

WHAT IS CLAIMED IS:

1. A cap comprising:
a housing comprising
5 a top wall,
a cylindrical sidewall forming a first cavity, and
an open bottom formed by the cylindrical sidewall with an opening to
the first cavity within the housing for receiving a needleless connector having
an open lumen;
10 an insert disposed in the housing and positioned within the first cavity, the
insert having an inner surface and an outer surface, the inner surface of the insert
defining a second cavity,
an inner thread on the inner surface of the insert and an outer thread on
the outer surface of the insert;
15 an absorbent reservoir material disposed under radial compression by the inner
thread on the inner surface of the insert; and
a sealing foam is disposed onto absorbent reservoir material.
2. The cap of claim 1, wherein the absorbent reservoir material is a nonwoven material,
foam, or a sponge.
- 20 3. The cap of claim 1, wherein the absorbent reservoir material is soaked with a
disinfectant or an antimicrobial agent.
4. The cap of claim 1, wherein the sealing foam is made of a closed cell foam.
5. The cap of claim 4, wherein the sealing foam is made of a polyethylene foam.
6. The cap of claim 4, wherein the sealing foam is made of a thermoplastic elastomer.
- 25 7. The cap of claim 4, wherein the sealing foam is made of a rubber or rubber like foams.
8. The cap of claim 7, wherein the sealing foam is an EPDM sponges, EVA, Buna-N,
silicone, vinyl, neoprene, fluoroelastomers, gum rubber.

9. The cap of claim 1, wherein the insert extends essentially from an inner surface of the top wall toward the open bottom of the housing.
10. The cap of claim 1, wherein the insert extends essentially parallel to the sidewall of the housing.
- 5 11. The cap of claim 1, wherein the inner thread and the outer thread have an inclined thread pattern.
12. The cap of claim 1, wherein the inner thread and outer thread have a helical-shaped thread pattern.
13. The cap of claim 1, wherein an exterior wall surface of the sidewall of the housing
10 includes a plurality of grip members.
14. The cap of claim 1, further comprising a disinfectant or an antimicrobial agent.
15. The cap of claim 14, wherein the disinfectant or the antimicrobial agent is selected from the group consisting essentially of isopropyl alcohol, ethanol, 2-propanol, butanol, methylparaben, ethylparaben, propylparaben, propyl gallate, butylated hydroxyanisole (BHA),
15 butylated hydroxytoluene, t-butyl-hydroquinone, chloroxylenol, chlorohexidine, chlorhexidine diacetate, chlorohexidine gluconate, povidone iodine, alcohol, dichlorobenzyl alcohol, dehydroacetic acid, hexetidine, triclosan, hydrogen peroxide, colloidal silver, benzethonium chloride, benzalkonium chloride, octenidine, antibiotic, and mixtures thereof.
16. The cap of claim 1, wherein the housing is made of a high density polyethylene or
20 polypropylene material.
17. The cap of claim 1, wherein the housing has an average wall thickness of > 0.03 inches.
18. The cap of claim 1, further comprising a peelable seal.
19. The cap of claim 18, wherein the peelable seal comprises an aluminum or multi-layer polymer film.
- 25 20. The cap of claim 18, wherein the peelable seal further comprises a moisture barrier.
21. A cap comprising:
a housing having a proximal portion and a distal portion comprising

a top wall positioned between the proximal portion and the distal portion,

a cylindrical sidewall forming a first cavity, and

5 an open bottom formed by the cylindrical sidewall with an opening to the first cavity within the housing for receiving a needleless connector having an open lumen; and

an insert disposed within the first cavity, the insert having closed distal end comprising a distal wall, an open proximal end, a sidewall extending proximally from the distal wall toward the open proximal end, the sidewall having a split-thread protrusion/insert integrally formed with the distal wall, the split-thread protrusion/insert having an inner surface and an outer surface, the inner surface of the split-thread protrusion/insert defining a second cavity,

10 an inner thread on the inner surface of the split-thread protrusion/insert, the inner thread being sufficient to interlock with a mating feature of a female needleless connector,

15 an outer thread on the outer surface of the split-thread protrusion/insert, the outer thread being sufficient to interlock with a mating feature of a male needleless connector;

a piston-shaped sealing foam;

20 an absorbent reservoir material configured within the second cavity;

a disinfectant or an antimicrobial agent; and

a seal for maintaining the disinfectant or an antimicrobial agent within the second cavity prior to use of the cap.

22. The cap of claim 21, wherein the sealing foam is made of a closed cell foam.
- 25 23. The cap of claim 22, wherein the sealing foam is made of a polyethylene foam.
24. The cap of claim 22, wherein the sealing foam is made of a thermoplastic elastomer.
25. The cap of claim 22, wherein the sealing foam is made of a rubber or rubber like foams.

26. The cap of claim 25, wherein the sealing foam is an EPDM sponges, EVA, Buna-N, silicone, vinyl, neoprene, fluoroelastomers, gum rubber.
27. The cap of claim 21, wherein the absorbent reservoir material comprises of a centrally disposed through hole extending from a distal end to a proximal end of the absorbent reservoir material.
28. The cap of claim 27, wherein an elongate shaft of the sealing foam is disposed into a through hole of the absorbent reservoir material.
29. The cap of claim 28, wherein the absorbent reservoir material surrounds an elongate shaft of the sealing foam.
30. The cap of claim 21, wherein the disinfectant or the antimicrobial agent is selected from the group consisting essentially of isopropyl alcohol, ethanol, 2-propanol, butanol, methylparaben, ethylparaben, propylparaben, propyl gallate, butylated hydroxyanisole (BHA), butylated hydroxytoluene, t-butyl-hydroquinone, chloroxylenol, chlorohexidine, chlorhexidine diacetate, chlorohexidine gluconate, povidone iodine, alcohol, dichlorobenzyl alcohol, dehydroacetic acid, hexetidine, triclosan, hydrogen peroxide, colloidal silver, benzethonium chloride, benzalkonium chloride, octenidine, antibiotic, and mixtures thereof.
31. The cap of claim 21, wherein the housing is made of a high density polyethylene or polypropylene material.
32. The cap of claim 21, wherein the housing has an average wall thickness of > 0.03 inches.
33. The cap of claim 21, further comprising a peelable seal.
34. The cap of claim 33, wherein the peelable seal comprises an aluminum or multi-layer polymer film.
35. The cap of claim 33, wherein the peelable seal further comprises a moisture barrier.