

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

AMENDMENT SUBMITTED WITH THE FILING OF A REQUEST FOR CONTINUED
EXAMINATION

Dear Sir,

In response to the Office Action of March 3, 2011, please accept the included request for continued examination and emend this application as follows:

Amendments to the claims are reflected in a list of claim which begins on page 2 of this response.

Remarks begin on page 11 of this response.

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

1. (Currently amended) A water-proof breathable membrane comprising:
 - a substantially liquid-impermeable cured base material solution;
 - a plurality of active particles in contact with the substantially liquid-impermeable cured base material solution, wherein the plurality of active particles are capable of improving the ~~breathability~~ transmission of vapor through the substantially liquid-impermeable cured ~~of the~~ base material solution;
 - at least one removable encapsulant in an amount effective to prevent at least a substantial portion of the plurality of active particles from being deactivated prior to removal of the removable encapsulant, and
 - wherein the at least one removable encapsulant is removable to reactivate at least a portion of the plurality of active particles to improve the ~~breathability of~~ transmission of vapor through the water-proof breathable membrane.
2. (cancelled) 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. (previously presented) 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, 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. (previously presented) The membrane according to claim 1, wherein the active particles comprise about 0% to about 75% of the total weight of the membrane.

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

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

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

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

18. (currently amended) The membrane according to claim 1, wherein the membrane ~~is~~ comprises a plastic material.
19. (currently amended) The membrane according to claim 1, wherein the membrane ~~is~~ comprises an article of clothing.
20. (currently amended) The membrane according to claim 1, wherein the membrane ~~is~~ comprises a fabric.
21. (currently amended) The membrane according to claim 1, wherein the membrane ~~is~~ comprises a coated fabric.
22. (Original) The membrane according to claim 1, wherein the membrane is coated on to ePTFE.
23. (currently amended) The membrane according to claim 1, wherein the membrane ~~is~~ comprises a coated article of clothing.
24. (Original) The membrane according to claim 1, wherein the membrane comprises a non-woven membrane.
25. (currently amended) The membrane according to claim 1, wherein the membrane ~~is~~ comprises 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. (currently amended) A water-proof composition comprising:

a liquid-impermeable breathable cured base material; and

a plurality of active particles in contact with the liquid-impermeable breathable cured base material, wherein the active particles improve the moisture vapor transport capacity of the composition.

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

30. (previously presented) The composition of claim 28, wherein the active particles comprise about 30% to about 50% of the total weight of the composition.

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

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

33. (previously presented) The composition of claim 28, wherein the active particles comprise about 0% to about 50% of the total weight of the composition.
34. (cancelled) 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. (previously presented) The composition of claim 40, wherein the at least one removable encapsulant is selected from the group consisting of: water-soluble surfactants, surfactants, salts, polymer salts, polyvinyl alcohols, waxes, 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. – 62. (Withdrawn)

63. (Currently amended) A water-proof composition comprising:
a base material; and
a plurality of active particles in contact with the base material, wherein the active particles improve the,
vapor transport of the composition, and
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. (previously presented) The composition of claim 63, wherein the active particles comprise about 30% to about 50% of the total weight of the composition.

67. (previously presented) The composition of claim 63, wherein the active particles comprise about 0% to about 30% of the total weight of the composition.

68. (currently amended) A water-proof composition comprising:
a base material; and
a plurality of active particles in contact with the base material, wherein the active particles improve the,
vapor transport of the composition, and
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. (previously presented) The composition of claim 68, wherein the active particles comprise about 30% to about 50% of the total weight of the composition.

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

REMARKS

Reconsideration and further examination is respectfully requested. Claims 1, 3-41 and 63-73 are currently pending in the application. Claims 2 and 34 have been cancelled. Claims 42-62 were previously withdrawn. Claims 1, 17-21, 23, 25, 28, 63 and 68 have been amended to more particularly point out the scope of the claim. All amendments are made without prejudice to pursue additional claims in a subsequent application.

Claim rejections under 35 USC § 102

The Examiner has rejected Claims 1-13, 15-29, 31, 33-41, 63-65, 67-70, and 72 under 35 USC 102(b) as being anticipated by U.S. Pat. App. Pub. No. 2004/0018359 (hereinafter, Haggquist). Although applicant submits that previously presented claims 1, 17-21, 23, 25, 25, 28, 63 and 68 were in a condition for allowance, in order to further prosecution of the application, Applicant has amended these claims.

Claim 1 has been amended to include a “water-proof” membrane. Additionally, the membrane now comprises a “substantially liquid-impermeable cured” base material solution. Furthermore, the term “breathability of the base material solution” was removed from the description of the plurality of active particles and in its place the term “transmission of vapor through the water-proof breathable membrane” was inserted.

