Claims

What is claimed is:

1. A copolymer A, which has

(i) at least one repeating unit carrying an amide group and a carboxyl and/or its ammonium salt,

(ii) at least one repeating unit derived from linear or branched C_2-C_{18} α-monoolefin, and

(iii) at least one repeating unit derived from a monomer having at least two carbon-carbon unsaturated double bonds.

2. The copolymer A according to claim 1, wherein in the copolymer A, the amount of the repeating unit (i) is 10-80% by weight, preferably 20-80% by weight or 22-79% by weight, based on the total amount of repeating units of copolymer A.

3. The copolymer A according to claim 1 or 2, wherein the linear or branched C_2-C_{18} α-monoolefin is a linear or branched C_2-C_{12} α-monoolefin, preferably a linear or branched C_2-C_8 α-monoolefin.

4. The copolymer A according to any one of claims 1 to 3, wherein in the copolymer A, the amount of the repeating unit (ii) is 10-75% by weight, preferably 15-74% by weight or 20-70% by weight, based on the total amount of repeating units of copolymer A.

5. The copolymer A according to any one of claims 1 to 4, wherein the carbon-carbon unsaturated double bond in the monomer having at least two carbon-carbon unsaturated double bonds is selected from carbon-carbon double bonds in (meth)acrylic acid ester group, (meth)acrylamide group, vinyl, allyl, and alkene or cycloalkene.

6. The copolymer A according to any one of claims 1 to 5, wherein in the copolymer A, the amount of the repeating unit (iii) is 0.1-70% by weight, preferably 0.1-30% by weight, based on the total amount of repeating units of copolymer A.

7. The copolymer A according to any one of claims 1 to 6, wherein the copolymer A is derived from a copolymer B, which has:

(i') at least one repeating unit carrying an anhydride group,

(ii) at least one repeating unit derived from linear or branched C_2-C_{18} α-monoolefin, and

(iii) at least one repeating unit derived from a monomer having at least two carbon-carbon unsaturated double bonds.

8. The copolymer A according to claim 7, wherein the repeating unit (i') carrying an anhydride group of the copolymer B is derived from at least one monomer having a carbon-carbon unsaturated double bond and an anhydride group.

9. The copolymer A according to claim 8, wherein the monomer having a carbon-carbon unsaturated double bond and an anhydride group is selected from monoethylenically unsaturated dicarboxylic anhydride having 4 to 8 carbon atoms, preferably maleic anhydride, itaconic anhydride, citraconic anhydride, and methylene malonic anhydride, and more preferred maleic anhydride.

10. The copolymer A according to any one of claims 7-9, wherein the copolymer A is derived from a reaction of the copolymer B with ammonia.

11. An adhesive comprising the copolymer A according to any one of claims 1-10.

12. The adhesive according to claim 11, wherein the adhesive is in solid form, preferably powder form; or in form of aqueous composition, preferably in form of aqueous solution, preferably the content of the copolymer A is 2-40% by weight, especially 5-30% by weight, based on the total weight of the aqueous composition.

13. The adhesive according to claim 11 or 12, wherein the adhesive does not comprise an organic crosslinking agent capable of covalently crosslinking with the amide group and/or carboxyl of the copolymer A.

14. An article comprising a component formed from the adhesive according to any one of claims 11-13.

15. The article according to claim 14, wherein the article is artificial board, paper, cloth or paint.

16. The article according to claim 15, wherein the article is an artificial board formed of a lignocellulose material and the adhesive.

17. The article according to claim 16, wherein the adhesive is used as a matrix resin, preferably the adhesive fills a gap between the lignocellulose materials.

18. The article according to any one of claims 14-17, wherein the adhesive is used in an amount based on solid content of 1-45% by weight, preferably 2-35% by weight, more preferably 3-30% by weight, based on the total weight of the article.

19. The article according to any one of claims 14-18, wherein the copolymer A as defined in any one of claims 1-10 is used in an amount of 1-40% by weight, preferably 2-30% by weight, more preferably 3-25% by weight, based on the total weight of the article.

20. Use of the adhesive according to any one of claims 11-13 in manufacture of artificial boards, paper, cloth or coatings.