WHAT IS CLAIMED IS:

1. A two-layered osmosis membrane comprising:

a support layer, in which a mesh is embedded, made of a phase separation polymer; and

a rejection layer, which adheres to the support layer, made of a thin film composite polymer,

wherein the support layer has a thickness of 50 to 200 μm, the rejection layer has a thickness of 0.05 to 3 μm, and the mesh has an open area of 30 to 70%, a mesh size of ~~60 to 300~~ 180 mesh, and a thickness of 45 to 150 μm.

2. The membrane of claim 1, wherein the support layer has a thickness of 60 to 180 μm; the rejection layer has a thickness of 0.06 to 1 μm; and the mesh has an open area of 40 to 70%, ~~a mesh size of 90 to 250 mesh,~~ and a thickness of 50 to 145 μm.

3. The membrane of claim 2, wherein the support layer has a thickness of 70 to 160 μm; the rejection layer has a thickness of 0.1 to 0.5 μm; and the mesh has an open area of 50 to 70%, ~~a mesh size of 100 to 180 mesh,~~ and a thickness of 55 to 140 μm.

4. The membrane of claim 1, wherein the phase separation polymer is polyethersulfone, polyphenylenesulfone, polyphenylenesulfidesulfone, polyacrylonitrile, cellulose ester, polyphenyleneoxide, polypropylene, polyvinyledenefluoride, polyvinylchloride, polyarylsulfone, polyphenylene sulfone, polyetheretherketone, polysulfone, polyamide, polyimide, or a combination thereof; and the thin film composite polymer is polyamide, polyimide, cellulose ester, polyurea, polyepiamine, poly(piperazineamide), sulfonated polyfurane, sulfonated polysulfone, carboxylated polysulfone, or a combination thereof.

5. The membrane of claim 4, wherein the support layer has a thickness of 60 to 180 μm; the rejection layer has a thickness of 0.06 to 1 μm; and the mesh has an open area of 40 to 70%, ~~a mesh size of 90 to 250 mesh,~~ and a thickness of 50 to 145 μm.

6. The membrane of claim 5, wherein the support layer has a thickness of 70 to 160 μm; the rejection layer has a thickness of 0.1 to 0.5 μm; and the mesh has an open area of 50 to 70%, ~~a mesh size of 100 to 180 mesh,~~ and a thickness of 55 to 140 μm.

7. The membrane of claim 1, wherein the phase separation polymer is polysulfone.

8. The membrane of claim 7, wherein the thin film composite polymer is polyamide.

9. The membrane of claim 8, wherein the support layer has a thickness of 60 to 180 μm; the rejection layer has a thickness of 0.06 to 1 μm; and the mesh has an open area of 40 to 70%, ~~a mesh size of 90 to 250 mesh,~~ and a thickness of 50 to 145 μm.

10. The membrane of claim 9, wherein the support layer has a thickness of 70 to 160 μm; the rejection layer has a thickness of 0.1 to 0.5 μm; and the mesh has an open area of 50 to 70%, ~~a mesh size of 100 to 180 mesh,~~ and a thickness of 55 to 140 μm.

11. The membrane of claim 10, wherein the mesh is a monofilament mesh.

12. The membrane of claim 10, wherein the thin film composite polymer is m-phenylene trimesamide.

13. The membrane of claim 7, wherein the mesh is a monofilament mesh.

14. The membrane of claim 13, wherein the support layer has a thickness of 60 to 180 μm; the rejection layer has a thickness of 0.06 to 1 μm; and the mesh has an open area of 40 to 70%, ~~a mesh size of 90 to 250 mesh,~~ and a thickness of 50 to 145 μm.

15. The membrane of claim 14, wherein the support layer has a thickness of 70 to 160 μm; the rejection layer has a thickness of 0.1 to 0.5 μm; and the mesh has an open area of 50 to 70%, ~~a mesh size of 100 to 180 mesh,~~ and a thickness of 55 to 140 μm.

16. The membrane of claim 7, wherein the thin film composite polymer is m-phenylene trimesamide.

17. The membrane of claim 1, wherein the thin film composite polymer is polyamide.

18. The membrane of claim 17, wherein the support layer has a thickness of 60 to 180 μm; the rejection layer has a thickness of 0.06 to 1 μm; and the mesh has an open area of 40 to 70%, ~~a mesh size of 90 to 250 mesh,~~ and a thickness of 50 to 145 μm.

19. The membrane of claim 18, wherein the support layer has a thickness of 70 to 160 μm; the rejection layer has a thickness of 0.1 to 0.5 μm; and the mesh has an open area of 50 to 70%, ~~a mesh size of 100 to 180 mesh,~~ and a thickness of 55 to 140 μm.

20. The membrane of claim 17, wherein the mesh is a monofilament mesh.

21. The membrane of claim 20, wherein the support layer has a thickness of 60 to 180 μm; the rejection layer has a thickness of 0.06 to 1 μm; and the mesh has an open area of 40 to 70%, ~~a mesh size of 90 to 250 mesh,~~ and a thickness of 50 to 145 μm.

22. The membrane of claim 21, wherein the support layer has a thickness of 70 to 160 μm; the rejection layer has a thickness of 0.1 to 0.5 μm; and the mesh has an open area of 50 to 70%, ~~a mesh size of 100 to 180 mesh,~~ and a thickness of 55 to 140 μm.

23. The membrane of claim 22, wherein the thin film composite polymer is m-phenylene trimesamide.

24. The membrane of claim 17, wherein the thin film composite polymer is m-phenylene trimesamide.

25. The membrane of claim 24, wherein the support layer has a thickness of 60 to 180 μm; the rejection layer has a thickness of 0.06 to 1 μm; and the mesh has an open area of 40 to 70%, ~~a mesh size of 90 to 250 mesh,~~ and a thickness of 50 to 145 μm.

26. The membrane of claim 25, wherein the support layer has a thickness of 70 to 160 μm; the rejection layer has a thickness of 0.1 to 0.5 μm; and the mesh has an open area of 50 to 70%, ~~a mesh size of 100 to 180 mesh,~~ and a thickness of 55 to 140 μm.

27. A method for making an osmosis membrane comprising:

applying a casting polymer solution to a mesh to form a casting solution layer that embeds the mesh, in which the casting polymer solution contains a polymer 5 to 30% by weight and a water-miscible solvent 70 to 95% by weight, the mesh having a mesh size of ~~60 to 300~~ 180 mesh, an open area of 30 to 70%, and a thickness of 45 to 150 μm;

coagulating the casting solution layer with a coagulation liquid to convert the casting solution layer into a support layer; and

coating a surface of the support layer with a rejection layer by interfacial polymerization~~.~~

wherein the support layer has a thickness of 50 to 200 μm and the rejection layer has a thickness of 0.05 to 3 μm.

28. The method of claim 27, wherein the coating step is performed by interacting an aqueous polyfunctional amine solution with an anhydrous polyfunctional acid halide solution on the surface of the support layer.