Despite the research efforts in improving blockiness or stickiness in the past, there is still a need for a coated polymeric particulates having improved blocking and stickiness properties, and there is also a need for a coating process for polymeric particulates having improved blocking and stickiness properties.

Summary ~~of the Invention~~

The ~~instant invention~~present disclosure provides coated polymeric particulates, and a method for producing polymeric particulates.

In a first aspect of the present disclosure, there is provided a coated polymeric particulate comprising:

one or more polymeric particulates; and

a coating composition present on at least a portion of at least one surface of said polymeric particulate, wherein said coating composition is comprises a dispersion consisting essentially of:

one or more base polymers selected from the group consisting of homopolymers and copolymers (including elastomers) of one or more alpha-olefins, copolymers (including elastomers) of an alpha-olefin with a conjugated or non-conjugated diene, polyolefins (including elastomers) such as copolymers of two or more alpha-olefins with a conjugated or non-conjugated diene, ethylene-vinyl compound copolymers, styrenic copolymers (including elastomers), styrene block copolymers (including elastomers), olefin block copolymers, polyvinyl compounds, thermoplastic polyesters, polycarbonates, glassy hydrocarbon-based resins, saturated mono-olefins, vinyl esters, acrylonitrile, methacrylonitrile, acrylamide, resins produced by ring opening metathesis and cross metathesis polymerization and combinations thereof;

one or more stabilizing agents;

one or more biocide agents;

one or more neutralizing agents; and

water.

In a second aspect of the present disclosure, there is provided a method for producing polymeric particulates comprising the steps of:

selecting one or more polymeric particulates,

selecting a coating composition comprising a dispersion consisting essentially of:

one or more base polymers selected from the group consisting of homopolymers and copolymers (including elastomers) of one or more alpha-olefins, copolymers (including elastomers)

of an alpha-olefin with a conjugated or non-conjugated diene, polyolefins (including elastomers) such as copolymers of two or more alpha-olefins with a conjugated or non-conjugated diene, ethylene-vinyl compound copolymers, styrenic copolymers (including elastomers), styrene block copolymers (including elastomers), olefin block copolymers, polyvinyl compounds, thermoplastic polyesters, polycarbonates, glassy hydrocarbon-based resins, saturated mono-olefins, vinyl esters, acrylonitrile, methacrylonitrile, acrylamide, resins produced by ring opening metathesis and cross metathesis polymerization and combinations thereof;

one or more stabilizing agents;

one or more biocide agents;

one or more neutralizing agents; and

water;

applying said coating composition to at least one or more surfaces of said one or more polymeric particulates;

thereby forming one or more coated polymeric particulates.

In one embodiment, the ~~instant invention~~present disclosure provides coated polymeric particulates comprising (a) one or more polymeric particulates; and (b) a coating composition present on at least a portion of at least one surface of said polymeric particulates, wherein said coating composition comprises a dispersion comprising: (1) one or more base polymers, (2) one or more stabilizing agents; (3) one or more biocide agents; (4) one or more neutralizing agents; and (5) water.

In an alternative embodiment, the present disclosure~~instant invention~~ further provides a method for producing polymeric particulates comprising the steps of: (a) selecting one or more polymeric particulates; (b) selecting a coating composition comprising a dispersion comprising: (1) one or more base polymers, (2) one or more stabilizing agents, (3) one or more biocide agents, (4) one or more neutralizing agents, and (5) water; (c) applying said coating composition to at least one or more surfaces of said one or more polymeric particulates; and (d) thereby forming one or more coated polymeric particulates.

In an alternative embodiment, the present disclosure~~instant invention~~ provides coated polymeric particulates, and method of producing the same, in accordance with any of the preceding embodiments, except that the one or more polymeric particulates are selected from the group consisting of ethylene based polymers, and propylene based polymer.

In an alternative embodiment, the present disclosure~~instant invention~~ provides coated polymeric particulates, and method of producing the same, in accordance with any of the preceding embodiments, except that the one or more polymeric particulates are foam.

In an alternative embodiment, the present disclosure~~instant invention~~ provides coated polymeric particulates, and method of producing the same, in accordance with any of the preceding embodiments, except that the ethylene based polymer comprises an ethylene interpolymer.

