WHAT IS CLAIMED IS:

1. A cap comprising:

a housing comprising

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;

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;

an absorbent reservoir material (50) 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,

characterized in that

the sealing foam having an integral body (56), an annular wall (57), a bonded surface (58) and a sealing surface (59), the bonded surface (58) of the sealing foam (55) is secured to the bottom surface (53) of the absorbent reservoir material 50 such that the annular walls (52, 57) of both the sealing foam 55 and the absorbent reservoir material 50 are concentric and coincident.

2. The cap of claim 1, wherein the absorbent reservoir material is a nonwoven material, foam, or a sponge.

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, a polyethylene foam, a thermoplastic elastomer, or a rubber or rubber-like foam.

5. The cap of claim 4, wherein the sealing foam is an EPDM sponges, EVA, Buna-N, silicone, vinyl, neoprene, fluoroelastomers, gum rubber.

6. 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.

7. The cap of claim 1, wherein the insert extends essentially parallel to the sidewall of the housing.

8. The cap of claim 1, wherein the inner thread and the outer thread have an inclined thread pattern.

9. The cap of claim 1, wherein the inner thread and outer thread have a helical-shaped thread pattern.

10. The cap of claim 1, wherein an exterior wall surface of the sidewall of the housing includes a plurality of grip members.

11. The cap of claim 1, further comprising a disinfectant or an antimicrobial agent.

12. The cap of claim 11, 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.

13. The cap of claim 1, wherein the housing is made of a high density polyethylene or polypropylene material.

14. The cap of claim 1, wherein the housing has an average wall thickness of > 0.03 inches.

15. The cap of claim 1, further comprising a peelable seal.

16. The cap of claim 15, wherein the peelable seal comprises an aluminum or multi-layer polymer film.

17. The cap of claim 15, wherein the peelable seal further comprises a moisture barrier.

18. The cap of claim 1 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, the sealing foam is piston-shaped and an elongate shaft of the sealing foam is disposed into the though hole of the absorbent reservoir material, the absorbent reservoir material surrounds an elongate shaft of the sealing foam.