

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Haggquist	
Application No.: 11/801,647	Art Unit: 1797
Filed: 05/09/2007	Examiner: Greene, Jason M
Title: Active Particle-Enhanced Membrane and Method for Making and using the Same	
Attorney Docket No.: 6000.108.01US (TT-8)	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE TO RESTRICTION REQUIREMENT

Dear Sir:

In response to the Office Action of March 18, 2010, please amend this application as follows:

A listing of the claims begins on page 2.

Remarks begin on page 13.

The following listing of claims replaces all prior versions and previously submitted listing of claims in this application.

I CLAIM:

1. (Original) A breathable membrane comprising:
 - a base material solution;
 - a plurality of active particles in contact with the base material solution, wherein the active particles are capable of improving the breathability of the base material solution;
 - at least one removable encapsulant in an amount effective to prevent at least a substantial portion of the active particles from being deactivated prior to removal of the removable encapsulant, and
 - wherein the removable encapsulant is removable to reactivate at least a portion of the active particles to improve the breathability of the membrane.
2. (Original) The membrane according to claim 1, wherein the base material exhibits water-proof properties when converted into a non-solution state, and the membrane is a water-proof breathable membrane.
3. (Original) The membrane according to claim 1, wherein the membrane possesses anti-static properties due at least in part to the active particles.
4. (Original) The membrane according to claim 1, wherein the membrane possesses stealth properties due at least in part to the active particles.

5. (Original) The membrane according to claim 1, wherein the membrane possesses odor adsorbance properties due at least in part to the active particles.
6. (Original) The membrane according to claim 1, wherein the membrane possesses quick drying properties due at least in part to the active particles.
7. (Original) The membrane according to claim 1, wherein the base material solution is selected from the group consisting of: a polyurethane solution, a polyacrylic solution, 1,3 propanediol terephthalate solutions, and any suitable combination thereof.
8. (Original) The membrane according to claim 1, wherein the active particles comprise activated carbon.
9. (Original) The membrane according to claim 1, wherein the active particles comprise zeolites.
10. (Original) The membrane according to claim 1, wherein the active particles are selected from the group consisting of: antibacterial, antiviral, antimicrobial, antifungal particles, and any suitable combination thereof.
11. (Original) The membrane according to claim 1, wherein the active particles are selected from the group consisting of: activated carbon, aluminum oxide (activated alumina), silica gel, soda ash, aluminum trihydrate, baking soda, p-methoxy-2-ethoxyethyl ester cinnamic acid

(cinoxate), zinc oxide, zeolites, titanium dioxide, molecular filter-type materials, and any suitable combination thereof.

12. (Original) The membrane according to claim 1, wherein the at least one removable encapsulant is selected from the group consisting of: water-soluble surfactants, surfactants, salts (*e.g.*, sodium chloride, calcium chloride), polymer salts, polyvinyl alcohols, waxes (*e.g.*, paraffin, carnauba), photo-reactive materials, degradable materials, bio-degradable materials, ethoxylated acetylenic diols, starches, lubricants, glycols, corn starch, mineral spirits, organic solvents, paraffinic solvents, and any suitable combination thereof.

13. (Original) The membrane according to claim 1, wherein the active particles comprise about 0% to about 75% of the membrane.

14. (Original) The membrane according to claim 1, wherein the active particles comprise about 30% to about 50% of the membrane.

15. (Original) The membrane according to claim 1, wherein the active particles comprise about 0% to about 30% of the membrane.

16. (Original) The membrane according to claim 1, wherein the active particles comprise about 0% to about 50% of the membrane.

17. (Original) The membrane according to claim 1, wherein the membrane is a yarn or fabric.

18. (Original) The membrane according to claim 1, wherein the membrane is a plastic material.
19. (Original) The membrane according to claim 1, wherein the membrane is an article of clothing.
20. (Original) The membrane according to claim 1, wherein the membrane is a fabric.
21. (Original) The membrane according to claim 1, wherein the membrane is a coated fabric.
22. (Original) The membrane according to claim 1, wherein the membrane is coated on to ePTFE.
23. (Original) The membrane according to claim 1, wherein the membrane is a coated article of clothing.
24. (Original) 24. The membrane according to claim 1, wherein the membrane comprises a non-woven membrane.
25. (Original) The membrane according to claim 1, wherein the membrane is a laminate.
26. (Original) The membrane according to claim 1, wherein the membrane is selected from the group consisting of bags, foam, plastic components, upholstery, carpeting, rugs, mats, sheets, towels, rugs, pet beds, mattress pads, mattresses, curtains, filters, shoes, insoles, diapers, shirts, pants, blouses, undergarments, protective suits, and any suitable combination thereof.

