Claims

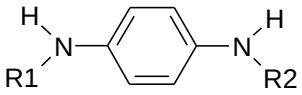
1. Use of a secondary amine or a mixture of secondary amines as a retarding additive for an adhesive composition comprising one or more (meth)acrylate ester monomers, a catalyst system, a polymeric modifier,

wherein the catalyst system is based on an aromatic perester free-radical precursor, an organic acid capable of cyclic tautomerism and a transition metal cure accelerator,

wherein the polymeric modifier is present in an amount ranging from 5 to 50 wt% based on the total weight of the composition,

wherein the secondary amine is a secondary aryl amine

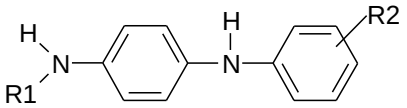
selected from compounds having formula (1)



(1)

wherein R1 and R2 are independently selected from C_6-C_{18} alkyl groups,

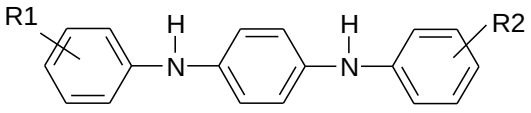
formula (2)



(2)

wherein R1 is selected from C_6-C_{18} alkyl groups and R2 is selected from hydrogen or C_1-C_6 alkyl groups, or

formula (3)



(3)

wherein R1 and R2 are independently selected from hydrogen or C_1-C_6 alkyl groups, or wherein the secondary amine is a cyclic secondary amine.

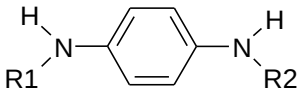
2. The use according to claim 1, wherein the cyclic secondary amine is a 2,2,4-trimethyl-1,2-dihydroquinoline polymer.

3. The use according to any of the preceding claims, wherein the retarding additive is comprised in an amount of 1 % to 5 % by weight, based on the total weight of the adhesive composition.

4. The use to any of the preceding claims, wherein the one or more methacrylate ester monomers are comprised in an amount of 10 % to 90 % by weight, based on the total weight of the adhesive composition.

5. An adhesive composition comprising one or more (meth)acrylate ester monomers, a catalyst system and a secondary amine or a mixture of secondary amines as a retarding additive,

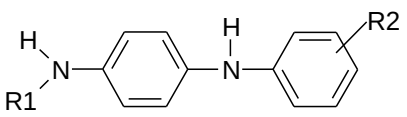
wherein the secondary amine is a secondary aryl amine selected from compounds having formula (1)



(1)

wherein R1 and R2 are independently selected from C_6-C_{18} alkyl groups,

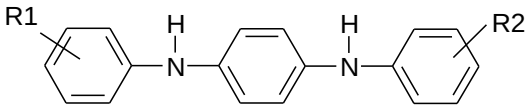
formula (2)



(2)

wherein R1 is selected from C_6-C_{18} alkyl groups and R2 is selected from hydrogen or C_1-C_6 alkyl groups, or

formula (3)



(3)

wherein R1 and R2 are independently selected from hydrogen or C_1-C_6 alkyl groups, and

wherein the retarding additive extends the open time of methacrylate-based adhesive compositions without affecting the mechanical and adhesive properties or the storage stability thereof.

6. The adhesive composition according to any of the preceding claims, wherein the retarding additive is comprised in an amount of 1 % to 5 % by weight, based on the total weight of the adhesive composition.

7. The adhesive composition according to any of the preceding claims, wherein the one or more methacrylate ester monomers are comprised in an amount of 10 % to 90 % by weight, based on the total weight of the adhesive composition.