SUMMARY

[005a] In one aspect, the present disclosure refers to a biodegradable aqueous dispersion for coating food contact substrates, the dispersion comprising:

from ~~about~~ 35 to ~~about~~ 75 weight percent water;

from ~~about~~ 25 to ~~about~~ 65 weight percent of polyhydroxyalkanoates;

from ~~about~~ 0.01 weight percent to ~~about~~ 5.0 weight percent of at least one surfactant;

from ~~about~~ 0.01 weight percent to ~~about~~ 5.0 weight percent of at least one rheology modifier;

from ~~about~~ 0.01 weight percent to ~~about~~ 2.5 weight percent of at least one wetting and dispersing agent; and

from ~~about~~ 0.01 weight percent to ~~about~~ 0.5 weight percent of at least one biocide or biostatic agent.

[005b] In another aspect, the present disclosure refers to a biodegradable food service item comprising:

a biodegradable substrate having at least one food contact surface; and

a coating applied over the at least one food contact surface,

wherein the coating is applied as a biodegradable aqueous dispersion, comprising

from ~~about~~ 35 to ~~about~~ 75 weight percent water;

from ~~about~~ 25 to ~~about~~ 65 weight percent of polyhydroxyalkanoates;

from ~~about~~ 0.01 weight percent to ~~about~~ 5.0 weight percent of at least one surfactant;

from ~~about~~ 0.01 weight percent to ~~about~~ 5.0 weight percent of at least one rheology modifier;

from ~~about~~ 0.01 weight percent to ~~about~~ 2.5 weight percent of at least one wetting and dispersing agent; and

from ~~about~~ 0.01 weight percent to ~~about~~ 0.5 weight percent of at least one biocide or biostatic agent.

[006] The above and other needs are met by a biodegradable aqueous dispersion for coating food contact substrates. According to one example, this dispersion is

WHAT IS CLAIMED IS

Claim 1. A biodegradable aqueous dispersion for coating food contact substrates, the dispersion comprising:

from ~~about~~ 35 to ~~about~~ 75 weight percent water;

from ~~about~~ 25 to ~~about~~ 65 weight percent of polyhydroxyalkanoates;

from ~~about~~ 0.01 weight percent to ~~about~~ 5.0 weight percent of at least one surfactant;

from ~~about~~ 0.01 weight percent to ~~about~~ 5.0 weight percent of at least one rheology modifier;

from ~~about~~ 0.01 weight percent to ~~about~~ 2.5 weight percent of at least one wetting and dispersing agent; and

from ~~about~~ 0.01 weight percent to ~~about~~ 0.5 weight percent of at least one biocide or biostatic agent.

Claim 2. The biodegradable aqueous dispersion of Claim 1, wherein the dispersion comprises from ~~about~~ 25 to ~~about~~ 65 weight percent poly-3-hydroxybutyrate-co-3-hydroxyhexanoate ("P(3HB-co-3HHx)").

Claim 3. The biodegradable aqueous dispersion of Claim 2, wherein the P(3HB-co-3HHx) comprises from ~~about~~ 75 to ~~about~~ 99 mole percent hydroxybutyrate and from ~~about~~ 1 to ~~about~~ 25 mole percent hydroxyhexanoate.

Claim 4. The biodegradable aqueous dispersion of Claim 1, wherein the dispersion comprises from ~~about~~ 1 to ~~about~~ 25 weight percent of at least one polyhydroxyalkanoate comprising from ~~about~~ 25 to ~~about~~ 50 mole percent of hydroxyvalerate, hydroxyhexanoate, hydroxyoctanoate, and/or hydroxydecanoate.

Claim 5. The biodegradable aqueous dispersion of Claim 1, wherein the dispersion comprises polyhydroxyalkanoates having a weight average molecular weight from ~~about~~ 50,000 Daltons to ~~about~~ 2.5 million Daltons.

Claim 6. The biodegradable aqueous dispersion of Claim 1, wherein the dispersion comprises particles having an average particle size from ~~about~~ 10 nm to ~~about~~ 50 μm.

Claim 7. The biodegradable aqueous dispersion of Claim 1, wherein the dispersion has an average solid content from ~~about~~ 25 percent to ~~about~~ 65 percent solids.

Claim 8. The biodegradable aqueous dispersion of Claim 1, wherein the dispersion further comprises from ~~about~~ 0.01 weight percent to ~~about~~ 5.0 weight percent of at least one surfactant selected from the group consisting of polysorbates, aromatic polyethylene oxides, sorbitan derivatives, block copolymers of poly(ethylene oxide) and poly(propylene oxide), poly(glycol ethers), poly(vinyl alcohol), alkyl sulfates, alkyl phosphates, stearates, and mixtures thereof.

Claim 9. The biodegradable aqueous dispersion of Claim 8, wherein the at least one surfactant has a hydrophilic-lipophilic balance which is greater than 10.

Claim 10. The biodegradable aqueous dispersion of Claim 1, wherein the dispersion further comprises from ~~about~~ 0.01 weight percent to ~~about~~ 5.0 weight percent of at least one rheology modifier selected from the group consisting of polysaccharides, acrylate-based emulsion copolymers, viscosity depressants, and viscosity enhancers.

Claim 11. A biodegradable food service item comprising:

a biodegradable substrate having at least one food contact surface; and

a coating applied over the at least one food contact surface,

wherein the coating is applied as a biodegradable aqueous dispersion, comprising

from ~~about~~ 35 to ~~about~~ 75 weight percent water;

from ~~about~~ 25 to ~~about~~ 65 weight percent of polyhydroxyalkanoates;

from ~~about~~ 0.01 weight percent to ~~about~~ 5.0 weight percent of at least one surfactant;

from ~~about~~ 0.01 weight percent to ~~about~~ 5.0 weight percent of at least one rheology modifier;

from ~~about~~ 0.01 weight percent to ~~about~~ 2.5 weight percent of at least one wetting and dispersing agent; and

from ~~about~~ 0.01 weight percent to ~~about~~ 0.5 weight percent of at least one biocide or biostatic agent.

Claim 12. The biodegradable food service item of Claim 11, wherein the biodegradable substrate comprises a biodegradable plate, cup, bowl, fiber tray, or eating utensil.

Claim 13. The biodegradable food service item of Claim 11, wherein the coating is applied over the at least one food contact surface at a coating weight, on a dry basis, from ~~about~~ 2 to ~~about~~ 25 grams per square meter.

Claim 14. The biodegradable food service item of Claim 11, wherein the coating exhibits a Cobb water absorption value, measured according to TAPPI Standard T441, of less than 20 grams per square meter.

Claim 15. The biodegradable food service item of Claim 11, wherein the coating exhibits Kit Test grease resistance value, measured according to TAPPI Standard T559 cm-12, of greater than Kit Value 5.