocyanate component.

15. A polyurethane foam obtainable by the process according to claim 14.

C L A I M S

1. A process for the preparation of a polymer polyol having a solid polymer content which is at most 60 wt.%, which process comprises mixing a base polyol, one or more ethylenically unsaturated monomers, a polymerization initiator, optionally a macromer, and optionally a chain transfer agent, and polymerizing the mixture thus obtained at a temperature of below 120°C, wherein the initiator is of formula

R1-C(=O)-O-O-R2 (I)

wherein R1 is an alkyl group and R2 is an alkyl group of formula

-C(R3)(R4)-C(R5)(R6)(R7) (II)

wherein R3 and R4 are the same or different and are an alkyl group, R5, R6 and R7 are the same or different and are a hydrogen atom or an alkyl group, wherein the polymerization reaction occurs substantially in the absence of a preformed stabilizer and wherein the base polyol is a polyether polyol with a nominal functionality of greater than 2.5 and a molecular weight in the range of from 2000 to 14000.

2. The process of claim 1, wherein R1 is an alkyl group having up to 10 carbon atoms.

3. The process of claims 1 or 2, wherein at least one of R5, R6 and R7 is an alkyl group and is selected from a methyl group, an ethyl group or a tertiary butyl group

4. The process of any one of the preceding claims, wherein R2 is selected from: tertiary-butyl, 1,1-

dimethylpropyl, 1,1-dimethylbutyl, 1,1,3-trimethylbutyl, 1,1,3,3-tetramethylbutyl, 1,1,2-trimethylpropyl, 1,1,2,2-tetramethylpropyl or 1,1,2,2-tetramethylbutyl.

5. The process of claim 1, wherein the polymerization temperature is optionally less than about 115°C, more suitably about 110°C or less.

6. A process for the preparation of a polymer polyol having a solid polymer content which is at most 60 wt.%, which process comprises mixing a base polyol, one or more ethylenically unsaturated monomers, a polymerization initiator, optionally a macromer, and optionally a chain transfer agent, and polymerizing the mixture thus obtained at a temperature of 50 to 200°C, wherein the initiator is of formula

R1-C(=O)-O-O-R2 (I)

wherein R1 is an alkyl group and R2 is an alkyl group of formula

-C(R3)(R4)-C(R5')(R6')-C(R7')(R8')(R9') (III)

wherein R3 and R4 are the same or different and are an alkyl group, R5' and R6' are the same or different and are a hydrogen atom or an alkyl group, R7', R8' and R9' are the same or different and are a hydrogen atom or an alkyl group, with the proviso that R7', R8' and R9' are not all hydrogen atoms in a case where both R5' and R6' are hydrogen atoms.

7. The process of claim 6, wherein R1 is an alkyl group having up to 10 carbon atoms.

8. The process of any one of claims 6 or 7, wherein R2 is 1,1-dimethylbutyl, 1,1,3-trimethylbutyl, 1,1,3,3-

tetramethylbutyl, 1,1,2-trimethylpropyl, 1,1,2,2-tetramethylpropyl or 1,1,2,2-tetramethylbutyl.

9. The process of any of claims 6 to 8, wherein the polymerization temperature is below 120°C.

10. The process of any one of claims 1 to 9, wherein R2 is 1,1,3,3-tetramethylbutyl.

11. The process of any one of claims 1 to 10, wherein R1 is 1-ethylpentyl.

12. The process of any one of claims 6 to 11, wherein the base polyol has a nominal molecular weight in the range of from 350 to 15,000 and an average nominal functionality (Fn) of greater than 2.0, optionally at least 2.9.

13. The process of any one of the preceding claims, wherein a macromer is used and the macromer is obtained by reacting a polyol with a cyclic dicarboxylic acid anhydride not containing any polymerizable double bond, and subsequently reacting the adduct thus obtained with an epoxide compound containing a polymerizable double bond.

14. A process for preparing a polyurethane foam by foaming a composition comprising a polymer polyol obtainable by the process according to any one of claims 1 to 13 and a polyisocyanate component.

15. A polyurethane foam obtainable by the process according to claim 14.