27. (Original) The membrane according to claim 1, wherein the removable encapsulant is a first removable encapsulant, and the membrane further comprises a second removable encapsulant.

28. (Original) A composition comprising:
a base material; and
a plurality of active particles in contact with the base material, wherein the active particles improve the moisture vapor transport capacity of the composition.

29. (Original) The composition of claim 28, wherein the active particles comprise about 0% to about 75% of the composition.

30. (Original) The composition of claim 28, wherein the active particles comprise about 30% to about 50% of the composition.

31. (Original) The composition of claim 28, wherein the active particles comprise about 0% to about 30% of the composition.

32. (Original) The composition of claim 28, wherein the active particles comprise about 25% to about 75% of the composition.

33. (Original) The composition of claim 28, wherein the active particles comprise about 0% to about 50% of the composition.

34. (Original) The composition of claim 28, wherein the base material exhibits water-proof properties when converted into a non-solution state.
35. (Original) The composition of claim 28, wherein the composition possesses anti-static properties at least in part due to the active particles.
36. (Original) The composition of claim 28, wherein the composition possesses stealth properties at least in part due to the active particles.
37. (Original) The composition of claim 28, wherein the composition possesses odor adsorbance properties at least in part due to the active particles.
38. (Original) The composition of claim 28, wherein the composition possesses quick drying properties at least in part due to the active particles.
39. (Original) The composition of claim 28, wherein the active particles are selected from the group consisting of: activated carbon, aluminum oxide (activated alumina), silica gel, soda ash, aluminum trihydrate, baking soda, p-methoxy-2-ethoxyethyl ester cinnamic acid (cinoxate), zinc oxide, zeolites, titanium dioxide, molecular filter-type materials, and any suitable combination thereof.
40. (Original) The composition of claim 28 further comprising: at least one removable encapsulant in an amount effective to prevent at least a substantial portion of the active particles from being deactivated prior to removal of the removable encapsulant, and wherein the removable encapsulant is removable to reactivate at least a portion of the active particles to improve the moisture vapor transport capacity of the composition.

41. (Original) The composition of claim 40, wherein the at least one removable encapsulant is selected from the group consisting of: water-soluble surfactants, surfactants, salts (*e.g.*, sodium chloride, calcium chloride), polymer salts, polyvinyl alcohols, waxes (*e.g.*, paraffin, carnauba), photo-reactive materials, degradable materials, bio-degradable materials, ethoxylated acetylenic diols, starches, lubricants, glycols, corn starch, mineral spirits, organic solvents, paraffinic solvents, and any suitable combination thereof.

42. (Withdrawn) A method for producing a breathable membrane, the method comprising:

- encapsulating a plurality of active particles with at least one removable encapsulant to produce encapsulated active particles;
- mixing the encapsulated particles with a base material solution to obtain a mixture solution; and
- converting the mixture solution into non-solution form to produce the breathable membrane, wherein breathable properties of the membrane are due at least in part to the mixing of the active particles.

43. (Withdrawn) The method of claim 42, wherein the base material solution further exhibits water-proof properties when converted into non-solution form.

44. (Withdrawn) The method of claim 42, wherein the membrane possesses anti-static properties due at least in part to the mixing of the active particles.

45. (Withdrawn) The method of claim 42, wherein the membrane possesses quick drying properties due at least in part to the mixing of the active particles.
46. (Withdrawn) The method of claim 42, wherein the membrane possesses odor adsorbance properties due at least in part to the mixing of the active particles.
47. (Withdrawn) The method of claim 42, wherein the membrane possesses stealth properties due at least in part to the mixing of the active particles.
48. (Withdrawn) The method of claim 42, wherein the encapsulating and the mixing are performed in a single step.
49. (Withdrawn) The method of claim 42, further comprising removing at least a portion of the encapsulant from the encapsulated active particles.
50. (Withdrawn) The method of claim 49, wherein the removing comprises dissolving the encapsulant.
51. (Withdrawn) The method of claim 49, wherein the removing comprises evaporating the encapsulant.
52. (Withdrawn) The method of claim 49, wherein the encapsulant deactivates the active particles and the removing comprises reactivating the active particles.
53. (Withdrawn) The method of claim 42, wherein the base material solution is selected from the group consisting of: a polyurethane solution, a polyacrylic solution, 1,3 propanediol terephthalate solutions, and any suitable combination thereof.

