ION EXCHANGE
Refreshing the Planet

INDION® LAB-Q WATER MAKER

Purification Technologies

Distillation: Distillation is probably the oldest method of water purification. Water is first heated to the boiling point. The water vapor rises to a condenser where cooling water lowers the temperature so the vapor is condensed, collected and stored.

Ion exchange: The ion-exchange process percolates water through spherical, porous bead resin materials (ion-exchange resins). Ions in the water are exchanged for other ions fixed to the beads. The two most common ion-exchange methods are softening and deionization.

Activated Carbon: Activated carbon is made of organic material porous particulates containing a maze of small pores, which account for the substance's highly developed surface. Organic molecules dissolved in water may enter the pores and bind to their walls.

Ultraviolet (UV) Radiation: Ultraviolet radiation has been widely used as a germicidal treatment for water. These lamps are an effective means of sanitizing water. The adsorption of UV light by the DNA in the microbial cells results in the inactivation of the microorganism. UV lamps with a very pure quartz sleeve allow passage of both 185 and 254 nm UV light. This combination of wavelengths is necessary for the photo oxidation of organic compounds, which ultimately allows conversion of dissolved organic substances into carbon dioxide. With these special lamps, Total Oxidizable Carbon (TOC) levels in high purity water can be reduced

Ultrafiltration: A microporous membrane filter removes particles according to pore size. By contrast, an ultrafiltration (UF) membrane functions as a molecular sieve. It separates dissolved molecules on the basis of their size–often reported as the "molecular weight "(both parameters are related, but not always directly)—by passing a solution through an infinitesimally fine filter.

Reverse Osmosis: Reverse osmosis (RO) is the most economical method of removing 95% to 99% of all contaminants. The pore structure of RO membranes is much tighter than that of UF membranes. RO membranes are capable of rejecting practically all particles, bacteria and organics > 200 Dalton molecular weight (including pyrogens) at a rate close to 99%.

Electro Deionization: This technology is a combination of electro dialysis and ion exchange, resulting in a process which effectively deionizes water, while the ion-exchange resins are

continuously regenerated by the electric current in the unit. This electrochemical regeneration replaces the chemical regeneration of conventional ion-exchange systems.

Microporous Filters: Microporous filters can be classified in three categories: depth, surface and screen. Depth filters are matted fibers or materials compressed to form a matrix that retains particles by random adsorption or entrapment. Surface filters are made from multiple layers of media. When fluid passes through the filter, particles larger than the spaces within the filter matrix are retained, accumulating primarily on the surface of the filter.