

Sand Filters

Nature has provided a simple way for water filtration. This technique filters surface water as it percolates through aquifers. This process has been adopted for raw water filtration in what is known as sand filters. There are two types of sand filters: slow and rapid.

A slow sand filter is a bed of sand and gravel that has a layer of biological media on its surface. This biofilm contains algae, bacteria, and aquatic larvae that grow few days after the installation of the filter. The filter is effective for surface water treatment as the microorganisms absorb or consume suspended particles and organic contaminants in the water, resulting in reduced turbidity and suspended particles and elimination of bad odours. This process is effective for municipal water prefiltration and requires no chemicals or mechanical separation.



A slow sand filter system

Rapid filters, on the other hand, are faster and do not use biological media. They use coarse sand and gravel to filter out suspended matter in the water. Raw water percolates through the bed material and suspended particles get trapped in the sand matrix. Filtered water leaves from the bottom of the tank.

As more water gets filtered, the sand bed becomes saturated with impurities. Automatic sand filter systems employ backwashing cycles where the flow of water is reversed to flush impurities and clean the bed. This cycle is typically performed several times per day.

Rapid and slow sand filters are usually employed for large scale water treatment applications as a cost effective method for removal of sediments, odour and in some cases bacterial contamination.



Modern rapid sand filters with automatic backwash systems