

CLAIMS

What is claimed is:

- 1 1. An absorbent composite comprising,
2 a nonwoven substrate, an absorbent layer, and a cover layer, wherein the nonwoven
3 substrate comprises a nonwoven support sheet hydro-entangled with a carded fiber web; wherein
4 the absorbent layer comprises super absorbent polymer particles coated with microfibrillated
5 cellulose; wherein the cover layer substantially co-extensive with the absorbent layer and is not
6 mechanically or chemically treated adhere to the absorbent layer.
- 1 2. The absorbent composite of claim 1, further comprising a tissue or nonwoven
2 wrap substantially coextensive with the outer surface of the composite and overlapping itself
3 along the entire longitudinal length of the composite.
- 1 3. The absorbent composite of claim 1, further comprising a polypropylene
2 spunbond support sheet.
- 1 4. The absorbent composite of claim 1, further comprising a polyester carded fiber
2 web.
- 1 5. The absorbent composite of claim 1, wherein no adhesive is used to bind the
2 absorbent layer to the carded fiber web.
- 1 6. The absorbent composite of claim 1, wherein the microfibrillated cellulose serves
2 to bind the superabsorbent polymer particles to each other.
- 1 7. The absorbent composite of claim 1, wherein the microfibrillated cellulose serves
2 to bind the superabsorbent polymer particles to each other through hydrogen bonding.
- 1 8. The absorbent composite of claim 1, wherein the microfibrillated cellulose serves
2 to bind the superabsorbent polymer particles to the carded fiber web.
- 1 9. The absorbent composite of claim 1, wherein the microfibrillated cellulose serves
2 to bind the superabsorbent polymer particles to the carded fiber web through hydrogen binding.
- 1 10. The absorbent composite of claim 1, wherein the microfibrillated cellulose serves
2 to bind the cover layer to the superabsorbent polymer particles through hydrogen bonding.
- 1 11. The absorbent composite of claim 1, wherein the microfibrillated cellulose serves
2 to bind the cover layer to the carded fibers through hydrogen bonding.
- 1 12. A method for producing an absorbent composite comprising carding of fibers to
2 form a carded web, placing the carded web on top of a nonwoven support sheet, mechanically
3 joining the carded web with the nonwoven supporting sheet through hydro-entanglement to form

4 a nonwoven substrate, preparing an MFC-coated SAP slurry by combining a mixture of SAP
5 slurry with a mixture of MFC slurry, applying the MFC-coated SAP slurry to the nonwoven
6 substrate, withdrawing excess liquid from the nonwoven substrate, placing a cover layer on top
7 of the MFC-coated SAP surface, and drying the composite.

1 13. The method of claim 12, wherein the fibers comprise polyester fibers.

1 14. The method of claim 12, wherein the nonwoven support sheet comprises
2 polypropylene spunbond.

1 15. The method of claim 12, wherein the SAP slurry and the MFC slurry are
2 combined homogenously.

1 16. The method of claim 12, wherein the excess liquid is withdrawn by a vacuum
2 force.

1 17. An absorbent article comprising a fluid-permeable topsheet, a fluid-impermeable
2 backsheet, and an acquisition distribution layer and absorbent composite disposed between the
3 topsheet and backsheet, wherein the absorbent composite comprises a hydro-entangled
4 nonwoven substrate, an absorbent layer, and a cover layer.

1 18. The absorbent article of claim 18, further comprising an acquisition distribution
2 layer.

1 19. The absorbent article of claim 19, wherein the acquisition distribution layer is
2 located between the topsheet and absorbent composite.

1 20. The absorbent article of claim 18, wherein the absorbent composite is wrapped in
2 a wrapsheet.

1 21. The absorbent article of claim 18, wherein the absorbent composite is oriented
2 with the nonwoven substrate facing the body.

1 22. The absorbent composite of claim 18, further comprising a tissue or nonwoven
2 wrap substantially coextensive with the outer surface of the composite and overlapping itself
3 along the entire longitudinal length of the composite.

1 23. The absorbent composite of claim 18, further comprising a polypropylene
2 spunbond support sheet.

1 24. The absorbent composite of claim 18, further comprising a polyester carded fiber
2 web.

1 25. The absorbent composite of claim 18, wherein no adhesive is used to bind the
2 absorbent layer to the carded fiber web.

1 26. The absorbent composite of claim 18, wherein the microfibrillated cellulose
2 serves to bind the superabsorbent polymer particles to each other.

1 27. The absorbent composite of claim 18, wherein the microfibrillated cellulose
2 serves to bind the superabsorbent polymer particles to each other through hydrogen bonding.

1 28. The absorbent composite of claim 18, wherein the microfibrillated cellulose
2 serves to bind the superabsorbent polymer particles to the carded fiber web.

1 29. The absorbent composite of claim 18, wherein the microfibrillated cellulose
2 serves to bind the superabsorbent polymer particles to the carded fiber web through hydrogen
3 binding.

1 30. The absorbent composite of claim 18, wherein the microfibrillated cellulose
2 serves to bind the cover layer to the superabsorbent polymer particles through hydrogen bonding.

1 31. The absorbent composite of claim 18, wherein the microfibrillated cellulose
2 serves to bind the cover layer to the carded fibers through hydrogen bonding.