Applicant notes that “a claim is anticipated [under 35 USC 102(b)] only if *each and every element* as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” MPEP § 2131 (citing *Verdegaal Brox. V. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987) (*italics added*)). Applicant submits that not only did Haggquist fail to expressly or inherently disclose each and every element found in original claim 1 – namely

“breathable” and “membrane,” Haggquist currently fails to disclose each and every element in pending claim 1, as currently amended.

In the current Office Action’s “Response to Arguments” section, the Examiner states that ¶¶ [0003] and [0030] of Haggquist “explicitly teaches [a] membrane being for ‘moisture management’.” Applicant submits that neither ¶ [0003], ¶ [0030], nor any other portion of Haggquist expressly or inherently discloses the use of a membrane. In fact, Haggquist teaches away from using a membrane. For example, ¶ [0034] of Haggquist discloses the use of active particles in a yarn, fiber, foam, and fabric. Furthermore, FIG. 3 discloses a process to create fibers having active particles. Haggquist’s disclosure of yarns, fibers, and the like describes the use of active particles in knits and wovens, which operate differently than the current specification’s disclosure of membranes. For example, knits and wovens typically *absorb a liquid*. To release the moisture, the *liquid evaporates from* the knit or woven. However, in a water-proof membrane, as in Claim 1, *vapor is transmitted through* the membrane. Therefore, unlike the knits and wovens disclosed in Haggquist, the membrane does not adsorb liquid. Similarly, the Haggquist knits and wovens do not allow for the transmittal of vapor through the knits and wovens.

The modifications to claim 1 are supported by the specification. For example, Example One describes a Moisture Vapor Transmission Rate (MVTR) of a membrane, describing the transmission of vapor through a membrane. ¶ [0044] discloses a water-proof membrane. ¶ [0039] discloses a membrane having liquid-impermeable properties, while ¶ [0035] discloses using a cured base material solution.

Since Haggquist fails to disclose, expressly or inherently, each and every Claim 1 element, Applicant submits that Claim 1 is in a condition for allowance and respectfully requests

removal of the § 102 rejection of claim 1. Since claims 3-16 and 18-27 are dependent upon claim 1, claims 3-16 and 18-27 are likewise in a condition for allowance. As such, Applicant respectfully requests removal of the § 102 rejection of claim 3-16 and 18-27.

Applicant further submits that claim 3 is in a condition for allowance as the Examiner has not provided any supporting evidence that Haggquist either expressly or inherently discloses a membrane possessing anti-static properties due at least in part to the active particles. Applicant submits that the Haggquist reference fails to disclose a membrane possessing anti-static properties due at least in part to the active particles. As such, Applicant respectfully requests removal of the § 102 rejection of claim 3.

Applicant further submits that claim 4 is in a condition for allowance as the Examiner has not provided any supporting evidence that Haggquist either expressly or inherently discloses a membrane possessing stealth properties due at least in part to the active particles. Applicant submits that the Haggquist reference fails to disclose a membrane possessing stealth properties due at least in part to the active particles. As such, Applicant respectfully requests removal of the § 102 rejection of claim 4.

Applicant further submits that claim 5 is in a condition for allowance as the Examiner has not provided any supporting evidence that Haggquist either expressly or inherently discloses a membrane possessing odor adsorbance properties due at least in part to the active particles. Applicant submits that the Haggquist reference fails to disclose a membrane possessing odor adsorbance properties due at least in part to the active particles. As such, Applicant respectfully requests removal of the § 102 rejection of claim 5.

Applicant further submits that claim 6 is in a condition for allowance as the Examiner has not provided any supporting evidence that Haggquist either expressly or inherently discloses a

membrane possessing quick drying properties due at least in part to the active particles.

Applicant submits that the Haggquist reference fails to disclose a membrane possessing quick drying properties due at least in part to the active particles. As such, Applicant respectfully requests removal of the § 102 rejection of claim 6.

Claim 17 has been amended to change the term “is” to “comprises.” As discussed above, Haggquist discloses the use of active particles in a yarn or fabric. However, claim 17 is in a condition for allowance because Haggquist fails to inherently or expressly disclose the use of a membrane as a yarn or fabric. As stated previously, Haggquist’s disclosure of yarns, fibers, and the like generally refers to knits and wovens, which operate differently than using a membrane as a yarn or fabric. For example, knits and wovens typically *adsorb a liquid*. To release the moisture, the liquid evaporates *from* the knit or woven. However, in a water-proof membrane used as a yarn or fabric, *vapor is transmitted through* the membrane comprising a yarn or fabric. Unlike the knits and wovens disclosed in Haggquist, a membrane comprising a yarn or fabric does not adsorb liquid. Similarly, the Haggquist knits and wovens do not allow for the transmittal of vapor through the knits and wovens. Therefore, Applicant submits that claim 17 is in a condition for allowance and respectfully requests removal of the Section 102 rejection of claim 17.

