WHAT IS CLAIMED IS:

1. An article of manufacture comprising:

a binder and a filler, the binder being a polyvinyl alcohol (PVOH), cellulose nanofibrils, or a combination of the PVOH and cellulose nanofibrils, and the filler being deinking waste solids comprising ash and cellulose fines.

2. The article of Claim 1, wherein the article is a fiber or a film.

3. The article of Claim 2, wherein the binder is impregnated with the filler.

4. The article of Claim 2, wherein the binder is encapsulating the filler.

5. The article of Claim 2, wherein the filler is present in a range between about 1 wt. % to about 80 wt. % based on the total weight of the fiber.

6. The article of Claim 2, wherein the PVOH is present in a range between about 20 wt. % to about 99 wt. % based on the total weight of the fiber.

7. The article of Claim 2, wherein the cellulose nanofibrils are present in a range between about 1 wt. % to about 80 wt. % based on the total weight of the fiber.

8. The article of Claim 2, wherein the ash is precipitated calcium carbonate, ground calcium carbonate, gypsum, titanium dioxide, clay, silica, or any combination thereof.

9. The article of Claim 2, wherein the filler comprises particles having an average size of less than about 20 micrometers in diameter.

10. The article of Claim 2, further comprising a processing aid.

11. The article of Claim 10, wherein the processing aid is present in a range between about 0.5 wt. % to about 10 wt. % based on the total weight of the fiber.

12. The article of Claim 10, wherein the processing aid is carboxymethylcellulose, starch, glyoxal, glutaraldehyde, dialdehydes boric acid carbonate, zirconium ammonium carbonate, glyoxalated polyacrylamide, polyamide-epichlorohydrin, polyamine-epichlorohydrin, urea-formaldehyde, melamine-formaldehyde, polyethyleneimine, propylene glycol, diethylene glycol, triethylene glycol, dipropylene glycol, glycerol, or any combination thereof.

13. A paper web comprising the article of Claim 2, wherein the article is the fiber.

14. A paper web comprising the article of Claim 1, wherein the paper web comprises a cellulosic substrate having a surface, and the article is substantially disposed onto the surface or impregnates the cellulosic substrate.

15. The paper web of Claim 14, wherein the article impregnates the cellulosic substrate and has a particle size with an average diameter in a range between about 1 micrometer and about 80 micrometers.

16. An article of manufacture comprising:

cellulose nanofibrils and a filler, the filler being deinking waste solids comprising ash and cellulose fines, and the cellulose nanofibrils being at least one of a nanofibrillated cellulose or a cellulose fibril.

17. The article of Claim 16, wherein the article is a fiber or a film.

18. The article of Claim 17, wherein the cellulose nanofibrils are impregnated with the filler.

19. The article of Claim 17, wherein the cellulose nanofibrils encapsulate the filler.

20. The article of Claim 17, wherein the filler is present in a range between about 5 wt. % to about 50 wt. % based on the total weight of the fiber.

21. An article of manufacture comprising:

a PVOH and a filler, the PVOH being present in a range between about 20 wt. % to about 85 wt. % based on the total fiber weight, and the filler being deinking waste solids comprising ash and cellulose fines.

22. The article of Claim 21, wherein the article is a fiber or a film.

23. The article of Claim 21, wherein the PVOH has a degree of polymerization in a range between about 500 to about 3,000.

24. The article of Claim 23, wherein the degree of polymerization is in a range between about 1,000 to about 1,600.

25. The article of Claim 21, wherein the PVOH has a degree of hydrolysis of greater than about 95%.

26. The article of Claim 25, wherein the PVOH has a degree of hydrolysis of greater than about 98 %.

27. A method of making an article of manufacture, the method comprising.

impregnating or encapsulating a binder with a filler, the filler being deinking waste solids comprising ash and cellulose fines, and the binder being a PVOH, cellulose nanofibrils, or a combination of the PVOH and cellulose nanofibrils; and

preparing an extrudable dope.

28. The method of Claim 27, wherein the article is a fiber or a film.

29. The method of Claim 28, further comprising wet spinning, dry spinning, shear spinning, or slit extruding the extrudable dope to form the fiber or the film.

30. The method of Claim 28, wherein the cellulose nanofibrils are at least one of a cellulose nanofibril or a cellulose fibrid.

31. The method of Claim 28, further comprising homogenizing wood pulp fibers or other fibrillatable cellulose to form the cellulose nanofibrils.

Claims

1. An article of manufacture comprising:

a binder and a filler, the binder being a polyvinyl alcohol (PVOH), and the filler being deinking waste solids comprising ash and cellulose fines;

wherein the article is a fiber or a film, and the binder impregnates or encapsulates the deinking waste solids to form the fiber or the film, and the PVOH is present in an amount in a range between about 20 wt. % to about 99 wt. % based on the total weight of the article.

2. The article of Claim 1, wherein the filler is present in a range between about 1 wt. % to about 80 wt. % based on the total weight of the fiber.

3. The article of Claim 1, wherein the ash is precipitated calcium carbonate, ground calcium carbonate, gypsum, titanium dioxide, clay, silica, or any combination thereof.

4. The article of Claim 1, wherein the filler comprises particles having an average size of less than about 20 micrometers in diameter.

5. The article of Claim 1, further comprising a processing aid.

6. The article of Claim 5, wherein the processing aid is present in a range between about 0.5 wt. % to about 10 wt. % based on the total weight of the fiber.

7. The article of Claim 5, wherein the processing aid is carboxymethylcellulose, starch, glyoxal, glutaraldehyde, dialdehydes boric acid carbonate, zirconium ammonium carbonate, glyoxalated polyacrylamide, polyamide-epichlorohydrin, polyamine-epichlorohydrin, urea-formaldehyde, melamine-formaldehyde, polyethyleneimine, propylene glycol, diethylene glycol, triethylene glycol, dipropylene glycol, glycerol, or any combination thereof.

8. A paper web comprising the article of Claim 1, wherein the article is the fiber.

9. A paper web comprising the article of Claim 1, wherein the paper web comprises a cellulosic substrate having a surface, and the article is substantially disposed onto the surface or impregnates the cellulosic substrate.

10. The paper web of Claim 9, wherein the article impregnates the cellulosic substrate and has a particle size with an average diameter in a range between about 1 micrometer and about 80 micrometers.

11. An article of manufacture comprising:

a PVOH and a filler, the PVOH being present in a range between about 20 wt. % to about 85 wt. % based on the total fiber weight, and the filler being deinking waste solids comprising ash and cellulose fines;

wherein the article is a fiber or a film.

12. The article of Claim 11, wherein the PVOH has a degree of polymerization in a range between about 500 to about 3,000.

13. The article of Claim 12, wherein the degree of polymerization is in a range between about 1,000 to about 1,600.

14. The article of Claim 11, wherein the PVOH has a degree of hydrolysis of greater than about 95%.

15. The article of Claim 14, wherein the PVOH has a degree of hydrolysis of greater than about 98 %.

16. A method of making an article of manufacture, the method comprising:

impregnating or encapsulating a binder with a filler, the filler being deinking waste solids comprising ash and cellulose fines, and the binder being a PVOH; and

preparing an extrudable dope;

wherein the article is a fiber or a film.

17. The method of Claim 16, further comprising wet spinning, dry spinning, shear spinning, or slit extruding the extrudable dope to form the fiber or the film.

18. The method of Claim 16, further comprising cellulose nanofibrils which are at least one of a cellulose nanofibril or a cellulose fibrid.

19. The method of Claim 18, further comprising homogenizing wood pulp fibers or other fibrillatable cellulose to form the cellulose nanofibrils.