Claims

1. A disinfection device comprising:

a container comprising an integral body, an open end, a closed end, an annular wall defining a chamber extending from the closed end to an open end;

a base scrub element disposed in the chamber, the base scrub element is made of a closed cell foam;

a side scrub element having an annular wall, an exterior wall surface, an interior wall surface, an inner cavity having a center portion, a bottom surface, a top surface, and a single slit that extends vertically from the bottom surface to the top surface and radially outward from the interior wall surface to the exterior wall surface, the side scrub element is disposed onto the base scrub element, the side scrub element having a single slit that extends vertically from the bottom surface to the top surface and radially outward from the interior wall surface to the exterior wall surface, a center portion of the side scrub element may be depressed entirely without separating or detaching from the interior wall surface;

a disinfectant or antimicrobial agent; and

a removable seal on the open end of the container.

2. The disinfection device of claim 1, wherein the container comprises a polypropylene or polyethylene material.

3. The disinfection device of claim 1, wherein the side scrub element is a foam.

4. The disinfection device of claim 3, wherein the foam is a polyurethane foam.

5. The disinfection device of claim 1, wherein the side scrub element is a sponge.

6. The disinfection device of claim 1, wherein a compression of the side scrub element toward the closed end of the chamber occurs upon connection to a female Luer connector or a male Luer connector.

7. The disinfection device of claim 6, wherein compression of the side scrub element disinfects the female Luer connector or the male Luer connector.

8. The disinfection device of claim 1, wherein the disinfectant or antimicrobial agent is selected from a 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.

9. The disinfection device of claim 1, wherein the disinfectant or antimicrobial agent is a fluid or a gel.

10. The disinfection device of claim 1, wherein the removable seal comprises an aluminum or multi-layer polymer film peel back top.

11. The disinfection device of claim 1, wherein the removable seal is heat-sealed or induction sealed to the open end of the container.

12. A method of disinfecting a medical connector, the method comprising: connecting the disinfection device of claim 1 to a medical connector, wherein connecting includes engaging the medical connector to the interior wall surface of the side scrub element upon insertion into the chamber such that the medical connector contacts the side scrub element and the disinfectant or antimicrobial agent.

13. A disinfection device comprising:

a container comprising an integral body, an open end, a closed end, an annular wall defining a chamber extending from the closed end to an open end;

a side scrub element having an annular wall, an exterior wall surface, an interior wall surface, a bottom surface, a top surface, and a single semi-circular slit, the side scrub element disposed onto a base scrub element, wherein a center portion of the side scrub element may be depressed entirely without separating or detaching from the interior wall surface;

a disinfectant or antimicrobial agent; and

a removable seal on the open end of the container.

14. The disinfection device of claim 13, wherein the single semi-circular slit partially revolves around an x-axis about a distance y from an origin of the top surface of the side scrub element.

15. The disinfection device of claim 13, wherein the side scrub element is a foam.

16. The disinfection device of claim 15, wherein the foam is a polyurethane foam.

17. The disinfection device of claim 13, wherein the side scrub element is a sponge.

18. The disinfection device of claim 17, wherein a compression of the side scrub element toward the closed end of the chamber occurs upon contact to a female Luer connector or a male Luer connector.

19. The disinfection device of claim 18, wherein compression of the side scrub element disinfects the female Luer connector or the male Luer connector.

20. The disinfection device of claim 13, wherein the disinfectant or antimicrobial agent is selected from a 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.

21. The disinfection device of claim 13, wherein the disinfectant or antimicrobial agent is a fluid or a gel.

22. The disinfection device of claim 13, wherein the removable seal comprises an aluminum or multi-layer polymer film peel back top.

23. The disinfection device of claim 13, wherein the removable seal is heat-sealed or induction sealed to an engagement surface on the open end of the container.

24. A method of disinfecting a medical connector, the method comprising: connecting the disinfection device of claim 13 to a medical connector, wherein connecting includes engaging the medical connector to the interior wall surface of the side scrub element upon insertion into the chamber such that the medical connector contacts the side scrub element and the disinfectant or antimicrobial agent.

25. A disinfection device comprising:

a container comprising an integral body, an open end, a closed end, an annular wall defining a chamber extending from the closed end to an open end;

a side scrub element having an annular wall, an exterior wall surface, an interior wall surface, a bottom surface, a top surface, and two or more semi-circular slits that are asymmetrically oriented, the side scrub element disposed onto a base scrub element, wherein a center portion of the side scrub element may be depressed entirely without separating or detaching from the interior wall surface;

a disinfectant or antimicrobial agent; and

a removable seal on the open end of the container.

26. The disinfection device of claim 25, wherein the container comprises a polypropylene or polyethylene material.

27. The disinfection device of claim 25, wherein the two or more semi-circular slits are not superimposed.

28. The disinfection device of claim 25, wherein the side scrub element is a foam.

29. The disinfection device of claim 28, wherein the foam is a polyurethane foam.

30. The disinfection device of claim 25, wherein the side scrub element is a sponge.

31. The disinfection device of claim 25, wherein a compression of the side scrub element toward the closed end of the chamber occurs upon connection to a female Luer connector or a male Luer connector.

32. The disinfection device of claim 31, wherein compression of the side scrub element disinfects the female Luer connector or the male Luer connector.

33. The disinfection device of claim 25, wherein the disinfectant or antimicrobial agent is selected from a 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.

34. The disinfection device of claim 25, wherein the disinfectant or antimicrobial agent is a fluid or a gel.

35. The disinfection device of claim 25, wherein the removable seal comprises an aluminum or multi-layer polymer film peel back top.

36. The disinfection device of claim 25, wherein the removable seal is heat-sealed or induction sealed to an engagement surface on an open end of the container.

37. A method of disinfecting a medical connector, the method comprising: contacting the disinfection device of claim 25 to a medical connector, wherein contacting includes engaging the medical connector to the interior wall surface of the side scrub element upon insertion into the chamber such that the medical connector frictionally engages the side scrub element and the disinfectant or antimicrobial agent.