CLAIMS:

1. An unsupported, permanently hydrophilic porous filtration membrane comprising:

a polymeric matrix material, wherein the polymeric matrix material is one or more polymers selected from the group consisting of polyamides, polyimides, polyether sulphones, polysulphones, polyaryl sulphones, cellulose esters, and polyetherimides, and

an electron-beam cross-linked polyoxazoline hydrophilic additive blended throughout said matrix material, forming the permanently hydrophilic porous filtration membrane having an extractable total organic carbon content of less than 20 $\mu gC/cm^2$.

2. The permanently hydrophilic filtration membrane of claim 1, wherein the membrane is a microporous membrane.

3. The permanently hydrophilic filtration membrane of claim 1, wherein the membrane is an ultrafiltration membrane.

4. The permanently hydrophilic filtration membrane of claim 1, wherein the extractable total organic carbon of the permanently hydrophilic filtration membrane is less than 10 $\mu gC/cm^2$.

5. The permanently hydrophilic filtration membrane of claim 1, wherein the polyoxazoline is selected from the group consisting of poly (2-ethyl-2-oxazoline), poly(2-methyl-2-oxazoline), and poly(2-propyl-2-oxazoline).

6. The permanently hydrophilic filtration membrane of claim 5, wherein the polyoxazoline is poly (2-ethyl-2-oxazoline).

7. The permanently hydrophilic filtration membrane of claim 1, wherein the polyoxazoline is cross-linked by electron beam with a dose of from 20 to 150 kGy.

8. The permanently hydrophilic filtration membrane of claim 1, wherein the membrane comprises polyether sulfone and poly (2-ethyl-2-oxazoline).

9. The permanently hydrophilic filtration membrane of claim 1, wherein the membrane is symmetric.

10. The permanently hydrophilic filtration membrane of claim 1, wherein the membrane is asymmetric.

11. The permanently hydrophilic filtration membrane of claim 1, wherein the membrane has a breaking strain of at least 20%.

12. The permanently hydrophilic filtration membrane of claim 1, wherein the membrane has a breaking strain of at least 25%.

13. The permanently hydrophilic filtration membrane of claim 1, wherein the membrane has one or more distinct zones.

14. The permanently hydrophilic filtration membrane of claim 13, wherein the membrane has three distinct zones.

15. The permanently hydrophilic filtration membrane of claim 1, wherein the membrane has a total thickness from 65 to 300μm.

16. The permanently hydrophilic filtration membrane of claim 1, wherein the membrane is pleated.

17. A filtration cartridge comprising:
a housing; and
the membrane of claim 1.