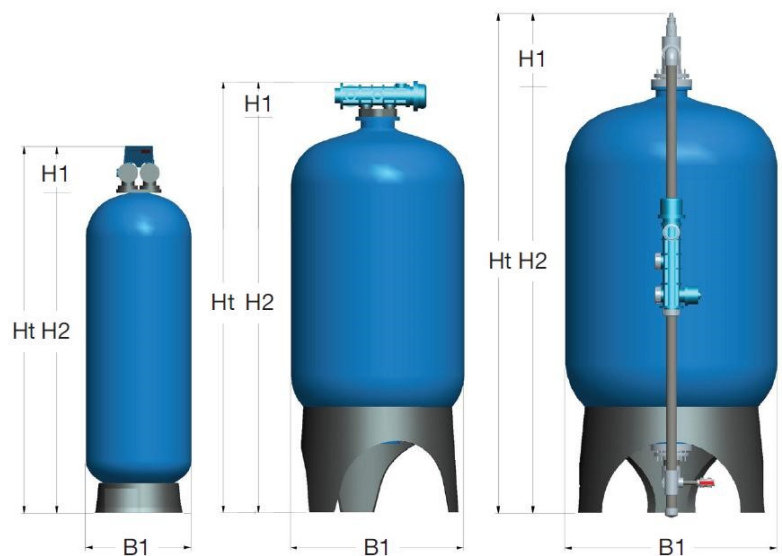


Carbon Filtration

Envirogen supply an extensive and comprehensive range of Activated Carbon Filters for use across a variety of markets and applications.

Most effective and commonly used for the **removal of organics and residual disinfectants including chlorine** in water supplies it:

- Improves taste
- Removes odours
- Minimises health hazards
- Protects other water treatment units such as RO membranes and ion exchange resins from possible damage due to oxidation or organic fouling.



The Process

There are two principal processes for carbon to remove contaminants from water:

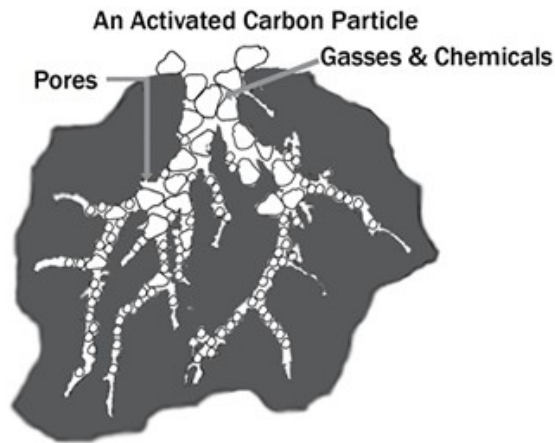
- **Adsorption** - a process where a solid is used to remove a soluble substance from the water
- **Catalytic reduction** - a chemical reaction that involves a transfer of electrons from the Activated Carbon surface to the residual disinfectant, essentially AC act as a reducing agent.



Organics are removed by adsorption and residual disinfectants by catalytic reduction.

The adsorptive process is where the contaminant is attracted to and held (adsorbed) onto the surface of the carbon particles. Carbon's large surface area per unit weight allows for contaminants to adhere to the activated carbon media

Physical adsorption occurs because all molecules exert attractive forces to adhere to each other. AC



adsorbs organic material because the attractive forces between the carbon surface and the contaminant are stronger than the forces keeping the contaminant dissolved in the water.

The efficiency of the adsorption process is influenced by carbon characteristics (particle and pore size, surface area, density and hardness) and the contaminant characteristics (concentration, tendency of chemical to leave the water, solubility of the contaminant, and contaminant attraction to the carbon surface).

Catalytic reduction is a chemical reaction that involves a transfer of electrons from the activated carbon surface to the residual disinfectant.

AC's removal of chlorine reduces the chlorine to a non-oxidative chloride ion. The reaction is very fast and takes a place in the first few inches of a new activated carbon bed, (where removal of organics by activated carbon takes minutes removal of chlorine literally takes seconds)

AC beds are essentially filters and need to be backwashed periodically. An area of about 50% should be incorporated into the vessel design to allow

Benefits

Activated carbon is a favoured water treatment technique due to its proven technology, multi functional nature and the fact that it adds nothing detrimental to the treated water whilst removing:

- Odours
- Taste contaminants
- Organics

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