In an alternative embodiment, the present disclosure~~instant invention~~ provides coated polymeric particulates, and method of producing the same, in accordance with any of the preceding embodiments, except that the propylene based polymer comprises a propylene interpolymer.

In an alternative embodiment, the present disclosure~~instant invention~~ provides coated polymeric particulates, and method of producing the same, in accordance with any of the preceding embodiments, except that the ethylene interpolymer is an interpolymer of ethylene and one or more α-olefin comonomers, or ethylene-propylene-diene-monomer (EPDM).

In an alternative embodiment, the present disclosure~~instant invention~~ provides coated polymeric particulates, and method of producing the same, in accordance with any of the preceding embodiments, except that the propylene interpolymer is an interpolymer of propylene and one or more α-olefin comonomers.

In an alternative embodiment, the present disclosure~~instant invention~~ provides coated polymeric particulates, and method of producing the same, in accordance with any of the preceding embodiments, except that the stabilizing agent comprises the reaction product of oleic acid and metal hydroxide in the presence of said water.

In an alternative embodiment, the present disclosure~~instant invention~~ provides coated polymeric particulates, and method of producing the same, in accordance with any of the preceding embodiments, except that the metal hydroxide is NaOH, or KOH.

In an alternative embodiment, the present disclosure~~instant invention~~ provides coated polymeric particulates, and method of producing the same, in accordance with any of the preceding embodiments, except that the dispersion has a pH in the range of greater than 8 and less than 12.

In an alternative embodiment, the present disclosure~~instant invention~~ provides coated polymeric particulates, and method of producing the same, in accordance with any of the preceding embodiments, except that the dispersion has a volume average particle size diameter in the range of from 0.1 to 5 micrometer.

In an alternative embodiment, the present disclosure~~instant invention~~ provides coated polymeric particulates, and method of producing the same, in accordance with any of the preceding embodiments, except that the dispersion has a volume average particle size diameter in the range of from 0.1 to 2 micrometer.

In an alternative embodiment, the present disclosure~~instant invention~~ provides coated polymeric particulates, and method of producing the same, in accordance with any of the preceding embodiments, except

that the dispersion has a volume average particle size diameter in the range of from 0.1 to 1 micrometer.

In an alternative embodiment, the present disclosure~~instant invention~~ provides coated polymeric particulates, and method of producing the same, in accordance with any of the preceding embodiments, except that the dispersion has a solid content in the range of 35 to 65 weight percent, based on the total weight of the dispersion.

In an alternative embodiment, the present disclosure~~instant invention~~ provides coated polymeric particulates, and method of producing the same, in accordance with any of the preceding embodiments, except that the one or more biocide agents are selected from the group consisting of [heavy metals e.g mercury based], [formaldehyde], [formaldehyde donors e.g triazines], [cyanobutanes. e.g 1,2-dibromo-2,4-dicyanobutane (DBDCB) and 2-bromo-2-intropropane-1,3-diol (Bronopol)], [isothiazolinones e.g 1,2 benzisothiazolin-3-one (BIT)], [combination of 5-chloro-2-methyl-4-isothiazolin-3-one (CIT) and 2-methyl-4-isothiazolin-3-one (MIT)], and [2-methyl-4-isothiazolin-3-one (MIT)] and [combination of 2-methyl-4-isothiazolin-3-one (MIT) and 1,2 benzisothiazolin-3-one (BIT)].

Brief Description of the Drawings

For the purpose of illustrating the invention, there is shown in the drawings a form that is exemplary; it being understood, however, that this invention is not limited to the precise arrangements and instrumentalities shown.

Fig. 1 is a graph illustrating the relationship between the relative stickiness index and time of the inventive and comparative examples;

Fig. 2 is a graph illustrating the relationship between the unconfined yield strength and time of the inventive and comparative examples;

Fig. 3 is an illustrative diagram showing a first process embodiment according to instant invention;

Fig. 4 is an illustrative diagram showing a second process embodiment according to instant invention; and

Fig. 5 is an illustrative diagram showing a third process embodiment according to instant invention.