1 32. A method for producing an absorbent composite comprising carding of-fibers to
2 form a carded web, placing the carded web on top of a nonwoven support sheet, mechanically
3 joining the carded web with the nonwoven supporting sheet through hydro-entanglement to form
4 a nonwoven substrate, depositing SAP either uniformly or in a predetermined pattern on to the
5 nonwoven substrate, preparing an microfibrillated cellulose slurry, applying the microfibrillated
6 cellulose slurry to the nonwoven substrate, withdrawing excess liquid from the nonwoven
7 substrate with a vacuum force, placing a cover layer on top of the microfibrillated cellulose -
8 coated superabsorbent polymer surface, and drying the composite.

1 33. The method of claim 12, wherein the fibers comprise polyester fibers.

1 34. The method of claim 12, wherein the nonwoven support sheet comprises
2 polypropylene spunbond.

1 35. An absorbent composite comprising,
2 a nonwoven substrate, an absorbent layer, and a cover layer; wherein the absorbent layer
3 comprises super absorbent polymer particles coated with microfibrillated cellulose.

1 36. The absorbent composite of claim 35, wherein the nonwoven substrate comprises
2 a nonwoven support sheet hydro-entangled with a carded fiber web.

1 37. The absorbent composite of claim 35, wherein the cover layer is substantially co-
2 extensive with the absorbent layer.

1 38. The absorbent composite of claim 35, wherein the cover layer is a tissue material.

1 39. The absorbent composite of claim 35, wherein the cover layer is a nonwoven
2 material.

1 40. The absorbent composite of claim 35, wherein the cover layer is not mechanically
2 or chemically treated to adhere to the absorbent layer.

CLAIMS

1. An absorbent composite comprising, a nonwoven substrate, an absorbent layer, and a cover layer, wherein the nonwoven substrate comprises a nonwoven support sheet hydro-entangled with a carded fiber web; wherein the absorbent layer comprises super absorbent polymer particles coated with microfibrillated cellulose; wherein the cover layer substantially co-extensive with the absorbent layer and is not mechanically or chemically treated to adhere to the absorbent layer, and wherein no adhesive is used to bind the cover layer to the absorbent layer.
2. The absorbent composite of claim 1, further comprising a tissue or nonwoven wrap substantially coextensive with the outer surface of the composite and overlapping itself along the entire longitudinal length of the composite.
3. The absorbent composite of claim 1, wherein the nonwoven support sheet comprises a polypropylene spunbond support sheet.
4. The absorbent composite of claim 1, wherein the carded fiber web comprises a polyester carded fiber web.
5. The absorbent composite of claim 1, wherein no adhesive is used to bind the absorbent layer to the carded fiber web.
6. The absorbent composite of claim 1, wherein the microfibrillated cellulose serves to bind the superabsorbent polymer particles to each other.
7. The absorbent composite of claim 1, wherein the microfibrillated cellulose serves to bind the superabsorbent polymer particles to each other through hydrogen bonding.
8. The absorbent composite of claim 1, wherein the microfibrillated cellulose serves to bind the superabsorbent polymer particles to the carded fiber web.

9. The absorbent composite of claim 1, wherein the microfibrillated cellulose serves to bind the superabsorbent polymer particles to the carded fiber web through hydrogen bonding.

10. The absorbent composite of claim 1, wherein the microfibrillated cellulose serves to bind the cover layer to the superabsorbent polymer particles through hydrogen bonding.

11. The absorbent composite of claim 1, wherein the microfibrillated cellulose serves to bind the cover layer to the carded fibers through hydrogen bonding.

12. A method for producing an absorbent composite comprising carding of fibers to form a carded web, placing the carded web on top of a nonwoven support sheet, mechanically joining the carded web with the nonwoven supporting sheet through hydro-entanglement to form a nonwoven substrate, preparing an WC-coated SAP slurry by combining a mixture of SAP slurry with a mixture of WC slurry, applying the WC-coated SAP slurry to the nonwoven substrate, withdrawing excess liquid from the nonwoven substrate to form an absorbent layer, placing a cover layer on top of the WC-coated SAP surface of the absorbent layer, and drying the composite, wherein the cover layer is not mechanically or chemically treated to adhere to the absorbent layer.

13. The method of claim 12, wherein the fibers comprise polyester fibers.

14. The method of claim 12, wherein the nonwoven support sheet comprises polypropylene spunbond.

15. The method of claim 12, wherein the SAP slurry and the WC slurry are combined homogenously.

16. The method of claim 12, wherein the excess liquid is withdrawn by a vacuum force.

17. The method of claim 12, wherein no adhesive is used to bind the cover layer to

the absorbent layer.

18. An absorbent article comprising a fluid-permeable topsheet, a fluid-impermeable backsheet, and an acquisition distribution layer and absorbent composite disposed between the topsheet and backsheet, wherein the absorbent composite comprises a hydro-entangled nonwoven substrate, an absorbent layer, and a cover layer, wherein the cover layer is not mechanically or chemically treated to adhere to the absorbent layer, and wherein no adhesive is used to bind the cover layer to the absorbent layer.

19. The absorbent article of claim 18, wherein the acquisition distribution layer is located between the topsheet and absorbent composite.

20. The absorbent article of claim 18, wherein the absorbent composite is wrapped in a wrapsheet.