SUMMARY

[0012] The above and other needs are met by a marking composition according to the current disclosure. The inventive marking composition exhibits improved structural integrity, color coverage, color intensity and uniformity, as well as smooth and slick laydown with minimal exertion of pressure along with less flaking when applied to a substrate or on other writing surfaces. The marking composition as herein provided is also substantially free of tackiness to the touch.

[0012a] In one aspect, the present disclosure provides a marking composition comprising:

a condensation polymer which is a reaction product of a diol and a dicarboxylic acid, in an amount from 20% to 80% by weight of the composition;

one or more fatty acids containing from 10 to 24 carbon atoms, or an ester thereof, in an amount from 20% to 80% by weight of the composition; and

a colorant, in an amount from 1% to 15% by weight of the composition,

wherein the polymer has a Shore D hardness value from 35 to 65, and

wherein the condensation polymer has a weight average molecular weight of from 5000 to 15,000 daltons and is selected from the group consisting of poly(butylene adipate), poly(hexylene succinate), and poly(propylene adipate).

[0012b] In another aspect, the present disclosure also provides a writing instrument comprising a marking composition,

wherein the writing instrument is selected from the group consisting of crayons, wax pastels, grease pencils, water-soluble crayons, colored ink markers, colored charcoals, and chalks; and

wherein the marking composition comprises

a condensation polymer which is a reaction product of a diol and a dicarboxylic acid, in an amount from 20% to 80% by weight of the composition;

one or more fatty acids containing from 10 to 24 carbon atoms, or an ester thereof, in an amount from 20% to 80% by weight of the composition; and a colorant, in an amount from 1% to 15% by weight of the composition,

wherein the polymer has a Shore D hardness value from 35 to 65, and

wherein the condensation polymer has a weight average molecular weight of from 5000 to 15,000 daltons and is selected from the group consisting of poly(butylene adipate), poly(hexylene succinate), and poly(propylene adipate).

[0013] According to one embodiment, the marking composition includes a condensation polymer which is a reaction product of a diol and a dicarboxylic acid. The condensation polymer is present in an amount from about 10% to about 90% by weight of the marking composition. The marking composition also includes one or more fatty acids containing from 10 to 24 carbon atoms, or an ester thereof. The fatty acid(s) or ester(s) are present in an amount from about 20% to about 80% by weight of the composition. The marking composition also includes a colorant, which is present in an amount from about 1% to about 15% by weight of the composition.

[0014] The present disclosure provides a writing instrument which incorporates a marking composition. The writing instrument may be selected from the group consisting of crayons, wax pastels, grease pencils, water-soluble crayons, colored ink markers, colored charcoals, and chalks. More preferably, the writing instrument is a crayon. The marking composition used in the writing instrument includes a condensation polymer which is a reaction product of a diol and a dicarboxylic acid. The condensation polymer is present in an amount from about 10% to about 90% by weight of the marking composition. The marking composition also includes one or more fatty acids containing from 10 to 24 carbon atoms, or an ester thereof. The fatty acid(s) or ester(s) are present in an amount from about 20% to about 80% by weight of the composition. The marking composition also includes a colorant, which is present in an amount from about 1% to about 15% by weight of the composition.

[0015] In certain embodiments according to the present disclosure, the polymer preferably makes up about 20% to about 80% by weight of the composition.

WHAT IS CLAIMED IS:

Claim 1. A marking composition comprising:

a condensation polymer which is a reaction product of a diol and a dicarboxylic acid, in an amount from 20% to 80% by weight of the composition;

one or more fatty acids containing from 10 to 24 carbon atoms, or an ester thereof, in an amount from 20% to 80% by weight of the composition; and

a colorant, in an amount from 1% to 15% by weight of the composition,

wherein the polymer has a Shore D hardness value from 35 to 65, and

wherein the condensation polymer has a weight average molecular weight of from 5000 to 15,000 daltons and is selected from the group consisting of poly(butylene adipate), poly(hexylene succinate), and poly(propylene adipate).

Claim 2. The marking composition of Claim 1, wherein the diol and the dicarboxylic acid each contain 2 to 14 carbon atoms.

Claim 3. The marking composition of Claim 1, wherein the polymer has a melting point from 40 °C to 75 °C.

Claim 4. The marking composition of Claim 1, wherein the composition comprises one or more fatty acids containing from 14 to 18 carbon atoms, or an ester thereof, in an amount from 20% to 80% by weight of the composition.

Claim 5. The marking composition of Claim 1, wherein the one or more fatty acids comprise are fully saturated fatty acids.

Claim 6. The marking composition of Claim 1, wherein the one or more fatty acids have a weight average molecular weight of from 100 to 400 daltons.

Claim 7. The marking composition of Claim 1, wherein the colorant is an inorganic pigment.

Claim 8. The marking composition of Claim 1, wherein the colorant is a pigment having an average particle size from 0.1 micron to 25 microns.

Claim 9. The marking composition of Claim 1, wherein the colorant is derived from plants or vegetables.

Claim 10. The marking composition of Claim 1, further comprising one or more additives selected from the group consisting of rust preventives, anticorrosive agents, fillers, leveling agents, viscosity modifiers, drying agent, plasticizers, foam inhibitors, mold release agents, and polymer stabilizers.

Claim 11. A writing instrument comprising a marking composition,

wherein the writing instrument is selected from the group consisting of crayons, wax pastels, grease pencils, water-soluble crayons, colored ink markers, colored charcoals, and chalks; and

wherein the marking composition comprises

a condensation polymer which is a reaction product of a diol and a dicarboxylic acid, in an amount from 20% to 80% by weight of the composition;

one or more fatty acids containing from 10 to 24 carbon atoms, or an ester thereof, in an amount from 20% to 80% by weight of the composition; and

a colorant, in an amount from 1% to 15% by weight of the composition,

wherein the polymer has a Shore D hardness value from 35 to 65, and

wherein the polymer has a weight average molecular weight of from 5000 to about 15,000 daltons and is selected from the group consisting of poly(butylene adipate), poly(hexylene succinate), and poly(propylene adipate).

Claim 12. The writing instrument of Claim 11, wherein the diol and the dicarboxylic acid each contain 2 to 14 carbon atoms.

Claim 13. The writing instrument of Claim 11, wherein the polymer has a melting point from 40 °C to 75 °C.

Claim 14. The writing instrument of Claim 11, wherein the marking composition comprises one or more fatty acids containing from 14 to 18 carbon atoms, or an ester thereof, in an amount from 20% to 80% by weight of the composition.

Claim 15. The writing instrument of Claim 11, wherein the one or more fatty acids comprise are fully saturated fatty acids.

Claim 16. The writing instrument of Claim 11, wherein the one or more fatty acids have a weight average molecular weight of from 100 to 400 daltons.

Claim 17. The writing instrument Claim 11, wherein the colorant is an inorganic pigment.

Claim 18. The writing instrument of Claim 11, wherein the colorant is a pigment having an average particle size from 0.1 micron to 25 microns.

Claim 19. The writing instrument of Claim 11, wherein the colorant is derived from plants or vegetables.

Claim 20. The writing instrument of Claim 11, wherein the marking composition further comprises one or more additives selected from the group consisting of rust preventives, anticorrosive agents, fillers, leveling agents, viscosity modifiers, drying agent, plasticizers, foam inhibitors, mold release agents, and polymer stabilizers.

Claim 21. The writing instrument of Claim 11, wherein the writing instrument is a crayon.