CLAIMS

1. A discrete electrolytic cartridge module for assembly into an electrolytic system in which the cartridge is in a brine solution during operation of the electrolytic system for producing electrolyzed water comprising:

an electrode connectable to an electrical supply;

an ion selective membrane disposed on a side of the electrode so as to define a space adjacent to at least a portion of the electrode;

a permeable insert covering the ion selective membrane on a side opposite the space; and

said permeable insert being made of an open cell foamed polymer that allows the passage of brine solution through the permeable insert to the ion selective membrane;

a bonding plate disposed on the permeable insert on a side opposite the side facing the ion selective membrane, said space being in communication with a fresh water supply at an inlet of the space and in communication with an outlet of the space, said space being sealed such that, when said electrolytic cartridge is submerged in said brine solution comprising ions, the only path for the ions of the brine solution to enter the space is through the ion selective membrane, and

said bonding plate being formed with openings that permit of passage of the brine solution through said bonding plate and permeable insert to said ion selective membrane while supporting permeable insert and ion selective membrane during direction of fresh water from said inlet into said space.

2. The electrolytic cartridge of claim 1, further comprising a plurality of ion selective membranes, a plurality of permeable inserts, and a plurality of bonding plates,

arranged such that, when submerged in a brine solution comprising ions, the only path for the ions of the brine solution to enter the first space is through the ion selective membranes.

3. The electrolytic cartridge of claim 1, further comprising a gasket disposed between the electrode and each ion selective membrane.

4. The electrolytic cartridge of claim 3, wherein each gasket is constructed of an elastomer.

5. The electrolytic cartridge of claim 4, wherein the elastomer of said gasket is silicone.

6. The electrolytic cartridge of claim 4, wherein each gasket comprises a side at least partially coated with an adhesive.

7. The electrolytic cartridge of claim 6, wherein the adhesive is capable of adhering a surface to a wet article.

8. The electrolytic cartridge of claim 6, wherein the adhesive is an acrylic adhesive.

9. The electrolytic cartridge of claim 1, wherein the open-cell foamed polymer comprises polyurethane.

10. The electrolytic cartridge of claim 9, wherein the open- cell foamed polymer is coated with a coating substance.

11. The electrolytic cartridge of claim 10, wherein the coating substance is polyvinyl chloride.

12. The electrolytic cartridge of claim 1, wherein the electrode is constructed of a metal alloy coated with a substance comprising oxides of at least one of tantalum, ruthenium, and iridium.

13. The electrolytic cartridge of claim 1, wherein the space is capable of containing fresh water at a pressure of at least 2 psi for at least 10 minutes without leaking.

14. The electrolytic cartridge of claim 1, wherein the ion selective membrane is an anion selective membrane.

15. The electrolytic cartridge of claim 1, wherein the ion selective membrane is a cation selective membrane.

16. An electrolyzing system for electrolyzing a brine solution of water and ions of an alkali salt to produce acidic electrolyzed water and alkaline electrolyzed water, the system comprising:

a basin comprising an internal chamber for containing the brine solution comprising cations and anions and defining a brine bath;

a first electrolytic cartridge arranged in the internal chamber of the basin with the first electrolytic cartridge immersed in the brine bath,

said first electrolytic cartridge comprising a first electrode that is connected to an electrical supply that positively charges the first electrode, and an anion selective membrane disposed on a side of the first electrode so as to define a first space adjacent to at least a portion of the first electrode and into which anions from the brine solution can enter through the anion selective membrane;

said first space being in communication with a fresh water supply at an inlet of the first space and in communication with an outlet;

said first space sealed from the brine bath such that the only path for the anions of the brine solution to enter the first space is through the anion selective membrane;

a second electrolytic cartridge arranged in the internal chamber of the basin with the second electrolytic cartridge immersed in the brine bath;

