

Multi-Media Filters

A multi-media filter, or depth filter, is a simple water filtration technology that utilizes layers of sand, gravel, garnet and coal to achieve fine filtration levels in the order of 5-15 microns (human hair is typically 75 microns in size). Multi-media filters are faster and more effective than sand filters in reducing turbidity, or cloudiness, from water supplies.

A typical multi-media filter has the coarse particles at the top and fine material at the bottom. Raw water is fed into the tank and percolates downwards through the different layers; large particles are removed at the topmost layer while smaller ones are filtered out in the finer layers. Therefore, filtration takes place throughout the multi-media filter bed, as opposed to the top few inches in a slow sand filter.

As with typical systems, backwash is used to clean the filter bed when it becomes saturated with contaminants. Clean water flows upwards or in the reverse direction, washing off suspended particles down the drain and regenerating the filtration bed. In modern systems this process is automated using a control valve.

Because multi-media filters contain sands and carbon, both physical and chemical filtration is achieved. Carbon is a strong adsorbent of chlorine, taste, odours and organic contaminants. Other fine layers can remove sediments in the 10-20 microns size range. Having said that, multi-media filters are not designed to remove bacteria, viruses or dissolved ions, and they are not typically used on their own for drinking water treatment. In large water systems, however, prefiltration of raw water using a multi-media filter is necessary to protect sensitive downstream treatment systems like Reverse Osmosis.



Multi-media filter system