Claim 18 has been amended to change the term “is” to “comprises.” Claim 18 is in a condition for allowance because Haggquist fails to inherently or expressly disclose the use of a membrane as a plastic material. As stated previously, Haggquist’s disclosure of yarns, fibers, and the like generally refers to knits and wovens, which operate differently than using a membrane as a plastic material. For example, knits and wovens typically *adsorb a liquid*. To release the moisture, the liquid evaporates *from* the knit or woven. However, in a water-proof

membrane used as a plastic material, *vapor is transmitted through* the membrane comprising a plastic material. Unlike the knits and wovens disclosed in Haggquist, a membrane comprising a plastic material does not adsorb liquid. Similarly, the Haggquist knits and wovens do not allow for the transmittal of vapor through the knits and wovens. Therefore, Applicant submits that claim 18 is in a condition for allowance and respectfully requests removal of the Section 102 rejection of claim 18.

Claim 19 has been amended to change the term “is” to “comprises.” Claim 19 is in a condition for allowance because Haggquist fails to inherently or expressly disclose the use of a membrane as an article of clothing. As stated previously, Haggquist’s disclosure of yarns, fibers, and the like generally refers to knits and wovens, which operate differently than using a membrane as an article of clothing. For example, knits and wovens typically *adsorb a liquid*. To release the moisture, the liquid evaporates *from* the knit or woven. However, in a water-proof membrane used as an article of clothing, *vapor is transmitted through* the membrane comprising an article of clothing. Unlike the knits and wovens disclosed in Haggquist, a membrane comprising an article of clothing does not adsorb liquid. Similarly, the Haggquist knits and wovens do not allow for the transmittal of vapor through the knits and wovens. Therefore, Applicant submits that claim 19 is in a condition for allowance and respectfully requests removal of the Section 102 rejection of claim 19.

Claim 20 has been amended to change the term “is” to “comprises.” As discussed above, Haggquist discloses the use of active particles in a fabric. However, Claim 20 is in a condition for allowance because Haggquist fails to inherently or expressly disclose the use of a *membrane* as a fabric. As stated previously, Haggquist’s disclosure of yarns, fibers, and the like generally refers to knits and wovens, which operate differently than using a membrane as a fabric. For

example, knits and wovens typically *adsorb a liquid*. To release the moisture, the liquid evaporates *from* the knit or woven. However, in a water-proof membrane used as a fabric, *vapor is transmitted through* the membrane comprising the fabric. Unlike the knits and wovens disclosed in Haggquist, a membrane comprising a fabric does not adsorb liquid. Similarly, the Haggquist knits and wovens do not allow for the transmittal of vapor through the knits and wovens. Therefore, Applicant submits that claim 20 is in a condition for allowance and respectfully requests removal of the Section 102 rejection of claim 20.

Claim 21 has been amended to change the term “is” to “comprises.” As discussed above, Haggquist discloses the use of active particles in a fabric. However, Claim 21 is in a condition for allowance because Haggquist fails to inherently or expressly disclose the use of a *membrane* as a coated fabric. As stated previously, Haggquist’s disclosure of yarns, fibers, and the like generally refers to knits and wovens, which operate differently than using a membrane as a coated fabric. For example, knits and wovens typically *adsorb a liquid*. To release the moisture, the liquid evaporates *from* the knit or woven. However, in a water-proof membrane used as a coated fabric, *vapor is transmitted through* the membrane comprising the coated fabric. Unlike the knits and wovens disclosed in Haggquist, a membrane comprising a coated fabric does not adsorb liquid. Similarly, the Haggquist knits and wovens do not allow for the transmittal of vapor through the knits and wovens. Therefore, Applicant submits that claim 21 is in a condition for allowance and respectfully requests removal of the Section 102 rejection of claim 21.