the second electrolytic cartridge comprising a second electrode that is connected to an electrical supply that negatively charges the second electrode, and a cation selective membrane disposed on a side of the second electrode so as to define a second space adjacent to at least a portion of the second electrode and into which cations from the brine solution can enter through the cation selective membrane,

a second permeable insert covering the cation selective membrane on a side opposite the second space;

said second space being in communication with a fresh water supply at an inlet of the second space and in communication with an outlet of the second space;

said second space sealed from the brine bath such that the only path for the cations of the brine solution to enter the second space is through the cation selective membrane;

a first permeable insert covering the anion selective membrane on a side opposite the first space made of an open cell foamed polymer that allows the passage of brine solution through the first permeable insert to the anion selective membrane;

a first bonding plate disposed on the first permeable insert on a side opposite the side facing the anion selective membrane, said first bonding plate being formed with openings that permit the passage of brine solution through the first bonding plate and first permeable insert to said anion selective membrane while supporting said permeable insert and first anion selective membrane during the direction of fresh water from said inlet into said first space;

a second permeable insert covering the cation selective membrane on a side opposite the first space made of an open cell foamed polymer that allows the passage of brine solution through the second permeable insert to the cation selective membrane; and

a second bonding plate separate from said first bonding plate disposed on the second permeable insert on a side opposite the side facing the cation selective membrane, said second bonding plate being formed with openings that permit the passage of brine solution through the second bonding plate and second permeable insert to said cation selective membrane while supporting said second permeable insert and cation selective membrane during the direction of freshwater from said inlet into said first space.

17. The electrolyzing system of claim 16, wherein the first electrolytic cartridge further comprises a plurality of anion selective membranes a plurality of permeable inserts, and a plurality of bonding plates, arranged such that the only path for the anions of the brine solution to enter the first space is through the anion selective membranes.

18. A method of producing acidic electrolyzed water and alkaline electrolyzed water from a brine solution comprising cations and anions, the method comprising:

immersing a first electrolytic cartridge in the brine solution, the first electrolytic cartridge comprising a first electrode, the first electrode connected to an electrical supply that positively charges the first electrode, the first electrolytic cartridge further comprising an anion selective membrane, said anion selective membrane being supported relative to the first electrode so as to define a first space adjacent to at least a portion of the first electrode, directing fresh water through said first space with the first space being sealed from the brine solution such that the only path for the anions of the brine solution to enter the first space is through the anion selective membrane;

immersing a second electrolytic cartridge in the brine solution adjacent one side of said first electrolytic cartridge, the second electrolytic cartridge comprising a second electrode, the second electrode being connected to an electrical supply that negatively charges the second electrode, the second electrolytic cartridge further comprising a cation selective membrane, the cation selective membrane being supported relative to the second electrode so as to define a second space adjacent to at least a portion of the second electrode, directing fresh water through said second space with the second space being sealed from the brine solution such that the only

path for the cations of the brine solution to enter the second space is through the cation selective membrane;

immersing a third electrolytic cartridge in the brine solution adjacent a second side of the first electrolytic cartridge opposite said first side of said electrolytic cartridge, the third electrolytic cartridge comprising a third electrode, said third electrode being connected to an electrical supply that negatively charges the third electrode, said third electrolytic cartridge further comprising a second cation selective membrane, said second cation selective membrane being supported relative to the third electrode so as to define a third space adjacent to at least a portion of the third electrode, directing fresh water through said third space with the third space being sealed from the brine solution such that the only path for the cations of the brine solution to enter the third space is through the second cation selective membrane;

flowing fresh water through the first, second, and third spaces while the first, second, and third electrodes are charged, thereby creating a first product, a second product, and a third product flowing from each respective space; and

controlling the charge of the first electrode and supply of fresh water to the first space separately verses the charge of the second and third electrodes and the supply of water to said second and third spaces; and

flowing at least a portion of the third product through the first space while at least the first and second electrodes are charged, thereby adjusting the pH of the first product.