



# WATER PURIFICATION

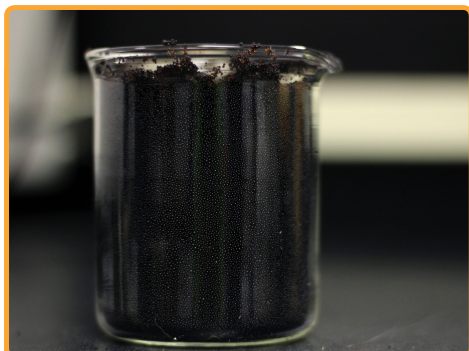
In the process of water purification, ion-exchange resins are used to remove toxic ions (e.g. copper, lead, or cadmium) from solution, replacing them with more innocuous ions such as sodium and potassium.

Few ion-exchange resins remove chlorine or organic contaminants from water on their own – this is usually achieved with Granular Activated Carbon (GAC). Ion exchange is a reversible process, meaning that industrial resin tanks may

be regenerated by thoroughly washing with an excess of desired ions. This greatly decreases the amount of waste that must be discarded, which not only cuts down on costs, but is highly sought after in today's growing environmental consciousness.



Anion Beaker



Cation Beaker



Resin Beakers Side by Side

## PRODUCTION OF HIGH PURITY WATER

Water of the highest purity is required for electronics, scientific experiments, production of superconductors, and nuclear industry, among others. Such water is produced using ion-exchange processes or combinations of membrane and ion-exchange methods. Cations are replaced with hydrogen ions using cation-exchange resins; anions are replaced with hydroxyl ions using anion-exchange resins. The hydrogen ions and hydroxyls recombine in the production of water molecules. Thus, no ions remain in the purified water. The purification process is usually performed in several steps with "mixed bed ion-exchange columns" at the end of the technological chain.

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