54. (Withdrawn) The method of claim 42, wherein the active particles comprise activated carbon.
55. (Withdrawn) The method of claim 42, wherein the active particles comprise zeolites.
56. (Withdrawn) The method of claim 42, wherein the active particles are selected from the group consisting of: antibacterial, antiviral, antimicrobial, antifungal particles, and any suitable combination thereof.
57. (Withdrawn) The method of claim 42, wherein the active particles are selected from the group consisting of: activated carbon, aluminum oxide (activated alumina), silica gel, soda ash, aluminum trihydrate, baking soda, p-methoxy-2-ethoxyethyl ester cinnamic acid (cinoxate), zinc oxide, zeolites, titanium dioxide, molecular filter-type materials, and any suitable combination thereof.
58. (Withdrawn) The method of claim 42, wherein the at least one removable encapsulant is selected from the group consisting of: water-soluble surfactants, surfactants, salts (*e.g.*, sodium chloride, calcium chloride), polymer salts, polyvinyl alcohols, waxes, photo-reactive materials, degradable materials, biodegradable materials, ethoxylated acetylenic diols, starches, lubricants, glycols, corn starch, mineral spirits, organic solvents, paraffinic solvents, and any suitable combination thereof.
59. (Withdrawn) The method of claim 42, wherein the active particles comprise about 0% to about 75% of the membrane.

60. (Withdrawn) The method of claim 42, wherein the active particles comprise about 30% to about 50% of the membrane.
61. (Withdrawn) The method of claim 42, wherein the active particles comprise about 0% to about 30% of the membrane.
62. (Withdrawn) The method of claim 42, wherein the encapsulating comprises:
encapsulating the active particles with a first removable encapsulant; and
encapsulating the active particles with a second removable encapsulant.
63. (Original) A composition comprising:
a base material; and
a plurality of active particles in contact with the base material, wherein the active particles improve the anti-static properties of the composition.
64. (Original) The composition of claim 63, wherein the active particles comprise activated carbon.
65. (Original) The composition of claim 63, wherein the active particles comprise zeolites.
66. (Original) The composition of claim 63, wherein the active particles comprise about 30% to about 50% of the composition.
67. (Original) The composition of claim 63, wherein the active particles comprise about 0% to about 30% of the composition.

68. (Original) A composition comprising:

a base material; and

a plurality of active particles in contact with the base material, wherein the active particles improve the stealth properties of the composition.

69. (Original) The composition of claim 68, wherein the active particles comprise activated carbon.

70. (Original) The composition of claim 68, wherein the active particles comprise zeolites.

71. (Original) The composition of claim 68, wherein the active particles comprise about 30% to about 50% of the composition.

72. (Original) The composition of claim 68, wherein the active particles comprise about 0% to about 30% of the composition.

REMARKS

Reconsideration and further examination is respectfully requested. The Office Action requires restriction to one of two inventions as follows:

- I. Claims 1-41 and 63-72, drawn to a breathable membrane and composition, classified in class 96, subclass 4.
- II. Claims 42-62, drawn to a method for producing a breathable membrane, classified in class 95, subclass 52.

In response, Applicants elect Group I consisting of claims 1-41 and 63-72. Claims 42-62 have been withdrawn without prejudice to pursue in a later filed application. Applicants make this election without traverse and respectfully request examination of all chosen claims.

Applicants have made a diligent effort to place the claims in condition for allowance. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Shane Percival, Applicants' Attorney at 720-536-4900 so that such issues may be resolved as expeditiously as possible.

For these reasons, and in view of the above amendments, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully Submitted,

April 13, 2010

/Shane Percival/

Date

Shane Percival
Attorney/Agent for Applicant(s)
Reg. No. 61597

Shane Percival
NEUGEBORN O'DOWD PC
1227 Spruce Street
Suite 200
Boulder, CO 80302
Tel. 720-536-4900