WE CLAIM:

1. A waterborne coating composition comprising:

(a) acrylic copolymer resin particles comprising pendant carbonyl functionality; and

(b) a crosslinking agent comprising at least two functional groups reactive with the carbonyl functionality of the acrylic copolymer, and

(c) a non-reactive surfactant,

wherein the acrylic copolymer resin particles have a calculated Tg of at least 40°C and comprise the reaction product of reactants comprising:

(i) at least 50 percent by weight, based on the total weight of the reactants, of hydrophobic acrylic monomers comprising:

(A) at least 60 percent by weight, based on the total weight of the hydrophobic acrylic monomers, of a styrenic monomer; and

(B) an alkyl(meth)acrylate ester of an alcohol wherein the alkyl portion of the alcohol is linear or branched and contains at least 4 carbon atoms, and

(ii) an acrylic monomer comprising an aldehyde and/or ketone functional group; and

(iii) a phosphate-functional monomer.

2. The coating composition of claim 1, wherein the acrylic monomer comprising an aldehyde and/or ketone functional group is present in an amount of 0.1 to 20 percent by weight, based on the total weight of the reactants used to make the acrylic copolymer resin particles.

3. The coating composition of claim 1, wherein the hydrophobic acrylic monomers are present in an amount of at least 90 percent by weight, based on the total weight of the reactants used to make the acrylic copolymer resin particles.

4. The coating composition of claim 1, wherein the styrenic monomer is present in an amount of 60 to 80 percent by weight, based on the total weight of hydrophobic acrylic monomers used to make the acrylic copolymer resin particles.

5. The coating composition of claim 1, wherein the alkyl(meth)acrylate ester of an alcohol wherein the alkyl portion of the alcohol is linear or branched and contains at least 4 carbon atoms, comprises an alkyl(meth)acrylate ester of an alcohol wherein the alkyl portion of the alcohol is linear or branched and contains 6 to 8 carbon atoms.

6. The coating composition of claim 1, wherein the alkyl(meth)acrylate ester of an alcohol is present in an amount of 10 to 30 percent by weight, based on the total weight of hydrophobic acrylic monomers used to make the acrylic copolymer resin particles.

7. The coating composition of claim 1, wherein the phosphate functional monomer is present in an amount of 0.5 to 2 percent by weight, based on the total weight of acrylic monomers used to make the acrylic copolymer resin particles.

8. The coating composition of claim 1, wherein the weight average molecular weight of the acrylic copolymer particles ranges from 50,000 to 200,000 grams per mole.

9. The coating composition of claim 1, wherein the calculated glass transition temperature of the acrylic copolymer particles is 40°C to 60°C.

10. The coating composition of claim 1, wherein the crosslinking agent comprises a compound comprising at least two hydrazide groups.

11. A method of using the coating composition of claim 1, comprising:

(a) applying the coating composition to a substrate;

(b) allowing the coating composition to coalesce to form a substantially continuous film on the substrate; and

(c) allowing the coating composition to cure in the presence of ambient air, the air having a relative humidity of 10 to 100 percent and a temperature of -10 to 120°C.

12. The waterborne coating composition of claim 1, wherein the non-reactive surfactant comprises a surfactant selected from the group consisting of anionic surfactants, cationic surfactants, nonionic surfactants, and compatible mixtures thereof.

13. The waterborne coating composition of claim 1, wherein the acrylic copolymer resin particles form a latex emulsion in water, and wherein the non-reactive surfactant is present in the latex emulsion at up to 10 percent by weight based on the total weight of the latex emulsion.

14. The waterborne coating composition of claim 1, wherein the acrylic copolymer resin particles have a mean diameter of no more than 500 nanometers.

WE CLAIM:

1. A waterborne coating composition comprising:

(a) acrylic copolymer resin particles comprising pendant carbonyl functionality; and

(b) a crosslinking agent comprising at least two functional groups reactive with the carbonyl functionality of the acrylic copolymer,

wherein the acrylic copolymer resin particles have a calculated Tg of at least 40°C and comprise the reaction product of reactants comprising:

(i) at least 50 percent by weight, based on the total weight of the reactants, of hydrophobic acrylic monomers comprising:

(A) at least 60 percent by weight, based on the total weight of the hydrophobic acrylic monomers, of a styrenic monomer; and

(B) an alkyl(meth)acrylate ester of an alcohol wherein the alkyl portion of the alcohol is linear or branched and contains at least 4 carbon atoms, and

(ii) an acrylic monomer comprising an aldehyde and/or ketone functional group.

2. The coating composition of claim 1, wherein the acrylic monomer comprising an aldehyde and/or ketone functional group is present in an amount of 0.1 to 20 percent by weight, based on the total weight of the reactants used to make the acrylic copolymer resin particles.

3. The coating composition of claim 1, wherein the hydrophobic acrylic monomers are present in an amount of at least 90 percent by weight, based on the total weight of the reactants used to make the acrylic copolymer resin particles.

4. The coating composition of claim 1, wherein the styrenic monomer is present in an amount of 60 to 80 percent by weight, based on the total weight of hydrophobic acrylic monomers used to make the acrylic copolymer resin particles.

5. The coating composition of claim 1, wherein the alkyl(meth)acrylate ester of an alcohol wherein the alkyl portion of the alcohol is linear or branched and contains at least 4 carbon atoms, comprises an alkyl(meth)acrylate ester of an alcohol wherein the alkyl portion of the alcohol is linear or branched and contains 6 to 8 carbon atoms.

6. The coating composition of claim 1, wherein the alkyl(meth)acrylate ester of an alcohol is present in an amount of 10 to 30 percent by weight, based on the total weight of hydrophobic acrylic monomers used to make the acrylic copolymer resin particles.

7. The coating composition of claim 1, wherein the reactants further comprise a phosphate-functional monomer.

8. The coating composition of claim 7, wherein the phosphate functional monomer is present in an amount of 0.5 to 2 percent by weight, based on the total weight of acrylic monomers used to make the acrylic copolymer resin particles.

9. The coating composition of claim 1, wherein the weight average molecular weight of the acrylic copolymer particles ranges from 50,000 to 200,000 grams per mole.

10. The coating composition of claim 1, wherein the calculated glass transition temperature of the acrylic copolymer particles is 40°C to 60°C.

11. The coating composition of claim 1, wherein the crosslinking agent comprises a compound comprising at least two hydrazide groups.

12. A method of using the coating composition of claim 1, comprising:

(a) applying the coating composition to a substrate;

(b) allowing the coating composition to coalesce to form a substantially continuous film on the substrate; and

(c) allowing the coating composition to cure in the presence of ambient air, the air having a relative humidity of 10 to 100 percent and a temperature of -10 to 120°C.

13. A substrate at least partially coated according to the method of claim 12.

14. The substrate of claim 13, wherein the substrate comprises metal and/or plastic.

15. An article comprising the substrate of claim 14, wherein the article is a medical device.