Claim 23 has been amended to change the term “is” to “comprises.” Claim 23 is in a condition for allowance because Haggquist fails to inherently or expressly disclose the use of a membrane as a coated article of clothing. As stated previously, Haggquist’s disclosure of yarns, fibers, and the like generally refers to knits and wovens, which operate differently than using a

membrane as a coated article of clothing. For example, knits and wovens typically *adsorb a liquid*. To release the moisture, the liquid evaporates *from* the knit or woven. However, in a water-proof membrane used as a coated article of clothing, *vapor is transmitted through* the membrane comprising the coated article of clothing. Unlike the knits and wovens disclosed in Haggquist, a membrane comprising a coated article of clothing does not adsorb liquid. Similarly, the Haggquist knits and wovens do not allow for the transmittal of vapor through the knits and wovens. Therefore, Applicant submits that claim 23 is in a condition for allowance and respectfully requests removal of the Section 102 rejection of claim 23.

Claim 25 has also been amended to change the term “is” to “comprises.” Applicant submits that claim 25 is in a condition for allowance and respectfully requests removal of the Section 102 rejection of claim 25.

Claim 28 has been amended to include the term “liquid-impermeable breathable cured” base material and hereby incorporates the arguments made above with respect to claim 1. Specifically, Applicant submits that Haggquist fails to disclose a liquid-impermeable breathable cured base material. Furthermore, since Haggquist discloses only knits and wovens, Haggquist fails to disclose that active particles improve the moisture vapor transport of a composition comprising a liquid-impermeable breathable cured base material. Since Haggquist fails to disclose all the elements in Claim 28, Claim 28 is in a condition for allowance. Applicant respectfully requests removal of the Section 102 rejection of claim 28. Furthermore, since claims 29-41 are all either directly or indirectly dependent upon claim 28, claims 29-41 are likewise in a condition for allowance and Applicant also respectfully requests removal of the Section 102 rejection of claims 29-41.

Claims 63 and 68 have been amended to include the term “water-proof” composition, and to include the claim element that the active particles improve the “vapor transport of the composition.” Applicant hereby incorporates the arguments made above with respect to claim 1 and applies those arguments to claims 63 and 68, respectively. As such, Applicant submits that claims 63 and 68 are in a condition for allowance and respectfully requests removal of the Section 102 rejection of claims 63 and 68. Additionally, since claims 65 and 67 are dependent upon claim 63 and claims 70 and 72 are dependent upon claim 68, Applicant submits claims 65, 67, 70 and 72 are likewise in a condition for allowance and respectfully requests removal of the Section 102 rejection of claims 65, 67, 70 and 72.

The Examiner has rejected Claims 63, 64, 67, 68, 70, and 72 under 35 USC 102(b) as being anticipated by U.S. Pat. App. Pub. No. 2003/0118664 (hereinafter, Trogolo). Applicant hereby incorporates the arguments made above with respect to claims 63 and 68 and submit that since Haggquist fails to disclose (a) a water-proof composition, or (b) improvement of vapor transport of the composition, independent claims 63 and 68 are in a condition for allowance. Furthermore, since claims 64 and 67 are dependent upon claim 63 and 71 and 72 are dependent upon claim 68, each of these claims is likewise in a condition for allowance. Applicant therefore respectfully requests removal of the Section 102 rejection of Claims 63, 64, 67, 68, 70, and 72.

The Examiner has rejected Claims 63, 64, 68, and 69 under 35 USC 102(e) as being anticipated by U.S. Pat. App. Pub. No. 2006/0068124 (hereinafter, Williams). Applicant hereby incorporates the arguments made above with respect to claims 63 and 68 and submit that since Haggquist fails to disclose (a) a water-proof composition, or (b) improvement of vapor transport of the composition, independent claims 63 and 68 are in a condition for allowance. Furthermore, since claims 64 and 69 are dependent upon claims 63 and 68, respectively, claims 64 and 69 are

likewise in a condition for allowance. Applicant therefore respectfully requests removal of the Section 102 rejection of Claims 63, 64, 68, and 69.

Claim rejections under 35 USC § 103

Claims 14, 30, 32, 66, and 71 have been rejected under 35 USC § 103(a) as being unpatentable over Trogolo or Haggquist. Specifically, the Examiner states that though neither reference explicitly teaches an active particle loading of 25-75wt% or 30-50wt%, one of ordinary skill in the art would have recognized that the loading could have been increased to provide an enhanced effect.

In response thereto, Applicant incorporates the arguments made above with respect to claims 1, 28, 63, and 68, respectively, and submits that since claims 14 is dependent on claim 1, claims 30 and 32 are dependent on claim 28, claim 66 is dependent on claim 63 and claim 71 is dependent on claim 68, each of these claims is in a condition for allowance. Applicant respectfully requests removal of the 103(a) rejection of these claims.

Applicants have made a diligent effort to place the claims in condition for allowance. Furthermore, failure of Applicants to respond to any specific rejection by the Examiner does not comprise an implicit acceptance of the Examiner's rejection. 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,

June 29, 2011

/Shane Percival/

Date

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